

# ThinManager<sup>™</sup> All in One Lab - Cloud



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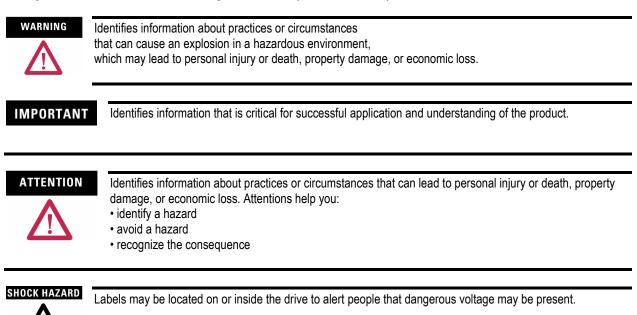
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Labels may be located on or inside the drive to alert people that surfaces may be dangerous temperatures.

# ThinManager All in One Lab

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# Before you begin

ThinManager is a centralized content delivery and device management platform designed for the plant floor. While the most common type of content delivered by ThinManager is Windows based applications via Microsoft's Remote Desktop Services (RDS), other content sources are supported as well including VNC Servers, IP Cameras and Terminal to Terminal Shadowing. Instead of maintaining multiple plant floor PCs, each with their own operating systems, applications and anti-virus requirements, migrating the plant floor applications to a Remote Desktop Server architecture can greatly simplify the deployment and maintenance of the system. In addition to content delivery, ThinManager enables central management of the devices to which the content will be delivered. In addition to thin/zero clients, ThinManager supports mobile devices like smartphones and tablets, as well as even PCs. All of these different device types can be managed under one umbrella, and managed in exactly the same way, regardless of the device type. If a virtualized desktop infrastructure (VDI) is preferred over Remote Desktop Services, ThinManager supports this architecture as well, or even a combination of both RDS and VDI. As this lab will demonstrate, ThinManager is a solution that IT departments can embrace, but does not require them to deploy or support, allowing Engineering and Maintenance to maintain the critical plant floor content.

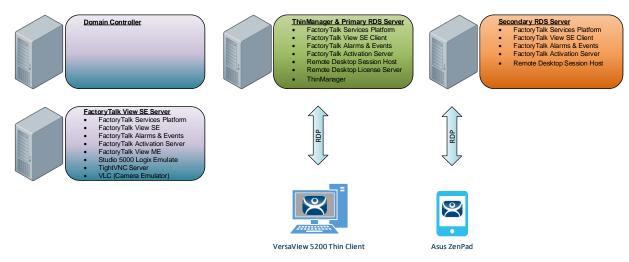
his lab is broken up into smaller segments and should be performed sequentially to start. Start by completing Sections 1 - 14 in order. Once Section 14 is completed you may proceed to complete **any** subsequent Section (15 - 18) in **any** order. To set expectations properly, it will most likely not be possible to complete all sections, as there is more content than allotted time. The lab manual will be available for future reference.

In the event of being prompted for logins, please use the following:

- If the Log On To Windows dialog is active, use the username 'tmlab\labuser' and 'rw' for the password.
- Use the same login information if prompted to log on to FactoryTalk Directory.

# About this lab

In this lab, you will complete an example deployment utilizing FactoryTalk View with ThinManager. Keep in mind that while this lab will focus on FactoryTalk content types, just about any Windows based application could be delivered using ThinManager. The thin clients and content delivered to them will be managed using ThinManager. Along the way, you will have an opportunity to work with some of the unique capabilities of ThinManager. The basic architecture being utilized is shown in the figure below:



This lab utilizes 6 different VMWare images running in the Amazon Elastic Cloud (EC2) and will require you to perform tasks on RDS1, RDS2, DC and the two Virtual Thin Clients. An Active Directory domain was created named TMLAB.LOC. Each of the Windows-based images have been pre-joined to the domain. The four images are:

- 1. Domain Controller Windows Server 2012 R2 fully qualified hostname = DC.TMLAB.LOC
- 2. HMI Server Windows Server 2016 fully qualified hostname = HMI.TMLAB.LOC
- 3. ThinManager/Primary RDS Server Windows Server 2016 fully qualified hostname = RDS1.TMLAB.LOC
- 4. Secondary RDS Server Windows Server 2016 fully qualified hostname = RDS2.TMLAB.LOC
- 5. Virtual Thin Client 1 (Thin01 running inside of RDS1)
- 6. Virtual Thin Client 2 (Thin02 running inside of RDS2)

The HMI server and applications for this lab are pre-built for your convenience and should not require any modifications. An ME Runtime exists on the HMI server as well, just to demonstrate VNC Server connectivity (basically emulating a PanelView Plus for the purposes of the lab).

The RDS1 image is a fresh Server 2016 build, with only a few items pre-installed. The lab will walk you through the installation of the Remote Desktop Services role, the FactoryTalk View SE Client and ThinManager.

RDS2 already has the Remote Desktop Services role, FactoryTalk View SE Client and ThinManager installed to save time. It will be used to demonstrate ThinManager Redundancy.

This lab will be performed by utilizing 2 virtualized thin clients and an Android Tablet. A virtual thin client can be created with VMWare Player or Workstation by just creating a new virtual machine without installing an Operating System (OS) on it, which is the essence of a zero client – no OS stored at the client, making it easier to manage. These virtual thin clients will then receive the ThinManager firmware utilizing PXE (<u>P</u>re-Boot E<u>x</u>ecution <u>E</u>nvironment). While a virtual thin client may not be very useful in a production environment, it is ideal for demonstration and training purposes.

This lab is broken up into 7 separate sections. In this lab, you will specifically gain experience with the following topics:

- Section 1: Defining ThinManager Display Servers, Display Clients and Terminals
- Section 2: Configuring ThinManager Application Link and Failover for FactoryTalk View SE
- Section 3: Terminal Replacement in Under 2 Minutes
- Section 4: Deploying Additional Content Using MultiSession and Tiling
- Section 5: MultiMonitor, Virtual Screens and Session Scaling
- Section 6: Relevance User Services User Based Content Delivery
- Section 7: Relevance Location Services Location Based Content Delivery

## **Tools & prerequisites**

A ControlLogix processor may be used in place of the Logix Emulate 5000 instance running on the HMI image, which is used to drive the FactoryTalk View SE and ME demo applications.

#### Software

- FactoryTalk Services Platform v6.11.00 (CPR 9 SR 11)
- FactoryTalk View Site Edition v11.00.00 (CPR 9 SR 11)
- FactoryTalk View ME Runtime v11.00.00 (CPR 9 SR 11)
- FactoryTalk Linx v6.11.00 (CPR 9 SR 11)
- FactoryTalk Alarms and Events v6.11.00 (CPR 9 SR 11)
- FactoryTalk Diagnostics v6.11.00 (CPR 9 SR 11)
- FactoryTalk Activation Manager v4.03.03
- RSLinx Classic v3.90.00 (CPR 9 SR 9)
- Studio 5000 Logix Designer v30.01.00 (CPR 9 SR 9)
- RSLogix Emulate 5000 v30.01.00 (CPR 9 SR 9)
- Internet Explorer 11
- Adobe Reader XI
- ThinManager v11 SP1
- TightVNC v2.8.5

#### **Operating Systems**

- Windows Server 2016
- Android 6.0 or Later

# Additional References

For additional information on FactoryTalk View Site Edition and Remote Desktop Services, you can review the following Rockwell Automation Knowledge Base article:

AID 554813 - Using FactoryTalk View SE with Remote Desktop Services - References TOC.

For additional information on Remote Desktop Services and its various components, you can review the following:

Microsoft TechNet Windows Server site for Remote Desktop Services

Remote Desktop Services Component Architecture Poster

For a comprehensive directory of Rockwell Automation Knowledge Base articles subject to ThinManager, refer to the following:

AID 1081869 - ThinManager TOC

For the ThinManager and FactoryTalk View SE Deployment Guide:

AID 1085134 - Deploying FactoryTalk View SE with ThinManager

## Section 1: Installation and Configuration of Remote Desktop Services

#### Overview

In this section, you will install and configure Remote Desktop Services on **RDS1**. To do this, you will be performing the following tasks:

- 1. Install the Remote Desktop Services Role
- 2. Install the Remote Desktop Services Licensing Role
- 3. Create a Session Collection

Windows Server 2016 is designed such that RDS servers should be joined to a domain using at least one Remote Desktop Services Connection Broker. All Remote Desktop Servers would then be managed as a Collection using Server Manager and/or PowerShell. However, Microsoft's Article ID 2833839, entitled "Guidelines for installing Remote Desktop Session Host role service on a computer running Windows Server 2016 without the Remote Desktop Connection Broker role service," describes that, although not ideal, the Remote Desktop Services role can be installed on a server joined to a workgroup as opposed to a domain. The major drawback to this architecture is that most of the User Interface tools provided to manage and configure Remote Desktop Services are not available to non-domain member servers. The configuration must take place using local group policy edits and/or PowerShell scripts.

#### Install the Remote Desktop Services Role

Roles and Role Services are configured through the Server Manager after the operating system is installed. For Remote Desktop Servers, it is recommended that the Remote Desktop Services role be installed prior to any client applications.

- 1. Launch Server Manager by clicking the Server Manager icon E from the Windows taskbar.
- 2. Once the Dashboard has refreshed (notice the streaming blue bar at the top while refreshing), click the Add roles and features link from the Server Manager Dashboard.

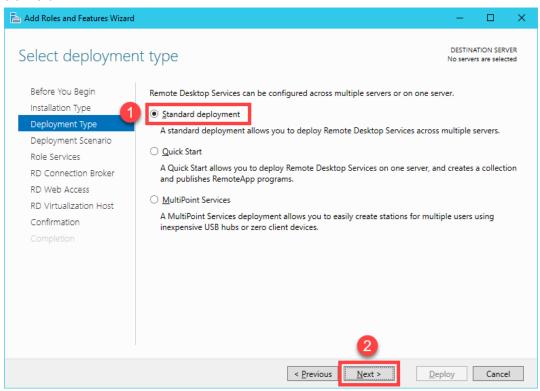
<b>a</b>			Server Manage
Server Ma	anager • Dashboard		
Image: Dashboard       1         Local Server       Image: Dashboard         Image: All Servers       Image: Dashboard         Image: Dashboard       Image: Dashboard         Image: Dashboard<	QUICK START 2 A 3 A WHAT'S NEW 4 C	figure this local server add roles and features add other servers to manage create a server group connect this server to cloud services	
	Roles: 1       Server groups: 1       Servers tol         File and Storage Services       1         ①       Manageability Events       1         Performance       BPA results		All Servers 1 Manageability Events Services Performance BPA results

- 3. On the Before You Begin page of the Add Roles and Features Wizard, click Next>.
- 4. On the Installation Type page of the Add Roles and Features Wizard, select Remote Desktop Services installation and click Next>.

à	Add Roles and Features Wizard	x
Select installation	DESTINATION SERVER No servers are selected	
Before You Begin Installation Type Deployment Type Deployment Scenario Role Services RD Connection Broker RD Web Access RD Virtualization Host Confirmation Completion	Select the installation type. You can install roles and features on a running physical computer or virtual machine, or on an offline virtual hard disk (VHD). <ul> <li>Role-based or feature-based installation</li> <li>Configure a single server by adding roles, role services, and features.</li> </ul> <li> Remote Desktop Services installation Install required role services for virtual Desktop infrastructure (VDI) to create a virtual machine-base or session-based desktop deployment.</li>	
	< Previous Next > Deploy Cancel	
he Remote Desktop Servic	es installation option is only available for Domain deployments. In addition, you	

The Remote Desktop Services installation option is only available for Domain deployments. In addition, you can only perform a Domain Deployment if you are a Domain Administrator. If working in a Workgroup environment, the Role-based or feature-based installation must be selected.

5. On the **Deployment Type** page of the **Add Roles and Features Wizard**, select the **Standard deployment** option and click **Next**>.



The Quick Start option is only suitable when deploying a single Remote Desktop Server. Since this lab is only using a single Remote Desktop Server, this option could have been used as well.

For deployments with more than one Remote Desktop Server, it is best to create a Server Group within Server Manager and add the Remote Desktop Servers to that group. Server groups allow you to view and manage a smaller subset of your server pool as a logical unit. To create a Server Group, click the Manage menu button within Server Manager, followed by the Create Server Group item. You can then add the desired servers to the new group.

It is also a recommendation to create a separate Organizational Unit (OU) within the Active Directory domain for the Remote Desktop Servers. You will then be able to manage the Group Policies for all of your Remote Desktop Servers through a single OU.

6. On the **Deployment Scenario** page of the **Add Roles and Features Wizard**, select **Session-based desktop deployment** and click **Next**>.

2	Add Roles and Features Wizard
ES Select deploymer Before You Begin Installation Type Deployment Type Deployment Scenario Role Services RD Connection Broker RD Web Access RD Session Host Confirmation Completion	
	< Previous Next > Deploy Cancel
•	zation Host role service provides virtual machine access on Hyper-V over . We will not be using this component in the lab.

- 7. Click the Next> button on the Role Services page of the Add Roles and Features Wizard.
- 8. From the **RD Connection Broker** page of the **Add Roles and Features Wizard**, click the **Right Arrow** button to add the **RDS1.lab.loc** server to the **Selected** list, followed by **Next**>.

	Add Roles and Features Wizard	1
Specify RD Conr	DESTINATION SE Destination Se Standard deployment sele	
Before You Begin Installation Type Deployment Type	Select the servers from the server pool on which to install the RD Connection Broker role service.           Server Pool         Selected	
Deployment Scenario Role Services	Filter:	
RD Connection Broker RD Web Access	Name IP Address Operating	
RD Web Access	1         RDS1.tmlab.loc         10.6.10.51         2	
Confirmation	►	
	< III >	
	1 Computer(s) found 0 Computer(s) selected	
	3	
	< Previous Next > Deploy Can	cel

The Remote Desktop Connection Broker role service is used for creating server farms to handle load balancing and application aggregation.

9. On the **RD Web Access** page of the **Add Roles and Features Wizard**, click the **Right Arrow** button to add the **RDS1.lab.loc** server to the **Selected** list, then click **Next**>.

5	Add Roles and Features Wizard
Specify RD Web	Access server Destination server Standard deployment selected
Before You Begin Installation Type Deployment Type	Select a server from the server pool on which to install the RD Web Access role service.
Deployment Scenario Role Services RD Connection Broker	Server Pool     Selected       Filter:     Computer
RD Web Access RD Session Host Confirmation	Name     IP Address     Operating       RDS1.tmlab.loc     10.6.10.51
	Computer(s) found  Computer(s) found  Computer(s) selected  Computer(s) found  Computer(s
	< Previous Next > Deploy Cancel

The RD Web Access role service is used to enable users to access Remote Desktop connections via a web browser.

10. On the **RD Session Host** page of the **Add Roles and Features Wizard**, click the **Right Arrow** button to add the **RDS1.lab.loc** server to the **Selected** list, then click **Next**>.

æ	Add I	Roles and Features	Wizard	_ <b>D</b> X
Specify RD Sessic	on Host serve	rs		DESTINATION SERVER Standard deployment selected
Before You Begin Installation Type			hich to install the RD Sess ole service will be deploy	sion Host role service. If more than ed on all of them.
Deployment Type Deployment Scenario	Server Pool		Sele	ected
Role Services	Filter:		Co	mputer
RD Web Access	Name	IP Address	Operating	
RD Session Host	1 RDS1.tmlab.loc	10.6.10.51	2	
Confirmation	-			
Completion				
	< 1 Computer(s) found	ш	>	omputer(s) selected
	r computer(s) round		3	inputer(s) selected
		< Pr	evious Next >	Deploy Cancel

 On the Confirmation page of the Add Roles and Features Wizard, check the Restart the destination server automatically if required checkbox followed by clicking the Deploy button. The installation process will start and continue for a few minutes. Once finished, RDS1 will automatically reboot. <u>This process will take a few minutes to complete.</u>

B	Add Roles and Features Wizard	
Confirm selection	DESTINATION SERVER Standard deployment selected	
Before You Begin Installation Type Deployment Type Deployment Scenario Role Services RD Connection Broker RD Web Access RD Session Host	To complete the installation, you must restart the RD Session Host servers. After installation is complete on the remote computers, the local computer will be restarted. <b>RD Connection Broker (1 server selected)</b> RDS.lab.loc <b>RD Web Access (1 server selected)</b> RDS.lab.loc <b>RD Session Host (1 server selected)</b> <b>RD Session Host (1 server selected)</b>	
Confirmation Completion	The following servers may restart after the role service is installed. RDS.lab.loc   RDS.lab.loc	
	< Previous Next > Deploy Cancel	

12. Once RDS1 begins to restart, it will take approximately 2 minutes before you can reconnect to your Cloud image via RDP. Once you have reconnected to RDS1, click the Server Manager icon next to the Windows Start button. The Add Roles and Features Wizard will reappear and provide status on the installation progress. Once the Status indicates Succeeded for each of the 3 role services, click the Close button.

📥 Add Roles and Features Wizard				—		×
View progress	The selected Remote Desktop Sei	rvices role services are being insta		DESTINA ndard deployn	TION SERVER nent selected	
Completion	Server	Progress	9	Status		1
	RD Connection Broker role ser	vice				
	RDS1.tmlab.loc		Succeeded	-		
	RD Web Access role service					
	RDS1.tmlab.loc		Succeeded	-		
	RD Session Host role service					
	RDS1.tmlab.loc		Succeeded	-		
				_		
		< <u>P</u> revious <u>N</u> ext >		lose	Cancel	]

<u>Note:</u> This will disconnect you from RDS1. Reconnect to your lab station from Thinfinity after 2-5 minutes (just as you had done at the beginning of this lab).

#### Install the Remote Desktop Services Licensing Role

When deploying Remote Desktop Services, consideration for Remote Desktop Services Client Access Licenses (RDSCALs) must be made. RDSCALs can be purchased from Microsoft in either Per User or Per Device. Use Per User licensing when individual users will be connecting from various devices and the number of users is generally smaller than the number of devices available to them for accessing the server.

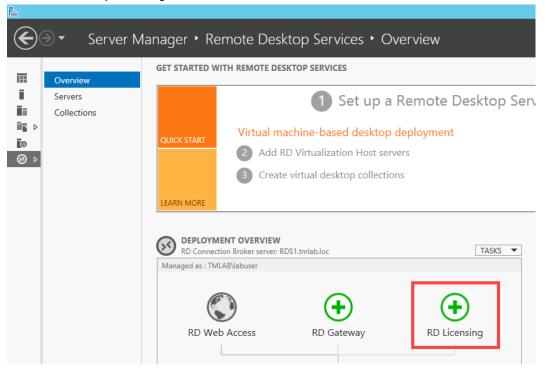
Use Per Device licensing when many users will be connecting from a fixed number of devices and the number of devices is generally smaller than the number of users using those devices. Per Device is generally best suited for ThinManager deployments.

By default, 2 administrative connections are allowed to the server. These connections do not require licenses from the license pool to be available. To start an administrative session, you must use the latest version of the Microsoft Remote Desktop Connection client and specify *<servername> /admin* as the address of the remote computer. Older versions of the Remote Desktop Connection tool did this via command line parameters to mstsc.exe.

Dashboard	anager • Da	ERVER MANAGER
Local Server     All Servers     File and Storage Services ▷		1 Configure this local server
<ul> <li>IIS</li> <li>⊗ Remote Desktop Services ▶</li> </ul>	QUICK START	2 Add roles and features
	WHAT'S NEW	3 Add other servers to manage
		<ol> <li>Create a server group</li> <li>Connect this server to cloud services</li> </ol>
	LEARN MORE	5 Connect this server to cloud services

#### 1. From Server Manager, click the Remote Desktop Services panel item.

2. From the **Overview** page of the **Remote Desktop Services** panel, click the **Green Plus** above **RD Licensing** to install the **Remote Desktop Licensing Service**.



3. From the Server Selection page of the Add RD Licensing Servers wizard, click the Right Arrow button to add RDS1.lab.loc to the Selected list. Click Next>.

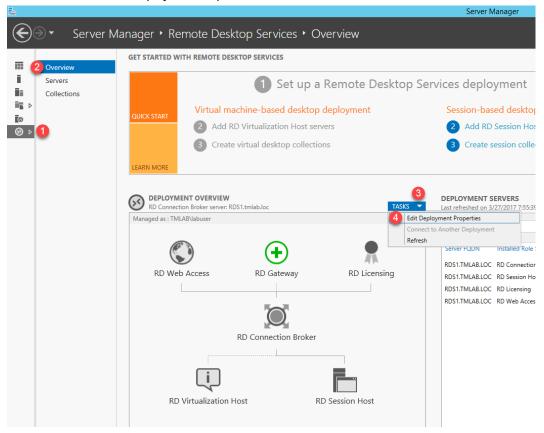
È.	Add RD Licensing Servers
Select a server	
Server Selection	This wizard allows you to add RD Licensing servers to your deployment. Select the servers on which to install the RD Licensing role service.
Confirmation Results	Server Pool
	Filter: Computer
	Name IP Address Operat
	RDS1.tmlab.loc 10.6.10.51
	1 Computer(s) found 0 Computer(s) selected
	The credentials of the TMLAB\labuser account will be used to add the servers.
	< Previous Next > Add Cancel

4. From the **Confirmation** page of the **Add RD Licensing Servers** wizard, click the **Add** button.

5. When the installation is complete, the **Status** will change to **Succeeded**. Click the **Close** button.

🚡 Add RD Licensing Servers			– 🗆 X
View progress			
view progress			
Server Selection	The role service is being install	ed on the following servers.	
Confirmation	Server	Progress	Status
Results	Remote Desktop Licensing	role service	
	RDS1.tmlab.loc		Succeeded
			-
	Review RD Licensing propertie	s for the deployment	
		< Previous Next >	Close

6. From the **Overview** panel of **Remote Desktop Services**, click the **Tasks** drop down list in the **Deployment Overview** frame and select the **Edit Deployment Properties** item.



7. From the **Deployment Properties** screen, select the **RD Licensing** panel, then click the **Per User** radio button. In addition, enter *RDS2.tmlab.loc* in the license server field and click the **Add...** button.

<b>B</b>	Deployment Properties	_ □	x
Configure the dep Show All RD Gateway + RD Web Access + Certificates +		4 Add	
		Remove	
	OK Can	icel Apply	

 For the purposes of this lab, we will move the licensing server from RDS2 to the top of the list (since it has been Activated an RD Licensing Server for you), so select RDS2.tmlab.loc from the license server list and click the Move Up button, followed by the OK button. This should stop that warning message you have probably seeing at the bottom right of the RDS1 screen regarding Licensing Servers.

	Deployment Properties	_ □	x
Configure the de	ployment		
RD Gateway +	RD Licensing		
RD Licensing-RD Web Access+Certificates+	Select the Remote Desktop licensing mode: Per Device Per User Specify a license server, and then click Add:		
		Add	
	Select the order for the Remote Desktop license servers: The RD Session Host server or the RD Virtualization Host server sends required to the specified license servers in the order in which you list them.	uests for licer	nses
	RDS1.tmlab.loc	Move Up	)
	RDS2.tmlab.loc	Move Down	
		Remove	
	3		
	OK Cancel	Apply	1

#### **Create a Session Collection**

Session Collections are only available for domain deployments. Collections allow you to group RD Session Host servers and manage their associated properties and published RemoteApps from a single location. A majority of the session based properties found in Server 2008 R2 and earlier can now be found at the Collection level.

1. To create a new Session Collection, click the Create session collections link from the Overview page of the Remote Desktop Services panel.

2 Overview	GET STARTED W	ITH REMOTE DESKTOP SERVICES	
Servers Collections	QUICK START	Set up a Remote Deskto     Virtual machine-based desktop deployment	p Services deployment Session-based desktop deployment
0		<ul> <li>Add RD Virtualization Host servers</li> <li>Greate virtual desktop collections</li> </ul>	<ul><li>2 Add RD Session Host servers</li><li>3 3 Create session collections</li></ul>

- 2. From the Before You Begin page of the Create Collection wizard, click Next>.
- 3. From the Collection Name page of the Create Collection wizard, enter TMLabApps, then click Next>.

🚘 Create Collection		_		×
Name the collection	on			
Before You Begin Collection Name	A session collection name is displayed to users when they log on to a server.	Remote Desktop	Web Aco	cess
RD Session Host User Groups	Name: TMLabApps			
User Profile Disks	Description (optional):			
Progress				
	2	F		
	< Previous Next >	Create	Cance	I

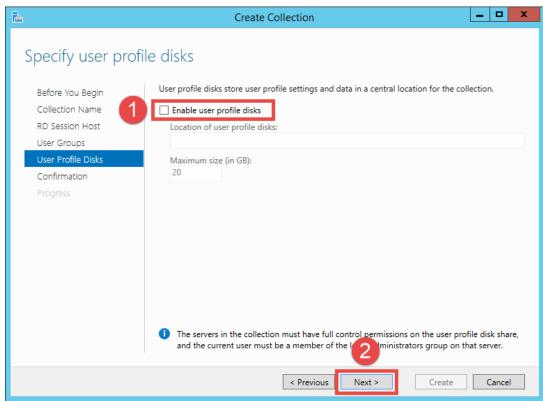
4. From the **RD Session Host** page of the **Create Collection** wizard, click the **Right Arrow** button to add **RDS1.lab.loc** to the **Selected** list and click **Next**>.

<b>B</b>	Create Collection
Specify RD Sessio	on Host servers
Before You Begin	Select the RD Session Host servers from the server pool to add to this collection.
Collection Name	
RD Session Host	Server Pool Selected
User Groups	Computer
User Profile Disks	Filter:
Confirmation	Name IP Address Operat
Progress	RDS1.tmlab.loc     <     I Computer(s) found     0 Computer(s) selected
	< Previous Next > Create Cancel

5. From the User Groups page of the Create Collection wizard, keep the default selection of TMLAB\Domain Users, which means that all users in the TMLAB domain will have access to this Session Collection. Click Next>.

L	Create Collection	- 🗆 X
Specify user grou	ps	
Before You Begin	Add the user groups that should have access to connect to the collection.	
Collection Name	User Groups:	
RD Session Host	TMLAB\Domain Users	Add
User Groups		Remove
User Profile Disks		nemove
Confirmation		_
Progress		
	< Previous Next > Create	Cancel

6. From the User Profile Disks page of the Create Collection wizard, uncheck the Enable user profile disks checkbox and click Next>.



7. Click the Create button from the Confirmation page of the Create Collection wizard.

8. Once complete, the **Status** indication should change to **Succeeded**. Click the **Close** button. Close **Server Manager** as well.

Create Collection			- 🗆
iew Progress			
	The session collection is be	eing created. Depending on the size of t	he session collection, this ma
Collection Name	take a while to complete.		
RD Session Host	Activity	Progress	Status
	Create Collection		Succeeded
User Profile Disks	Add servers		Succeeded
		RDS1.TMLAB.LOC	
Progress			
Progress			
		< Previous Next >	Close Cance

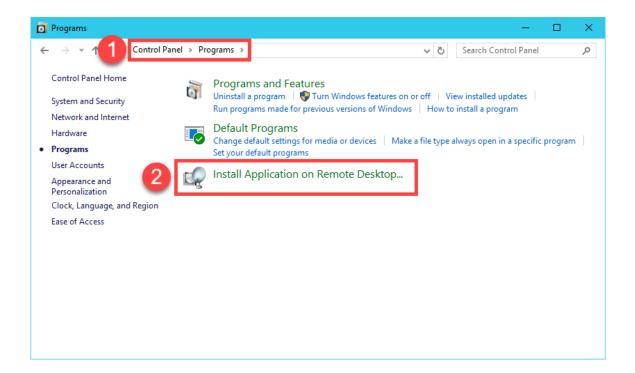
As mentioned previously, many of the properties found in the **Remote Desktop Session Host Configuration** in Windows Server 2008 R2 are now found at the **Session Collection** level.

With Windows Server 2012 or newer, the Remote Control Settings are now found in Group Policy, either Local or Domain, at Computer Configuration → Policies → Administrative Templates → Windows Components → Remote Desktop Services → Remote Desktop Session Host → Connections → Set rules for remote control of Remote Desktop user sessions. In addition, each domain user account has Remote Control settings as well which determine whether their remote sessions are enabled for remote control. If so, you can also control whether the user requires permission to be remotely controlled and whether the remote control session provides interactivity or not. These settings can be found on the Remote control tab of the user properties dialog box within the Active Directory Users and Computers application on the domain controller.

This completes the section **Installation and Configuration of Remote Desktop Services**. Continue on to the next section to learn about installing and configuring a **FactoryTalk View Site Edition Client** on a **Remote Desktop Server**.

# Section 2: Installation and Configuration of FactoryTalk View Site Edition Client

To prevent idle time, the FactoryTalk View SE Client has been pre-installed on RDS1. Below, under the Overview section, there are links to the Lab Appendix where steps to complete the FactoryTalk View SE Client install and Network Directory configuration are located <u>for your reference</u>. Installing the Remote Desktop Service Role before installing client applications and performing client application(s) installation in RD-Install mode are best practices when deploying Remote Desktop Services applications with ThinManager. After reviewing the Appendix (do not complete as part of this lab), proceed to Section 3.



#### Overview

In this section, you will install and configure FactoryTalk View Site Edition Client software on the Remote Desktop Server. To do this, you will be performing the following tasks:

- 1. Install FactoryTalk View Site Edition Client in RD-Install Mode Located in Lab Appendix for your reference
- 2. <u>Configure the FactoryTalk Directory to Point to a Network Directory</u> Located in Lab Appendix for your reference

# Section 3: Installation and Configuration of ThinManager

### Overview

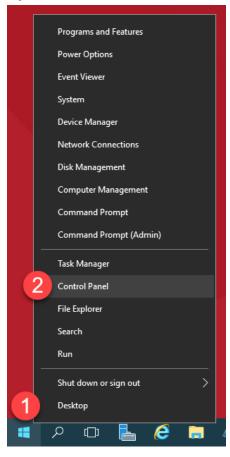
In this section, you will install ThinManager on the **RDS1** virtual machine. While ThinManager is most commonly installed on a **Remote Desktop Server**, it does not have to be. In fact, it could be installed on a workstation class machine, like **Windows 7** even. Basically, ThinManager does <u>not</u> have to be installed on a **Remote Desktop Server** in order to use that server as a source of content.

In this section, you will be performing the following tasks:

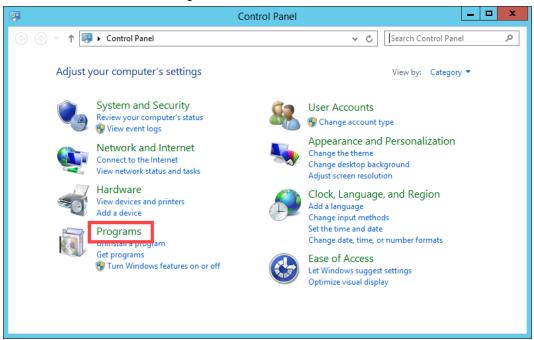
- 1. Installation of ThinManager
- 2. Apply FactoryTalk Activation for ThinManager
- 3. Apply Traditional Master License for ThinManager
- 4. Update TermCap Database

## Installation of ThinManager

1. Right click the **Windows Start** button and click the **Control Panel** menu item.



2. From the Control Panel, click the Programs link.



3. From the **Programs** page of the **Control Panel**, click the **Install Application on Remote Desktop...** link.

	Programs 📃 🗖 🗙
€ 🗇 ▼ ↑ 💽 ► Control Panel ► F	rograms ► v C Search Control Panel P
Control Panel Home System and Security Network and Internet Hardware Programs User Accounts Appearance and Personalization Clock, Language, and Region	Programs and Features         Uninstall a program       Image: Seatures on or off       View installed updates         Run programs made for previous versions of Windows       How to install a program         Default Programs         Change default settings for media or devices       Make a file type always open in a specific program       Set your default programs         Install Application on Remote Desktop
Ease of Access	

4. Click the Next button of the Install Program From Floppy Disk or CD-ROM wizard.

Install Prog	gram From Floppy Disk or CD-ROM
	Insert the product's first installation floppy disk or CD-ROM, and then click. Next. The application will be installed in RD-Install mode.
	< Back Next > Cancel

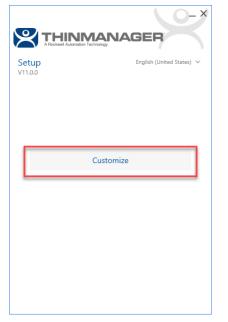
5. Click the Browse... button from the Run Installation Program page of the wizard.

	Run Installation Program					
Windows was unable to find the installation program. Click Back to try again. Click Browse to find the installation program manually.						
	Open: Browse					
	< Back Next > Cancel					

6. In the Browse dialog, browse to the folder C:\Tools\Installs\11.0.1-ThinManager-Web, select Setup and click Open. Click Next> to launch the ThinManager installation program.

Run Installation Program	×
2	Windows was unable to find the installation program. Click Browse to find the installation program manually.         Open:         Ialls\11.0.1-ThinManager-Web\Setup.exe         Browse

7. Click the **Customize** button on the installer to set up the installation parameters.



8. Accept the default installation options to install the 32 bit version. Click **Next**.

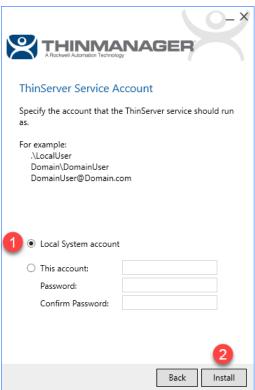
	$ - \times $
Customize	
✓ FactoryTalk Activation Manager v4.03.03 (i)	0.0 MB
▲ 🔳 ThinManager v11.0.1	265.2 MB
🔺 🔽 ThinManager	
ThinManager	
ThinServer Service	
✓ Start Menu Shortcut	
I hinManager (xb4)	
(j) Total:	265.2 MB

ThinManager v11 introduced support for FactoryTalk Activation. As this section will demonstrate, traditional ThinManager Master Licensing is still supported and is the default. In order to utilize FactoryTalk Activation, you must install FactoryTalk Activation Manager v4.03.03 or later, which has been pre-installed on your virtual machine to save time.

It should be noted that if you choose to install the x64 version of ThinManager you will be unable to preview IP cameras from the ThinManager user interface.

9. On the ThinServer Service Account page of the installation wizard, select Local System account and click the

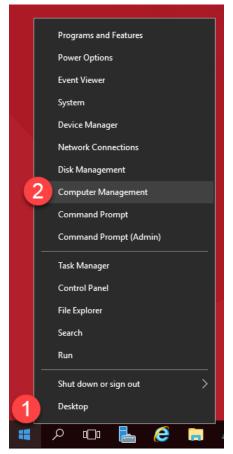
Install button.



- 10. From the End User License Agreements page, click the Accept all button.
- 11. When the installation has finished click the **Close** button on the installer, followed by the **Finish** button on the Admin installer.

 Finish Admin Install
When the installation has ended (successfully or not), please click the Finish button or the Cancel button. DO NOT CLICK THE BUTTONS BEFORE INSTALLATION HAS ENDED!
< Back Finish Cancel

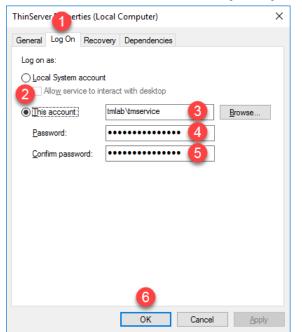
12. It is recommended to run the ThinServer service as a local Administrator account (in a domain environment, this would be a domain account that is a member of the local Administrator group). This account should also have local Administrator permissions on each Remote Desktop Server managed by ThinManager. In this lab, the tmlab\tmservice account has already been added to the local Administrators group on RDS1 and RDS2 for you. Let's now assign that account to the ThinServer service. Right click the Windows Start button and select Computer Management.



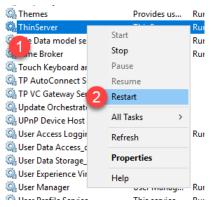
13. From the **Computer Management** console, expand the **Services and Applications** branch and select **Services**. From the Services list on the right side, scroll down to **ThinServer**, right click it and choose **Properties**.

🌆 Computer Management							-		$\times$
File Action View Help									
Þ 🔿 🙋 📷 🔯 😫 🚺	2 📷 🕨 🔳 💵 🕨								
Normal Computer Management (Local	Services							Actions	_
<ul> <li> <sup>*</sup> System Tools         <ul> <li></li></ul></li></ul>	ThinServer	Name	Description	Status	Startup Type	Log On As	^	Services	
> III Event Viewer		🍓 Storage Service	Provides en		Manual (Trig	Local System		More	
Changed Fielders	Stop the service Restart the service	🆏 Storage Tiers Management	Optimizes t		Manual	Local System		71.5.0	
> 🖉 Local Users and Groups	restart the service	🎑 Superfetch	Maintains a	Running	Automatic	Local System		ThinServer	
> 🔊 Performance		🆏 Sync Host_dcb98	This service	Running	Automatic (D	Local System		More	
Ti berice manager	Description: ThinServer	🍓 System Event Notification S	Monitors sy	Running	Automatic	Local System			
Storage	Ininserver	🍓 System Events Broker	Coordinates	Running	Automatic (T	Local System			
> 🍓 Windows Server Backup		🍓 Task Scheduler	Enables a us	Running	Automatic	Local System			
📅 Disk Management		🍓 TCP/IP NetBIOS Helper	Provides su	Running	Manual (Trig	Local Service			
Services and Applications		🍓 Telephony	Provides Tel		Manual	Network Service			
> 🧤 Internet Information Sei		🖏 Themes	Provides us	Running	Automatic	Local System			
Routing and Remote Ac		2 San ThinServer	ThinServer	Runnina	Automatic	Local System			
WMI Control		Tile Data model server	Start		Automatic	Local System			
www.control		🖓 Time Broker	Stop		Manual (Trig	Local Service			
		🍓 Touch Keyboard and Hand	Pause		Manual (Trig	Local System			
		Connect Service	Resume		Manual	Local System			
		Cateway Service	Restart		Manual	Local System			
		🐏 Update Orchestrator Service			Manual	Local System			
		🖓 UPnP Device Host	All Tasks	>	Manual	Local Service			
		User Access Logging Service	Refresh		Automatic (D	Local System			
		User Data Access_dcb98			Manual	Local System			
		🚇 User Data Storage_dcb98	3 Properties		Manual	Local System			
		User Experience Virtualizatio	Help		Disabled	Local System			
		Q User Manager			Automatic (T	Local System			
		Q User Profile Service	This service	Running	Automatic	Local System			
		🤹 Virtual Disk	Provides m		Manual	Local System			
		Whware Alias Manager and		Running	Automatic	Local System			
		WWWARE CAF AMQP Comm	VMware Co		Manual	Local System	>		
	5 ( <u>n</u> (	`					,		
< >> \	Extended Standard							1	

14. From the ThinServer Properties window, select the Log On tab, then the This account radio button. Enter tmlab\tmservice in the This account textbox and rw in the Password and Confirm Password textboxes. Click the OK button. Click the OK button to the resulting message boxes.



15. Right click the **ThinServer** service one more time and select **Restart** in order to restart the service. Close the **Computer Management** console window. If still open, close the **Control Panel** as well.



## Apply FactoryTalk Activation for ThinManager

A ThinManager license/activation determines how many ThinManager terminals can be concurrently connected to ThinManager and whether ThinManager is enabled for Redundancy. Redundancy provides 2 installs of ThinManager whose configurations are automatically synchronized. Redundancy is different from Failover. Failover is included in every ThinManager license and provides the ability to automatically failover to multiple Remote Desktop Servers without any user intervention required at the client. Automatic Remote Desktop Server Failover will be demonstrated in Section 5. This lab will demonstrate how to setup Redundancy. In addition to the ThinManager installation just completed on RDS1, ThinManager has been pre-installed on RDS2 for you.

Prior to version 11, ThinManager offered 2 Redundancy options: Mirrored and Full. To simplify, ThinManager now only offers Full Redundancy. If you are an existing Mirrored Redundancy user and are purchasing additional ThinManager licensing for your system, please contact insidesales@thinmanager.com to discuss upgrading your existing Mirrored Redundancy licensing to Full Redundancy.

From the RDS1 virtual machine, double click the ThinManager shortcut on the desktop 1.

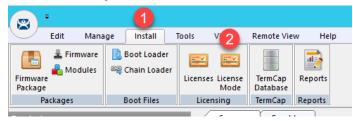


Since we have yet to install a ThinManager license/activation, a message box alerts us. Click the OK button. 2.

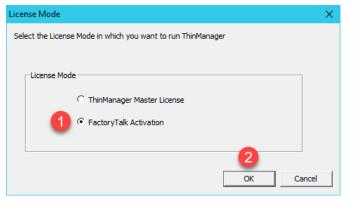


As the message box indicates, a fully functional 30 day demo code can be obtained from the ThinManager website at http://downloads.thinmanager.com.

From the ThinManager Admin Console, click the Install ribbon, followed by the License Mode icon. 3.

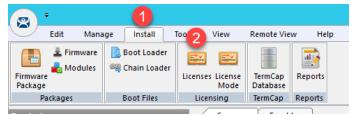


4. From the License Mode window, select the radio button for FactoryTalk Activation and click OK.



As previously mentioned, ThinManager v11 adds support for FactoryTalk Activations as an alternative to traditional Master Licensing. Only one licensing mode can be enabled at a time. When using FactoryTalk Activation, licenses are downloaded to a machine in the same way as all other FactoryTalk activated products. Once an activation is downloaded, it must be assigned to a ThinManager server. For more information, refer to <u>AID1083531 - FactoryTalk Activation</u> with <u>ThinManager</u>. GoldMaster Activations are supported in this mode as well. For more information, please refer to <u>AID1083532 - ThinManager Support for GoldMaster Activation</u>.

5. From the Admin Console, return to the Install tab and this time click the Licenses button.



6. From the FactoryTalk Activations window, click the Add Activations button.

Fa	actoryTalk Activations			×
	Activations attached to this	s ThinManager server		
	Serial Number	Feature	Count	Γ
	Add Activations	Remove Activations	OK Cancel	

7. With the way the Cloud lab images are hosted in the Amazon Elastic Cloud, we were unable to maintain the CodeMeter-based ThinManager FactoryTalk Activation once the Cloud lab image was launched, so you will not see any available activations. Click the **Cancel** button, then click the **Cancel** button again.

Add Activations to Thin	Manager				×		
Installed Activations							
Installed Activations Choose the Serial Number to add activations from           Image: Only show ThinManager Activations           Serial Number         Feature           Version         Count           Available Count         Expiration							
Choose the Serial Number to add activations from           Image: Only show ThinManager Activations							
Serial Number	Feature	Version	Count	Available Count	Expiration		
<					>		
					-		
Enter the number of activ	ations to add to ThinMar	nager					
		ļ					
				OK I	Cancel		

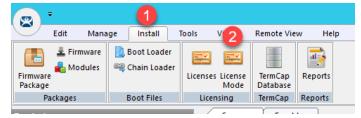
By default, ThinManager terminal connection license packs cannot be split up and applied to separate installations. If your ThinManager deployment requires a license pack to be split up, please inquire about ThinManager FLEX licensing, which enables this capability.

With FactoryTalk Activation and ThinManager Redundancy, you will need to assign an activation to both ThinManager installations. When you purchase a ThinManager license with FactoryTalk Activation, it will include an install count of 2 for this purpose – one for the Primary ThinManager Server and one for the Secondary ThinManager Server. Therefore, with a FactoryTalk Activated ThinManager license in a redundant deployment, you would follow the above steps on the Primary ThinManager Server as well as the Secondary ThinManager Server.

#### Apply Master License for ThinManager

With **ThinManager Traditional Master Licensing** in a redundant deployment, a single redundant license is automatically shared between redundant partners.

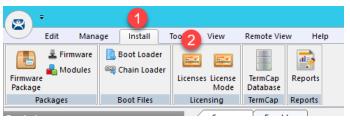
1. From the ThinManager Admin Console, click the Install ribbon, followed by the License Mode icon.



2. From the License Mode window, select the radio button for ThinManager Master License and click OK.

License Mode	×	0
Select the License Mode in which you want to run ThinManager		
License Mode ThinManager Master License C FactoryTalk Activation	OK Cancel	]

3. From the Admin Console, return to the Install tab and this time click the Licenses button.



4. From the **Licensing** window, click the **Install License** button.

Li	icensing				
	Master License Number				Install License
					Delete License
	License Number	Description	Redundancy	Expiration	
	_ Installation Id				
	RI	DS1 (primary) 2AF8-34E6-193	77-4EF1-7559-3D9F		Show All
	L				
	License Details	Delete Demo Co	de Install Demo Co	Show Old	Licenses Done

5. From the **Open** dialog, navigate to **C:\Tools\Installs** and select the **TMLicense\_E1B0-EC84-B530-079A** file. Click the **Open** button.

😤 Open						×
← → 🚺 🖪	> This	PC > Local Disk (C:) > Tools > Installs >	~ (	ර Search Insta	lls	<i>م</i>
Organize 🔻 Ne	w folder				•== •	•
<ul> <li>Quick access</li> <li>Desktop</li> <li>Downloads</li> <li>Documents</li> <li>Pictures</li> <li>Advanced</li> <li>FTVSE Clients</li> <li>Installs</li> <li>Lab Files</li> </ul>	* 2	Name 11.00.00-FTView-DVD 11.0.1-ThinManager-Web 30.01.01-Studio5000-Web TMLicense_E1B0-EC84-B530-079A	Date modified 3/4/2019 2:18 PM 12/11/2018 9:27 AM 3/4/2019 2:23 PM 4/1/2019 11:05 AM	Type File folder File folder File folder LIC File	Size	2 КВ
This PC	File <u>n</u> am	e: TMLicense_E1B0-EC84-B530-079A		∼ ThinMana <u>c</u>	jer License File	s ~
			(	3 <u>O</u> pen	Ca	incel

6. Click the **OK** button from the ensuing confirmation dialog box.



7. From the **Licensing** window, click the **Done** button.

Li	censing				
ı	Master License Number	E180-EC84-B530-079A			Install License Delete License
	License Number	Description	Redundancy	Expiration	
	EEA31EC3-5D4E5BF9	XLr Redundant License	full	05/04/2020	
		primary) 2AF8-34E6-1977-4			Show All
	License Details	Delete Demo Code	Install Demo Code	Show Old I	icenses Done

- 8. **Close** the ThinManager **Admin Console** in order for ThinManager to properly recognize the features of the license and **Restart** it.
- 9. From the Admin Console, click the ThinServer icon in the tree selector, followed by RDS1 from the ThinManager Servers tree, then the Licenses tab.

	-	×
	Tools View Remote View Help	
Firmware Addules Package	Licenses License Mode	
Packages Boot Files	Licensing TermCap 3 brts	 
ThinManager Server	Configuration Licenses Properties Schedule Versions Synchronization Event Log Report IP Assignment	•
E-S ThinManager Servers 2 S RDS1	Licenses Used / Available	
-	MultiMonitor License 0 / 10	
	WinTMC Connection License 0 / 10	
	Relevance License 0 / 10	
	TermSecure License 0 / 15	
	Terminal Connection License 0 / 10	
	Xur License 0 / 10	
	License Number Status	
	EEA31EC3-5D-#ESBF9 Valid	
	—	
🖾 📃 🛔 🗊 🤱 🍛 🖉	».	

### Update TermCap Database

Every version of ThinManager ships with an up-to-date version of the **Terminal Capabilities Database** (**TermCap**) at the time of release. The **TermCap Database** provides ThinManager with the configuration parameters for each thin client model. At each terminal connection, the **TermCap** database is utilized to perform an integrity check. If the configuration does not match the terminal specifications, ThinManager may reconfigure the terminal to an acceptable set of parameters. The images used in this lab were built with an up-to-date version of the **TermCap**, so an update is technically not necessary for this deployment of ThinManager, but it is worthwhile to become familiar with the process. In the following steps you will apply the latest **TermCap Database** to this installation.

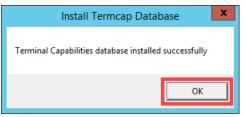
1. From ThinManager, click the Install ribbon followed by the TermCap Database icon.



2. From the **Open** dialog box, browse to **C:\Tools\Installs** and select the **termcap.db.9.0.25** file and click the **Open** button.

🖾 Open			×
$\leftarrow \rightarrow 1$ · This P	PC → Local Disk (C:) → Tools → Installs	✓ Č Search Insta	alls 🔎
Organize 🔻 New folder			📰 🕶 🔟 🕐
<ul> <li>✓ Quick access</li> <li>✓ Desktop</li> <li>✓ Downloads</li> <li>✓ Documents</li> <li>✓ Pictures</li> <li>✓ Advanced</li> <li>✓ FTVSE Clients</li> <li>✓ Installs</li> </ul>	Name ^	Date modifiedType3/4/2019 2:18 PMFile folder12/11/2018 9:27 AMFile folder3/4/2019 2:23 PMFile folder2/4/2019 2:33 PM25 File	Size 4,612 KB
Lab Files	e: termcap.db.9.0.25	TermCap I	

3. You should receive a successful confirmation message. Click the **OK** button.



This completes the section Installation and Configuration of FactoryTalk View Site Edition Client on Remote Desktop Server. Continue to the next section to start exploring the ThinManager fundamentals, Display Servers, Display Clients and Terminals.

# Section 4: Defining ThinManager Display Servers, Display Clients and Terminals

# Overview

In this section, you will create the 3 primary building blocks of ThinManager:

- 1. Display Servers
- 2. Display Clients
- 3. Terminals

In ThinManager, **Display Servers** are the server sources of content that you want to deliver to your devices. A **Display Server** is typically a Remote Desktop Server, but can also be an IP/USB Camera or a VNC Server (like a PanelView Plus or a MacBook Pro).

**Display Clients**, not to be confused with the FactoryTalk View SE executable DisplayClient.exe, represent the actual content you will be delivering to your devices, which are referred to as **Terminals** in ThinManager. There are 6 types of **Display Clients** supported in ThinManager: (1) Remote Desktop Services, (2) Camera, (3) Terminal Shadow, (4) Workstation, (5) VNC and (6) Virtual Screen. Within this lab, you will have an opportunity to create several of these Display Client types.

You will use **Display Servers** and **Display Clients** to setup the content you want to deliver to the devices managed by ThinManager. This content can be assigned and delivered in 3 ways with ThinManager:

- 1. By Device
- 2. By User
- 3. By Location

While you will experience all 3 content type delivery methods in this lab, you will start with the first one, By Device, in this section. By Device allows you to assign content to the Terminal Profile, representing the default content that will be delivered to a device when it is powered on. Terminals are the thin or zero clients, mobile devices and/or PCs that you will be managing with ThinManager. Each device will have a unique Terminal Profile in ThinManager.

A zero client may look very similar to a thin client physically, but it does not have an operating system. A thin client, on the other hand, has an operating system - maybe a scaled down version of Linux capable of connecting to a Remote Desktop Server, or maybe even Windows Embedded. ThinManager treats each of these device types in much the same way in that the same ThinManager firmware is delivered to either device type. The ThinManager firmware should be viewed as the operating system for ThinManager thin or zero clients. So, if a device has no operating system like a zero client, or has an operating system like a thin client, it will receive the ThinManager firmware when it boots up and boot from it. We will refer to the virtual thin client(s) as a thin client often but it is actually a zero client, since it does not have local storage and therefore no Operating System.

ThinManager supports 2 types of thin or zero clients:

- ThinManager Ready
- ThinManager Compatible

ThinManager Ready terminals have the ThinManager BIOS extension image embedded in them by the manufacturer. When these terminals are powered on, they know how to find a ThinManager Server right out of the box. Once found, the ThinServer service delivers the terminal's firmware and configuration.

ThinManager Compatible terminals do <u>not</u> have the ThinManager BIOS extension image. However, the ThinManager firmware is hardware compatible with the majority of thin clients on the market. This is because the ThinManager firmware is compiled for the x86 platform, and the majority of thin clients are x86-based. In order to deliver the ThinManager firmware to these devices, PXE is utilized. <u>P</u>reboot e<u>X</u>ecution <u>E</u>nvironment (PXE) is an Intel standard whereby an operating system can be delivered over the network. The virtual thin clients used in this Cloud Lab are examples of ThinManager Compatible terminals.

Functionally, there is no real difference between a ThinManager Ready terminal and a ThinManager compatible terminal.

In this section, you will register your **RDS1** virtual machine as a Display Server within ThinManager. With this Display Server created, you will create a **Display Client** to deliver a Windows desktop session from **RDS1**. You will then create a **Terminal Profile** to which you will assign the newly created **Display Client**. Lastly, you will start the virtual thin client and assign the new terminal profile to it in order to see the results. To do this, you will be performing the following tasks:

- 1. Create Display Servers
- 2. Create a Display Client
- 3. Create a Terminal Profile
- 4. Configure PXE Server
- 5. Assign the Terminal Profile to a Thin Client
- 6. Shadow Terminal from ThinManager

ThinManager is primarily composed of 2 components – the ThinServer service and the ThinManager administrative console (admin console).

The ThinServer service is a Windows based service that is the engine of ThinManager. It delivers the terminal's firmware and configuration, and therefore is essential in order for a terminal to boot.

The ThinManager admin console, on the other hand, is not licensed, and is the interface from which you manage the entire ThinManager environment.

While these 2 components do not have to be co-located or installed on a Remote Desktop Server, they often are due to the benefits of the Remote Desktop Services architecture.

## **Create Display Servers**

Register **RDS1** and **RDS2** as Display Servers in ThinManager.

1. Launch the ThinManager user interface from the desktop of **RDS1**.



2. Click the **Display Servers** icon **I** in the ThinManager tree selector.

The tree selector can be expanded or collapsed using the bar above directly above it.



3. From the **Display Servers** tree, right click the **RDS Servers** branch and select **Add Remote Desktop Server**. This will launch the Remote Desktop Server Wizard.

	Edit Mana	ge	Install	Tools	View	Rem	ote View	He
	Restore Backu		Restore B Backup B Synchron	iometric l		PXE Server	ThinMana Server L	
Packages		Co	nfiguratio	n				М
Display Ser	vers				Statu	s Su	mmary	Even
	isplay Servers RDS Servers Cameras	2	Add Rem	ote Desk	Attribute top Server			
	VNC Servers	-	Add Virtu	ial Remo	te Desktop	Server		
			Add Rem	iote Desk	top Server	Group		
			Edit Rem	ote Desk	top Server l	List		

- 4. From the Introduction page of the Remote Desktop Server Wizard, click the Next button.
- 5. From the **Remote Desktop Server Name** page of the wizard, type *RDS1* in the **Name** field.
- 6. Click the **Discover** button. If the name is successfully resolved, the IP address of **RDS1** should be filled in automatically.
- 7. Type *tmservice@tmlab.loc* in the **User Name** field.
- 8. Type *rw* in the **Password** field.
- 9. Click the Verify button which should confirm that the credentials entered are valid, followed by the OK button.

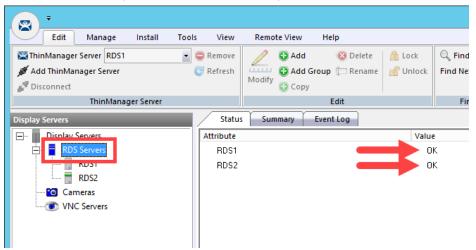
10. Click the **Finish** button.

Remote Deskto	p Server Wizard	
	op Server Name mote Desktop Server Name and Log In information	m. 🏱
Remote Deskto	p Server Name	
Name	RDS1	
IP Address	10 . 6 . 10 . 51	Discover
		Change Group
Log In Informat	on	
User Name	tmservice@tmlab.loc	Search
Password	жижижи	
Domain	l	Verify
		Password Options
		Schedule
	5	
< Bac	k Next > Finish Ca	ncel Help

- 11. **RDS1** should now be added to the Remote Desktop Servers group. You may have to click the Display Servers branch to refresh the Remote Desktop Servers group.
- 12. Repeat steps 3 through 11, but this time register RDS2.

Remote Desktop		
Name	RDS2	
IP Address	10 . 6 . 10 . 52	Discover
		Change Group
Log In Informatio	n	
User Name	tmservice@tmlab.loc	Search
Password	*******	
Domain		Verify
		Password Options
		Schedule

13. If not already selected, click the RDS Servers branch and note the status of RDS1 and RDS2 on the right-hand side. It should indicate a Value of OK for each (it may take RDS2 a few seconds to change to OK). This indicates that the IP address and credentials provided for the Remote Desktop Servers are in fact valid.



The credentials entered when configuring a Remote Desktop Server must have Administrative rights on the Remote Desktop Server. This is required for SmartSession and to populate the User, Sessions and Process tabs of the details pane, which are available when you click on the Remote Desktop Server of interest. SmartSession is ThinManager's load balancing solution. With SmartSession, Remote Desktop Server sessions will be started on the least loaded Remote Desktop Server based on CPU Utilization, RAM Utilization and Number of Sessions. Once a session is started on a Remote Desktop Server, the session will not be moved dynamically. You can learn more about SmartSession in <u>Section 15</u>.

In order for ThinManager to connect to a Remote Desktop Server (like RDS1 in the example above), the provided Administrative credentials for that Remote Desktop Server in ThinManager should also be used as the ThinServer service credentials. The ThinServer service credentials on RDS1 are in fact configured as tmservice@tmlab.loc with password of rw, which are the same credentials entered for the RDS1 Remote Desktop Server. This domain user also has local Administrator permissions on RDS2.

#### **Create a Display Client**

1. Click the **Display Clients** icon from the ThinManager tree selector.



2. From the **Display Clients** tree, right click the **Remote Desktop Services** branch and select **Add Display Client**. This will launch the **Display Client Wizard**.

	fools View	Remote View	Help
ThinManager Server RDS1	🔹 🤤 Remove	ndd 😳 🥖	🔞 Delet
🚿 Add ThinManager Server	C Refresh		Group 🗇 Renai
Jisconnect		Modify 🔂 Copy	
ThinManager Server			Edit
Display Clients	Sumn	hary	
🖃 🚛 Display Clients	Attribute		
Remote Desktop Services		te Deckton Servic	es Display Clie.
	splay Client		ices Clients
Terminal Shadow Add Di	splay Client Grou	4P :ocol C	lients
- By Workstation	Citrix I	CA Protocol Clients	
	Smart 9	Session Clients	
Virtual Screen	Applica	tion Link Clients	

3. Type *Desktop* as the **Client Name** on the **Client Name** page of the wizard. Click the **Next** button.

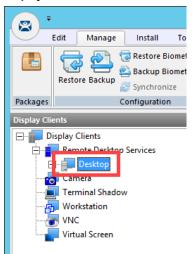
🕿 Display Client Wizard	×
Client Name Enter the Display Client name.	st
Display Client Name Client Name Set a Display Name	
Type of Display Client Remote Desktop Services	
Display Client Group	Change Group
	Permissions
2 < <u>B</u> ack <u>N</u> ext > Finish	Cancel Help

The **Set a Display Name** checkbox is new for ThinManager 11 and provides the ability to assign an Alias to a Display Client that will be shown at the Terminal in the Display Client Selector instead of the **Client Name** entered. This feature requires firmware package 8.2 or newer. Firmware packages will be explained in the Advanced Lab.

- 4. Click the **Next** button on the **Display Client Options** page of the wizard.
- 5. Click the Next button on the Remote Desktop Services and Workstation Options page of the wizard.
- 6. Click the Next button on the Screen Resolution / Scaling Options page of the wizard.
- Select RDS1 from the Available Remote Desktop Servers list and click the Right Arrow button to move it to the Selected Remote Desktop Servers list. This is the Remote Desktop Server on which this Display Client will run. Click the Finish button.

8	Display Client Wizard	x
	lay Client Members Select the Remote Desktop Servers for this Display Client.	$\aleph$
	able Remote Desktop Selected Remote Desktop Server	•
	Edit Server List	
<	Back Next > Finish Cancel	Help

8. You should see the **Desktop** Display Client under the **Remote Desktop Services** branch. You may have to click the **Display Clients** node for the branch to refresh.



New in ThinManager 11, you can now create **Display Client Groups**. **Display Client Groups** provide the ability to better organize large quantities of content. You can create **Display Client Groups** much like folders in Windows Explorer, and then add **Display Clients** to the **Display Client Group**. Nested **Display Client Groups** are supported as well.

### **Create a Terminal Profile**

As previously mentioned, each device that you will be managing (thin clients, zero clients, tablets, smart phones or PCs) will have a unique Terminal Profile created in ThinManager like the one you are about to create.

1. For this Cloud lab, we will be running **firmware package 8.1** for our virtual thin client(s). However, in ThinManager v11, the default firmware package for **PXE** clients is **8.2**. The next couple of steps will enable us to change the package on a terminal by terminal basis. Select the **Manage** ribbon followed by the **Packages** icon.

<b>P</b> <sup>-</sup>	1		
2	Edit Manage Install Tools View	Remote View	Help
Packages	Restore Backup Biometric Database	PXE ThinManage Server Server List	Regional de Constante de Consta
Packages	Configuration		Manage
Terminals	Conf	iguration Module	s Schedu

 The Package Manager window enables firmware packages to be assigned in 2 different ways – by terminal model or on a terminal by terminal basis. We are going to utilize the latter. To enable this capability, check the Allow the setting of the Package in Terminal Configuration checkbox. Click the OK button.

Package Manager	×
Model Specific Default Packag	e
Manufacturer	ACP
Model	DC-30-100
Package	Termcap Model Default
Allow Chain Loader	<b>v</b>
Allow the setting of	of the Package in Terminal Configuration
Install Package	2
Edit Packages	OK Cancel

3. Click the **Terminals** icon from the ThinManager tree selector.



4. From the **Terminals** tree, right click the **Terminals** node and select **Add Terminal**. This will launch the **Terminal Configuration Wizard**.

	Edit	Manage	Install	Tools	View
	Restore	Backup	ि Restore ऒ Backup	Biometric	
			🛃 Synchro	nize	
Packages			Configurati	on	
Terminals			_		Sumn
	erminals				Sumn Attribute
	erminals	2	.dd Termina	/ I	
	erminals		dd Termina dd Group		Attribute
	erminals	A		-	Attribute

5. Type VersaView5200 as the Terminal Name on the Terminal Name page of the wizard. Click the Next button.

Ferminal Configuration Wizard	
Ferminal Name Enter the name for this terminal, select the terminal group to which this termi choose to copy the configuration from another terminal.	nal belongs, or
Teminal Name	
VersaView5200	Description
This must be a unique name using letters, numbers, hyphens (-), and underscores ( ) only.	,
Terminal Group	
	Change Group
Copy Settings	
Copy Settings from another Terminal	Copy From
	,
Permissions	
Permissions	
Permissions       < Back	Cancel Help

Clicking the Description button on the **Terminal Name** page of the wizard will not only allow you to enter a Description for the terminal, but also allow you to create **Custom Variables** for the terminal. **Custom Variables** were added in ThinManager 8.1. The **Custom Variable** can be used in the **Display Client** command line or by the **TermMon ActiveX**. This would allow you to create a single **Display Client** in ThinManager that utilizes a **Custom Variable** and it would direct that **Display Client** to different content based on the terminal to which it was assigned. For instance, if you have several FactoryTalk View SE Client configuration files (CLIs) that you need to deploy, you could create a **Custom Variable** on each terminal that would include the name of the CLI file to deliver to it. You would then create a single **Display Client** that references the path to the CLI files and appends the **Custom Variable** to it in the command line. In addition to **Terminals**, **Custom Variables** can also be created and assigned to **Relevance Users** and **Locations**.

6. Accept the defaults of Generic / PXE from the Make / OEM and Model drop down lists, respectively. Select 8.1 from the Terminal Firmware Package drop down list. Click the Next button.

🕿 Terminal Configuration Wizard	×
Terminal Hardware Select the manufacturer and model of this terminal.	$\aleph$
Use this to configure the type of hardware for this terminal.	
Make / OEM OGENERIC	•
Model 2 PXE	•
OEM Model PXE	
Video Chipset Unknown	
Terminal Firmware Package 3 8.1	•
Terminal ID and IP Address	
Clear	
Terminal ID None	
	Help
< Back Next > Finish Cancel	Ticip

- 7. Click the **Next** button on the **Terminal Options** page of the wizard.
- 8. Click the Next button on the Terminal Mode Selection page of the wizard.
- 9. Select **Desktop** from the **Available Display Clients** list and click the **Right Arrow** button to move it to the **Selected Display Clients** list. This is the **Display Client** that will be delivered to this **Terminal**. Click the **Finish** button.

Terminal Configuration Wizard		×
Display Client Selection Select the Display Clients to use on this terminal		$temp{H}$
Available Display Clients          Remote Desktop Services         Desktop 1         Camera         Terminal Shadow         Workstation         VNC         Vitual Screen	Selected Display Clients	•
Edit Display Clients	Override	
< <u>B</u> ack <u>N</u> ext >	Finish Cancel He	lp

10. You should see the VersaView5200 terminal under the Terminals node.



You can also create **Terminal Groups** in ThinManager. **Terminal Groups** provide 2 key capabilities: (1) terminal organization and (2) property inheritance. With terminal organization, you can create **Terminal Groups** much like folders in Windows Explorer, and then add **Terminals** to the **Terminal Group**. The other key benefit of **Terminal Groups** is that you can assign **Terminal** properties at the **Terminal Group** level and choose to make these settings a **Group Setting**. By doing so, each **Terminal** member of the **Terminal Group** would receive that setting as defined in the **Terminal Group**. In both cases, nested **Terminal Groups** are support as well. You will learn more about **Terminal Groups** in <u>Section 13</u>.

Even though you will be using virtual thin clients for this Cloud based training, this hands on lab was based on the ThinManager MR Demo Kit which includes a VersaView 5200 Dual HD (Catalog #: 6200T-NA) industrial grade thin client. In addition to the 6200T-NA, the **VersaView 5200** family includes four additional models. The **VersaView5200 Single HD Display** (Catalog #: 6200T-BA) which has a smaller form factor and provides a single **HD Display** output. The **VersaView Dual 4K Display** (Catalog #: 6200T-KB) has the same form factor as the 6200T-NA but provides two 4K video outputs (one HDMI and one DisplayPort). For Control Room applications, the **VersaView 5200 Multi 4K Display** (Catalog #: 6200T-RC or 6200T-RE) is available. The 6200T-RC provides three **4K** outputs (all DisplayPort), while the 6200T-RE provides **seven 4K** outputs (3 DisplayPort and 4 mini-DisplayPort).

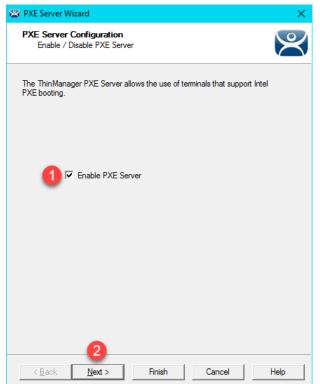
# **Configure PXE Server**

Since this Cloud lab is utilizing virtual thin clients, we will need to boot them using PXE; therefore, the ThinManager PXE Server must be configured.

1. From the ThinManager Admin Console, select the Manage ribbon, followed by the PXE Server icon.



2. From the PXE Server Configuration page of the wizard, check the Enable PXE Server checkbox.



 From the Network Interface Configuration page of the wizard, make sue VMWare Virtual Ethernet Adapter for VMNet8 is selected from the Select Interface to Configure drop down list, and Using standard DHCP server is selected from the PXE Server Mode list. Click the Finish button.

🕿 PXE Server Wizard 🛛 🗙
Network Interface Configuration Select the settings for each network interface
Select Interface to Configure
VMware Virtual Ethernet Adapter for VMnet8
PXE Server Mode Using standard DHCP server Using standard DHCP server Using standard DHCP server on this machine Using standard DHCP server with Boot Options (PXE Disabled)
C Not using standard DHCP server
IP Address Conflict Detection
C ARP
C None
Allow New PXE clients
< Back Next > Finish Cancel Help

Some notes when configuring this page in your own deployments. Make sure you have selected the correct network interface in the **Select Interface to Configure** drop down list. In other words, on which network adapter should ThinManager listen for PXE requests. The **PXE Server Mode** selection is not as obvious. PXE, by definition, requires a DHCP Server. This setting basically tells ThinManager about the DHCP Server to be used for PXE requests. When a PXE client is booted, it not only needs an IP Address, but it also needs an IP address for its boot server, as well as a boot filename.

Here is a quick summary of the options:

- <u>Using standard DHCP server</u> choose this when you have an existing DHCP server that you want to use for PXE, but you want ThinManager to provide the additional boot details, like the IP addresses of the ThinManager Server(s) and the name of the boot file. This is the preferred choice if you are using an existing DHCP server.
- 2. Using standard DHCP server on this machine similar to the first option, except the actual DHCP server is located on the same machine as ThinManager.
- Using standard DHCP server with Boot Options (PXE Disabled) choose this when you have an existing DHCP server that you want to use, but you do not want ThinManager to provide the additional boot details. Instead, you will need to specify Option 66 and Option 67 in your DHCP Server to specify these details.
- <u>Not using standard DHCP server</u> choose this when you want ThinManager to provide everything the client IP address, the boot server IP address(es) and the boot filename. ThinManager will only respond to DHCP requests associated with PXE, not to standard DHCP requests.

If you will be using Legacy PXE clients and UEFI PXE clients with your ThinManager deployment, it is important to note that they require different boot files. This is automatically handled by ThinManager if you choose options 1, 2 or 4 above. However, if you choose option 3, you will need to apply Vendor Classes in your DHCP Server for Option 67 in order to deliver the correct boot filename based on the type of thin client requesting it. Legacy PXE clients use a boot filename of **acpboot.bin**, while UEFI PXE clients use **tmboot32.bin** for x86 UEFI and **tmboot64.bin** for x64 UEFI.

Through the majority of this Cloud lab, we will be using the **PXE Server Mode** configured above – namely, **Using standard DHCP server**. Again, this means we have an existing DHCP Server that will supply the IP address to our PXE client, and ThinManager will provide the additional details needed to boot it (i.e.: boot server IP address(es) and boot filename). In this configuration, we will depend on VMWare Player, which will host our virtual thin client(s) to provide a **NAT'd** (**Network Address Translation**) IP address. This mode proved to be the most reliable for the virtual thin client(s).

## Assign the Terminal Profile to a Thin Client

1. Minimize the **ThinManager Admin Console**, and double click the **Thin01** virtual machine shortcut on the desktop. It may take a minute or so to initially launch since your Cloud lab image does not have full connectivity to the Internet.

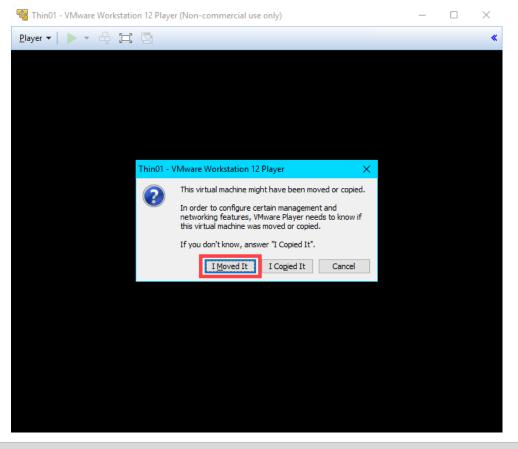


**<u>NOTE</u>**: Do not use the **VMWare Full Screen** option, as it has proven to be somewhat unstable in the cloud. It is ok to maximize the window.

Upon starting, the virtual thin client will recognize that it has no operating system installed and will therefore attempt to contact a **PXE Server**. The **ThinManager PXE Server** will respond to the **PXE** request and deliver the ThinManager firmware via **TFTP**.

Since VMWare Tools cannot be installed within the virtual thin clients, the mouse pointer will get locked within each virtual machine when one of the virtual thin clients is active. To return the mouse pointer to the host, hit the CTRL+ALT key sequence.

2. If you receive a message box asking if you moved or copied the virtual machine, click the I Moved It button.



You may notice that the virtual thin client receives an IP address in the 192.168.x.y subnet. This is because we have it configured for NAT at this point in the lab.

3. Once the Thin01 has received the ThinManager firmware, it will communicate with the ThinManager Server, asking for a Terminal Profile. ThinManager identifies terminals by their MAC address. Since we have not previously assigned a Terminal Profile to the MAC address of this terminal, ThinManager will ask which profile to assign to it. Hit the down arrow key to select the VersaView5200 profile we created previously and hit the Enter key.

	This Terminal is Undefined on Server RDS1 Choose the Terminal to Replace or Action				
tatus :	Name	Туре			
	Create new Terminal VersaView5200	Terminal			

If the **Create new Terminal** option was selected above, the **Terminal Configuration Wizard** would be launched within ThinManager that would facilitate the creation of a new Terminal Profile that would then be assigned to the terminal being booted.

Additionally, you can control whether a Terminal Profile becomes available in this selection list. By default, a Terminal Profile becomes available for assignment when its associated terminal is offline. The Allow replacement at terminal if off line setting can be found on the Terminal Options page of the Terminal Configuration Wizard.

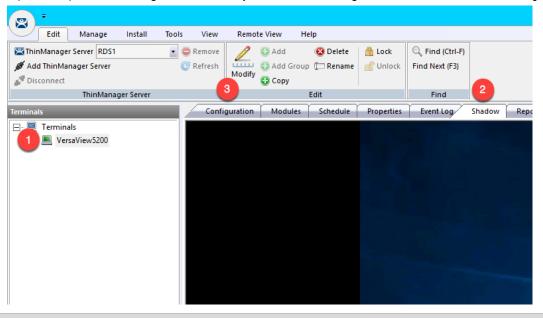
If your mouse gets locked inside the virtual machine, you can hit the **CTRL-ALT** keys on your keyboard to release it. This is happening because we have not (and cannot) installed VMWare Tools inside our virtual machine.

4. The VersaView5200 Terminal Profile will now be delivered to the Thin01, and any default content (Display Clients) assigned to the VersaView5200 Terminal Profile will be delivered. Since we are starting with a Desktop session and we have not configured Auto Login, you will be prompted with a login dialog box to start the Windows Remote Desktop session on RDS1. Enter *tmlab\thin01* as the username and *rw* as the password. Once authenticated, you should be presented with a Windows Desktop Session on RDS1.

Enter your Windows credentials to connect to RDS1			
Username			
1 tmlab\thin01			
Cancel OK 2			

## Shadow Thin Client from ThinManager

- 1. Return to the **RDS1** lab image, and click the **Terminals** icon **Figure** from the ThinManager tree selector.
- 2. Expand the **Terminals** node in the **Terminals** tree and select the **VersaView5200** terminal.
- Select the Shadow tab from the Details Pane. You should see a shadow of the terminal from within ThinManager. Notice that the shadow is fully interactive. Also notice that the VersaView5200 terminal icon is green indicating that it is powered up and ThinManager has connectivity to it. Click the Configuration tab when finished shadowing.



Each ThinManager terminal has a shadowing setting that determines if the terminal can be shadowed or not. This setting is available by double clicking the terminal to open the **Terminal Configuration Wizard** and navigating to the **Terminal Options** page of the wizard. The available shadowing options are Yes, No, Ask, Warn, and a checkbox for enabling Interactive Shadow or not. If you choose to experiment with these settings, remember that a terminal must be restarted for configuration changes to be applied to it. To perform a terminal restart, right click the terminal and select **Restart Terminal**.

Checkpoint Question:<u>https://thinmanager.com/cloudlabs/section04/</u>

This completes the section **Defining ThinManager Display Servers**, **Display Clients and Terminals** of the lab. Continue on to deliver a FactoryTalk View SE application without a Windows desktop and implement automatic Remote Desktop Server failover.

# Section 5: Configuring ThinManager Application Link and Failover for FactoryTalk View SE

# Overview

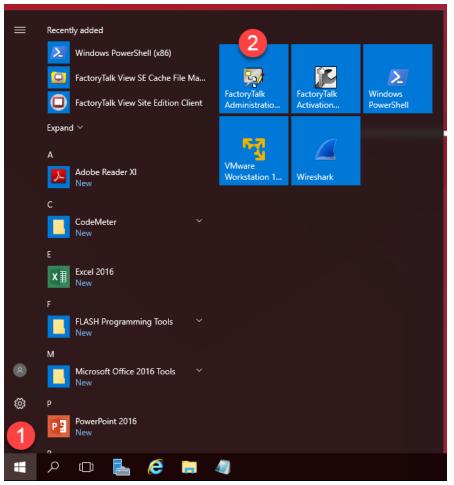
In the last lab section, you successfully delivered a Windows Desktop to the a virtual thin client using ThinManager. Typically, we go through great lengths to actually prevent access to the Windows Desktop on the plant floor, which is one reason why VDI is not always the best option for plant floor deployments – since delivering desktops is one of the strengths of VDI. This section will use ThinManager Application Link to deliver the FactoryTalk View SE Cookie Factory demo to the virtual thin client <u>without</u> a desktop. In addition, this section will demonstrate how easy it is to configure automatic Remote Desktop Server failover for your ThinManager terminals. To do this, you will be performing the following tasks:

- 1. Add Terminal Names to FactoryTalk Directory
- 2. Add Windows Linked User Group to FactoryTalk Directory
- 3. Create a RemoteApp for FactoryTalk View SE
- 4. Create a New ThinManager Display Client with Application Link
- 5. Apply New Display Client to Terminal
- 6. Add Automatic Remote Desktop Server Failover
- 7. Allow Remote Start of Unlisted Programs

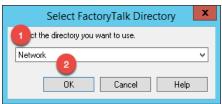
# Add Terminal Names to FactoryTalk Directory

By default, every Computer connecting to the FactoryTalk Directory must be added as a Computer Account – ThinManager terminals are no different. This section will add the ThinManager terminal names to the FactoryTalk Directory as Computer Accounts.

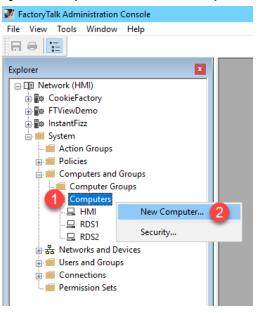
Click the Windows Start button from the RDS1 host image – <u>NOT the shadowed Desktop delivered to the thin client or the thin client itself.</u>



2. On the Select FactoryTalk Directory dialog, make sure Network is selected and click the OK button.



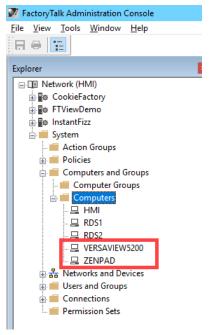
3. In the Explorer view, browse to Network (THIS COMPUTER) → System → Computers and Groups → Computers, right click Computers and select New Computer... from the menu.



4. In the **Computer** textbox, enter *VersaView5200* and click the **OK** button.

New Compute	r		×
General Polic	y Setting		
Computer:	VersaView5200 1		
Description:			
Member of:			
		<u>A</u> dd	<u>R</u> emove
	2		
	ОК	Cancel	Help

5. Repeat the previous 2 steps but this time add *ZENPAD*. When finished, you should have **ZENPAD** and **VersaView5200** added to the **Computers** folder.

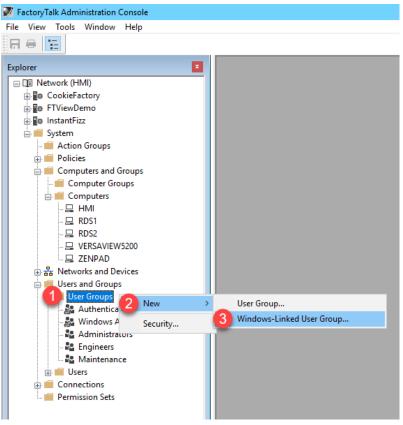


6. Keep the FactoryTalk Administration Console open for the next section.

# Add Windows Linked User Group to FactoryTalk Directory

In addition to adding the terminal name as a Computer Account to the FactoryTalk Directory, you will typically have to add the Windows user account that is assigned to the terminal, and therefore launching the session, to the FactoryTalk Directory as well. In this section, you will add a Windows Linked Group to the TMLAB\Domain Users group.

1. In the Explorer view, browse to Network (THIS COMPUTER) → System → Users and Groups → User Groups, right click User Groups and select New | Windows-Linked User Group... from the menu.



2. From the **New Windows-Linked User Group** popup, click the **Add** button.

New Windows-Linked User Group
General
Click the Add button to select one or more Windows user groups. When you click the Create button, a new linked user account will be created for each Windows user group you have selected.
Add Remove
OK Cancel Help

3. By default, this dialog box will show the local computer's user and groups, but we want to browse the **TMLAB** domain. From the **Select Groups** window, click the **Locations...** button.

Select Gro	ups	×
Select this object type: Groups or Built-in security principals		Object Types
From this location: RDS1		Locations
Enter the object names to select ( <u>examples</u> ):		Check Names
Advanced	OK	Cancel

4. From the Locations selection box, expand the Entire Directory item and select the tmlab.loc item. Click the OK button.

Locations	x
Select the location you want to search.	
Location: RDS1 Entire Directory I trilab.loc	
OK Cancel	

5. Back at the **Select Groups** window, enter *Domain Users* in the text box and click the **OK** button.

Se	lect Groups	>
Select this object type:		
Groups		Object Types
From this location:		
tmlab.loc		Locations
Enter the object names to select ( <u>examp</u> Domain Users	<u>les)</u> :	
Domain Osers		Check Names
Domain Osers	9	Check Names

 From the New Windows-Linked User Group window, you should now have TMLAB\DOMAIN USERS listed. Click the OK button.

New Windows-Linked User Group	x
General	
Click the Add button to select one or more Windows user groups. When you click the Create button, a new linked user account will be created for each Windows user group you have selected.	
STMLAB\DOMAIN USERS	
Add Remove	
OK Cancel Help	

7. Close the FactoryTalk Administration Console.

In your deployments, you will most likely want to be more selective with which Windows user groups to link and to which FactoryTalk group to assign them. This section utilized the entire Domain Users group to simplify the lab going forward.

### Create a RemoteApp for FactoryTalk View SE

Remote Desktop Services considers any program configured to run initially - like the one you are about to configure with ThinManager ApplicationLink in this section - an "Initial Program." By default, Windows Server 2008R2 and later Remote Desktop Services requires that each Initial Program be added to the published RemoteApp list, or you will receive an Access Denied message when the Display Client attempts to launch.

While it is recommended that this default security measure be maintained, it can also be disabled through Local or Group Policy (from the Group Policy Editor: Default Domain Policy | Computer Configuration | Policies | Administrative Templates | Windows Components | Remote Desktop Services | Remote Desktop Session Host | Connections | Allow remote start of unlisted programs).

With Windows Server 2012 or newer, the RemoteApp list is managed through Session Collections for domain deployments. In this lab we will maintain the default security behavior and maintain the RemoteApp list. A number of RemoteApps have already been added. In this section, you will add a new one for the FactoryTalk View SE Client application.

- 1. From the RDS1 image, launch Server Manager by clicking the Server Manager icon from the Windows taskbar. <u>MAKE SURE YOU CLICK THE SERVER MANAGER ICON ON THE RDS1 IMAGE AND NOT THE SHADOW OF</u> <u>THE THIN CLIENT.</u>
- 2. From Server Manager, select the Remote Desktop Services panel item, followed by the TMLabApps panel item (under Collections).
- 3. Click the **Tasks** dropdown list in the **RemoteApp Programs** frame, followed by the **Publish RemoteApp Programs** item.

🚡 Serve	Manager			
E	Server M	anager • Remote Desktop Services • Collections • TMLabApps		
II II II II II II II II	Overview Servers Collections 2 TMLabApps	PROPERTIES Properties of the collection Collection Type Session Resources Remote Desktop User Group TMLAB/Domain Users	TASKS -	CONNECTIONS Last refreshed on 4/11/2019 1 Filter Server FQDN User RDS1.tmlab.loc TMLAB\Lab RDS1.tmlab.loc TMLAB\thir RDS1.tmlab.loc TMLAB\thir
-		REMOTEAPP PROGRAMS Published RemoteApp programs   0 total Remote Desktop is published for the users of the collection. Publish RemoteApp programs Publishing RemoteApp programs will unpublish the Remote Desktop.		oteApp Programs

4. From the **Publish RemoteApp Programs** dialog, scroll down and check the **FactoryTalk View Site Edition Client** list item, followed by **Next**>.

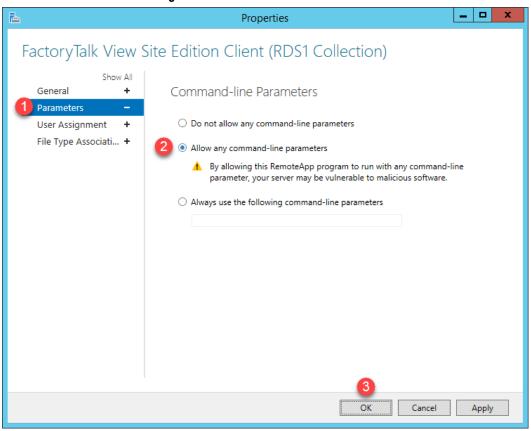
🚡 Publish RemoteApp Programs		- D >	ĸ
Select RemoteApp	Select the RemoteApp programs to publish to the TM	LabApps collection. To add a RemoteApp	
Confirmation Publishing	program to the list, click Add. The RemoteApp programs are populated from RDS1.1	TMLAB.LOC.	
Completion	RemoteApp Program     PractoryTalk Administration Console     FactoryTalk Diagnostics Counter Monitor     FactoryTalk Directory Configuration Wizard     FactoryTalk Live Data Test Client     FactoryTalk View SE Cache File Management     FactoryTalk View Site Edition Client     FFTAE Database Update Utility     Milmport RSSecurity Configuration     Internet Information Services (IIS) Manager     SiSCSI Initiator	Location %SYSTEMDRIVE%\Program Files (x86)\Cc %SYSTEMDRIVE%\Program Files (x86)\Cc %SYSTEMDRIVE%\Windows\system32\in %SYSTEMDRIVE%\Windows\system32\in	
	Add Verify that the program is installed on all the RD Sessi	>	]

- 5. Click the **Publish** button on the **Confirmation** page.
- 6. Once **Status** changes to **Published**, click the **Close** button.

Server I	-	
$\mathbf{E}$	€ Server N	Aanager • Remote Desktop Services • Collections • TMLabA
i i i	Overview Servers Collections	PROPERTIES Properties of the collection Collection Type Session Resources RemoteApp Programs
in ⊳ © ⊗ ⊳	TMLabApps	User Group TMLAB\Domain Users
		Last refreshed on 4/11/2019 11:43:12 AM   Published RemoteApp programs   1 total          Filter       P       Image: Comparison of the comparison of th

7. Right click the newly listed RemoteApp and select Edit Properties.

8. Select the **Parameters** panel item and then select the **Allow any command-line parameters** option. Click the **OK** button and the close **Server Manager**.



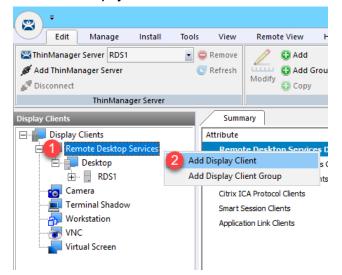
If your RemoteApp requires command line parameters, then selecting Allow any command-line parameters is less than secure than selecting Always use the following command-line parameters. We have chosen the less secure option for this lab as you will be creating several ThinManager Display Clients, each of which will launch a separate FactoryTalk View SE Client configuration file, and therefore require a different command-line. This option was chosen simply to save time in the lab.

### Create a New ThinManager Display Client with Application Link

1. Return to ThinManager and click the Display Clients icon



2. From the **Display Clients** tree, right click the **Remote Desktop Services** branch and select **Add Display Client**. This will launch the **Display Client Wizard**.



3. Type FTV\_CookieDemo as the Client Name on the Client Name page of the wizard. Click the Next button.

🞇 Display Client Wizard	×
Client Name Enter the Display Client name.	$\aleph$
Display Client Name Client Name T FTV_CookieDemo Set a Display Name	
Type of Display Client     Remote Desktop Services       Display Client Group	
Change Grou Permissio	
A Back Next > Finish Cancel	Help

from the ThinManager tree selector.

- 4. Click the **Next** button on the **Display Client Options** page of the wizard.
- 5. Check the **Application Link** checkbox on the **Remote Desktop Services and Workstation Options** page of the wizard. Click the **Next** button.

8	Display Client Wizard	x
	Desktop Services and Workstation Options t the options for this Display Client	$\mathfrak{C}$
א א <b>1</b> ר ר	tion Options Allow Auto-Login Application Link SmartSession Enforce Primary Instant Failover	
< Back	Kext > Finish Cancel	Help

6. From the Screen Resolution / Scaling Options page of the wizard, check the box for Don't Use Screen Resolution, and select 1280x1024 from the Resolution drop down list. Click the Next button.

🙄 Display Client Wizard
Session Resolution / Scaling Options Enter scaling options and session resolution if desired setting is different from the screen.
Session Scaling Options
Maintain Aspect Ratio
Cale Down Only
Session Resolution Options       Image: Don't Use Screen Resolution       Resolution       2       1280x1024
<b>3</b>
< Back Next > Finish Cancel Help

By default, Remote Desktop Services sessions are started using the screen resolution of the Terminal Profile where the Display Client is assigned. This setting overrides that behavior for this Display Client. So even if the screen resolution of the terminal is different, this Display Client will start with a resolution of 1280x1024, and ThinManager will automatically scale it to fit the screen resolution of the physical display where it is delivered.

 Select RDS1 from the Available Remote Desktop Servers list and click the Right Arrow button to move it to the Selected Remote Desktop Servers list. This is the Remote Desktop Server on which this Display Client will run. Click the Next button.

8	Display	/ Client Wiza	ard	x
<b>Display Client</b> Select the R	Members lemote Desktop Ser	rvers for this Disp	olay Client.	$\aleph$
Available Remot <b>1 RDS1 (10.6.10.1</b> RDS2 (10.6.10.1	51) 52)	Selected Re	mote Desktop Se	ervers
Edit Ser	ver List			
< Back	3 Next>	Finish	Cancel	Help

 From the AppLink page of the wizard, enter the following path for the Program Path and Filename field and Command Line Options field (you can also copy and paste these paths from the LabPaths.txt file by right clicking the Notepad icon pinned to the start bar and selecting LabPaths.txt):

#### Program Path and Filename:

C:\Program Files (x86)\Rockwell Software\RSView Enterprise\DisplayClient.exe

#### Command Line Options:

"C:\Lab Files\CookieDemo1280.cli"

9. Make sure to enclose the **Command Line Options** path in double quotes. Click the **Finish** button.

🙄 Display Client Wizard	×
AppLink Enter the linked application path.	$\aleph$
AppLink Path Program Path and Filename	
m Files (x86)\Rockwell Software\RSView Enterprise\DisplayClient.exe	
Browse	
Command Line Options	
2 "C:\Lab Files\CookieDemo1280.cli" Browse art in the following folder	
Browse	
Be sure to enclose with double quotes.	
3	
< <u>B</u> ack Next > Finish Cancel	Help

### Apply New Display Client to Terminal

1. Click the **Terminals** icon From the ThinManager tree selector.



2. From the Terminals tree, double click the VersaView5200 terminal to launch the Terminal Configuration Wizard.



- 3. Click the Next button on the Terminal Name page of the wizard.
- 4. Click the Next button on the Terminal Hardware page of the wizard.
- 5. Click the Next button on the Terminal Options page of the wizard.
- 6. Click the Next button on the Terminal Mode Selection page of the wizard.
- Select FTV\_CookieDemo from the Available Display Clients list and click the Right Arrow button to move it to the Selected Display Clients list. Select Desktop from the Selected Display Clients list and click the Left Arrow button to move it to the Available Display Clients list. Click the Next button.

🕿 Terminal Configuration Wizard		×
Display Client Selection Select the Display Clients to use on this terminal		२
Available Display Clients Remote Desktop Services Desktop FTV_CookieDemo Camera Terminal Shadow Workstation VNC Virtual Screen	Selected Display Clients	•
Edit Display Clients	Override	
< <u>B</u> ack <u>N</u> ext >	Finish Cancel Help	,

8. Click the Next button on the Terminal Interface Options page of the wizard.

- 9. Click the **Next** button on the **Hotkey Configuration** page of the wizard.
- 10. On the Log In Information page of the wizard, enter *thin01@tmlab.loc* as the Username and *rw* as the Password. The terminal will use these credentials to login to the Remote Desktop Server for those Display Clients applied to it that have the Allow Auto Login property enabled. Click the Verify button which should confirm that the credentials entered are valid. Click the Next button.

8	Terminal Configuration Wizard	x
-	In Information Enter the log in information to log in automatically. Leave the log in information blank or fill only some of the fields to force manual log in.	$\prec$
Wi	ndows Log In Information	7
Use	mame 1 thin01@tmlab.loc Search	
Pas	sword 2 - Password Options	
Dom	nain <u>3</u> Verfy	
	< Back Next > Finish Cancel Help	

11. From the Video Resolution screen of the wizard, select 1920x1080 as the Screen Resolution, 64K Colors as the Color Depth and 60Hz as the Refresh Rate. Click the Next button.

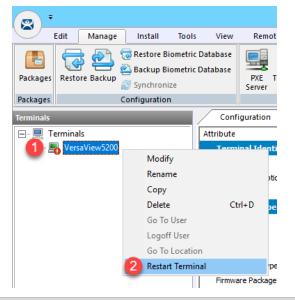
Configuration Wizard	x
<b>Video Resolution</b> Select the video resolution for this terminal.	$\aleph$
- Select Video Resolution	
These are the resolutions supported by the Thin Client model you selected.	
1     Resolution     2     Color Depth     3     Refresh Rate       1920x1080     •     64K Colors     •     60Hz     •	]
4	
< Back [Next>] Finish Cancel	Help

- 12. Click the Next button on the Module Selection page of the Terminal Configuration Wizard.
- 13. Click the Next button on the ThinManager Server Monitor List page of the Terminal Configuration Wizard.

14. From the Monitoring Configuration page of the wizard, select the Custom radio button within the Monitor Interval. Keep the defaults for Monitor Interval, Monitor Timeout and Monitor Retry. Enter a value of 1 for the Primary Up Delay Multiplier. This will speed up the Remote Desktop Server failover time in a later section. Click the Finish button.

Terminal Configuration Wizard
Monitoring Configuration Select the setting for how often the Remote Desktop Server status is monitored by this terminal.
Connection Monitor Settings         Pre-set Monitor Intervals         Monitor Interval         5       •         Seconds         Monitor Timeout         1       •         Monitor Retry         Primary Up Delay Multiplier         Primary Up Delay         5 Seconds         Connection Timeout         10
3 < Back Next > Finish Cancel Help

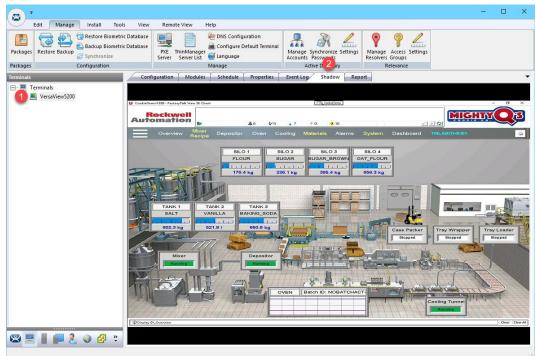
15. Right click the VersaView5200 terminal from the Terminals tree and select Restart Terminal to apply the changes. Click Yes to restart the terminal.



You may notice a small red exclamation icon appear in the bottom of the terminal icon. This indicates that a change has been made to the terminal's configuration that has not been published to the terminal yet. Restarting the terminal will republish the terminal's configuration, including any recent changes.

If you need to apply a change to a terminal's configuration, simply right click the terminal of interest from the Terminals tree and select **Restart Terminal**. Restarting a terminal simply reapplies the terminal's configuration – unless ThinManager automatically detects a configuration change that requires a terminal reboot, in which case a reboot is performed. **Reboot Terminal**, available from the **Tools** ribbon bar, is equivalent to cycling power to the terminal, and therefore resends the firmware as well as the configuration. It is important to note that in both of these cases the sessions running on the Remote Desktop Servers are not restarted by default. You need to perform a **Reset Session** in this case. To reset a session, return to the **Display Servers** tree segment, and select the Remote Desktop Server on which the session of interest is running. Select the **Sessions** tab from the **Details Pane**. A list of all of the sessions running on the selected Remote Desktop Server will be displayed. Right click the session desired and select **Reset Session**.

16. With the VersaView5200 terminal still selected, click on the Shadow tab in the Details Pane of ThinManager. If the Shadow does not start, click the Configuration tab, then the Shadow tab to reactivate the shadow. The CookieDemo application utilized was developed as a 1280x1024 application, yet we are delivering it to a 1920x1080 display. While it appears to be stretched, this is due to the fact that we are going from a 4x3 aspect ratio to a 16x9 ratio, but ThinManager's new session scaling delivers the 1280x1024 session without bars to a 1920x1080 display.



17. If you click the red "X" in the top right corner of FactoryTalk View SE application (either from the Shadow or at the virtual thin client), it will close, leaving an empty black screen <u>without</u> a desktop.

Once the application closes, you will see the desktop background with no Start menu bar for about 30 seconds before you are automatically logged out. When using AppLink, the user does not have access to any other programs or the desktop when connecting and once that application terminates, the user is automatically logged off. The logoff delay is due to the FactoryTalk View Site Edition client continuing to shut down in the background after the display is closed.

If you hit the CTRL+ALT+DEL keyboard sequence from the virtual thin client (by clicking the icon in the taskbar of VMWare Player) while the empty black screen is active, you will be presented with the Task Manager, from which Windows File Explorer could certainly be launched. With ThinManager, this is easily rectified by adding the Key Block Module to your terminal(s), which is a simple way to block common keyboard sequences like CTRL+ALT+DEL, CTRL+ESC, etc. You will use the Key Block Module in <u>Section 12</u>.

A module is a small driver that can be applied to a terminal to provide additional capabilities. For example, ThinManager includes 15 unique Touch Screen Modules, a Redundant Ethernet Module for thin clients with dual Ethernet ports (provides automatic failover of network interfaces connected to the thin client) as well as a MultiSession Screen Saver Module (each Display Client applied to a thin client is automatically cycled on a configurable time basis as a screen saver) – just to name a few. Modules are added to a terminal using the Terminal Configuration Wizard and will be explored in more detail, as mentioned above, in <u>Section 12</u>.

### Add Automatic Remote Desktop Server Failover

 From the RDS1 image, select the Terminals tree, expand the VersaView5200 terminal. Double click the FTV\_CookieDemo Display Client under the VersaView5200 terminal to launch the Display Client Wizard.



- 2. Click the **Next** button on the **Client Name** page of the wizard.
- 3. Click the Next button on the Display Client Options page of the wizard.
- 4. Check the Enforce Primary checkbox on the Remote Desktop Services and Workstation Options page of the wizard. Click the Next button.



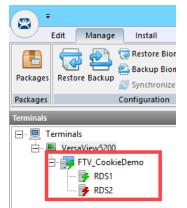
5. Click the Next button on the Screen Resolution / Scaling Options page of the wizard.

6. Select RDS2 from the Available Remote Desktop Servers list and click the Right Arrow button to move it to the Selected Remote Desktop Servers list. Click the Finish button.

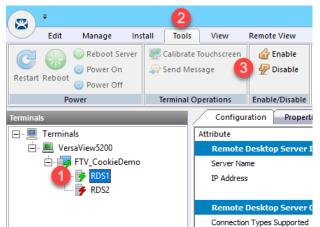
8	Display	Client Wizard	x
	lay Client Members Select the Remote Desktop Serv	ers for this Display Client.	$\aleph$
Avai	lable Remote Desktop	Selected Remote Desktop Serve	ers
	62 (10.6.10.52)	RDS1 (10.6.10.51)	
			<b>•</b>
	Edit Server List		
		3	
<	Back Next >	Finish Cancel	Help

By adding more than 1 Remote Desktop Server to the **Selected Remote Desktop Servers** list, you have added automatic Remote Desktop Server failover for this Display Client. The order of the servers listed determines the order of failover. In this case, **RDS1** would be the primary and **RDS2** would be the secondary. There is no limit to how many Remote Desktop Servers you can add, the terminal will just keep failing to the next available server in the list.

7. Right click the VersaView5200 terminal and select Restart Terminal to apply the changes. Click Yes on the confirmation dialog box. If you expand the VersaView5200 terminal, and then expand the FTV\_CookieDemo Display Client, you will now see both RDS1 and RDS2 are listed. The green lightning bolt next to RDS1 indicates that the session being delivered to the terminal is running on RDS1. Notice that RDS2 has a red lightning bolt next to it.



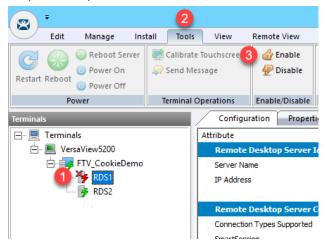
To force a failover to occur, we can manually disable the RDS1 Remote Desktop Server from ThinManager. This will disconnect all Remote Desktop Server sessions connected to RDS1. From the Terminals tree, expand the VersaView5200 terminal, and then expand the FTV\_CookieDemo Display Client. Select the RDS1 Remote Desktop Server under the FTV\_CookieDemo Display Client. With RDS1 selected, click the Tools ribbon, followed by the Disable icon.



9. If you quickly shadow VersaView5200 (or look at your demo kit) you will see the new FactoryTalk View SE session launching on RDS2. To shadow, simply select VersaView5200 from the Terminals tree and then click the Shadow tab from the Details Pane. With the RDS1 Remote Desktop Server disabled, its icon has changed from a green lightning bolt to a red lightning bolt with an X, while the RDS2 Remote Desktop Server has changed from a red lightning bolt to green.



 To re-enable RDS1, select RDS1 from the Terminals tree and then click the Enable button in the Tools ribbon. Notice that the green lightning bolt returns to RDS1, while RDS2 returns to red. The active session on the terminal has returned to the primary, RDS1. This is because we checked the Enforce Primary option of the Display Client Wizard in a previous step.



There are actually 2 types of automatic Remote Desktop Server failover supported by ThinManager. The one demonstrated above is called **Standard Failover**. With **Standard Failover**, the failover session is started on-demand. The other type is called **Instant Failover**, which differs by keeping sessions running on each Remote Desktop Server – the active one, and a hot standby one. **Instant Failover** is a great option for deployments that cannot be without visualization for any length of time. Otherwise, **Standard Failover** is perfectly suitable. To enable **Instant Failover** in our example above, we would have additionally checked the **Instant Failover** checkbox in Step 4 above.

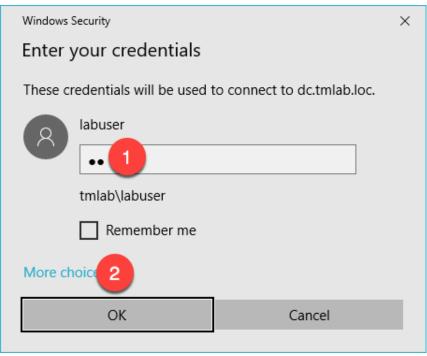
### Allow Remote Start of Unlisted Programs

As described previously, Remote Desktop Services considers any program configured to run initially - like the ones used with ThinManager **ApplicationLink** - an "Initial Program." By default, Windows Server 2008R2 and later Remote Desktop Services requires that each Initial Program be added to the published **RemoteApp** list, or you will receive an Access Denied message when the **Display Client** attempts to launch. Previously in this section, the **FactoryTalk View SE Client** was added to the **RemoteApp** list. In this lab, we are going to disable this default behavior via **Group Policy**, resulting in the ability to launch any initial program through Remote Desktop Services without having to maintain the **RemoteApp** list. Through **Group Policy**, we can make this change on the **Domain Controller** and update both **RDS1** and **RDS2** to receive the policy change.

1. Minimize the **ThinManager Admin Console** if it is maximized and double click the **dc.tmlab.loc** shortcut on the desktop to launch a remote desktop session on the **DC** virtual image.



2. If you are prompted to enter login credentials, make sure the username is *tmlab\labuser* and enter a password of *rw*.

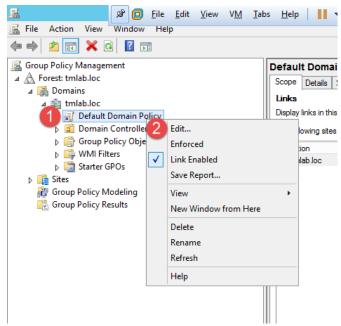


<u>Note:</u> If you cannot connect to DC via the shortcut, you may need to restart RDS1 from the Windows Desktop (Start > Power > Restart).

- 3. Click the **Windows Start** button.
- 4. From the Windows Start Menu, click the Group Policy Management icon.



5. From the Group Policy Editor, right click the Default Domain Policy item and click Edit...



6. From the Group Policy Management Editor, navigate to Default Domain Policy [DC.TMLAB.LOC] Policy → Computer Configuration → Policies → Administrative Templates → Windows Components → Remote Desktop Services → Remote Desktop Session Host → Connections. Double click the Allow remote start of unlisted programs setting on the right-hand side.

7. From the ensuing policy setting dialog box, click the **Enabled** option button followed by the **OK** button. Close the **Group Policy Management Editor** and the **Group Policy Management** window.

	A	Ilow remote start of unlisted programs
Allow remote star	t of unlisted prog	Previous Setting Next Setting
<ul> <li>Not Configured</li> <li>Enabled</li> </ul>	Comment:	
<ul> <li>Disabled</li> </ul>	Supported on:	At least Windows Server 2008
Options:		Help:
		This policy setting allows you to specify whether remote users can start any program on the RD Session Host server when they start a Remote Desktop Services session, or whether they can only start programs that are listed in the RemoteApp programs list.         You can control which programs on an RD Session Host server can be started remotely by using the RemoteApp Manager on Windows Server 2008 R2 and Windows Server 2008. If you are using Windows Server 2012 R2, you can configure this in the Collection properties sheet by using Server Manager.         By default, only programs in the RemoteApp Programs list can be started when a user starts a Remote Desktop Services session.         If you enable this policy setting, remote users can start any program on the RD Session Host server when they start a Remote Desktop Services session.         For example, a remote user can do this by specifying the program's executable path at connection time by using the Remote Desktop Connection client.
		OK Cancel Apply

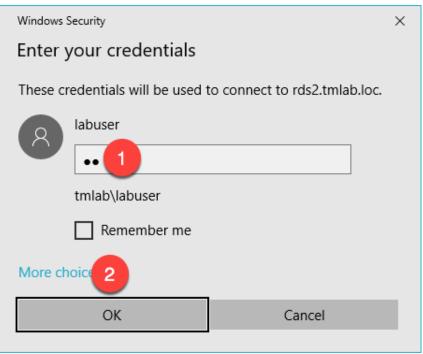
8. Close the remote desktop session on **dc.tmlab.loc**. Click **OK** to the confirmation dialog box.

· → 🕂 🔒 📲	dc.tmlab.loc	_ 7 ×
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The Group Policy does not take effect immediately on the member Remote Desktop Servers. The final steps of this section will force the update to occur. To apply the change to RDS2, double click the rds2.tmlab.loc shortcut on the RDS1 desktop.

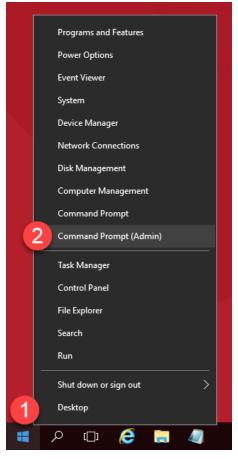


10. If you are presented with a login dialog box, make sure the username is *tmlab\labuser* and enter a password of *rw*.

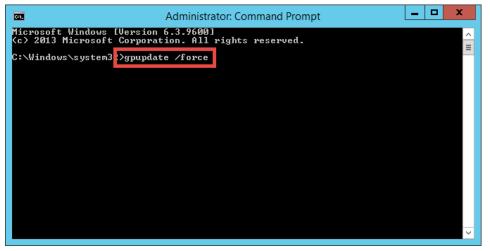


<u>Note:</u> If you cannot connect to RDS2 via the shortcut, you may need to restart RDS1 from the Windows Desktop (Start > Power > Restart).

11. From RDS2, right click the Windows Start Button and click Command Prompt (Admin).



12. From the Administrator: Command Prompt window, enter gpupdate /force followed by the ENTER key.



13. Once the updated policy has been applied, close the Administrator: Command Prompt window.



14. Close the remote desktop session on rds2.tmlab.loc. Click the OK button if you receive a confirmation dialog box.

	🛨 🛍 📲	rds2.tmlab.loc	_ 8 ×
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15. Repeat steps 11 – 13 from above on **RDS1**.

Checkpoint Question: <u>https://thinmanager.com/cloudlabs/section05/</u>

This completes the section **Configuring ThinManager Application Link and Failover for FactoryTalk View SE** of the lab. Continue on to see how easy it is to replace a failed terminal with ThinManager.

# Section 6: Terminal Replacement in under 2 Minutes

# Overview

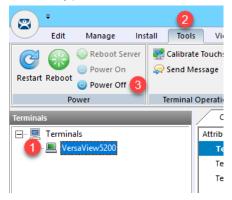
While industrial grade terminals like the **VersaView 5200** do not fail often (since it has no moving parts), it can be replaced in under 2 minutes when it does. Replacement starts by disconnecting the failed terminal and connecting the new terminal in its place. When the new terminal is powered up for the 1<sup>st</sup> time, ThinManager will recognize that it has not been associated with a ThinManager **Terminal Profile** previously and prompt you to assign one to it. One of the available terminal configurations will be the configuration for the failed terminal, since it is no longer in service. Once that terminal configuration is selected, ThinManager will create an association between the **Terminal and Terminal Profile** based on the **MAC address** of the terminal, and will therefore not prompt for this assignment on subsequent reboots of the terminal. Once assigned, the new terminal will essentially assume the identity of the failed terminal and even reconnect to the failed terminal's sessions (Remote Desktop Server, VDI, etc.), which typically are configured to run uninterrupted on the server during this process.

This lab section is composed of the following tasks:

- 1. Power Down the Virtual Thin Client
- 2. Reassign the VersaView5200 Terminal Profile

#### Power Down the Virtual Thin Client

- 1. Click the **Terminals** icon *From* the ThinManager tree selector.
- 2. Under the **Terminals** node, select the **VersaView5200** terminal.
- 3. Select the **Tools** ribbon, and then click the **Power Off** icon. Click the **Yes** button on the confirmation dialog box. This will remotely power down the virtual thin client.



4. To confirm, the **VersaView5200** terminal icon in the **Terminals** tree should be **Red** before continuing. The **Thin01** virtual thin client will automatically close upon powering off.

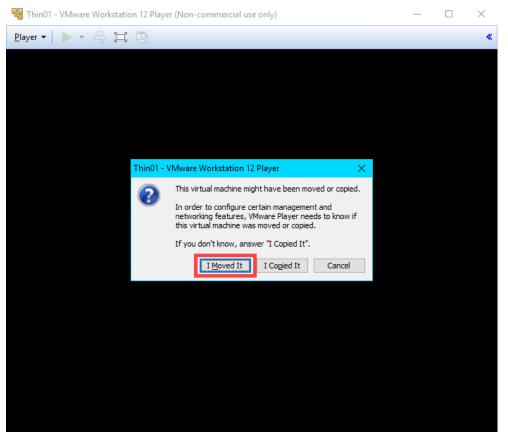


### Reassign the VersaView5200 Terminal Profile

1. Double click the **Thin02** shortcut from the **RDS1** desktop. Since we are using virtual thin clients, you should think of this step as removing a failed physical thin client with a replacement thin client – as the



2. If you receive a message box asking if you moved or copied the virtual machine, click the I Moved It button.

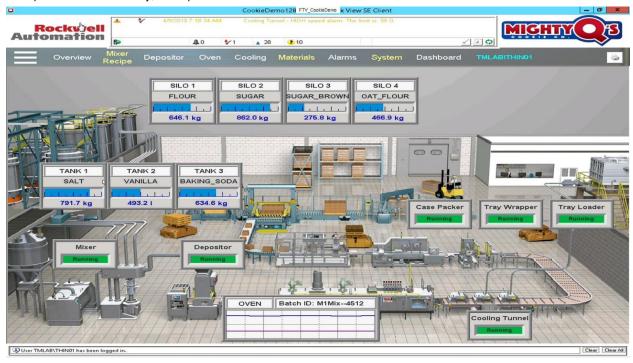


3. Upon powering up, the ThinManager firmware should get delivered to the replacement terminal. Because ThinManager does not have an existing terminal configuration that matches the MAC address of the replacement unit, you will be prompted to either Create new Terminal or select an existing terminal configuration that is currently not active, VersaView5200. Select VersaView5200 from the list using the Down Arrow of your keyboard and hit Enter.

	inal is Undefined on Server RDS1 he Terminal to Replace or Action	
: : Name	Туре	
Create new Termin VersaView5200	al Terminal	

If this was an actual **ThinManager Ready** terminal, like the **VersaView 5200**, you would have the option of assigning a static IP address to the terminal (or using **DHCP**). **ThinManager Compatible** terminals use **PXE** which is inherently dependent on **DHCP**.

4. You have now successfully replaced your thin client. Notice when the replacement unit received the VersaView5200 terminal profile it was automatically reconnected to the Remote Desktop Server sessions that were being delivered to the replacement unit – literally, a bumpless transfer.



Checkpoint Question: https://thinmanager.com/cloudlabs/section06/

This completes the section **Terminal Replacement in Under 2 Minutes** of the lab. Continue on to deliver additional content and visualize it using tiling mode.

# Section 7: Deploying Additional Content Using MultiSession and Tiling

# Overview

To this point, we have only delivered a single ThinManager Display Client to **VersaView5200**. First, the **Desktop** Display Client, then the **FTV\_CookieDemo** Display Client. This lab will focus on applying multiple Display Clients as well as the options to visualize and switch between them from a ThinManager-managed Terminal. When more than one Display Client is applied to a terminal, it is referred to as **MultiSession**. The Display Clients applied to a terminal can be run from the same Remote Desktop Server, or from multiple Remote Desktop Servers – even on different networks. In addition to Remote Desktop Services Display Clients, IP Cameras, VNC and Terminal Shadow Display Clients can be delivered with **MultiSession**. This makes it possible to deliver a very diverse set of content to a single terminal, creating composite applications. The Display Clients can be visualized as tiles on a display so that multiple Display Clients can be monitored at the same time and/or spread out across multiple monitors – or a combination. This lab section is composed of the following tasks:

- 1. Create InstantFizz Remote Desktop Services Display Client
- 2. Create Excel Remote Desktop Services Display Client
- 3. Create SuperJuice VNC Display Client
- 4. Create Camera Display Client
- 5. Apply Display Clients to Terminal and Enable Tiling
- 6. FactoryTalk View SE Client Licensing Benefits
- 7. Remove Tiled Display Clients

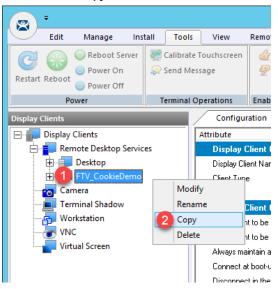
## Create InstantFizz Remote Desktop Services Display Client

We are going to copy the **FTV\_CookieDemo** Display Client to create another View SE Display Client, but this time to launch a different View SE application. We won't need Automatic Remote Desktop Failover, so we will disable this from the copied terminal profile.

1. From ThinManager, click the **Display Clients** icon **International From the ThinManager tree selector**.



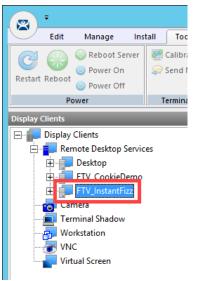
2. From the **Display Clients** tree, expand the **Remote Desktop Services** branch and right click the **FTV\_CookieDemo** item and select **Copy**.



3. Type FTV\_InstantFizz in the Enter new Display Client Name text box and click the OK button.



4. Double click the FTV\_InstantFizz Display Client item.



- 5. From the **Client Name** page of the wizard, click the **Next** button.
- 6. From the **Display Client Options** page of the wizard, click the **Next** button.
- 7. From the **Remote Desktop Services and Workstation Options** page of the wizard, uncheck the **Enforce Primary** checkbox and click the **Next** button.

😂 Display Client Wizard	x
Remote Desktop Services and Workstation Options Select the options for this Display Client	$\aleph$
Connection Options          Image: Allow Auto-Login         Image: Application Link         Image: Smart Session         Image: Enforce Primary         Image: Instant Failover	
A Back Next > Finish Cancel	Help

8. From the Screen Resolution / Scaling Options page of the wizard, change the Resolution to 1920x1080 and click the Next button.

🖾 Display Client Wizard	x
Session Resolution / Scaling Options Enter scaling options and session resolution if desired setting is different from the screen.	$\sim$
Session Scaling Options	
Maintain Aspect Ratio     Scale Down Only	
Session Resolution Options          Image: Don't Use Screen Resolution         Resolution         1920x1080	
A Back Next > Finish Cancel Help	

9. From the **Display Client Members** page of the wizard, select **RDS2** from the **Selected** list and click the **Left** arrow button to remove it. Click the **Next** button.

🕿 Displa	y Client Wizard	x
<b>Display Client Members</b> Select the Remote Desktop Se	ervers for this Display Client.	$\aleph$
Available Remote Desktop	Selected Remote Desktop Server	rs ▲
Edit Server List		
< Back Next >	Finish Cancel	Help

10. From the **AppLink** page of the wizard, replace **CookieDemo1280** in the **Command Line Options** path with *InstantFizz1920* like below (you can also copy and paste this path from the **LabPaths.txt** file by right clicking the **Notepad** icon pinned to the start bar and selecting **LabPaths.txt**):

🙄 Display Client Wizard	×
AppLink Enter the linked application path.	$\aleph$
AppLink Path Program Path and Filename	]
Im Files (x86)\Rockwell Software\RSView Enterprise\DisplayClient.exe	
Browse	
Command Line Options	
1 "C:\Lab Files\InstantFizz1920.ch" Browse art in the following folder	
Browse	
Be sure to enclose with double quotes.	
2	
<back next=""> Finish Cancel He</back>	elp

"C:\Lab Files\InstantFizz1920.cli"

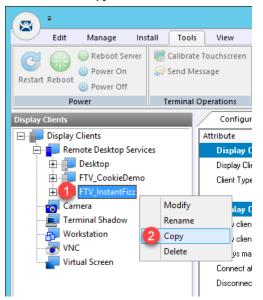
11. Click the **Finish** button.

Notice that we did not have to publish another Remote Desktop Services RemoteApp for this Display Client since we selected the option for allowing any command line parameters when we published the FactoryTalk View SE RemoteApp in <u>Section 5</u>.

## Create Excel Remote Desktop Services Display Client

We are going to copy the FTV\_InstantFizz Display Client to create another Remote Desktop Services Display Client.

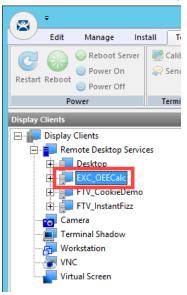
1. From the **Display Clients** tree, expand the **Remote Desktop Services** branch and right click the **FTV\_InstantFizz** item and select **Copy**.



2. Type EXC\_OEECalc in the Enter new Display Client Name text box and click the OK button.



3. Double click the EXC\_OEECalc Display Client item.



- 4. From the **Client Name** page of the wizard, click the **Next** button.
- 5. From the **Display Client Options** page of the wizard, click the **Next** button.
- 6. From the **Remote Desktop Services and Workstation Options** page of the wizard, click the **Next** button.
- 7. From the Screen Resolution / Scaling Options page of the wizard, change the Resolution from 1920x1080 to 1280x800 and click the Next button.

Display Client Wizard	x
Session Resolution / Scaling Options Enter scaling options and session resolution if desired setting is different from the screen.	$\aleph$
Session Scaling Options	7
Maintain Aspect Ratio	
C Scale Down Only	
Session Resolution Options          Image: Don't Use Screen Resolution         Resolution         1280x800	
2	1
<pre> &lt; Back Next &gt; Finish Cancel H</pre>	lelp

- 8. From the **Display Client Members** page of the wizard, click the **Next** button.
- 9. From the **AppLink** page of the wizard, replace the **Program Path and Filename** and the **Command Line Options** paths with the ones below (you can also copy and paste this path from the **LabPaths.txt** file by right clicking the **Notepad** icon pinned to the start bar and selecting **LabPaths.txt**):

#### Program Path and Filename:

C:\Program Files (x86)\Microsoft Office\Office16\EXCEL.EXE

#### Command Line Options:

"C:\Lab Files\OEECalc.xls"

🙄 Display Client Wizard	×
App Link Enter the linked application path.	$\mathfrak{C}$
AppLink Path	
Program Path and Filename	
Im Files (x86)\Microsoft Office\Office16\EXCEL.EXE	
Brows	e
Command Line Options	
C:\Lab Files\OEECalc.xls	_
Brows	e
art in the following folder	
Brows	e
Be sure to enclose with double quotes.	
2	
< Back Next > Finish Cancel	Help

10. Click the Finish button.

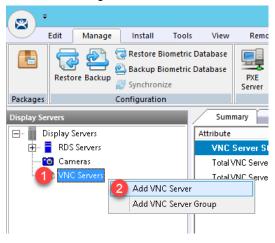
# Create SuperJuice VNC Display Client

An instance of the FactoryTalk View ME Runtime is running on the HMI image. In addition, a VNC Server was installed and running. Together, they will simulate a PanelView Plus for the purposes of this lab. As a sidebar, only one instance of the ME Runtime can be hosted on a single machine, even if it is a Remote Desktop Server.

1. Click the **Display Servers** icon **I** in the ThinManager tree selector.



2. From the **Display Servers** tree, right click the **VNC Servers** branch and select **Add VNC Server**. This will launch the **VNC Server Configuration Wizard**.



3. From the VNC Server Name page of the wizard, enter *HMI* in the VNC Server Name text box. Enter 10.6.10.50 in the VNC Server IP Address text box. Keep 5900 as the Port, and enter *rw* in the Password field. Click the Finish button.

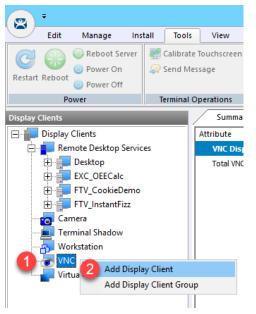
Server Configuration Wizard
VNC Server Name Enter Name and Network Configuration
VNC Server Name VNC Server Name HMI Change Group
Network Config           VNC Server IP Addres         10 . 6 . 10 . 50           Port         3 5900           Password         4
< Back Next > Finish Cancel Help

4. Click the **Display Clients** 

icon from the ThinManager tree selector.



5. Expand the **Display Clients** tree, right click the **VNC** branch and select **Add Display Client**.



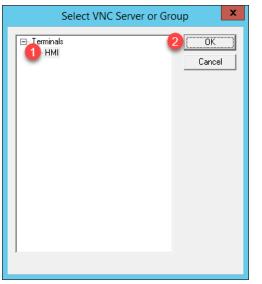
6. From the **Client Name** page of the wizard, enter *FTV\_SuperJuice* as the **Client Name**. Click the **Next** button.

🕿 Display Client Wizard	X
Client Name Enter the Display Client name.	$\approx$
Display Client Name Client Name <b>1</b> FTV_SuperJuice Set a Display Name	
Type of Display Client	<b>I</b>
	Change Group
•	Permissions
2 < <u>B</u> ack <u>N</u> ext > Finish	Cancel Help

- 7. From the **Display Client Options** page of the wizard, click the **Next** button.
- 8. From the VNC Display Client page of the wizard, <u>un</u>check the All VNC Servers Available checkbox and then click Add button.

8	Display Client Wizard	×
VI	VC Display Client Select the VNC Servers to be included	
	All VNC Servers Available	
	/NC Display Client Options	
	< Back Next > Finish Cancel Help	]

9. Select **HMI** from the **Terminals** tree and click the **OK** button.



10. Back on the VNC Display Client page, keep the check for Interactive Shadow and click the Finish button.

8	Display Client Wizard 🗙
VN	C Display Client Select the VNC Servers to be included
	Add Add Delete
	KBack Next > Finish Cancel Help

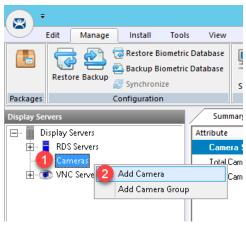
# **Create Camera Display Client**

We will now configure a Display Client to access the IP Camera's video stream located at your lab station using Real Time Steaming Protocol (RTSP).

1. Click the **Display Servers** icon **I** in the ThinManager tree selector.



2. From the **Display Servers** tree, right click the **Cameras** branch and select **Add Camera**. This will launch the **Camera Configuration Wizard**.



- 3. From the **Camera Name** page of the wizard, enter/select the following and then click the **Next** button.
  - Camera Name = Axis
  - **IP Address** = *131.173.8.23*
  - **Port** = 80
  - Streaming Protocol = Legacy Motion JPEG
  - Make = Generic
  - Model = Default

🕿 Camera Configuration Wizard	×
Camera Name Enter the camera name and network location	ttema
Camera Name Camera Name Avis Change Group	
Camera Network Setup Type IP Camera IP Address 2 131 . 173 . 8 . 23 Port 3 80	
Camera Connection Streaming Protocol Make Model Model Make 6 Default	
<	lp

This is a public facing IP camera located at Osnabrück University in Lower Saxony, Germany. The camera is focused on a Foucault pendulum, a device named after the French physicist Léon Foucault. It was created to demonstrate the Earth's rotation. While the camera performs reasonably well over the Internet, it will be a bit sluggish in our virtual thin client, but still effectively shows the concept.

4. From the **Camera Authentication** page of the wizard, leave the **Camera Authentication** frame blank and enter *mjpg/video.mjpg* in the **Custom URL** field (or copy and paste from the **LabPaths** shortcut on your Desktop) and click the **Finish** button.

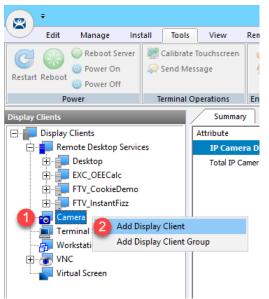
🞇 Camera Configuration Wizard	×
Camera Authentication Enter the camera username and password	$\aleph$
Camera Authentication	
Usemame	
Password	
Verify Password	
Custom URLhttp://131.173.8.23:80/	
mjpg/video.mjpg	
$\overline{}$	
2	
< <u>B</u> ack <u>N</u> ext > <b>Finish</b> Cancel	Help

5. Click the Display Clients

icon from the ThinManager tree selector.



6. Expand the Display Clients tree, right click the Camera branch and select Add Display Client.



7. From the Client Name page of the wizard, enter *IPC\_Video* as the Client Name. Click the Next button.

📽 Display Client Wizard	×
Client Name Enter the Display Client name.	$ttep{}$
Display Client Name Client Name	
Type of Display Client	
Change Group Permissions	
Create at least one camera overlay	elp

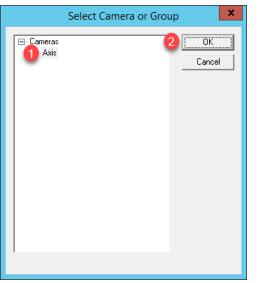
- 8. From the **Display Client Options** page of the wizard, click the **Next** button.
- 9. From the **Overlay Layout** page of the wizard, select **1x1** from the **Choose Camera Layout** drop down list and select **1920x1080** from the **Display Size** drop down list. Click the **Next** button.

🕿 Display Client Wizard	×
Overlay Layout Select the size and location of the camera overlays	$\mathfrak{C}$
Choose Camera Layout 1x1	•
Add O	verlay
Remove	Overlay
Display Size 1920x1080 🔽 2	
Create at least one camera overlay	
3	
< Back Next> Finish Cancel	Help

10. From the **Overlay Cameras** page of the wizard, <u>un</u>-check the **All Cameras Available** checkbox and click the **Add** button.

8	Display	Client Wiza	ard 🛛 🗙
Overlay Camer Select the ca	<b>as</b> meras available in	the overlay	times
Overlay Name	Overlay_1		
Position / Size -			
Left 0	Top 0	Width 1920	Height 1080
Cameras to sho	N		
All Cameras			2
			Add
			Delete
			Set Initial Camera
			Overlay Options
< Back	Next >	Finish	Cancel Help

11. From the Select Camera or Group window, select the Axis item and click the OK button.



12. Back at the **Overlay Cameras** page of the wizard, click the **Overlay Options** button.

8	Display	Client Wiz	ard ×
Overlay Cameras Select the cameras available in the overlay			times
Overlay Name	Overlay_1		
Position / Size -			
Left 0	Top 0	Width 1920	Height 1080
Cameras to show	v		
All Cameras			
Axis			Add
			Delete
			Set Initial Camera
			Overlay Options
< Back	Next>	Finish	Cancel Help

13. From the Overlay Options window, check the Scale checkbox and click the OK button followed by the Finish button.

Overlay Options			
General Options 2 OK Cancel Cancel Cancel Cancel Cancel Cancel General Options Cancel Cancel Cancel Cancel Cancel Cancel Cancel Cancel Cancel Cancel Cancel Cancel Cancel Cancel Cancel			
Title Options       Title Position       Top       Title Size   Normal			
Cycling Options Enable Cycling Cycle Time (secs)			

ThinManager also supports USB Cameras as sources of content. A camera's video stream can be delivered as its own Display Client, or as an overlay to an existing Display Client. ThinManager supports real time streaming protocols (RTSP) like H.264. RTSP can be decoded by the terminal's CPU or for certain Intel graphics chipsets, by the on-board graphics, reducing the load on the terminal's CPU. The **VersaView 5200** supports RTSP decoding by the on-board graphics chipset.

## Apply Display Clients to Terminal and Enable Tiling

1. Click the **Terminals** icon From the ThinManager tree selector.



- 2. From the Terminals tree, double click the VersaView5200 terminal to launch the Terminal Configuration Wizard.
- 3. Click the Next button on the Terminal Name page of the wizard.
- 4. Click the Next button on the Terminal Hardware page of the wizard.
- 5. Click the Next button on the Terminal Options page of the wizard.
- 6. Click the Next button on the Terminal Mode Selection page of the wizard.
- 7. Select FTV\_InstantFizz from the Available Display Clients list and click the Right Arrow button to move it to the Selected Display Clients list.

🕿 Terminal Configuration Wizard	×
Display Client Selection Select the Display Clients to use on this terminal	$\approx$
Available Display Clients Remote Desktop Services Desktop EXC_OEECalc FTV_cookieDemo Camera Terminal Shadow Workstation Workstation Edit Display Clients Over	
< <u>B</u> ack <u>N</u> ext > Finish	Cancel Help

8. Repeat the previous step for the **FTV\_SuperJuice**, **EXC\_OEECalc**, **IPC\_Video** and **Desktop Display Clients**. Click the **Next** button.

🕿 Terminal Configuration Wizard	×
Display Client Selection Select the Display Clients to use on this termi	nal 😫
Available Display Clients Desktop EXC_OEECalc FTV_CookieDemo FTV_InstantFizz Camera IPC_Video Terminal Shadow Workstation Workstation FTV_SuperJuice	Selected Display Clients
Edit Display Clients	Override
< Back	> Finish Cancel Help

9. On the **Terminal Interface Options** page of the wizard, make sure **Show Selector on Terminal, Enable Tiling and Screen Edge Display Client Selection** are checked. Click the **Selector Options** button.

Terminal (	Configuration Wizard		
Terminal Interface Options Select the display client selector and main menu options that will be available on the terminal.			
Display Client Selection Options	4		
🚺 🔽 Show Selector on Terminal	Selector Options		
2 🔽 Enable Tiling	Tiling Options		
3 🔽 Screen Edge Display Client S	Selection		
Allow Display Clients to move	e to/from screen		
PIN Pad Options	PIN Pad Options		

10. Click on the Selector Options button. <u>Un</u>check Auto-hide Selector and click the OK button.

Display Client Selector Option	ns 👔 🗙
🗖 Auto-hide Selector 🚺	ОК
Tile on Selector activation	Cancel
Selector Menu Size Normal 💌	

11. Back on the **Terminal Interface Options** page of the wizard, click the **Tiling Options** button.

8	Terminal Configuration V	Wizard 🛛 🗙
т	erminal Interface Options Select the display client selector and main menu optio on the terminal.	ons that will be available
T	Display Client Selection Options	
	🔽 Show Selector on Terminal	Selector Options
	🔽 Enable Tiling	Tiling Options
	🔽 Screen Edge Display Client Selection	
	Allow Display Clients to move to/from screen	
ſ	PIN Pad Options	PIN Pad Options
	< Back Next > Finish	Cancel Help

12. Make sure Show Grid is checked, and also check Tile Display Clients at startup. Click the OK button.



13. Click the Next button when you return to the Terminal Interface Options page of the wizard.

14. From the Hotkey Configuration page of the wizard, make sure Enable Display Client Hotkeys and Enable Tiling Hotkey are both checked. Click the Mouse Button Mapping button.

8	Terminal Configur	ation Wizard 🛛 🗙	
Ho	Hotkey Configuration Configure the hotkeys to apply to this terminal		
ſ	Ferminal Hotkeys		
	🔲 Enable Instant Failover Hotkey	Change Hotkey	
	✓ Enable Display Client Hotkeys	Change Hotkeys	
	I Enable Tiling Hotkey	Change Hotkey	
	Enable Swap Hotkey	Change Hotkey	
	Enable Fullscreen Hotkey	Change Hotkey	
		Mouse Button Mapping	
	< Back Next > Fin	ish Cancel Help	

15. From the **Mouse Button Mapping** dialog box, select **Tile** from the **Button 3 (Right Mouse)** drop down list. Click the **OK** button followed by the **Next** button.

Mous	e Button Mapping	x			
Mouse Button Action					
Button 1 (Left Mouse)	Default				
Button 2 (Middle Mouse)	Default	]			
Button 3 (Right Mouse)	1 Tile	]			
Button 4 (Scroll Wheel Up)	Default	. =			
Button 5 (Scroll Wheel Down)	Default	]			
Button 6	Default	]			
Button 7	Default				
Button 8	Default	]			
Button 9	Default				
1	2 ( OK )	Cancel			

ThinManager 9 introduced more mouse button mapping options, including all mouse button types to a number of new mouse button actions like Swap and Full Screen, both of which are applicable to Virtual Screens, which will be introduced in the next section.

- 16. From the **Log In Information** page of the wizard, click the **Next** button.
- 17. From the Video Resolution page of the wizard, click the Next button.
- 18. From the **Module Selection** page of the wizard, click the **Add**... button.

Same Terminal Configuration Wizard	x
Module Selection Select the modules that load on this terminal at boot up.	$temp{}$
Installed Modules	
Module	
Move Up	Move Down
Add	Remove
< Back Next > Finish Cance	Help

19. From the Attach Module to Terminal dialog box, scroll down and select the RDP Experience Module and click the OK button.

Attac	h Module to Terminal
Module Type	All Modules 🗨 Show Advanced Modules 🗖
	ation Module le dule n Screen Driver = on Module en Saver Module ard Configuration Module ouch Screen Driver
RDP Experience M	todule view view view view view view view vie

20. Back on the **Module Selection** page of the wizard, select the **RDP Experience Module** and click the **Configure** button.

Contract Configuration Wizard	×
Module Selection Select the modules that load on this terminal at boot up.	times
Installed Modules	
RDP Experience Module	
Move Up	Move Down
Add	Remove
< Back Next > Finish Cancel	Help

21. From the **Module Properties** dialog box, select **3** from the **Duplicate Server Connect Delay (seconds)**. Click the **Done** button.

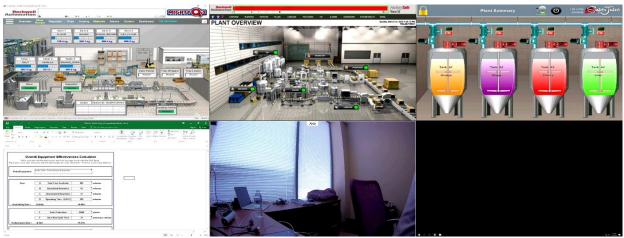
լեղ	Module	Properties		x
	Allow Desktop Background Show Window Contents While Dragging	YES		•
	Allow Menu and Window Animation	YES		-
	Allow Themes	YES		-
	Allow Font Smoothing Duplicate Server Connect Delay (seconds			
	Enable Network Level Authentication	YES		
	Use Hardware Scaling When Available	YES	-	•
			_	
	Set to Default		2	
			Done	Cancel

22. Back on the **Module Selection** page of the wizard, click the **Finish** button.

S Terminal Configuration Wizard	x
Module Selection Select the modules that load on this terminal at boot up.	$temp{}$
Installed Modules	
Module RDP Experience Module	
Move Up	Move Down
Add Configure	Remove
< Back Next > Finish Cancel	Help

The RDP Experience Module enables configuration of how the RDP session is rendered at the terminal, including if the Desktop Background or Themes are delivered, if Network Level Authentication (NLA) is enabled, etc. It is typically used with MultiSession because it also staggers the starting of the sessions on the Remote Desktop Server. Without staggering the starting of the sessions, the Remote Desktop Server can respond with a warning message that it is busy.

- 23. Right click the VersaView5200 terminal from the Terminals tree and select Restart Terminal to apply the changes. Click Yes to the confirmation dialog.
- 24. Shadowing the VersaView5200 should show the 6 Display Clients in a 2x3 grid referred to as Tile Mode. If you see an Activation window in Microsoft Excel, just ignore it.



In addition to using **Tile Mode** to switch between the **Display Clients**, the **Display Client Selector** at the top of the terminal can be used. To use the **Display Client Selector**, click and hold the selector to expand the menu. While still holding the mouse button, point to the desired **Display Client** and release the mouse button to select it. You can also return to **Tile Mode** from the **Display Client Selector**.

You may also notice when dragging your mouse back to the lab manual that the **Display Client** will change. This is due to the **Screen Edge Selection** feature that we enabled. Dragging the mouse to either edge of the screen will select the next **Display Client** automatically.

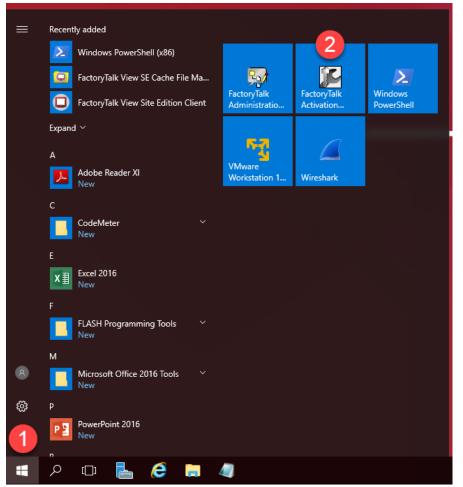
25. By default, the hotkeys CTRL-PAGE UP and CTRL-PAGE DOWN will also cycle through the Display Clients. We also enabled the Screen Edge Selector which allows you to move the pointer to the edge of the screen and shift the next Display Client into view. Experiment with each of these. Similarly, the hotkey CTRL-t will return to Tile Mode.

You can deploy up to 25 (a 5x5 Grid) **Display Clients** using **Tiling Mode** to a single monitor. If you are not using **Tiling Mode**, there is no limit to the number of **Display Clients** that can be applied to a single monitor. All of the processing required for this content is not occurring at the terminal, but at the server.

# FactoryTalk View SE Client Licensing Benefits

The FactoryTalk View Site Edition Client consumes one SE Client license for each unique session running on a Remote Desktop Server that launches **DisplayClient.exe** in a distributed architecture. With the release of ThinManager 11.0 and FactoryTalk View SE 11.0, a single FactoryTalk View SE Client license is all that is required per ThinManager-managed Terminal. This enables you to deliver an unlimited number of sessions (either for ThinManager MultiSession and/or Failover) and consume only 1 SE Client license. The required versions of software for this to work are FactoryTalk View SE Client 11.00.00 or higher and ThinManager 11.0 or higher. This functionally also requires ThinManager to be at Firmware Package 8.1.11 or higher.

The **VersaView5200** terminal is currently hosting (6) different pieces of content, utilizing the Tiling and MultiSession features. Two of the sessions are unique FactoryTalk View SE Client sessions – FTV\_CookieDemo and FTV\_InstantFizz. FTV\_CookieDemo is configured for Failover, so at most, we could launch up to 3 FactoryTalk View SE client sessions for this one terminal. We will open the FactoryTalk Activation Manager to review how the terminal only requires (1) FT View SE Client license for the (2) FT View SE Client sessions.



1. From the Start Menu click the FactoryTalk Activation Manager icon.

#### 2. Once it launches, click the **Find Available Activations** button.

FactoryTalk Activation Manager	— D		× About
Home       Manage Activations       Advanced         Welcome to FactoryTalk Activation!       You are steps away from using your Rockwell Automation product. All do is activate your Rockwell product using FactoryTalk Activation.         Ready to get started?       To activate your Rockwell product using FactoryTalk Activation.         To activate your Rockwell product, click one of the following buttons:       To learn more about FactoryTalk Activations         Find Available Activations       Learn More         Get New Activations       Learn More         Rockwell Automation       Ready to get New Activations	ictoryTalk et ring	:0	

 Here you will see all the FactoryTalk Activations for the local server. Find the FactoryTalk View SE Client item in the list and notice that only 1 of the 10 SE Client licenses is currently in use despite running 2 separate sessions of the FactoryTalk View SE Client on the virtual thin client.

FactoryTalk Activatio	on Mar	nager									
Iome Manage Activations Advanced											
	Sele	ct the location that will provide you	r activations	or add a nev	activation location:					Update Act	tivation Search Path
Find Available Activations		Path to Activations									
	•	C:\Users\Public\Documents\Ro	ckwell Autom	ation\Activat	ions						
Get New Activations											
Borrow Activations											
Donow / Canadons											
Return Activations											
Return Activations											
Pahast Astivitions											
Rehost Activations	Avai	lable activations:									
Rehost Activations Renew Activations	Avai	lable activations:	Serial #	Expires	Activation	Feature Version	Location	Total	In Use	Borrowed	Product Version
	Avai			· · ·	Activation RSV.STUDIO		Location RDS1	Total	In Use 0	Borrowed	
	Avai	Product	2529J00933	5/4/2020		Version		1	Use		Version
	Avai	Product FT V Studio for FTV Enterprise	2529J00933	5/4/2020 5/4/2020	RSV.STUDIO	Version 1.00	RDS1	1	Use 0	0	Version 11.00.00
	Avai	Product FT V Studio for FTV Enterprise FT V Studio for FTV Enterprise FT View SE Client RSLogix 5000 Pro (English)	2529J00933 2529J00934 2524J00645 2022J04203	5/4/2020 5/4/2020 5/4/2020 5/4/2020	RSV.STUDIO RSV.STUDIO RSVSECLI.RW RS5K_700.EXE	Version 1.00 1.00	RDS1 RDS1 RDS1 RDS1	1	Use 0 0	0	Version 11.00.00 11.00.00
	Avai	Product FT V Studio for FTV Enterprise FT V Studio for FTV Enterprise FT View SE Client RSLogix 5000 Pro (English) ThinManager	2529J00933 2529J00934 2524J00645 2022J04203 3959J00028	5/4/2020 5/4/2020 5/4/2020 5/4/2020 5/4/2020	RSV.STUDIO RSV.STUDIO RSVSECLI.RW RS5K_700.EXE TM.FTA.1	Version 1.00 1.00 1.00 1.00 11.00	RDS1 RDS1 RDS1 RDS1 RDS1 RDS1	1 1 10 6 1	Use 0 0 1 0 0 0	0 0 0	Version           11.00.00           11.00.00           31.00.00           32.00.00           11.00.00
	Avai	Product FT V Studio for FTV Enterprise FT V Studio for FTV Enterprise FT View SE Client RSLogix 5000 Pro (English) ThinManager	2529J00933 2529J00934 2524J00645 2022J04203	5/4/2020 5/4/2020 5/4/2020 5/4/2020 5/4/2020	RSV.STUDIO RSV.STUDIO RSVSECLI.RW RS5K_700.EXE	Version 1.00 1.00 1.00 1.00 11.00	RDS1 RDS1 RDS1 RDS1	1 1 10 6	Use 0 0 1 0	0 0 0 0 0	Version 11.00.00 11.00.00 11.00.00 32.00.00
		Product FT V Studio for FTV Enterprise FT V Studio for FTV Enterprise FT View SE Client RSLogix 5000 Pro (English) ThinManager	2529J00933 2529J00934 2524J00645 2022J04203 3959J00028	5/4/2020 5/4/2020 5/4/2020 5/4/2020 5/4/2020	RSV.STUDIO RSV.STUDIO RSVSECLI.RW RS5K_700.EXE TM.FTA.1	Version 1.00 1.00 1.00 1.00 11.00	RDS1 RDS1 RDS1 RDS1 RDS1 RDS1	1 1 10 6 1	Use 0 0 1 0 0 0	0 0 0 0 0 0	Version           11.00.00           11.00.00           31.00.00           32.00.00           11.00.00
		Product FT V Studio for FTV Enterprise FT V Studio for FTV Enterprise FT View SE Client RSLogix 5000 Pro (English) ThinManager	2529J00933 2529J00934 2524J00645 2022J04203 3959J00028	5/4/2020 5/4/2020 5/4/2020 5/4/2020 5/4/2020	RSV.STUDIO RSV.STUDIO RSVSECLI.RW RS5K_700.EXE TM.FTA.1	Version 1.00 1.00 1.00 1.00 11.00	RDS1 RDS1 RDS1 RDS1 RDS1 RDS1	1 1 10 6 1	Use 0 0 1 0 0 0	0 0 0 0 0 0	Version           11.00.00           11.00.00           31.00.00           32.00.00           11.00.00
		Product FT V Studio for FTV Enterprise FT V Studio for FTV Enterprise FT View SE Client RSLogix 5000 Pro (English) ThinManager	2529J00933 2529J00934 2524J00645 2022J04203 3959J00028	5/4/2020 5/4/2020 5/4/2020 5/4/2020 5/4/2020	RSV.STUDIO RSV.STUDIO RSVSECLI.RW RS5K_700.EXE TM.FTA.1	Version 1.00 1.00 1.00 1.00 11.00	RDS1 RDS1 RDS1 RDS1 RDS1 RDS1	1 1 10 6 1	Use 0 0 1 0 0 0	0 0 0 0 0 0	Version           11.00.00           11.00.00           31.00.00           32.00.00           11.00.00
		Product FT V Studio for FTV Enterprise FT V Studio for FTV Enterprise FT View SE Client RSLogix 5000 Pro (English) ThinManager	2529J00933 2529J00934 2524J00645 2022J04203 3959J00028	5/4/2020 5/4/2020 5/4/2020 5/4/2020 5/4/2020	RSV.STUDIO RSV.STUDIO RSVSECLI.RW RS5K_700.EXE TM.FTA.1	Version 1.00 1.00 1.00 1.00 11.00	RDS1 RDS1 RDS1 RDS1 RDS1 RDS1	1 1 10 6 1	Use 0 0 1 0 0 0	0 0 0 0 0 0	Version 11.00.00 11.00.00 11.00.00 32.00.00 11.00.00

4. Close out of the FactoryTalk Activation Manager.

#### **Remove Tiled Display Clients**

- 1. Click the **Terminals** icon from the ThinManager tree selector.
- 2. From the Terminals tree, double click the VersaView5200 terminal to launch the Terminal Configuration Wizard.
- 3. Click the **Next** button on the **Terminal Name** page of the wizard.
- 4. Click the Next button on the Terminal Hardware page of the wizard.
- 5. Click the Next button on the Terminal Options page of the wizard.
- 6. Click the Next button on the Terminal Mode Selection page of the wizard.
- Remove the FTV\_InstantFizz, FTV\_SuperJuice, EXC\_OEECalc, IPC\_Video and Desktop Display Clients from the Selected Display Clients list. The FTV\_CookieDemo should be the only Selected Display Client. Click the Finish button.

🕿 Terminal Configuration Wizard	×
Display Client Selection Select the Display Clients to use on this terminal	$\mathfrak{>}$
Available Display Clients Selected Display Clients	•
Edit Display Clients Override	
< <u>B</u> ack <u>N</u> ext > Finish Cancel	Help

8. Right click the **VersaView5200** terminal from the **Terminals** tree and select **Restart Terminal** to apply the changes. Click **Yes** to the confirmation dialog.



This completes the section **Deploying Additional Content Using MultiSesion and Tiling** of the lab. Continue on to explore MultiMonitor and its evolution, Virtual Screening.

# Section 8: MultiMonitor, Virtual Screens and Session Scaling

# Overview

ThinManager v11 supports up to 7 physical displays connected to a single ThinManager-managed thin client. In addition, ThinManager v9 introduced the concept of a **Virtual Screen Display Client**. The **Virtual Screen Display Client** is similar to the **Tiling** concept but enables you to determine the layout of the content in completely configurable areas, to which you can assign **Display Clients**. You can also overlay **Virtual Screens** to create a picture-in-picture effect with the ability to swap content in/out. Prior to ThinManager 9, the concept of overlays was supported, but only for IP cameras. Now, any type of **Display Client** can be applied to a **Virtual Screen**, and it can be automatically scaled to the size of the **Virtual Screen**. This section will introduce you to **MultiMonitor** and **Virtual Screens** and will be composed of the following tasks:

- 1. Split Content across Multiple Monitors
- 2. Create Virtual Screen Display Client
- 3. Apply Virtual Screen to Terminal
- 4. Add Virtual Screen Swapping

## Split Content across Multiple Monitors

Instead of applying multiple **Display Clients** to a single monitor, we will split the content across 2 monitors using **ThinManager's MultiMonitor**.

- 1. If not already there, return to **ThinManager** on **RDS1**.
- 2. Click the Terminals tree selector icon.



3. From the Terminals tree, double click the VersaView5200 terminal to launch the Terminal Configuration Wizard.



- 4. Click the Next button on the Terminal Name page of the wizard.
- 5. Click the **Next** button on the **Terminal Hardware** page of the wizard.
- 6. Click the Next button on the Terminal Options page of the wizard.

7. From the Terminal Mode Selection page of the wizard, check Enable MultiMonitor. Click the Next button.

🕿 Terminal Configuration Wizard	×
Terminal Mode Selection Select the operating modes for this terminal	$\aleph$
Terminal Mode	
Enable Relevance User Services     Enable Relevance Location Services     Enable MultiMonitor     Enable MultiStation	
Z K Next > Finish Cancel	Help

 From the MultiMonitor Video Settings page of the wizard, make sure the following is selected: 2 Monitors radio button, 64K Colors Color Depth, 1920x1080 Resolution for each monitor, 60Hz Refresh Rate for each monitor, Video Port 1 for Monitor 1, and Video Port 2 for Monitor 2. Click the Next button.

🕿 Terminal Configuration Wizard	×
MultiMonitor Video Settings Select the number of monitors and a video mode for each monitor.	$\aleph$
Number of Monitors	
Monitor Video Modes	
Color Depth 64K Colors 🔽 Video	
Resolution Refresh Rate Port	
Monitor 1 1 1920x1080 💌 60Hz 💌 1 💌	
Monitor 2 2 1920x1080 - 60Hz - 2 -	
, , , , , ,	
Use Session Size Limits for Server 2012	
Main Menu Options	
3	
< Back Next > Finish Cancel	Help

The **Use Session Size Limits for** drop down list allows you to specify either **Server 2012** or **Server 2008 R2** session size limits. Prior to Windows Server 2012, the maximum screen resolution for an RDP session was 4096 x 2048. Windows Server 2012 has increased this maximum to 8192 x 8192.

9. From the **Monitor Layout** wizard, accept the defaults. This is where you tell ThinManager how your monitors are physically oriented via the **Monitor Layout** section, as well as how to treat each individual monitor via the **Screen** 

Layout section. Click the Next button.

Screens are treated individually by default, which is referred to as **Screening**. Or the screens can be combined logically, which is referred to as **Spanning**.

📽 Terminal Configuration Wizard	×
Monitor Layout Select the physical monitor layout and the layout of the terminal server sessions.	$temp{}$
Choose your monitor layout	
Main Monitor C At Mouse © 1 C 2	
Choose your screen layout	
< Back Next > Finish Cancel	Help

10. Select FTV\_CookieDemo from the Available Display Clients list and click the Right Arrow button for Screen A to move it to the Selected Display Clients list. Repeat this step to move the FTV\_InstantFizz Display Client to Screen A as well. Select FTV\_SuperJuice from the Available Display Clients list and click the Right Arrow button for Screen B to move it to the Selected Display Clients list. Repeat this step to move the IPC\_Video Display Client to Screen B as well. Click the Next button.

🕿 Terminal Configuration Wizard	×
Display Client Selection Select the Display Clients to put on each screen or station	$\aleph$
A B   A B   A Camera   Camera Camera   Camera Camera   Camera Camera   Vorkstation Camera   Virtual Screen Camera   Edit Display Clients   Override	Up Down
< Back Next > Finish Cancel	Help

11. On the Screen Options page of the wizard, click the Screen Options button for Screen A.

🕿 Terminal Config	juration Wizard			×
Screen Options Set the options for each screen or station.				$\aleph$
- Screen A Options	Main Monitor	1 •	Screen Options	
Screen B Options				
	Main Monitor	2 💌	Screen Options	
	< <u>B</u> ack	<u>N</u> ext >	Finish Cancel	Help

12. Make sure Show Display Client Selector, Enable Tiling, Allow Display Clients to move to/from screen and Screen Specific Mouse Button Mapping checkboxes are checked. Click the Selector Options button.

Screen Options		×
Display Clients to move to/from screen     2 w Display Client Selector	5 Selector Options	OK Cancel
3 ble Tiling     4 en Specific Mouse Button Mapping	Tiling Options Mouse Button Mapping	
Use Microsoft Extended Desktop Main Desktop Monitor	Ŧ	
MultiStation Options Station has a keyboard Station has a mouse Screen Edge Display Client Selection	n	

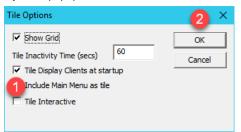
13. From the Display Client Selector Options popup, uncheck Auto-hide Selector and click the OK button.

Display Client Selector Options	<b>2</b> ×
	ОК
Tile on Selector activation	Cancel
Selector Menu Size Normal	

14. Back on the Screen Options popup, now click the Tiling Options button.

Screen Options		×
Allow Display Clients to move to/from screen		ОК
Show Display Client Selector	Selector Options	Cancel
🔽 Enable Tiling	Tiling Options	
✓ Screen Specific Mouse Button Mapping	Mouse Button Mapping	
🔲 Use Microsoft Extended Desktop		
Main Desktop Monitor	<b>~</b>	
MultiStation Options		
🔽 Station has a keyboard		
🔽 Station has a mouse		
Screen Edge Display Client Selection	I	

15. From the **Tile Options** popup, check the **Tile Display Clients and startup** check box. Click the **OK** button on the **Tile Options** popup.



16. Click the **Mouse Button Mapping** button on the **Screen Options** popup.

Screen Options		Х
✓ Allow Display Clients to move to/from screen		ОК
▼ Show Display Client Selector	Selector Options	Cancel
Enable Tiling	Tiling Options	
✓ Screen Specific Mouse Button Mapping	Mouse Button Mapping	
Use Microsoft Extended Desktop		
Main Desktop Monitor	~	
MultiStation Options		
🔽 Station has a keyboard		
🔽 Station has a mouse		
Circen Edge Display Client Selection	1	

17. From the **Mouse Button Mapping** dialog box, select **Tile** from the **Button 3 (Right Mouse)** drop down list. Click the **OK** button.

Mouse Button Mapping		×
Mouse Button Action		
Button 1 (Left Mouse)	Default	<b>•</b> ^
Button 2 (Middle Mouse)	Default	<b>•</b>
Button 3 (Right Mouse)	1 Tile	<b>•</b>
Button 4 (Scroll Wheel Up)	Default	<b>•</b>
Button 5 (Scroll Wheel Down)	Default	<b>•</b>
Button 6	Default	<b>•</b>
Button 7	Default	<b>•</b>
Button 8	Default	<b>•</b>
Button 9	Default	<b>.</b>
I	2	``
	ОК	Cancel

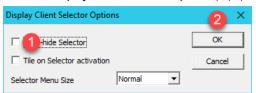
- 18. Click the **OK** button on the **Screen Options** popup.
- 19. Back on the Screen Options page of the wizard, click the Screen Options button for Screen B.

😤 Terminal Config	guration Wizard			×
Screen Options Set the option	s ns for each screer	or station.		$\aleph$
Screen A Options				
	Main Monitor	1 💌	Screen Options	
Screen B Options				
	Main Monitor	2 💌	Screen Options	
	< <u>B</u> ack	<u>N</u> ext >	Finish Cancel	Help

20. Make sure Show Screen Specific Mouse Button Mapping checkboxes are checked. Click the Selector Options button.

Screen Options		×
Display Clients to move to/from screen     O	5 Selector Options	OK Cancel
4 en Specific Mouse Button Mapping     Use Microsoft Extended Desktop	Mouse Button Mapping	
Main Desktop Monitor	~	
MultiStation Options  Station has a keyboard  Station has a mouse		
Screen Edge Display Client Selection	1	

21. From the Display Client Selector Options popup, uncheck Auto-hide Selector and click the OK button.



22. Back on the Screen Options popup, now click the Tiling Options button.

Screen Options		×
✓ Allow Display Clients to move to/from screen		ок
Show Display Client Selector	Selector Options	Cancel
✓ Enable Tiling	Tiling Options	
✓ Screen Specific Mouse Button Mapping	Mouse Button Mapping	
🔲 Use Microsoft Extended Desktop		
Main Desktop Monitor	~	
MultiStation Options		
🔽 Station has a keyboard		
🔽 Station has a mouse		
Screen Edge Display Client Selection		

23. From the **Tile Options** popup, check the **Tile Display Clients and startup** check box. Click the **OK** button on the **Tile Options** popup.

Tile Options	<b>2</b> ×
Image: Show Grid     60       Tile Inactivity Time (secs)     60       Image: Tile Display Clients at startup     1       Include Main Menu as tile     1       Tile Interactive     1	OK Cancel

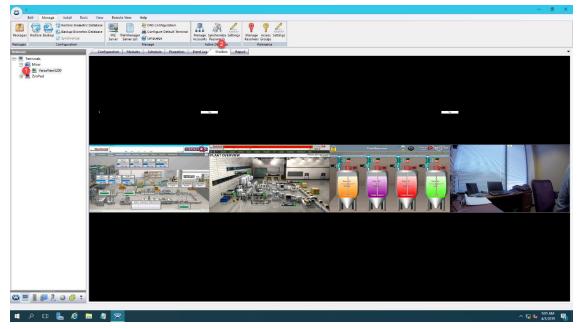
24. Click the Mouse Button Mapping button on the Screen Options popup.

Screen Options		×
☑ Allow Display Clients to move to/from screen		ок
▼ Show Display Client Selector	Selector Options	Cancel
🔽 Enable Tiling	Tiling Options	
✓ Screen Specific Mouse Button Mapping	Mouse Button Mapping	
Use Microsoft Extended Desktop		
Main Desktop Monitor	<b>~</b>	
MultiStation Options		
🔽 Station has a keyboard		
🔽 Station has a mouse		
Circen Edge Display Client Selection		

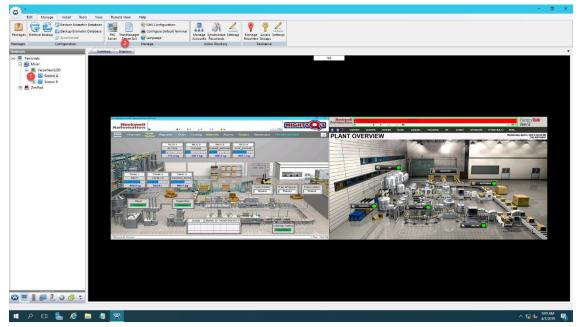
25. From the **Mouse Button Mapping** dialog box, select **Tile** from the **Button 3 (Right Mouse)** drop down list. Click the **OK** button.

Mouse Button Mapping		×
Mouse Button Action		
Button 1 (Left Mouse)	Default	▼ ^
Button 2 (Middle Mouse)	Default	•
Button 3 (Right Mouse)	1 Tile	•
Button 4 (Scroll Wheel Up)	Default	•
Button 5 (Scroll Wheel Down)	Default	•
Button 6	Default	•
Button 7	Default	•
Button 8	Default	•
Button 9	Default	• v
	ОК	Cancel

- 26. Click the **OK** button on the **Screen Options** popup.
- 27. Click the **Finish** button.
- 28. Right click the **VersaView5200** terminal from the **Terminals** tree and select **Restart Terminal** to apply the changes. Click **Yes** to the confirmation dialog.
- 29. To see the results, select the VersaView5200 terminal and then click the Shadow tab in the Details Pane.



- 30. Experiment with the **Display Client Selector** of each monitor while **Shadowing**. You can move **Display Clients** from one monitor to the other and back again. This behavior is fully configurable.
- 31. You can also shadow an individual monitor, as opposed to both at the same time. Expand the VersaViewV5200 terminal and select Screen A. Now click the Shadow tab in the Details Pane to shadow just Screen A.



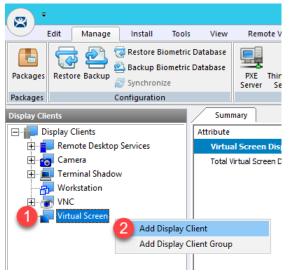
**MultiMonitor** combined with **Tiling** and/or **Virtual Screens** are extremely powerful tools that really elevate the user experience at the terminal. They are especially valuable in **Control Room** settings, or anywhere centralized monitoring is desired. As previously mentioned, some thin clients can support up to 7 monitors. **ThinManager** also includes a **Shared Keyboard** and **Mouse Module** that can be applied to a group of thin clients. The **Shared Keyboard** and **Mouse Module** allows you to control several thin clients using a single keyboard and mouse. As an example, you could have three 7 monitor thin clients in your **Control Room** driving a total of 21 displays all being controlled by a single keyboard and mouse. The **Virtual Screen** section will show you an evolution of this **MultiMonitor** concept and really take content visualization to the next level.

### **Create Virtual Screen Display Client**

1. Click the **Display Clients** icon from the ThinManager tree selector.



2. Right click the Virtual Screen branch and select the Add Display Client item.



3. From the Client Name page of the wizard, enter Overview as the Client Name. Click the Next button.

🕿 Display Client Wizard			×
<b>Client Name</b> Enter the Display Client name.			$\mathfrak{>}$
Display Client Name Client Name			
Type of Display Client	Ţ		
Display Client Group		Change	Group
< Back Next >	Finish		
< <u>B</u> ack <u>N</u> ext >	Finish	Cancel	Help

- 4. From the **Display Client Options** page of the wizard, click the **Next** button.
- 5. From the Select or Create the Virtual Screen Layout page of the wizard, select 1920x1080 from the Screen Resolution drop down list and then click the Add button.

😂 Di:	splay Client Wizard
Select or Create the Virtu Select a pre-configured v layout	In al Screen Layout intual screen layout or create a custom
Choose Layout Cus Screen Resolution 192	tom Qx1080 CAD Add Remove Set Order
< Back Next >	Finish Cancel Help

6. From the **Custom Overlay** dialog box, enter *Main* as the **Overlay Name**, keep 0 in the **Left** field, keep 0 in the **Top** field, *1280* in the **Width** field and *1080* in the **Height** field. Click the **OK** button.

	Custor	n Overlay	<b>4</b> ×
Overlay Name	1 Main		ОК
Position / Size Left 0	Top 0	Width 2 1280	Cancel Height 3 1080

7. Back at the **Select or Create the Virtual Screen Layout** page of the wizard, click the **Add** button again to add another overlay.

8	Display Client Wizard
	e Virtual Screen Layout jured virtual screen layout or create a custom
Choose Layout Screen Resolution	Custom
	Remove Set Order
< Back Nex	t > Finish Cancel Help

8. From the **Custom Overlay** dialog box, enter *Side1* as the **Overlay Name**, *1280* in the **Left** field, *0* in the **Top** field, *640* in the **Width** field and *360* in the **Height** field. Click the **OK** button.

	Custor	n Overlay	<b>5</b> ×
Overlay Name	1 Side1		Cancel
Position 2 <sup>ze</sup> Left 1280	Top D	Width 3	Height 4 360

9. Back at the **Select or Create the Virtual Screen Layout** page of the wizard, click the **Add** button again to add another overlay.

,			
8	Display Clier	nt Wizard	x
Select or Create th Select a pre-confi layout		<b>_ayout</b> ayout or create a custor	- 😕
Choose Layout Screen Resolution	Custom 1920x1080	•	
			Add Remove et Order
< Back Ne	xt> Finisł	n Cancel	Help

10. From the **Custom Overlay** dialog box, enter *Side2* as the **Overlay Name**, *1280* in the **Left** field, *360* in the **Top** field, *640* in the **Width** field and *360* in the **Height** field. Click the **OK** button.



11. Back at the **Select or Create the Virtual Screen Layout** page of the wizard, click the **Add** button again to add another overlay.

8	Display Client Wizard
	he Virtual Screen Layout figured virtual screen layout or create a custom
Choose Layout	Custom
Screen Resolution	1920x1080
	Remove Set Order
< Back Ne	ext > Finish Cancel Help

12. From the **Custom Overlay** dialog box, enter *Side3* as the **Overlay Name**, *1280* in the **Left** field, *720* in the **Top** field, *640* in the **Width** field and *360* in the **Height** field. Click the **OK** button, followed by the **Next** button.

Custom	Overlay	6 ×
Overlay Name 1 Side3		OK )
Position 2 2 2 Top 3 Left 2 720	Width 4	Cancel Height 5 360

13. We will now assign content to each of the Virtual Screens created, starting with the **Main** Virtual Screen. Click the **Add** button in the **Selected Display Clients** frame.

8	Display	Client Wiza	ard 📉
Virtual Screen Select the op	Configuration tions for this Virtual	Screen	$\aleph$
Virtual Screen	Main		
Position / Size - Left 0	Top 0	Width 1280	Height 1080
- Selected Displa	y Clients		Add Delete
			Screen Options
< Back	Next >	Finish	Cancel Help

14. Select the **FTV\_CookieDemo** item from the list and click the **OK** button.

Select Display Client	×
	_
Remote Desktop Services	
EXC_OEECalc	
FTV_InstantFizz	
FTV_Studio	
LGX_CookieDemo	
Camera	
🗄 🗐 🔲 Terminal Shadow	
Workstation	
t wnc	
2	
OK Cancel	

15. Back at the Virtual Screen Configuration page of the wizard, click the Next button.

8	Display	Client Wizar	rd 🗶
Virtual Screen Select the op	Configuration ations for this Virtual	Screen	times
Virtual Screen	Overview		
Position / Size			
Left 0	Top 0	Width 1280	Height 1080
- Selected Displa	v Clients		
FTV_Coc			Add Delete
			Screen Options
< Back	Next >	Finish	Cancel Help

16. Now for the **Side1** Virtual Screen, click the **Add** button.

8	Display Cl	ient Wizard	×
Virtual Screen ( Select the opt	Configuration ions for this Virtual Scr	een	times
Virtual Screen	Side1		
Position / Size - Left 1280	Top	Width	Height 360
Selected Display	Clients		
		]	Screen Options
< Back	Next > Fir	nish	Cancel Help

17. Select the **FTV\_InstantFizz** item from the list and click the **OK** button.

Select Display Client X
Remote Desktop Services Desktop EXC_OEECalc FTV_CookieDemo FTV_InstantFizz FTV_Studio LGX_CookieDemo Camera Camera Workstation
±
2
OK Cancel

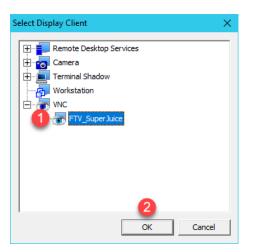
18. Back at the **Virtual Screen Configuration** page of the wizard, click the **Next** button.

8	Display Client W	/izard X
Virtual Screen Select the op	Configuration tions for this Virtual Screen	$\approx$
Virtual Screen	Side 1	
Position / Size - Left 1280	Top Width 0 640	Height 360
- Selected Display		Add Delete
		Screen Options
< Back	Next > Finish	Cancel Help

19. Now for the **Side2** Virtual Screen, click the **Add** button.

8	Displa	y Client Wiza	ard 🛛 🗙
Virtual Screen Select the op	Configuration tions for this Virtua	al Screen	$\mathfrak{a}$
Virtual Screen	Side2		
Position / Size -	Тор	Width	Height
1280	360	640	360
- Selected Displa	y Clients		Delete
			Screen Options
< Back	Next >	Finish	Cancel Help

20. Select the **FTV\_SuperJuice** item from the list and click the **OK** button.



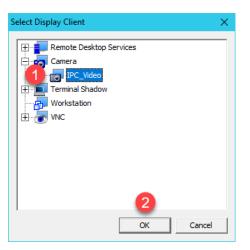
21. Back at the **Virtual Screen Configuration** page of the wizard, click the **Next** button.

8	Display	Client Wiz	ard 🗙
Virtual Screen Select the op	Configuration tions for this Virtual	Screen	$\approx$
Virtual Screen	Side2		
Position / Size -	-		
Left 1280	Top 360	Width 640	Height 360
1280	360	640	360
Selected Displa	y Clients		
FTV_Sup	erJuice		Add
·			
			Delete
			Screen Options
			Screen Options
_			
< Back	Next >	Finish	Cancel Help

22. Now for the **Side3** Virtual Screen, click the **Add** button.

8	Display Client Wiza	rd ×
Virtual Screen Select the op	Configuration tions for this Virtual Screen	$\mathfrak{a}$
Virtual Screen	Side3	
Position / Size - Left	Top Width	Height
1280	720 640	360
- Selected Display	/ Clients	Add Delete
		Screen Options
< Back	Next> Finish	Cancel Help

23. Select the IPC\_Video item from the list and click the OK button.



24. Back at the Virtual Screen Configuration page of the wizard, click the Finish button.

8	Display	Client Wiza	rd ×
Virtual Screen Select the op	Configuration otions for this Virtual	Screen	$\approx$
Virtual Screen	Side3		
Position / Size Left 1280	Тор  720	Width 640	Height 360
Selected Displa	y Clients		
Teo IPC_Vide	0		Add Delete
			Screen Options
< Back	Next >	Finish	Cancel Help

# Apply Virtual Screen to Terminal

1. Click the **Terminals** tree selector icon.



2. Double click the VersaView5200 terminal.



- 3. Click the **Next** button on the **Terminal Name** page of the wizard.
- 4. Click the Next button on the Terminal Hardware page of the wizard.
- 5. Click the Next button on the Terminal Options page of the wizard.
- 6. From the Terminal Mode Selection page of the wizard, <u>un</u>-check Enable MultiMonitor.

🕿 Terminal Configuration Wizard	×
Terminal Mode Selection Select the operating modes for this terminal	$\aleph$
Teminal Mode	
Enable Relevance User Services	
Enable Relevance Location Services	
Enable MultiStation	
2 < Back Next > Finish Cancel	11-1-
< back iveXt > Finish Cancel	Help

7. From the **Display Client Selection** page of wizard, remove all of the **Display Clients** from the **Selected Display Clients** list. Select the **Overview Display Client** from the **Available Display Clients** list and click the **Right Arrow** button to move it to the **Selected Display Clients** list. Click the **Finish** button.

🕿 Terminal Configuration Wizard	×
Display Client Selection Select the Display Clients to use on this terminal	$temp{}$
Available Display Clients	•
Edit Display Clients Override	
< <u>B</u> ack <u>N</u> ext > <u>Finish</u> Cancel	Help

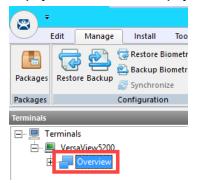
8. Right click the VersaView5200 terminal and select the Restart Terminal item. Click the Yes button to confirm.

Like **MultiMonitor Display Clients**, **Virtual Screen Display Clients** can be configured to be moveable from one **Virtual Screen** to another. You can also enable **Tiling** within a **Virtual Screen**. In addition, you can select any of the **Virtual Screens** to go **Full Screen** from their respective **Display Client Selector**, and then return to **Virtual Screen** mode. **Virtual Screening** allows you to take the concept of digital signage to the plant floor and deliver a wide range of content in virtually an unlimited number of ways.

ThinManager 8.1 added support for 4K monitors. For thin clients with the graphics horsepower to drive a 4K display (3840x2160), you can, for example, carve up the 4K display into 4 separate 1920x1080 quadrants and treat them as individual displays within **ThinManager using Virtual Screening**.

### Add Virtual Screen Swapping

1. From the **Terminals** tree, expand the **VersaView5200** terminal and then double click the **Overview Virtual Screen Display Client** to launch the **Display Client Wizard**.



- 2. From the **Client Name** page of the wizard, click the **Next** button.
- 3. From the **Display Client Options** page of the wizard, click the **Next** button.
- 4. From the Select or Create the Virtual Screen Layout page of the wizard, click the Next button.
- 5. From the Main Virtual Screen Configuration page of the wizard, click the Next button.
- 6. From the Side1 Virtual Screen Configuration page of the wizard, click the Screen Options button.

8	Display	Client Wiza	rd 🗙
Virtual Screen Select the op	Configuration tions for this Virtual	Screen	$\mathfrak{a}$
Virtual Screen	Side1		
Left 1280	Top 0	Width 640	Height 360
Selected Displa	y Clients		
FTV_Inst	antFizz		Add
			Terminal Override
			Screen Options
< Back	Next >	Finish	Cancel Help

7. From the Virtual Screen Options dialog, check the Virtual Screen Specific Mouse Button Mapping checkbox, and select Main from the Swap Destination drop down list. Click the Mouse Button Mapping button.

Virtual Screen Options	×		
Allow Display Clients to move to/from screen			
Show Display Client Selector	Selector Options		
	Tilin 3 tions		
✓ Virtual Screen Specific Mouse Button Mapping	Mouse Button Mapping		
Virtual Screen Display Options   Virtual Screen Border  Virtual Screen Always Visible  Hide Virtual Screen at Startup  Virtual Screen is view only  Allow Full-screen Show Messages Use Terminal Setting			
Swap Options       Swap Destination       Image: Swap on empty Virtual Screen       Image: Show "Swap" in Selector Menu       Image: Enable Single-swap mode	•		
0	K Cancel		

8. From the **Mouse Button Mapping** dialog, select **Swap** from the **Button 3 (Right Mouse)** drop down list. Click the **OK** button twice, followed by the **Next** button.

М	ouse Button Mapping	x
Mouse Button Action		
Button 1 (Left Mouse)	Default	^
Button 2 (Middle Mouse)	Default	
Button 3 (Right Mouse)	1 Swap	
Button 4 (Scroll Wheel Up)	Default	=
Button 5 (Scroll Wheel Down)	Default	
Button 6	Default	
Button 7	Default	
Button 8	Default	
Button 9	Default	~
	Mouse Button Action Button 1 (Left Mouse) Button 2 (Middle Mouse) Button 3 (Right Mouse) Button 4 (Scroll Wheel Up) Button 5 (Scroll Wheel Down) Button 6 Button 7 Button 8	Button 1 (Left Mouse) Button 2 (Middle Mouse) Button 3 (Right Mouse) Button 4 (Scroll Wheel Up) Button 5 (Scroll Wheel Down) Button 6 Default Button 7 Default Button 8 Default Button 9 Default Car

9. Back at the Side 2 Virtual Screen Configuration page of the wizard, click the Screen Options button.

8	Display	/ Client Wiz	ard 🛛 🗙
Virtual Screen Select the op	Configuration tions for this Virtua	I Screen	$\cong$
Virtual Screen	Side2		
Position / Size - Left 1280	Тор  360	Width 640	Height 360
Selected Display	-		Add Delete
			Teminal Override
			Screen Options
< Back	Next >	Finish	Cancel Help

10. From the Virtual Screen Options dialog, check the Virtual Screen Specific Mouse Button Mapping checkbox, and select Main from the Swap Destination drop down list. Click the Mouse Button Mapping button.

Virtual Screen Options	×	
Allow Display Clients to move to/from screen		
Show Display Client Selector	Selector Options	
	Tilir 3 tions	
Virtual Screen Specific Mouse Button Mapping	Mouse Button Mapping	
Virtual Screen Display Options           Virtual Screen Border           Virtual Screen Always Visible           Hide Virtual Screen at Startup           Virtual Screen is view only           Allow Full-screen           Show Messages		
Swap Options Swap Destination 2 Main Swap on empty Virtual Screen Show "Swap" in Selector Menu Enable Single-swap mode	<b>_</b>	
0	K Cancel	

11. From the Mouse Button Mapping dialog, select Swap from the Button 3 (Right Mouse) drop down list. Click the OK button twice, followed by the Next button.

	Mouse But	ton Mapping	x		
1	Mouse Button Action				
	Button 1 (Left Mouse)	Default 💌	^		
	Button 2 (Middle Mouse)	Default 💌			
	Button 3 (Right Mouse)	Swap 💌			
	Button 4 (Scroll Wheel Up)	Default 💌	=		
	Button 5 (Scroll Wheel Down)	Default 💌			
	Button 6	Default 💌			
	Button 7	Default 💌			
	Button 8	Default 💌			
	Button 9	Default 🔹	~		
1		2	ncel		

12. Back at the Side 3 Virtual Screen Configuration page of the wizard, click the Screen Options button.

8	Display	Client Wiz	ard 🔀
Virtual Screen Configuration Select the options for this Virtual Screen			
Virtual Screen	Side3		
Left 1280	Top 720	Width 640	Height 360
Selected Display	y Clients		,
IPC_Vide	D		Add
			Delete
			Terminal Override
			Screen Options
< Back	Next >	Finish	Cancel Help

13. From the Virtual Screen Options dialog, check the Virtual Screen Specific Mouse Button Mapping checkbox, and select Main from the Swap Destination drop down list. Click the Mouse Button Mapping button.

Virtual Screen Options	×		
Allow Display Clients to move to/from screen			
Show Display Client Selector	Selector Options		
	Tilir 3 tions		
Virtual Screen Specific Mouse Button Mapping	Mouse Button Mapping		
Virtual Screen Display Options Show Virtual Screen Border Virtual Screen Always Visible Hide Virtual Screen at Startup Virtual Screen is view only Allow Full-screen Show Messages Use Terminal Settin	ng 🔻		
Swap Options Swap Destination 2 Main Swap on empty Virtual Screen Show "Swap" in Selector Menu Enable Single-swap mode	<b>_</b>		
0	K Cancel		

14. From the Mouse Button Mapping dialog, select Swap from the Button 3 (Right Mouse) drop down list. Click the OK button twice, followed by the Finish button.

	М	ouse Button Mapping	x
Γ	Mouse Button Action		
	Button 1 (Left Mouse)	Default 💌	^
	Button 2 (Middle Mouse)	Default 💌	
	Button 3 (Right Mouse)	1 Swap 💌	
	Button 4 (Scroll Wheel Up)	Default	=
	Button 5 (Scroll Wheel Down)	Default 💌	
	Button 6	Default 💌	
	Button 7	Default	
	Button 8	Default 💌	
	Button 9	Default 🗸	~
	1	2 OKCan	

- 15. Right click the **VersaView5200** terminal from the **Terminals** tree and select **Restart Terminal** to apply the changes. Click **Yes** to the confirmation dialog.
- 16. Select the Shadow tab to see the results. Right click on any of the 3 side virtual screens to test the swapping capability.

Checkpoint Question: <u>https://thinmanager.com/cloudlabs/section08/</u>

This completes the section **Virtual Screens and Session Scaling** of the lab. Please continue on to **Relevance User Services** to explore user based content delivery.

# Section 9: Relevance User Services - User Based Content Delivery

### Overview

Up to this point in the lab, you have assigned default content to the **Terminal's Profile**. In other words, the content is owned by the terminal and is the same regardless of who is physically at the terminal. You can control a user's access within each application at the terminal by requiring them to login **within** the application and then customizing their experience there – but this is completely separate from ThinManager. This lab section will demonstrate how you can customize the actual content that a user receives at a **Terminal in addition** to the default content that is assigned to the **Terminal Profile**. For instance, you may want to deliver additional content to a Maintenance user that logs into the terminal using ThinManager security, such as the Maintenance Work Order System, or possibly Logix Designer.

This lab section is composed of the following tasks:

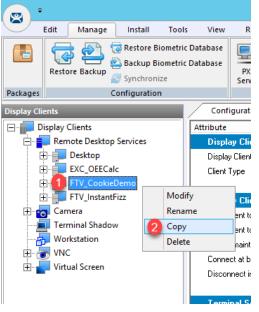
- 1. Create a View Studio Display Client
- 2. Create an Engineer User Group
- 3. Create an Engineer User
- 4. Enable User Services for Terminal
- 5. Login as Engineer User
- 6. Add RF IDeas Badge Reader
- 7. Configure ThinManager to Cache Password
- 8. Add Multifactor Authentication with a PIN and Password Storage
- 9. Authentication Pass Through
- 10. Remove Tiled Display Clients

### **Create View Studio Display Client**

1. From ThinManager, click the **Display Clients** icon from the ThinManager tree selector.



2. From the **Display Clients** tree, expand the **Remote Desktop Services** branch and right click the **FTV\_CookieDemo** item and select **Copy**.



- 3. Type *FTV\_Studio* in the Enter new Display Client Name text box and click the OK button.
- 4. Double click the new FTV\_Studio Display Client item.
- 5. Click the **Next** button on the **Client Name** page of the wizard.
- 6. Click the Next button on the Display Client Options page of the wizard.

7. From the **Remote Desktop Services and Workstation Options** page of the wizard, uncheck the **Enforce Primary** checkbox and click the **Next** button.

🗳 Display Client Wizard	X
Remote Desktop Services and Workstation Option Select the options for this Display Client	ons 🔗
Connection Options Allow Auto-Login Application Link SmartSession Finforce Primary Instant Failover	
2 < Back Next > Finish Ca	incel Help

8. From the Screen Resolution / Scaling Options page of the wizard, change the Resolution to 1280x800. Click the Next button.

📽 Display Client Wizard	x		
Session Resolution / Scaling Options Enter scaling options and session resolution if desired setting is different from the screen.	$\prec$		
Session Scaling Options Maintain Aspect Ratio Scale Down Only			
Session Resolution Options			
Cancel Help			

We are assigning the 1280x800 resolution here so that the Display Client will scale nicely on the Asus ZenPad in the next section.

9. From the **Display Client Members** page of the wizard, remove **RDS2** from the **Selected Remote Desktop Servers** list, leaving just **RDS1, click Next.** 

🕿 Display Client Wizard	×
Display Client Members Select the Remote Desktop Servers for this Display Client.	$\mathfrak{>}$
Available Remote Desktop Servers Selected Remote Desktop Server	ers
RDS2 (10.6.10.52)	
Edit Server List	•
Kext Sack Cancel	Help

10. From the **AppLink** page of the wizard, replace the **Program Path and Filename** and **Command Line Options** with the ones below (you can also copy and paste this path from the **LabPaths.txt** file by right clicking the **Notepad** icon pinned to the start bar and selecting **LabPaths.txt**):

#### Program Path and Filename:

C:\Program Files (x86)\Rockwell Software\RSView Enterprise\VStudio.exe

#### Command Line Options:

/o /type:sed /app:CookieFactory /lang:1033

Click the Finish button.

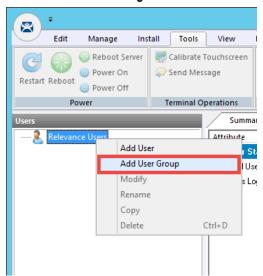
🕿 Display Client Wizard	×
AppLink Enter the linked application path.	$\aleph$
- AppLink Path	
Program Path and Filename rogram Files (x86)\Rockwell Software\RSView Enterprise\VStudio.exe	
Browse	
Command Line Options	
2 /o /type:sed /app:CookieFactory /lang:1033	
Browse	
Start in the following folder	
Browse	
3	
<back next=""> Finish Cancel</back>	Help

# Create an Engineer User Group

1. Click the **Users** icon *i* in the ThinManager tree selector.



2. From the **Relevance Users** tree, right click the **Relevance Users** node and select **Add User Group**. This will launch the **Relevance User Configuration Wizard**.



3. From the **Relevance User Group Information** page of the wizard, enter *Engineer* as the **User Name** in the **Group Name** frame. Click the **Next** button.

Relevance User Configuration Wizard
Relevance User Group Information Enter the Relevance User Group name.
Group Name
Password Verify Password Customize Password Options Group Setting
Group Change Group
Permissions
< Back Next > Finish Cancel Help

ThinManager 8 included much tighter integration with Active Directory. For example, a Relevance User Group can be automatically synchronized with an Active Directory group. In doing so, ThinManager would automatically create Relevance Users for each member of the synchronized Active Directory group. It should be noted that only 1 AD Security Group can be used to synchronize with Active Directory in ThinManager. This limitation is because an Active Directory user can be a member of multiple Active Directory groups, but ThinManager does not support this membership model (i.e.: a Relevance User can only belong to one Relevance User Group). ThinManager can also synchronize with an Organizational Unit and automatically create the associated Relevance users.

4. From the **Display Client Selection** page of the wizard, check the **Group Setting** checkbox. Select **Yes** from the **Add User-specific Display Clients** radio button group. Click the **Next** button.

Relevance User Configuration Wizard
Display Client Selection Select "Yes" to specify Display Clients for users in this group.
Add User-specific Display Clients?
Answer "Yes" here if you want to select user-specific Display Clients in addition to the Display Clients that are in the terminal configuration. Any user-specific clients will be added to the clients specified in the terminal configuration.
< Back Next > Finish Cancel Help

Clicking the Group Setting checkbox will pass the setting onto members of the group.

5. Select **FTV\_Studio** from the **Available Display Clients** list and click the **Right Arrow** button to move it to the **Selected Display Clients** list. Click the **Group Setting** checkbox and then click the **Next** button.

🕿 Relevance User Configuration Wizard	×			
Display Client Specification Select the Display Clients to which users in this group can connect.				
Available Display Clients	Group Setting 🔽 2			
Remote Desktop Services	FTV_Studio			
Edit Display Clients	Override			
< <u>B</u> ack <u>N</u> ext >	Finish Cancel Help			

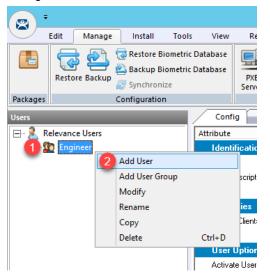
- 6. From the **Windows Log In Information** page of the wizard, click the **Next** button.
- 7. From the **Terminal Interface Options** page of the wizard, note that you can override the default **Terminal** settings by making changes here. Leave the default settings in place. Click the **Next** button.
- 8. From the **Terminal Hotkey Options** page of the wizard, click the **Next** button.

9. From the **User Group Options** page of the wizard, click the **Activate Display Client at Log In** checkbox, as well as its **Group Setting** checkbox. This setting will pull the user's configured **Display Clients** to the foreground at the **Terminal** when they login. Click the **Finish** button.

🕿 Relevance U	Jser Configuration Wizard	x
User Group Options Select options for users in this g	group	$\aleph$
Log In / Log Out Options	Group Setting	
Inactivity Timeout Reset Sessions at Logout	120 seconds	
Activate Display Client at Log In		
User Schedule	Group Setting	
Terminal Effects I✓ Enable Terminal Effects	Group Setting 🗖	
Shadowing Allow terminal to be shadowed	Group Setting	
Allow Interactive Shadow	2	
< Back Next >	Finish Cancel	Help

# Create an Engineer User

- 1. Expand the **Relevance Users** node.
- 2. Right click the newly created **Engineer User Group** and select **Add User**. This will launch the **Relevance User Configuration** wizard.



3. From the **Relevance User Information** page of the wizard, check the **Active Directory User** checkbox if it is not already checked. Click the **Search** button.

Relevance User Configuration Wizard	×
Relevance User Information Enter Relevance usemame, password and permission information.	$\mathfrak{C}$
Active Directory User	
AD User Name	
2 Search	
Customize Password Options	
Group	
Change Group	
Copy Settings	
Permissions	
< Back Next > Finish Cancel	Help

4. From the **Search for AD User** dialog box, click the **Search** button.

		Search for AD User	×
Filter	Contains	Recurse Security Groups	Locations
Name		User Principal Name	
		ОК	Cancel

5. Select **Ed** from the user list and then click the **OK** button.

	Search for AD User	
	Recurse 🔽	Locations
Filter Contai		Search
Name	User Principal Name	^
Administrator Ed Guest krbtgt	ed@tmlab.loc	=
labuser loc01	labuser@tmlab.loc loc01@tmlab.loc	
loc02 loc03 loc04	loc02@tmlab.loc loc03@tmlab.loc loc04@tmlab.loc	
loc05 Mike	loc05@tmlab.loc	
oscar	oscar@tmlab.loc (2)	Cancel

By linking to an Active Directory User, this Relevance user's credentials will reside in Active Directory, not within ThinManager. You can also create non-linked Active Directory users in ThinManager, in which case their credentials would reside in ThinManager.

6. Back at the **Relevance User Information** page of the wizard, click the **Next** button.

i R	elevance User Config	guration Wizard	×
Relevance User Enter Relevance	Information e usemame, password and p	emission information.	$\mathfrak{>}$
Active Directory			
AD User Name	Ed		
		Search	
Customize	Password Options		
Group			
		Change Group	
Copy Settings			
Copy Settings	from another User	Copy From	
	Permissions		
< Back	Next > Fini	sh Cancel	Help
			. ioip

7. From the Active Directory Password page of the wizard click the Next button.

Note that you can choose to store the Active Directory password for this user within ThinManager. This is sometimes done when using badge readers or fingerprint scanners so the user can either scan his/her badge or scan his/her fingerprint only to login (i.e.: no password entry is required). If the Active Directory password were to change outside of ThinManager, the user would be prompted to enter the new password upon their next login attempt, which would then result in ThinManager storing the updated password.

You can also allow ThinManager to automatically rotate the user's Active Directory password based on predefined criteria, in which case, only ThinManager would know the active password. Many times end users choose to have their terminals automatically login to the Remote Desktop Servers with a service account, and then security is managed within the application delivered. Prior to ThinManager 8, a service account with a nonexpiring password would have to be created in this scenario.

- 8. From the **Card / Badge Information** page of the wizard, click the **Next** button. We will incorporate an RF IDeas badge reader shortly.
- 9. From the **Relevance Resolver Selection** page of the wizard, click the **Next** button.

10. From the **Display Client Selection** page of the wizard, notice that the selection is disabled. This is because we chose **Group Setting** for this setting on the **User Group**. Click the **Next** button.

8	Relevance User Configuration Wizard	x
	Display Client Selection Select "Yes" to specify Display Clients for this user.	$\mathfrak{S}$
	Add User-specific Display Clients?	
	< Back Next > Finish Cancel	Help

11. From the **Display Client Specification** page of the wizard, notice that the selection is disabled here as well. Click the **Finish** button.

🕿 Relevance User Configuration Wizard		×
Display Client Specification Select the Display Clients to which this user car	n connect.	$\aleph$
Available Display Clients     Remote Desktop Services	Selected Display Clients	
, Edit Display Clients	Override	
< <u>B</u> ack <u>N</u> ext >	Finish Cancel	Help

### **Enable User Services for Terminal**

1. Click the **Terminals** icon *From* the ThinManager tree selector.



- 2. Under the Terminals node, double click the VersaView5200 terminal to launch the Terminal Configuration Wizard.
- 3. Click the Next button on the Terminal Name page of the wizard.
- 4. Click the Next button on the Terminal Hardware page of the wizard.
- 5. Click the Next button on the Terminal Options page of the wizard.
- 6. From the **Terminal Mode Selection** page of the wizard, check **Enable Relevance User Services**. Click the **Next** button.

🕿 Terminal Configuration Wizard	×
Terminal Mode Selection Select the operating modes for this terminal	$temp{}$
Teminal Mode	
1 I Enable Relevance User Services	
Enable Relevance Location Services	
Enable MultiMonitor	
Enable MultiStation	
9	
< Back Next > Finish Cancel	Help

7. From the **Display Client Selection** page of the wizard, remove the **Overview Display Client** from the **Select Display Clients** listbox and add the **FTV\_CookieDemo Display Client**.

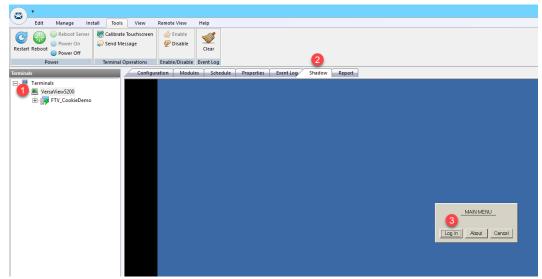
Display Client Selection Select the Display Clients to use on this terminal Available Display Clients	🕿 Terminal Configuration Wizard	×
Remote Desktop Services Desktop EXC_OEECalc FTV_cookieDemo FTV_instartFizz FTV_Studio Camera Terminal Shadow Workstation Workstation Cuertice Edit Display Clients Override		$\mathfrak{a}$
Edit Display Clients Override	Remote Desktop Services	
		Ourite
< Back Next > Finish Cancel Help		2

8. Right click **VersaView5200** and select **Restart Terminal** to apply the change.

When deploying **Relevance Users** for the first time, Enabling **Relevance User Services** at the **Terminal** is a commonly missed step. Without Enabling **Relevance User Services** at the terminals where you want to enable Relevance User logins, the Login option will not be available from the **Main Menu**. If you would like to Enable **Relevance User Services** for all of your terminals, you can create a **Terminal Group**, enable it there, and check the **Group Setting** checkbox. Each Terminal member of the Terminal Group would then have it enabled. Again, **Terminal Groups** will be explored in <u>Section 13</u>.

### Login as Engineer User

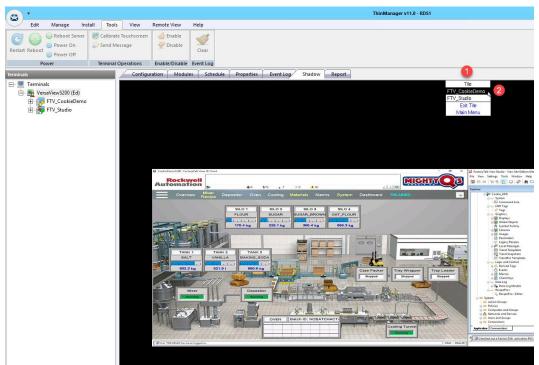
- 1. From the **Terminals** icon in the ThinManager tree selector, select **VersaView5200**.
- 2. Click the **Shadow** tab from the Details Pane.
- 3. Hit CTRL-m to access the Main Menu.
- 4. From the Main Menu, click the Log In button.



- 5. From the Log In popup, enter *Ed* as the User Name.
- 6. From the **Password** popup, enter *rw* as the **Password**.
- 7. Once logged in, the View Studio Display Client should be launched. Notice that there are now 2 Display Clients listed under the VersaView5200 Terminal in the Terminals tree. Also notice that the VersaView5200 Terminal label now indicates that (Ed) is logged in there.



8. Click and hold the **Display Client Selector** within the **Shadow** and hover over the **FTV\_CookieDemo Display Client** to activate it.



- Click and hold the Display Client Selector again and hover over the FTV\_Studio Display Client to activate it. Tiling is also available. This can be controlled within the VersaView5200 Terminal Profile or overridden through the User Configuration Wizard.
- 10. Click the Display Client Selector once more and this time select Main Menu.
- 11. From the Main Menu, click the Log Off button. Ed will be logged off, and the FTV\_Studio Display Client will be removed.

There is an Inactivity Timeout setting available either at the User Group level or at the User object itself that will automatically logoff the Relevance User after a period of inactivity. The default is 120 seconds. It can be found on the last page of the User Configuration Wizard.

If Ed were to leave VersaView5200 and log into another Terminal (either thin client, PC or mobile device), his content would follow him. You can control what happens to a Disconnected session with the Session Collection in Windows Server 2012 or newer.

If you would prefer Ed to only receive content at a specific Terminal, you can use ThinManager Access Groups (introduced in <u>Section 10</u>) to apply permissions to specific Display Clients. Access Groups can be configured from the Manage ribbon. Once an Access Group is created, it can then be associated with a Relevance User Group. The same Access Group can then be applied as a Permission on the Display Client(s) that you want to restrict or provide access to. When you apply these restricted Display Clients to a Terminal, they will only become visible when a user assigned to that Access Group logs into the Terminal. ThinManager ships with the TermMon ActiveX control that can be utilized by any ActiveX container, like FactoryTalk View SE. The ActiveX extends most of the ThinManager feature set to the ActiveX container, so you can then programmatically control many elements of ThinManager right from FactoryTalk View SE. As an example, you can trigger a Touchscreen Calibration to launch from a button within FactoryTalk View SE using the ActiveX control. You can also respond to ThinManager events from within FactoryTalk View SE. You can experience the TermMon ActiveX control in <u>Section 18</u>. More details on the ActiveX control can be found at: <a href="http://www.thinmanager.com/kb/index.php/TermMon\_ActiveX\_Control">http://www.thinmanager.com/kb/index.php/TermMon\_ActiveX</a>

# Add RF IDeas Badge Reader

An RF IDeas Badge Reader could be connected to a physical thin client via USB. Since we are using a virtual thin client, we will be unable to test the results of this section, but will still go through the steps to add the module.

- 1. From the **Terminals** icon in the ThinManager tree selector, double click the **VersaView5200** terminal profile.
- 2. Click the Next button on the Terminal Name page of the wizard.
- 3. Click the **Next** button on the **Terminal Hardware** page of the wizard.
- 4. Click the Next button on the Terminal Options page of the wizard.
- 5. Click the **Next** button on the **Terminal Mode Selection** page of the wizard.
- 6. Click the Next button on the Display Client Selection page of the wizard.
- 7. Click the Next button on the Terminal Interface Options page of the wizard.
- 8. Click the Next button on the Hotkey Configuration page of the wizard.
- 9. Click the Next button from the Log In Information page of the wizard.
- 10. Click the Next button from the Video Resolution page of the wizard.

11. From the **Module Selection** page of the wizard, click the **Add**... button.

Terminal Configuration Wizard		
Module Selection Select the modules that load on this terminal at boot up.		
Installed Modules		
Module		
RDP Experience Module		
Move Up Move Down		
Add Remove		
Add Remove		
< Back Next > Finish Cancel Help		
	1	

12. From Attach Module to Terminal dialog box, select the RF Ideas pcProx USB Module and click the OK button.

Attach Module to Terminal		
Module Type All Modules 🖵 Show Advanced Modules 🗆		
On-Screen Keyboard Configuration Module PanJit TouchSet Touch Screen Driver PenMount Touch Screen Driver RDP Experience Module RDP Port Module RDP Serial Port Redirection Module RDP Session IP Module Redundant Ethernet Module RF Ideas pcProx Module		
RFIdeas pcProx Sonar Module Screen Saver Module Second Network Module		

The release of ThinManager 11 includes the new USB ID Reader Module, which enables ThinManager to support generic Badge Reader modules that act as a keyboard emulator.

13. Select the **RF Ideas pcProx USB Module** from the Installed Modules list and click the **Configure** button.

🕿 Terminal Configuration Wizard	×
Module Selection Select the modules that load on this terminal at boot up.	times
Installed Modules	
Module	
RDP Experience Module	
RF Ideas pcProx USB Module	
Add Remove	Move Up Move Down
< <u>B</u> ack <u>N</u> ext > F	inish Cancel Help

14. From the **Module Properties** dialog box, select **RDR-80582AK0** from the **Model** drop down list and click the **Done** button.

Module Properties		
Model Mode Bits in ID Number (AK0 Only) Bits in Facility Code (AK0 Only) Zero Pad Facility Code and ID (AK0 Only) Allow Manual TermSecure Logon Prompt for TermSecure Password Expose Card ID to TermMon ActiveX Control	RDR-805824K0     Image: Constraint of the second seco	
Set to Default	[ Cano	cel

- 15. Back at the **Module Selection** page of the wizard, click the **Finish** button.
- 16. Right click VersaView5200 and select Restart Terminal to apply the change.
- 17. We want ThinManager to prompt us to assign new badges to users. To enable this option, click the **View** ribbon, followed by the **Options** icon.



18. From the **Options** window, check the **Display "Create New User" dialog for unknown users** and click the **OK** button.

Options	×
General Options Display "Create New Terminal" dialog for unknown terminals. Display "Create New User" dialog for unknown users.	
□ Icon Options □ □ Minimize to the System Tray.	
License Options Warn if license will expire 10 day(s). A value of o disables	
Cancel	

19. At this point, if you had a badge reader, you would take the **badge** and tap it on the RF IDeas badge reader.

20. If this was a new badge to ThinManager, you would be presented with the option to assign it to a user. **NOTE:** Since you do not have a badge reader in the Cloud lab, you will not see this window appear.

Relevance User Configuration Wizard	×	
User Replacement Assign this card number to an existing user or create a new user		
New Card Number : 54089 Click "Assign Card Number to Existing User" to replace the card number of an existing user. To create a new user click "Next".		
Assign Card Number to Existing User		
TermSecure User to replace:		
< Back Next > Finish Cancel	Help	

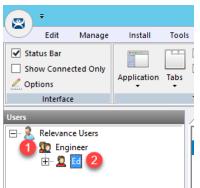
# Configure ThinManager to Cache Password

In the next steps you will configure ThinManager to cache Ed's password, so he does not have to enter it for a configurable amount of time after initial login.

1. Click the **Users** icon <sup>1</sup> in the ThinManager tree selector.



2. Expand the Engineer group and double click the icon for Ed.



3. Click the **PIN Options** button on the **Relevance User Information** page of the wizard.

🕿 Relevance User Configuration Wizard	×
Relevance User Information Enter Relevance username, password and permission information.	$\aleph$
Active Directory User	
Relevance User Information	_
AD User Name Ed	
Search	
Customize	
Password Options PIN Options	
Group	
Engineer Change Group	
Copy Settings Copy Settings from another User Copy From	
Permissions	
< <u>B</u> ack <u>N</u> ext > Finish Cancel	Help

4. From the **PIN Maintenance Options** popup, click the **Change** button next to **Cache authorization is disabled**.

PIN Maintenance Options	;	×
PIN Options Minimum PIN Length Maximum PIN Length	4	
Use a temporary PIN		
Cache authorization is disabled	Change	
PIN Maintenance		
Require User to change PIN every	0 days	
Require User to change PIN at next l	login 🔽	
User PIN		
PIN		
Verify PIN		
	OK Cancel	

5. Enable password caching for 1 minute by entering a 1 in the input field next to the **Cache authorization for** item. Click **OK**.

Authorization Cache	×
Cache authorization for	minutes
Clear Authorization Cache for this user	Clear
2 ок	Cancel

6. Click **OK** on the **PIN Maintenance Options** popup, followed by the **Finish** button.

As previously mentioned, you could also configure ThinManager to permanently store a user's password, so that they only provide a single factor (i.e.: badge, fingerprint scan) to authenticate. Furthermore, ThinManager can be configured to automatically rotate the password at a configurable interval to comply with password change policy.

- 7. Return to the shadow of the VersaView5200 terminal, hit CTRL-m on the keyboard to open the Main Menu.
- 8. Click the Log In button.
- 9. Enter *ed* as the **User Name** with a **Password** of *rw* as before to login as Ed.
- 10. Hit CTRL-m on the keyboard to open the Main Menu again, and click the Log Off button.
- 11. Once Ed has been logged off, hit CTRL-m on the keyboard one more time to return to the **Main Menu** and click the **Log In** button.
- 12. This time you will notice that you only have to enter *ed* as the username since the password has been cached by ThinManager for 1 minute. Password caching is generally used with badging and/or fingerprint scanning. Log Off Ed.

# Add Multifactor Authentication with a PIN and Password Storage

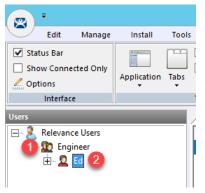
As part of ThinManager 10, a permanent or temporary PIN can be assigned to Relevance Users as an additional option for authenticating.

In the next steps you will configure ThinManager to store the Active Directory password for Ed so that a password will not be required, and instead you will assign a PIN to Ed's user account and require the PIN to authenticate.

1. Click the **Users** icon <sup>2</sup> in the ThinManager tree selector.



2. Expand the Engineer group and double click the icon for Ed.



3. Click the **PIN Options** button on the **Relevance User Information** page of the wizard.

🕿 Relevance User Configuration Wizard 💌		
Relevance User Information Enter Relevance username, password and permission information.		
✓ Active Directory U:		
AD User Name	Ed	
		Search
	Customize Password Options PIN (	Options 1
- Group		
Engineer		Change Group
Copy Settings		
Copy Settings from another User Copy From		
Permissions		
< Back Next > Finish Cancel Help		

4. Click the **Change** button within the **PIN Options** frame.

PIN Maintenance Options	×
PIN Options Minimum PIN Length Maximum PIN Length	4
Use a temporary PIN Cache authorization for 1 minute	Change
PIN Maintenance Require User to change PIN every Require User to change PIN at next l	0 days login 1
User PIN	
	OK Cancel

5. Enter a *0* for the **Cache authorization for** textbox and click the **Clear** button next to the **Clear Authorization Cache** for this user to reset the cache. Confirm the **Clear User Authorization Cache** prompt and click **OK**.

Authorization Cache	×
Cache authorization for 1 0 minu	2
Clear Authorization Cache for this us	Clear
ОК С	ancel

6. Enter *1234* in the **PIN** field within the **User PIN** frame and re-enter in the **Verify PIN** field. Click the **OK** button, followed by the **Next** button.

PIN Maintenance Options	×
PIN Options Minimum PIN Length A Maximum PIN Length Use a temporary PIN	
	Change
PIN Maintenance Require User to change PIN every 0 days Require User to change PIN at next login 1	
User PIN PIN Verify PIN 2 **** 3 OK	Cancel

7. From the Active Directory Password page of the wizard, check the Allow ThinManager to store password checkbox, and enter *rw* as the password. Click the Verify button which should confirm that the credentials entered are valid. Click Next.

🕿 Relevance User Configurat	ion Wizard			×
Active Directory Passwor Password Maintenance C				$\mathfrak{>}$
Active Directory Password – Active Directory Password – Allow ThinManager to st Password	ore password		Re-Sync Acc	ÿ
Password Maintenance Allow ThinManager to Use System Defaults Minimum Password Length Maximum Password Length Rotate Password every	20	days		
Authorization Caching			Change	
	2 ack <u>N</u> ext >	Finish	Cancel	Help

8. On the **Card/Badge Information** page of the wizard, uncheck the **Prompt for Password** checkbox under the **Manual** Login frame, and check the **Prompt for PIN** checkbox. Click the **Finish** button.

🕿 Relevance User Configuration Wizard	×
Card / Badge Information Enter card/badge information if user has one.	$\aleph$
Card / Badge Login  This user will use a card or badge to log in Enter Card/Badge ID number  Prompt for Password  Prompt for PIN	
Biometric Login Enroll Fingerprint Prompt for Password Prompt for PIN	
Manual Login Prompt for Password 2 V Prompt for PIN 3	
< <u>B</u> ack <u>N</u> ext > Finish Cancel	Help

- 9. Return to the shadow of **VersaView5200** and hit CTRL-m again to open the **Main Menu**.
- 10. Click the **Log In** button.
- 11. Enter *ed* as the **User Name**.
- 12. Using the keyboard, enter Ed's **PIN 1234**, to complete the login process. As before, the **FTV\_Studio Display Client** should be delivered.
- 13. Once finished experimenting Log Off so that Ed is no longer logged in.

In the example above, we set a permanent PIN for Ed. We could have just as easily required a temporary PIN that Ed would create for himself at the terminal. We could also require him to change this PIN on a scheduled interval.

# Authentication Pass Through

With ThinManager 10 and FactoryTalk View 10 or higher, a **Relevance User** login can be automatically passed into running sessions of FactoryTalk View SE. This is accomplished by seamlessly and securely passing a security token from ThinManager to those instances of FactoryTalk View SE being delivered to the ThinManager-managed terminal where the login occurred. There is no longer a need to hard-code passwords and/or write VBA code to pass login credentials from ThinManager to FactoryTalk View SE.

In the next steps you will configure ThinManager to deliver (2) separate FactoryTalk View SE Display Clients to the virtual thin client in tile mode. The **tmlab\thin01** user will automatically establish the two sessions, as this is the domain user that is assigned to the **VersaView5200** terminal profile. Next you will badge in with Ed's badge and see the results of the built-in Authentication Pass Through feature.

1. From the **Terminals** icon in the ThinManager tree selector, double click the **VersaView5200** terminal profile.

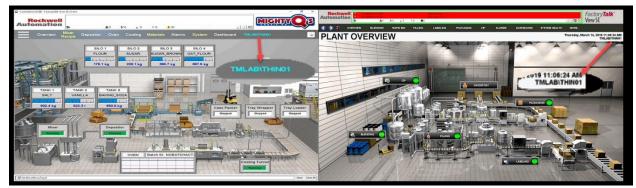


- 2. Click the Next button on the Terminal Name page of the wizard.
- 3. Click the Next button on the Terminal Hardware page of the wizard.
- 4. Click the Next button on the Terminal Options page of the wizard.
- 5. Click the **Next** button on the **Terminal Mode Selection** page of the wizard.

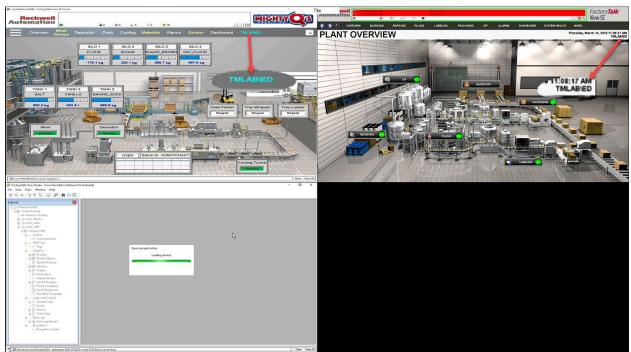
6. From the **Display Client Selection** page of the wizard, select **FTV\_InstantFizz** from the **Available Display Clients** list and click the **Right Arrow** button to move it to the **Selected Display Clients** list, click the **Finish** button.

🕿 Terminal Configuration Wizard	×
Display Client Selection Select the Display Clients to use on this terminal	$\aleph$
Available Display Clients  Remote Desktop Services  Desktop EXC_OEECalc FTV_CookieDemo FTV_InstartFizz FTV_Studio Camera Terminal Shadow Workstation	Selected Display Clients
Edit Display Clients	Override
< <u>B</u> ack <u>N</u> ext >	Finish Cancel Help

- 7. Right click the **VersaView5200** terminal from the **Terminals** tree and select **Restart Terminal** to apply the changes. Click **Yes** to the confirmation dialog.
- 8. Shadow the VersaView5200 terminal and confirm that user tmlab\thin01 is signed-in to both FactoryTalk View SE client sessions.



- 9. From the shadow, hit CTRL-m on the keyboard to open the Main Menu.
- 10. Click the Log In button.
- 11. Enter *ed* as the **User Name** and *1234* as the **PIN**. Verify that **tml1ab\ed** user automatically logged into both **FactoryTalk View SE** display clients, and that the **FTV\_Studio** client is delivered in tile mode.



- 12. Hit CTRL-m on the keyboard again to open the Main Menu.
- 13. Click the Log Off button.
- 14. Verify that the **tmlab\thin01** user is logged back into the tiled FactoryTalk View SE display clients.

#### **Remove Tiled Display Clients**

1. Click the **Terminals** icon **Figure** from the ThinManager tree selector.



- 2. From the Terminals tree, double click the VersaView5200 terminal to launch the Terminal Configuration Wizard.
- 3. Click the **Next** button on the **Terminal Name** page of the wizard.
- 4. Click the Next button on the Terminal Hardware page of the wizard.
- 5. Click the Next button on the Terminal Options page of the wizard.
- 6. Click the **Next** button on the **Terminal Mode Selection** page of the wizard.
- 7. Remove the **FTV\_InstantFizz Display Client** from the **Selected Display Clients** list. The **FTV\_CookieDemo** should be the only **Selected Display Client**. Click the **Finish** button.

🕿 Terminal Configuration Wizard	×
Display Client Selection Select the Display Clients to use on this terminal	$\cong$
Available Display Clients	Selected Display Clients
Edit Display Clients < <u>B</u> ack <u>N</u> ext >	Override

8. Right click the **VersaView5200** terminal from the **Terminals** tree and select **Restart Terminal** to apply the changes. Click **Yes** to the confirmation dialog.

STOP Checkpoint Question: <u>https://thinmanager.com/cloudlabs/section09/</u>

This completes the **User Based Content Delivery** section of the lab. Continue on to deliver location based content with Relevance Location Services.

### Section 10: Relevance Location Services – Location Based Content Delivery

### Overview

So far we have assigned and delivered content to a terminal, as well as content to a user. The next level of the content delivery model is **Location**. When talking about mobility on the plant floor, providing access anywhere to applications that control moving processes may cause more problems than solve. ThinManager **Relevance** provides the tools to safely provide access to these applications because you can define a **Location** and associate **Display Client**(s) with that **Location**. When a mobile device leaves a specified **Location**, the content associated with that **Location** will be no longer delivered to the mobile device. Different users may receive different content from the same **Location** based on their **Access Groups** in ThinManager.

So how does ThinManager determine a mobile device's location? By using Location Resolver technologies like:

- 1. Quick Response Codes (QR Codes)
- 2. Bluetooth Beacons
- 3. Wireless Access Points
- 4. Global Positioning Systems (GPS)

Relevance supports iOS, Android and Windows mobile devices. For iOS devices, ThinManager offers the iTMC application which is available through the App Store. For Android devices, ThinManager offers the aTMC application which is available through the Google Play Store. And for Windows tablets, ThinManager offers WinTMC, which is a Windows based application that essentially emulates a ThinManager terminal. In order to leverage all of the available Location Resolver technologies on a Windows Tablet, it is recommended that Windows 10 be utilized.

**Location Resolvers** can be easily registered through iTMC, aTMC or WinTMC. In this section you will register a QR Code to represent a location of a Logix PLC.

Once you have registered your **Location Resolvers**, you can then assign them to **Locations** created within ThinManager, and in turn, specific **Display Clients** can be associated with that **Location**.

As an example, let's say we would like to apply laminated QR Codes to all of our process automation assets, so that our Maintenance staff could walk up to an instrument with their mobile device, scan a QR Code, and instantly receive a series of documents and/or or applications that are assigned to that instrument. To do so, we would first need to register each QR Code from the mobile device (using a ThinManager client application). Within ThinManager, we would create the **Display Clients** necessary for the desired documentation. This might include a series of **Display Clients** for Adobe Reader that open specific user manuals and/or standard operating procedures located on a file share. With the **Display Clients** created, we would then create a new **Location** in ThinManager, assign the **Display Clients** to it, and then associate the new QR Code **Resolver** to the **Location**.

We can also assign a default **Location** to a **Terminal**, which would enable a mobile device to interact with that **Terminal** in some very unique ways. Instead of applying **Display Clients** to a **Terminal** like we have throughout the lab so far, we would assign the **Display Client**(s) to the Location and then assign the **Location** to the **Terminal**. This extra level of indirection creates some very interesting possibilities. For instance, we could allow a user to scan a QR Code at the terminal that would actually **Transfer**, or redirect, the content from the terminal to the mobile device. We could also confine access to this content by applying a Bluetooth Beacon to "geo-fence" the user. When the user walks outside of the range established for the Bluetooth Beacon, the content would automatically be removed from the device, as it would be returned to the terminal. In this example, the **Transfer** is considered a **Resolver Action**. ThinManager **Relevance** supports 5 **Resolver Actions**:

- 1. Forced Transfer
- 2. Manual Transfer
- 3. Clone
- 4. View Only Shadow
- 5. Shadow

The Forced Transfer re-directs Display Client(s) from a terminal to a mobile device without requiring approval at the terminal. Manual Transfer, on the other hand, would require a user's acknowledgement at the terminal to approve the Transfer request. Clone would spin up new, independent sessions of the Display Clients assigned to the terminal, while View Only Shadow and Shadow would do just what you would expect. This lab section is composed of the following tasks:

- 1. Install iTMC on Your Mobile Device (iOS Users)
- 2. Install aTMC on Your Mobile Device (Android Users)
- 3. Create Terminal Shadow Display Client
- 4. Create Terminal Profile for Mobile Device
- 5. Assign Terminal Profile to Mobile Device
- 6. Create Public Display Server
- 7. Reassign Display Client to Public Display Server
- 8. Login as Engineer User
- 9. Create Logix Designer Display Client
- 10. Register QR Code Location Resolver from Mobile Device
- 11. Create Engineer Access Group
- 12. Create Relevance Location for Logix PLC
- 13. Resolve to Location from Mobile Device

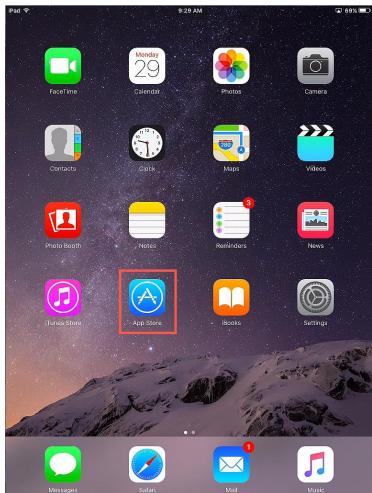
QR Codes are essentially more robust alphanumeric versions of barcodes. QR Codes can be generated and printed from several websites. Bluetooth Beacons are essentially proximity sensors for mobile devices. They offer a tunable signal strength, and hence range, from 0 to approximately 50 meters. ThinManager 8 introduced support for the iBeacon, which utilizes Apple's Bluetooth beacon protocol. There are numerous iBeacons available in various forms. Wireless Access Points expose a unique identifier called a BSSID which ThinManager can use to determine on which Access Point a mobile device is connected. GPS offers accurate location resolution down to 5 feet, but is only for outdoor applications.

Fencing (or geo-fencing) is defined as combining resolvers to limit access to specific Display Clients based on Location. For instance, a Bluetooth Beacon can be used to geo-fence in a QR Code so that a mobile device must be within range of the Bluetooth Beacon when they scan the QR Code to actually resolve to the associated Location and receive its content. Once the mobile device is outside the range of the Bluetooth Beacon, the Display Clients associated with the Location would not be delivered to the mobile device.

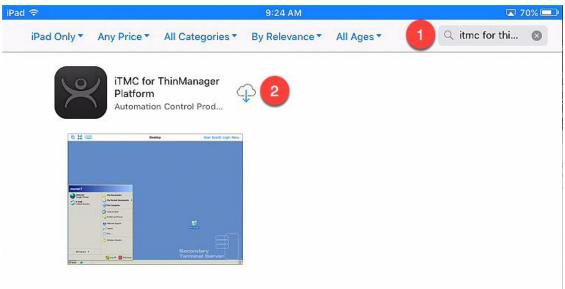
# Install iTMC on Your Mobile Device (iOS Users)

If you will be using an iOS mobile device, you will need to install iTMC in order to complete the mobility portions of this lab. <u>If you</u> have an Android mobile device, you may skip to **Install aTMC on Your Mobile Device (Android Users)** below.

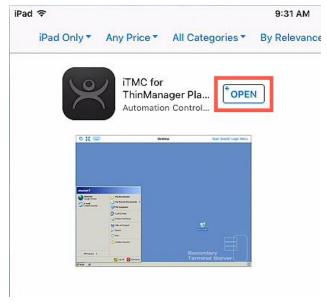
1. Launch the App Store from your iOS device.



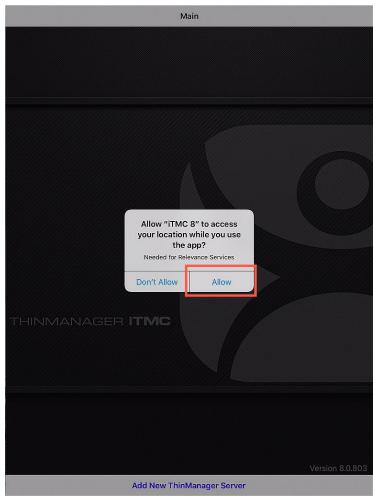
2. In the **Search** field, enter *iTMC* for *ThinManager Platform*. Touch the **Download** icon.



3. Once the download is complete, touch the **OPEN** button.

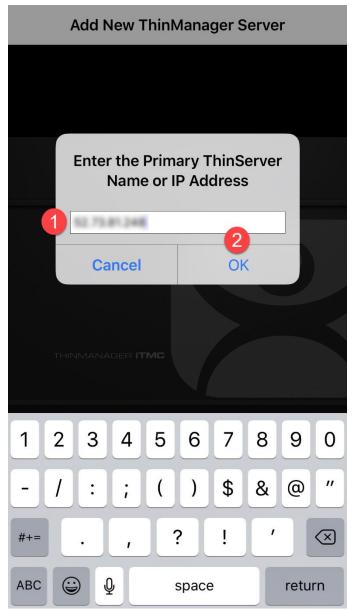


4. Launch **iTMC**. If it requests to access to your location while using the app, touch the **Allow** button.



iOS treats Bluetooth beacons as Location Services devices, so if you intend to use beacons with an iOS device, you will need to enable Location Services for iTMC.

5. Enter **the public IP address** of your **RDS1** server and touch the **OK** button.



6. Enter a **Description** for this connection and touch the **Save** button.

Cancel	Add ThinM	lanager So	erver	
DESCRIPT	ON			2
DemoKit	1			
PRIMARY -	THINMANAGER	SERVER IP		
52.73.81	248			
SECONDA	RY THINMANAC	GER SERVER	IP	
Enter IP .				
q w	e r t	yu		o p
as	d f	g h	jk	Ι
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space

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return

# Install aTMC on Your Mobile Device (Android Users)

If you will be using an Android mobile device, you will need to install aTMC in order to complete the mobility portions of this lab.

1. Ensure you mobile device has an Internet connection and open Chrome.



2. From **Chrome**, enter the following **URL**: *downloads.thinmanager.com*. Touch on the **aTMC** download link (1.0.6.apk in the screen shot below, but you may see a newer version which is ok).

ThinManager Downloads X		≱ 🗟 🖬 5:40
← → C 🚺 tps://do	wnloads.thin	manager.com/\ 🟠 🌵
TM 9.0 Service Pack 4	8/15/2017	106 MB - md5: dbe75005ec077745f97246cdbc675a Release Note
irmware Packages		
Firmware Package 8.1.4	8/8/2017	termpack-8.1.4.pl 50.9 MB - md5: 604acee592b0484494437273bcd1d
Firmware Package 8.0.4	7/29/2016	termpack-8.0.4b.pl 50.3 MB - md5: f986eebf561646d8a24754f586c2eb
Firmware Package 7.1.6	4/7/2016	termpack-7.1.6.pl 42.5 MB - md5: bb249601cd68aabadd708fc2f16949
Firmware Package 6.0.16	4/18/2014	termpack-6.0.16.pl 27.2 MB - md5: 8faf47089bc9fe55dcf65a265689a
Firmware Package 5.0.5	3/10/2014	termpack-5.0.5.pl 20.7 MB - md5: 5d6deb9219eb157b2ec293417424as
ermMon ActiveX Control		
TermMon Demo Application 7.0.5	4/25/2016	TermMon Demo Application 7.0.5.z 122.1 KB - md5: 6a2717efd25aa53501f4d862fba35b
		Usage Informatio
TermMon ActiveX Control 7.3.0	4/25/2016	TermMon 7.3.0.00 94 KB - md5: a599890b5b67b99777d89f83a89adt Usage Informatio
hinManager Clients		
iTMC 8.0.809	1/31/2017	iTMC 8 on the App Store on iTune
WinTMC 3.1.2 (Windows 8 and Newer)	11/4/2016	WinTMC_312_Install.m 25.2 MB - md5: 5931caf0466331d10b4b331a6b08fc
	11/4/2010	Release Note Prerequisite Informatio
WinTMC 3.1.2 (Windows 7 and Older)	11/4/2016	WinTMC_312_Legacy_Install.m 24.9 MB - md5: 3ffaf6a19b7c9ebe4add296118b1b3
with we s. t. z (windows / and older)	11/4/2010	Release Note Prerequisite Information
aTMC 1.0.6	10/26/2016	2,1.0.6.ap
arm Can Databasa		aTMC on the Google Play Sto
ermCap Database		tormoon db 0.0.1
TermCap 9.0.11	8/22/2017	termcap.db.9.0.1 4.4 MB - md5: c78647c5e087ee7ca6e42865915883
ouchscreen Calibration		
Touch Screen Calibration Program	4/5/2007	CalTouchScreen.e) 20 KB - md5: 746b8b0018e7c889e3371a357af03c

aTMC can also be downloaded from the Google Play Store.

3. Once **aTMC** is downloaded, install it.

			* 🗟	÷ 5:4	7 PM
≡ Inte	rnal storage			Q	
C > root	> sdcard > Down	load			
	<b>1.0.6.apk</b> 04/23/19 5:44 PM			7.23	MB
$\mathbb{R}$	aTMC				
	ou want to install ss to:	this applica	tion? It will get		l
Ø	ake pictures and vide	os			
	approximate location ( precise location (GPS a				
	Cancel		Install		
				(+	
	5		ō		

4. Once **aTMC** is installed, launch it. Give this connection a **ThinServer Name** (DemoKit in the screen shot below), and then enter the **public IP address** of your assigned **Cloud** server. You can find the **Public IP Address** of your **RDS1** server on the **Desktop Wallpaper of RDS1** in the top right corner. Touch the **Next** button.

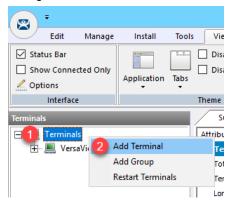
	<b>A</b>								\$ 🛜 ‡	🕒 10:28 AM
aTMC		ADD I	NEW THII	NSERVER					G ADD	THINSERVER
_	_		rver Nan	ne						_
	DemoKit 🚺									
		Primar	y 2							
		Secon								
			aury							
0		123		:		:;;:		Ŷ	-	
	l <sup>!</sup> 2	@ 3	; # 4	<sup>\$</sup> 5	% 6	^ 7	& 8	*	9 ( (	) <sup>)</sup>
q [	<b>w</b> <sup>1</sup>	е	r	t	у	u	i	0	р *	×
а	S	d	f	g	h	: j	; k		1 🤺 [	Next
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5. Click the Add button.

				💲 🛜 🗊 10:28 AM
aTMC				
	ADD NEW THINS ThinServer Name DemoKit Primary Secondary			
	CANCEL		1 ADD	
	5	습	Ð	

### Create Terminal Profile for Mobile Device

- 1. Click the **Terminals** icon from the ThinManager tree selector.
- 2. From the **Terminals** tree, right click the **Terminals** node and select **Add Terminal**. This will launch the **Terminal Configuration Wizard**.



3. Type ZenPad as the Terminal Name on the Terminal Name page of the wizard. Click the Next button.

🕿 Terminal Configuration Wizard	×
Terminal Name Enter the name for this terminal, select the terminal group to which this term choose to copy the configuration from another terminal.	ninal belongs, or
Terminal Name ZenPad This must be a unique name using letters, numbers, hyphens (-), and underscores (_) only.	Description
Terminal Group	Change Group
Copy Settings	Copy From
Permissions       < Back     Next >	Cancel Help

4. Select Generic from the Make/OEM drop down list and Android Device from the Model drop down list. Click the Next button.

🖀 Terminal Configuration Wizard	×
Terminal Hardware Select the manufacturer and model of this ter	minal.
Use this to configure the type of hardware for this	teminal.
Make / OEM 1 GENERIC	•
Model 2 Android Device	•
OEM Model Android	
Video Chipset UNKNOWN	
Terminal Firmware Package	Model Default
	Terminal will run Package 8.2
Terminal ID and IP Address	Clear
Terminal ID None	Edit
	EOI
3	
< <u>B</u> ack	> Finish Cancel Help

If you are using an iOS device in the lab, you would select **Apple** as the **Make / OEM** and **iOS Device** as the **Model**.

- 5. Click the **Next** button on the **Terminal Options** page of the wizard.
- 6. Check the Use Display Clients, Enable Relevance User Services, and Enable Relevance Location Services checkboxes on the Terminal Mode Selection page of the wizard. Click the Next button.

🕿 Ter	rminal Configuration Wizard	x
Terminal Mode Selection Select the operating mo		$\mathfrak{S}$
Terminal Mode		
	nce User Services Ince Location Services	
🗖 Enable MultiMi	onitor	
🔲 Enable MultiSt	alion	
	3 Next > Finish Cancel	Help

- 7. Click the **Next** button from the **Display Client Selection** page of the wizard.
- 8. Click the Next button on the Terminal Interface Options page of the wizard.
- 9. Check the Enable QR Code Location Ids and Enable Bluetooth Locations checkboxes from the Relevance Options page of the wizard. Click the Next button.

Same Terminal Configuration Wizard	x			
Relevance Options Select the types of Relevance Resolvers to use on this client. Optionally choose an assigned location for this client				
Assigned Location	Change Clear			
Options Enabled Resolver Types 1 F Enable QR Code Location Ids 2 F Enable Bluetooth Locations Enable GPS Locations F Enable Wi-Fi Locations				
Use Force Transfer to restore Assigned Location Allow selection of Location manually Enforce fencing on manual Location selection Confirm before entering a location Resolver Update Interval 3000 ms				
Sack Next > Finish Cancel	Help			

10. From the Log In Information page of the wizard, enter *tab01@tmlab.loc* as the Username and *rw* as the Password. Click the Verify button to validate these credentials, and then click the Next button.

8	Terminal Configuration Wizard				
Log In Information Enter the log in information to log in automatically. Leave the log in information blank or fill only some of the fields to force manual log in.					
_ W	/indows Log In Information				
Us	emame 1 tab01@tmlab.loc Search				
Pa	ssword 2 - Password Options				
Do	main <u></u> Verify				

11. From the Video Resolution screen of the wizard, select **1280x800** as the Resolution, and keep other default settings. Click the Finish button.

8	Terminal Configuration Wizard	x
	o Resolution Select the video resolution for this terminal.	$\mathfrak{R}$
Sele	ect Video Resolution	
	These are the resolutions supported by the Thin Client model you selected.	
1	Resolution     Color Depth     Refresh Rate       1280x800      64K Colors     0Hz	
	2	
	< Back Next > Finish Cancel Help	

# Assign Terminal Profile to Mobile Device

Unlike a thin client like the **VersaView 5200**, we are not going to deliver ThinManager firmware to a tablet, which already has its own OS. Instead, we will use the **aTMC** app to essentially emulate a ThinManager thin client.

1. Launch aTMC from your mobile device.



2. Touch the DemoKit ThinServer to connect to it.

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aTMC			
PemoKit :			
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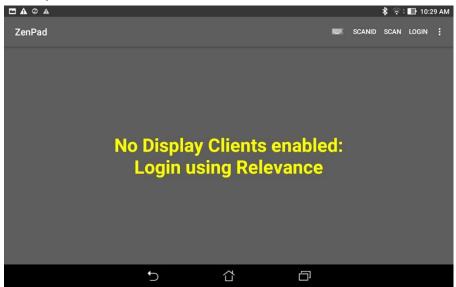
3. Since we have not assigned a **Terminal Profile** to the **ZenPad** yet, **aTMC** will prompt us to assign one of the available profiles to it. Touch the **ZenPad** profile that we created in the previous steps.

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aTMC						8
			-			
Sele	ct Terminal to Repla	ce:				
	Create new Terminal					
	ZenPad					
			CANCEL			
	5		D			

4. If you receive a prompt to allow **aTMC** access to the device's location, touch the **Allow** button.

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	ZenPad									
		0	Allow <b>aTMC</b> to a	ccess this	device's	location	ו?			
					Deny	Allow				
			<u> </u>							
			ſ	$\Box$		Ū				

5. The **ZenPad Terminal Profile** will be delivered to the tablet. Since we did not assign any **Display Clients** to the terminal profile, we will receive a blank screen.



## **Create Public Display Server**

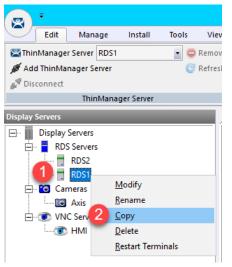
The Display Servers we created earlier in the lab utilized private IP addresses (10.6.10.51 for RDS1 and 10.6.10.52 for RDS2), which will not be reachable from your remote tablet. Therefore, we will create an additional Display Server that utilizes the public IP address of RDS1 so your tablet can connect to it. This method is fine for testing and lab purposes, but if you need remote access to your Remote Desktop Servers, a Virtual Private Network (VPN) or Remote Desktop Gateway is recommended.

1. Click the **Display Servers** icon in the ThinManager tree selector.

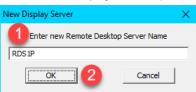
The tree selector can be expanded or collapsed using the bar above directly above it.



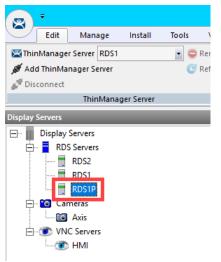
2. From the **Display Servers** tree, expand the **RDS Servers** branch, right click **RDS1** and click **Copy**.



3. From the New Display Server input box, enter *RDS1P* and click the **OK** button.



4. Double click the newly created **Display Server RDS1P**.



- 5. From the **Introduction** page of the wizard, click the **Next** button.
- From the Remote Desktop Server Name page of the wizard, change the IP address from 10.6.10.51 to the public IP address of your RDS1 image. In addition, <u>delete</u> the User Name, Password and Verify Password entries. Click the Finish button.

🖁 Remo	te Desk	top Serv	er Wizard						>
			<b>rver Nam</b> )esktop Sei		e and Log li	n informatior	۱.		×
Rem	ote Desk	top Serv	er Name —						
Name	•	F	RDS1P						
IP Ac	ddress	1	su .	а.	8.3			Discover	]
							Chan	ige Group	
-Log I	In Inform	ation							
User 1	Name	2						Search	
Passw	vord	3							
Verify	Passwor	4							
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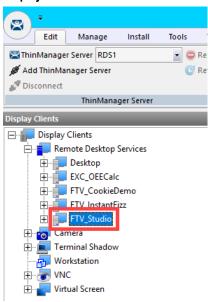
# Reassign Display Client to Public Display Server

When we created the **FTV\_Studio Display Client** in the previous section, we assigned the **RDS1 Display Server** to it, which has a private IP address of 10.6.10.51. This IP address will not be reachable by your remote tablet, so we will temporarily reassign it to **RDS1P**.

1. From ThinManager, click the **Display Clients** icon **International From the ThinManager tree selector**.



2. From the **Display Clients** tree, expand the **Remote Desktop Services** branch and double click the **FTV\_Studio Display Client**.



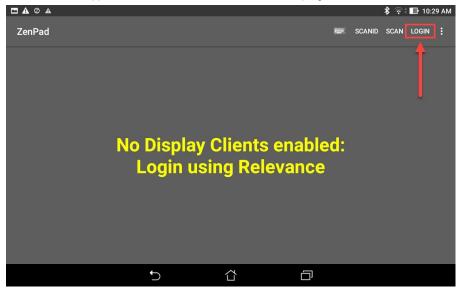
- 3. Click the Next button from the Client Name page of the wizard.
- 4. Click the Next button from the Display Client Options page of the wizard.
- 5. Click the Next button from the Remote Desktop Services and Workstation Options page of the wizard.
- 6. Click the Next button from the Session Resolution / Scaling Options page of the wizard.

7. From the **Display Client Members** page of the wizard, remote **RDS2** from the **Selected Remote Desktop Servers** list box and add **RDS1P** instead. Click the **Finish** button.

🕿 Display Client Wizard	×							
Display Client Members Select the Remote Desktop Servers for this Display Client.								
Available Remote Desktop Servers Selected Remote Desktop Server	ers							
RDS1 (10.6.1.51) RDS2 (10.6.1.52)								
	•							
Edit Server List								
2								
< Back Next > Finish Cancel	Help							

# Login as Engineer User

1. From the **aTMC** application, touch the **LOGIN** button in the top right corner.



2. Enter *ed* as the **username** and touch the **Ok** button.

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Zen	Pad												
						Е <u>ed</u> 1	Enter usern	ame					
							CANCEI	<mark>2</mark> ∟ ок					
ed	we	Dr	re	rd	D.C.	except	excellen	t exactl	y 're	edit	expect	exar	mple 🔽
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q	]	w	е		r	t	у	u	i	o		р *	×
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#### 3. Enter 1234 as the **PIN**.

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ZenPad							:
		Enter PIN For Ed		_			
	1	2 2	<mark>3</mark> 3				
	4	5	6				
ľ	7	8	9				
	Clear	0	Enter				
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4. Upon successful authentication, you should receive the **FTV\_Studio Display Client**. This is the same session that was delivered to the virtual thin client in the previous section. In fact, it is configured to just pick up right where Ed left off.

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		1	SCANID	SCAN	LOGOFF	:
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And the second s	the brokes course this sector.		E A R			

5. If you perform a 3 finger hold down, **aTMC** will go **Full Screen**, and the **FTV\_Studio** session should scale perfectly to the ZenPad display.

Other tablet gestures are supported as well. Pinch and zoom works as expected. Once zoomed in, you can pan around the screen using two fingers on the tablet. You can also perform a 2 finger hold down, which will toggle the on screen keyboard.

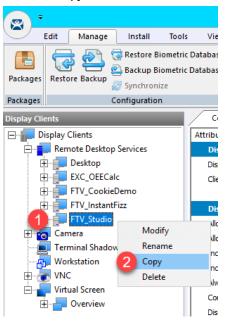
## Create Logix Designer Display Client

In these last sections of the lab, we are going to set ThinManager up to deliver Logix Designer to the ZenPad just by simply scanning a QR Code. The first step is to create the Display Client for Logix Designer.

1. From ThinManager, click the **Display Clients** icon **International From the ThinManager tree selector**.



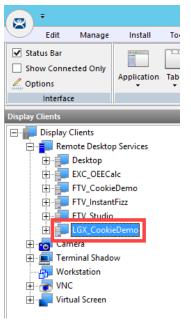
2. From the **Display Clients** tree, expand the **Remote Desktop Services** branch and right click the **FTV\_Studio** item and select **Copy**.



3. Type LGX\_CookieDemo in the Enter new Display Client Name text box and click the OK button.



4. Double click the new LGX\_CookieDemo Display Client item.



- 5. From the **Client Name** page of the wizard, click the **Next** button.
- 6. From the **Display Client Options** page of the wizard, click the **Next** button.
- 7. From the Remote Desktop Services and Workstation Options page of the wizard, click the Next button.
- 8. From the Screen Resolution / Scaling Options page of the wizard, click the Next button.
- 9. From the Display Client Members page of the wizard, click the Next button.

10. From the **AppLink** page of the wizard, replace the **Program Path and Filename** and the **Command Line Options** paths with the ones below (you can also copy and paste this path from the **LabPaths.txt** file by right clicking the **Notepad** icon pinned to the start bar and selecting **LabPaths.txt**):

#### Program Path and Filename:

C:\Program Files (x86)\Rockwell Software\Studio 5000\Logix Designer\ENU\v30\Bin\LogixDesigner.Exe

#### Command Line Options:

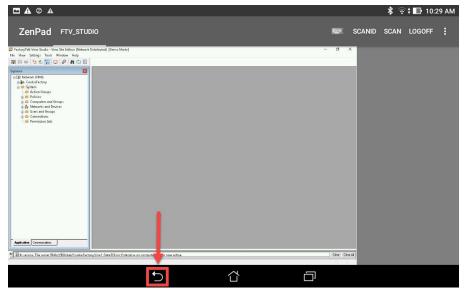
"C:\Lab Files\CookieLine\_V30\_Emulate.ACD"

🙄 Display Client Wizard	×
AppLink Enter the linked application path.	$temp{}$
AppLink Path	
Program Path and Filename	
ftware\Studio 5000\Logix Designer\ENU\v30\Bin\LogixDesigner.Exe	
Browse	1
Command Line Options	-
C:\Lab Files\CookieLine_V30_Emulate.ACD	
art in the following folder	1
Browse	]
Be sure to enclose with double quotes.	
2	
< <u>B</u> ack <u>N</u> ext> <b>Finish</b> Cancel	Help

11. Click the **Finish** button.

# Register QR Code Location Resolver from Mobile Device

1. From aTMC, touch the **Back** button to return to the aTMC **Main Menu**. Touch **Yes** on the confirmation dialog.



2. From the aTMC **Main Menu**, touch the **Settings** button (3 vertical dots below the **DemoKit** button), followed by the **Manage ThinServer** button.

□ <u>+</u> ⊚ □			💲 🗔 🔞 🖬 3:54 PM
aTMC			
DemoKit Manage ThinServer Remove ThinServer			
	ţ)		

3. From the aTMC **Settings** window, touch the **Register QR Code** button.

			💲 🗔 📑 12:35 PM
Settings			
RELEVANCE RESOLVERS			
Register QR Code			
Register Bluetooth Beacon			
Register WiFi Access Point			
CAMERA			
Set Camera Location			
DEBUGGING			
Debug Logging: Disabled			
	Ú		

4. If you receive a prompt requesting permission for **aTMC** to take pictures and record video, touch the **Allow** button.

					💲 🛜 🕆 🕕 10:30 AM
RELEVANCE RESOLVERS					
Register QR Code					
Register Bluetooth Beacon					
Register WiFi Access Point	<b>•</b> • • •			and video 2	
CAMERA	O All	ow <b>aTMC</b> to tak			
Set Camera Location			Deny	Allow	
DEBUGGING					
Debug Logging: Disabled					
	÷		ά		

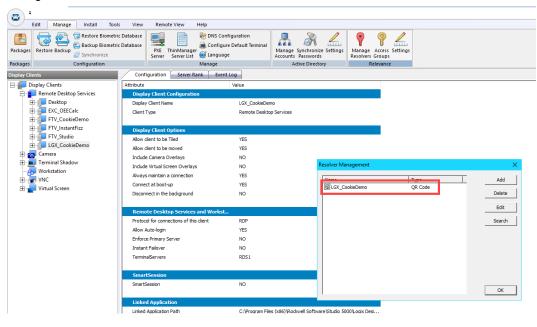
5. A camera window will appear. Point the Tablet camera at the **QR Code** below.



6. Once the **QR Code** is scanned by aTMC, you must give it a name. Touch the **USE DATA AS NAME** button which will use the data embedded in the **QR Code** as the name of the new **Location Resolver** (**LGX\_CookieDemo**).

🖽 🛨 🦏 📾					<b>∦</b> ⊒ ?₀	‡ 📑 3:55 PM
aTMC ENTER IDENTIFIER NAME						
	Data: LGX_Cod	okieDemo				
	Enter Name:					
		CANCEL USE DATA A	IS NAME OK			
$\odot$	123	;;		Ŷ		
1 2 @	3 #	4 \$ 5 *	6 7	8 *	9 (	0)
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- 7. You should receive a successful confirmation dialog. Touch the **OK** button, followed by the **Back** button to return to the **Main Menu**.
- 8. To confirm the creation of the Location Resolver, return to ThinManager on RDS1, click the Manage ribbon, followed by the Manage Resolvers icon. You should see a new QR Code resolver named LGX\_CookieDemo in the Resolver Management window. Click the OK button.



#### Create Engineer Access Group

We would like to restrict access to the new Location Resolver just created and its associated content. To do so, we will create a new Access Group and assign it to a Location in the following steps.

1. Click the Manage ribbon, followed by the Access Groups icon.



2. From the Access Groups popup, click the Add button.

Access Groups	x
	<u> </u>
	Edit
	Add
	Delete
	Calc Permissions
	Access Groups

3. Click the Select Windows Security Group button.

	Access Group	x
Enter Group Name	Select Windows Security Group	OK Cancel Edit Members

The Select Windows Security Group provides the ability to link an Access Group to a Widows Security Group. Therefore, you could manage access to ThinManager resources (Terminals, Display Clients, etc.) through Windows Security Groups as well. You could also use the TermMon ActiveX within an ActiveX container, like View SE, to detect when a ThinManager logon event occurs and then to determine that user's Windows Security Group membership to determine their appropriate access within the application. You can learn more about the **TermMon ActiveX** in <u>Section 18</u>.

4. From the Select Security Group to Add window, expand the Users item and select the Engineer group.

Select Security Group to Add	x
Allowed RODC Password Replication Group	~
Cert Publishers	
🖽 Cloneable Domain Controllers	
⊕ · Denied RODC Password Replication Group	
DHCP Administrators	
DHCP Users	
⊞. DnsAdmins	
Domain Admins	
Domain Controllers	
Engineer	
E Enterprise Admins	$\sim$
ОК	Cancel
Received and the second s	

5. From the Access Group window, click the OK button.

	Access Group	x
Enter Group Name	Engineer	OK
	Select Windows Security Group	Cancel
		Edit Members

6. From the Access Groups window, click the OK button.

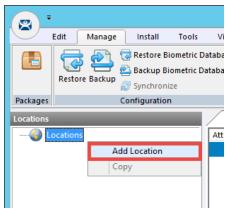
Access Groups	×
Unrestricted All Users All Terminals All Locations Engineer	<u>OK</u>
	Edit
	Add
	Delete
	Calc Permissions

## Create Relevance Location for Logix PLC

1. Click the **Locations** icon in the tree selector.



2. From the ensuing **Locations** tree, right click the **Locations** tree node and select **Add Location**.



3. From the Location Name page of the Location Configuration Wizard, enter *LGX\_CookieDemo* as the Location Name. Click the Next button.

8	Location Configuration Wizard	x
1	Location Name Enter Name for this location	
	Location Name 1 LGX_CookieDemo	
	This must be a unique name using letters, numbers, hyphens (-), and underscores (_) only.	
	Description	
	Location Group Change Group	
[	Copy Settings	
	Copy Settings from another Location	
	Permissions	1
	< Back Next > Finish Cancel Help	

- 4. From the **Location Options** page of the wizard, click the **Next** button.
- 5. From the **Display Client Selection** page of the wizard, select the **LGX\_CookieDemo Display Client** and click the **Right** arrow button to move it to the **Selected Display Clients** list, click **Next**.

S Location Configuration Wizard	×
Display Client Selection Select the display clients to use at this location	
Available Display Clients   Remote Desktop Services   Desktop  EXC_OEECalc  FTV_CookieDemo  FTV_Instant Rizz  FTV_Studio  GX_CookieDemo  Teminal Shadow  Workstation	Selected Display Clients
Edit Display Clients 2    	Override Finish Cancel Help

6. From the **Windows Log In information**, enter *loc01@tmlab.loc* as the **Username** and *rw* as the **Password**. Click the **Verify** button to confirm the credentials are valid. Click the **Next** button.

8	Location Configuration Wizard
	Windows Log In information Enter Windows usemame and password information.
	- Windows Log In Information
	Usemame 1 loc01@tmlab.loc Search Password 2 -
	Domain <u>3</u> Verify Password Options
	4
	< Back Next > Finish Cancel Help

7. From the **Relevance Resolver Location** page of the wizard, click the **Add** button.

3	Location Configura	tion Wizard	x
Relevance Resolver Selection Assign Relevance Resolvers to this location			
Relevance Resolution	Vers	Action	
<	Ш	>	
Add	Delete Edit	1	
< Back	Next> Finis	h Cancel Help	

8. From the **Choose a Relevance Resolver** popup, select **LGX\_CookieDemo** from the **Resolver Name** dropdown list, and **Clone** from the **Choose Action** dropdown list. Click the **Permissions** button.

Choose a Relevance Resolver			
	Only Show Unassigned Resolvers		
Resolver Name	LGX_CookieDemo		
Resolver Description			
Resolver Type	QR Code		
Choose Action	2 Clone		
	Settings		
	3 Permissions		
	OK Cancel		

9. From the **Permissions** window, remove **Unrestricted** from the **Member Of** list, and move **Engineer** to the **Member Of** list. Click the **OK** button **twice**, followed by the **Finish** button.

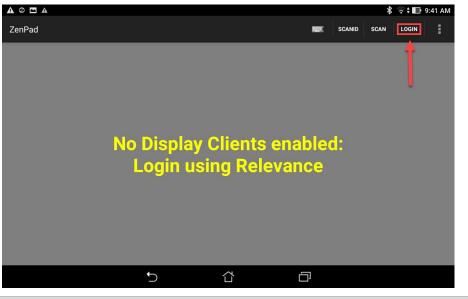
Permissions		
TermSecu	re Access Groups	
Available All Terminals All Users Unrestricted	Member Of	
	()	

## Resolve to Location from Mobile Device

1. Return to **aTMC**. You may have to power the ZenPad back on. If so, you may also have to reconnect **aTMC** to the **DemoKit** server listed.

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aTMC				
DemoKit :				
	5	Ċ	Ū	

2. If not already logged in as Ed, touch the LOGIN button and enter a username of ed and a PIN of 1234.



If aTMC does not show a LOGIN button, please restart the aTMC app.

3. Once logged in as Ed, touch the **SCANID** button in the top right corner.

	*	🗟 🕈 📑 10:2	9 AM
ZenPad ftv_studio esca		I LOGOFF	:
🕼 Factory Tak View State Edition (View Site Edition (Viework Distributed) [Demo Mode] – 🗗 X File View Settings: Tools Window Help			
Dh service. The server MMA//Sitebal/Coolisif settery/Linet Data/Site Enterpoise on computer HM is new active.     Obs Clear All			
5 Å P			

There is also a SCAN button available to the right of SCANID that enables the scanning of barcodes within the delivered applications.

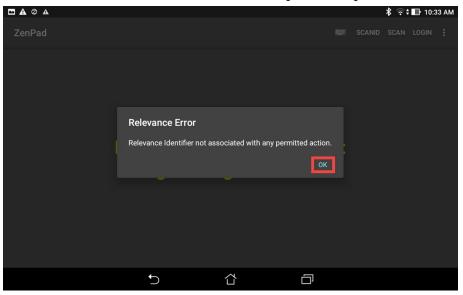
4. The camera window will open within aTMC. Scan the QR Code below (this is the same QR Code we registered earlier).



5. Since Ed is a member of the Engineer Security Group, he is permitted to resolve to the location represented by the QR Code above (which could be laminated and placed on the actual PLC panel). As a result, the Logix Designer Display Client should be delivered with the associated ACD file automatically opened. If not automatically activated, touch the LGX\_CookieDemo tab at the top of aTMC.

			💲 🛜 🗊 10:33 AM
	FTV_STUDIO	LEAVE SCANIE	SCAN LOGOFF
	- 9		Ø ×
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Ċ			

6. To verify the permissions required, touch the **LEAVE** button followed by the **LOGOFF** button and then attempt to rescan the QR Code above. You should receive the following error message.



Checkpoint Question: https://thinmanager.com/cloudlabs/section10/

This completes the Location Based Content Delivery section of the lab. Please continue on to learn about ThinManager Redundancy and Firewall Configuration.

# Section 11: ThinManager Redundancy and Firewall Configuration

# Overview

With ThinManager installed on both **RDS1** and **RDS2** servers, we can now enable automatic synchronization to provide ThinManager redundancy. With redundancy enabled, we will be able to utilize **Windows Firewalls** to demonstrate how the ThinManager firmware and terminal profiles are delivered over the network. On **RDS1**, we will turn on **Windows Firewalls** and open the necessary ports required by ThinManager to communicate. After learning about ThinManager redundancy and firewall configurations, we will disable the secondary ThinManager server for the remainder of the lab sections.

In this section, you will be performing the following tasks:

- 1. Configure Automatic Synchronization
- 2. Add Remote ThinManager Server
- 3. Disable Automatic Synchronization
- 4. Turn On Windows Firewall on RDS1
- 5. Configure Windows Firewall on RDS1
- 6. Disable Secondary ThinManager Server

## **Configure Automatic Synchronization**

As previously mentioned, automatic synchronization is generally used in **Redundant** deployments. It automatically synchronizes the ThinManager configurations between two ThinManager installations so that either ThinManager installation can boot terminals and deliver terminal profiles. In the subsequent steps, you will configure **RDS1** and **RDS2** to be synchronization partners.

1. From ThinManager, click the Manage ribbon followed by the ThinManager Server List icon.



2. The ThinManager Server List Wizard will launch. Click the Next button from the Introduction page of the wizard.

8	ThinManager Server List Wizard	x	
	Manager Server List Wizard Introduction	$\mathbb{R}$	
netwo	hin Manager Server Wizard defines the Thin Manager Servers on your rk. These are the servers to which the thinclients can make monitor ctions.		
The ThinManager Server name must be the name Windows uses to identify your computer on the network.			
If you are using a DNS server you will only enter the server name. If you are not using a DNS server you will enter a server name and IP address. The server name will be for reference only.			
< E	Back Next > Finish Cancel Help		

3. From the **Auto-synchronization Selection** page of the wizard, check the **Automatic Synchronization** checkbox and click the **Next** button.

ChinManager Server List Wizard	x			
Auto-synchronization Selection Check Automatic Synchronization to automatically synchronize the configuration of two ThinManager servers.	$\langle$			
Check the box if you want to use Automatic Synchronization between two ThinManager servers. Leave the box unchecked if you want to use manual synchronization.				
If you have mirrored licenses, then you must use Automatic Synchronization.				
Automatic Synchronization				
Cancel Help				

4. From the Auto-synchronization Configuration page of the wizard, click the Edit button in the Primary ThinManager Server frame.

🕿 Thin	Manager Server List Wizard	x		
Define the primary ar	Auto-synchronization Configuration Define the primary and secondary ThinManager servers. These servers will be synchronized.			
Primary Thin Manager S	Edit			
Name				
IP Address				
- Secondary Thin Manag	er ServerEdit			
Name				
IP Address				
Additional ThinManas	ger Servers			
< Back Next	> Finish Cancel	Help		

5. Enter *RDS1* in the **ThinManager Server** field, followed by the **Discover** button, which should auto-fill the **IP Address** of **RDS1** in the **ThinManager Server IP** Field. Click the **OK** button.

Enter the Primary ThinManager Server Information			
ThinManager Server 1 RDS1 3	ок		
ThinManager Server IP 10 . 6 . 10 . 51	Cancel		

6. Back on the **Auto-synchronization Configuration** page of the wizard, click the **Edit** button from the **Secondary ThinManager Server** frame of the wizard.

8	ThinManager Server List Wizard	x			
Define	Auto-synchronization Configuration Define the primary and secondary ThinManager servers. These servers will be synchronized.				
Primary Th	in Manager Server Edit				
Name	RDS1				
IP Addres	10.6.10.51				
Secondar	y ThinManager Server				
Name					
IP Addres	35				
Addition	al ThinManager Servers				
< Back	Next > Finish Cancel Help				

7. Enter *RDS2* in the **ThinManager Server** field, followed by the **Discover** button, which should auto-fill the **IP Address** of **RDS2** in the **ThinManager Server IP** Field. Click the **OK** button.

Enter the Secondary ThinManager Server Information			
ThinManager Server 1 RDS2	3 ок		
ThinManager Server IP 10 . 6	. 10 . 52 Cancel		

8. Back on the Auto-synchronization Configuration page of the wizard, click the Finish button.

8	ThinManager Server List Wizard	x			
Define the pr	Auto-synchronization Configuration Define the primary and secondary ThinManager servers. These servers will be synchronized.				
- Primary Thin Ma	nager ServerEdit	J			
Name	RDS1				
IP Address	10.6.10.51				
Secondary Thir	Manager ServerEdit				
Name	RDS2				
IP Address	10.6.10.52	1			
Additional Thi	nManager Servers				
< Back	Next > Finish Cancel	Help			

9. To check the state of the synchronization, click the **ThinManager** icon from the button bar.



10. From the **ThinManager Server** tree, select **RDS1**, followed by the **Synchronization** tab. You should see a **Synchronization State** of **Synchronized**.

	Edit Manage Install Tool	ls View	Remote View	Help	
	Restore Backup Biometri Backup Biometri Backup Biometri Synchronize		PXE ThinManage Server Server List		Manage Synchronize Set Accounts Passwords
Packages	Configuration			Manage	2 Ictive Directory
ThinManag	ger Server	Conf	iguration License:	s Properties Versions	Synchronization Event
E 😤 TI	hinManager Servers	Attribute		Value	
18	RDS1	Synch	ronization Mode	Master	
-		Synch	ronization State	Synchronized	
		Synch	ronization Peers	10.6.10.52	

If the Synchronization State does not immediately show Synchronized, simply click on another tab, and return to the Synchronization tab to refresh its state.

Since the first synchronization was initiated from RDS1, it becomes the initial Master. Subsequently, the ThinServer that has been up and running the longest will assume the role of Master.

11. To further confirm the synchronization state, double click the **rds2.tmlab.loc** shortcut on the **RDS1** desktop.



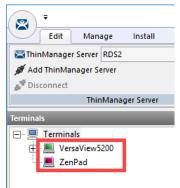
12. If you are presented with a login dialog box, make sure the username is *tmlab\labuser* and enter a password of *rw*. Click the **OK** button.



13. From the **RDS2** desktop, double click the **ThinManager** shortcut on the desktop.



14. Notice that the ThinManager configuration on **RDS2** now has terminals configured since it has been **synchronized** with the configuration from **RDS1**. Close the **ThinManager Admin Console**.



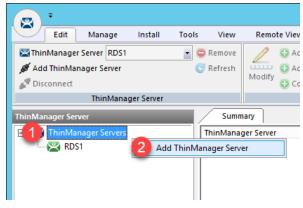
15. Close the remote desktop session on **RDS2**. Click the **OK** button if you are presented with a confirmation dialog box.

🕂 🖬 💵 🖬 🖬	
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#### Add Remote ThinManager Server

The ThinManager Administrative Console can manage not only the ThinServer installed on its machine, but also remote ThinServers installed on remote machines. Keep in mind that the Administrative Console does not have to be installed on the same machine as the ThinServer service, although it often is. So, you could have a number of remote ThinServers, all of which could be remotely managed by a single ThinManager Administrative Console. With that said, only a pair of ThinServers can have their configurations synchronized.

1. From the ThinManager Server tree, right click the ThinManager Servers item and select Add ThinManager Server.



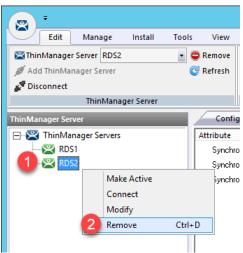
2. From the **ThinManager** popup window, enter *RDS2* in the **Enter ThinManager Server** field and click the **OK** button.



3. Notice that **RDS2** has now been added to the **ThinManager Admin Console**. You could now manage the ThinManager configuration of **RDS2** remotely from **RDS1**.

₹ Edit Manage Install	Tools View	Remote View	Help	
ThinManager Server RDS2 Add ThinManager Server Disconnect	💽 🤤 Remove 🧭 Refresh	Add O Add G Modify O Copy	😵 Delete 🛛 🔒 Lock roup 📺 Rename 💣 Unlock	Find (Ctrl-F) Find Next (F3)
ThinManager Server			Edit	Find
ThinManager Server	Sumn	nary		
Printer Servers	ThinMana	ger Server	Connection State	Version
🔀 RDS1	RDS1		Connected	v11.0 SP1
😤 RDS2	RDS2		Connected	v11.0 SP1

4. Since RDS1 and RDS2 are synchronization partners, managing RDS2 from RDS1 isn't all that useful (since their configurations will always be the same), but it is useful to see how easily this accomplished. With that said, let's remove RDS2 from the Admin Console on RDS1.



5. From the ensuing confirmation dialog box, click the **Yes** button.

ThinManager	x
Remove ThinManager Server RDS2. Are You Sure?	
Yes No	

#### **Disable Automatic Synchronization**

We will disable automatic synchronization to prepare for the remaining advanced lab section(s).

1. From ThinManager, click the **Manage** ribbon followed by the **ThinManager Server List** icon.



2. The ThinManager Server List Wizard will launch. Click the Next button from the Introduction page of the wizard.

8	ThinManager Server List Wizard	x				
	lanager Server List Wizard	$\sim$				
The ThinManager Server Wizard defines the ThinManager Servers on your network. These are the servers to which the thinclients can make monitor connections.						
The ThinManager Server name must be the name Windows uses to identify your computer on the network.						
If you are using a DNS server you will only enter the server name. If you are not using a DNS server you will enter a server name and IP address. The server name will be for reference only.						
< Ba	ack Next > ] Finish Cancel Help					

3. From the **Auto-synchronization Selection** page of the wizard, <u>un</u>check the **Automatic Synchronization** checkbox and click the **Finish** button.

🕿 ThinManager Server List Wizard 🛛 🗙
Auto-synchronization Selection Check Automatic Synchronization to automatically synchronize the configuration of two ThinManager servers.
Check the box if you want to use Automatic Synchronization between two ThinManager servers. Leave the box unchecked if you want to use manual synchronization.
If you have mirrored licenses, then you must use Automatic Synchronization.
1 T Automatic Synchronization
2
< <u>B</u> ack <u>N</u> ext > Finish Cancel Help

# Disable Secondary ThinManager Server

We will disable the secondary ThinManager server for the remainder of the lab sections as well.

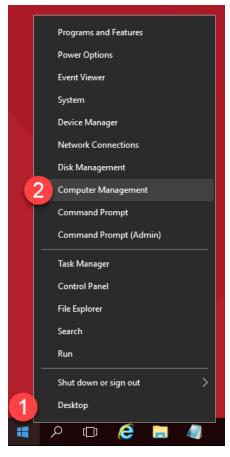
1. Double click the rds2.tmlab.loc shortcut on the RDS1 desktop.



2. If you are presented with a login dialog box, make sure the username is *tmlab\labuser* and enter a password of *rw*. Click the **OK** button.

Windows Security	×				
Enter your credentials					
These credentials will be used t	to connect to rds2.tmlab.loc.				
labuser					
tmlab\labuser					
Remember me					
More choice 2					
ОК	Cancel				

- 3. Close the **ThinManager Admin Console** if it is open.
- 4. Right-click the **Windows Start** button and select **Computer Management**.



5. Expand the **Services and Applications** node and select the **Services** management console. Scroll down to find the **ThinServer** service, right-click and select **Properties.** 

							_		_
Computer Management (Local	Services							Actions	
> P Task Scheduler	ThinServer	Name	Description	Status	Startup Type	Log On As	^	Services	
> R Event Viewer		🆏 Storage Tiers Management	Optimizes t		Manual	Local Syste		More	
> 🙀 Shared Folders	Stop the service Restart the service	🖏 Superfetch	Maintains a	Running	Automatic	Local Syste		71:0	
> 🖉 Local Users and Groups	Restart the service	🆏 Sync Host_5514c	This service	Running	Automatic (D	Local Syste		ThinServer	l
> 🔊 Performance		🥋 Sync Host_bb63f	This service	Running	Automatic (D	Local Syste		More	•••
🛃 Device Manager	Description:	🖏 System Event Notification S	Monitors sy	Running	Automatic	Local Syste			
🔄 Storage	ThinServer	🆏 System Events Broker	Coordinates	Running	Automatic (T	Local Syste			
> 🐞 Windows Server Backup		🏟 Task Scheduler	Enables a us	Running	Automatic	Local Syste			
📅 Disk Management		🥋 TCP/IP NetBIOS Helper	Provides su	Running	Manual (Trig	Local Service			
Services and Applications		🎑 Telephony	Provides Tel		Manual	Network S			
> 1 Internet Information Sei		🔍 Themes	Provides us	Running	Automatic	Local Syste			
Routing and Remote Ac	2	🐘 ThinServer 📃 🔤	ThinServer	Running	Automatic	tmlab\tms			
Services	_	🖏 Tile Data model server	Start	ng	Automatic	Local Syste			
		🍓 Time Broker	Stop	ng	Manual (Trig	Local Service			
		🎑 Touch Keyboard and Han	Pause		Manual (Trig	Local Syste			
		Connect Service	Resume		Manual	Local Syste			
		🍓 TP VC Gateway Service	Restart		Manual	Local Syste			
		🍓 Update Orchestrator Serv	Nestart		Manual	Local Syste			
		🔍 UPnP Device Host	All Tasks	>	Manual	Local Service			
		🔍 User Access Logging Serv	Refresh	ng	Automatic (D	Local Syste			
		🔍 User Data Access_5514c	Nerresh		Manual	Local Syste	1		
		User Data Access_bb63f	Properties		Manual	Local Syste			
		🔍 User Data Storage_5514c	Help		Manual	Local Syste			
		🔍 User Data Storage_bb63f			Manual	Local Syste			
		Ser Experience Virtualizatio	Provides su		Disabled	Local Syste			
		🔍 User Manager	User Manag	Running	Automatic (T	Local Syste			
		🔍 User Profile Service	This service	Running	Automatic	Local Syste			
		🖏 Virtual Disk	Provides m		Manual	Local Syste			
		WMware Alias Manager and		Running	Automatic	Local Syste			
		🔍 VMware CAF AMQP Comm	VMware Co		Manual	Local Syste	~		

6. On the **General** tab, click the **Startup type** drop down list and select **Disabled**, then click the **Stop** button.

ThinServer Pr	roperties (Local Computer)	×
General Log	g On Recovery Dependencies	
Service nan	ne: ThinServer	
Display nam	ne: ThinServer	
Description:	: ThinServer	$\hat{}$
Path to exe "C:\Program	cutable: m Files (x86)\Rockwell Software\ThinManager\thinserver.	exe"
Startup type		$\sim$
	Automatic (Delayed Start) Automatic Manual	
Service stat	Lize Disabled Running	
<u>S</u> tart	Stop Pause Resum	ie
You can spe from here.	ecify the start 3 neters that apply when you start the ser	rvice
Start para <u>m</u>	jeters:	
	OK Cancel	Apply

7. Confirm it has stopped and click **OK**.

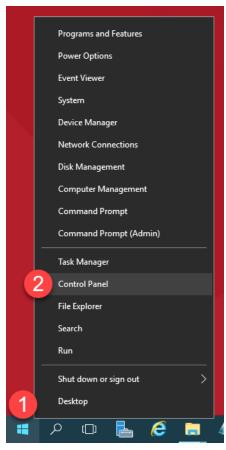
ThinServer Proper	ties (Local Computer)	×
General Log On	Recovery Dependencies	
Service name:	ThinServer	
Display name:	ThinServer	
Description:	ThinServer A	
Path to executab ''C:\Program Files	le: (x86)\Rockwell Software\ThinManager\thinserver.exe"	
Startup type:	Automatic ~	
Service status: <u>S</u> tart You can specify t from here. Start para <u>m</u> eters:	Stopped	]
	OK Cancel Apply	

- 8. You have successfully disabled the **Secondary ThinManager Server**. The remaining lab sections can be completed with a single **ThinManager Server**. Close out of the **Computer Management** console on **RDS2**.
- 9. Close the remote desktop session on **rds2.tmlab.loc** to return to **RDS1**. Click the **OK** button if presented with a confirmation dialog box.

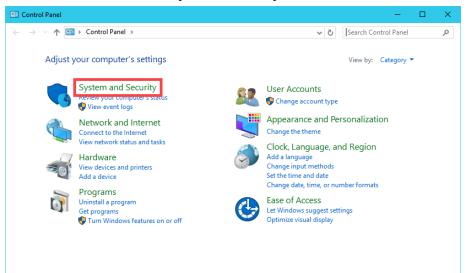
🕂 🛱 al rds2.tmlab.loc	×
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#### Turn On Windows Firewall on RDS1

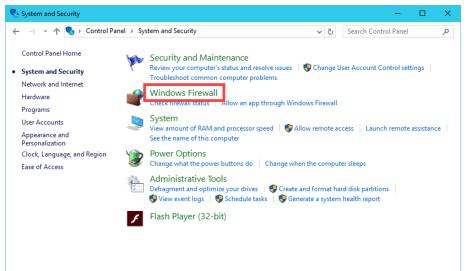
1. With the VersaView5200 virtual thin client still powered on, right click the Windows Start Button on RDS1 and select Control Panel.



2. From the Control Panel, click the System and Security link.



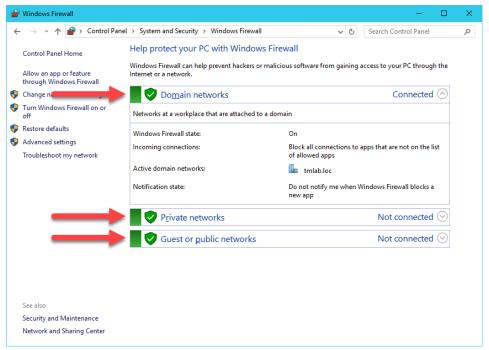
3. From the System and Security page of the Control Panel, click the Windows Firewall link.



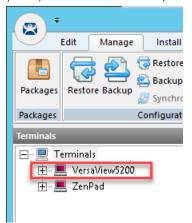
4. From the Windows Firewall page of the Control Panel, click the Use recommended settings button.

Windows Firewall		- 🗆 X
← → × ↑ 🔗 > Control P	Panel → System and Security → Windows Firewall	✓ ♂ Search Control Panel
Control Panel Home	Help protect your PC with Windows	Firewall
Allow an app or feature through Windows Firewall	Windows Firewall can help prevent hackers or n Internet or a network.	nalicious software from gaining access to your PC through the
😌 Change notification settings	Update your Firewall settings	
Turn Windows Firewall on or off	Windows Firewall is not using the recom settings to protect your computer.	mended 👽 Use recommended settings
Restore defaults	What are the recommended settings?	
👎 Advanced settings		
Troubleshoot my network	Do <u>m</u> ain networks	Connected 🔗
	Networks at a workplace that are attached to a	a domain
	Windows Firewall state:	Off
	Incoming connections:	Block all connections to apps that are not on the list of allowed apps
	Active domain networks:	🔤 tmlab.loc
	Notification state:	Do not notify me when Windows Firewall blocks a new app
	P <u>r</u> ivate networks	Not connected $\bigotimes$
See also	Guest or <u>p</u> ublic networks	Not connected 😔
Security and Maintenance		
Network and Sharing Center		

5. The result should be the 3 domain profiles, Domain, Private and Public, should all be Turned On and Green.



6. If you return to ThinManager, and select the Terminals button bar icon, you should see the VersaView5200 terminal icon is now Red, indicating that we have lost our Terminal Monitor Connection with our virtual thin client, since that traffic is now being blocked by the Windows Firewall. The virtual thin client can still receive its content from its source (RDS1) via TCP3389, which is opened by default on the Windows Firewall.

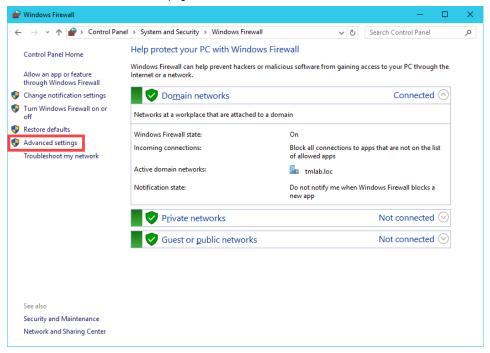


If you had a physical thin client and attempted to reboot it at this point, it would still be able to boot but not from the ThinManager installed on **RDS1**, instead **RDS2** would respond to the PXE request and boot the terminal. Unfortunately, we are unable to demonstrate this in the Cloud as the DHCP request from the virtual thin client does not make it to **RDS2** due to networking restrictions.

#### Configure Windows Firewall on RDS1

Now, let's configure the **Windows Firewall** on **RDS1** to permit the required traffic to restore our communication between ThinManager and the virtual thin client.

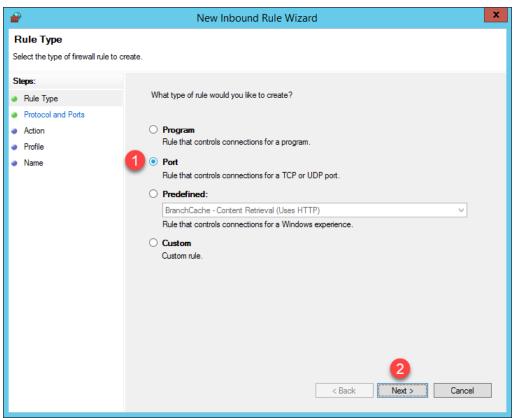
1. Return to the Windows Firewall page of the Control Panel on RDS1 and click the Advanced Settings link.



2. From the **Windows Firewall and Advanced Security** window, right click the **Inbound Rules** tree item and select **New Rule.** 



3. From the **Rule Type** panel of the **New Inbound Rule Wizard**, select the **Port** radio button, followed by the **Next** button.

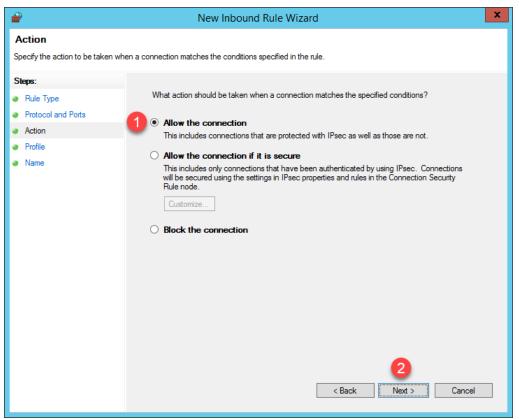


4. From the **Protocol and Ports** panel of the **New Inbound Rule Wizard**, select the **TCP** radio button and enter 2031 in the **Specified local ports** field. Click the **Next** button.

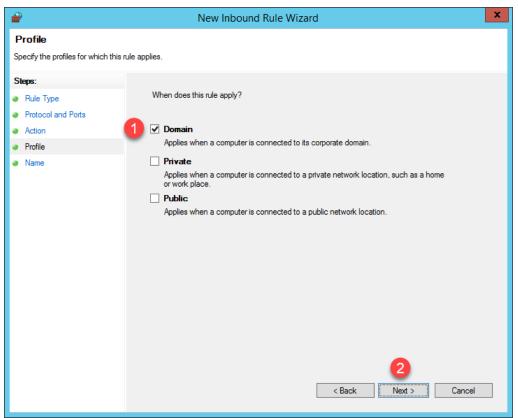
<b>@</b>	New Inbound Rule Wizard
Protocol and Ports	
Specify the protocols and ports	to which this rule applies.
Steps:	
Rule Type	Does this rule apply to TCP or UDP?
Protocol and Ports	1 • тср
<ul> <li>Action</li> </ul>	O UDP
<ul> <li>Profile</li> </ul>	
Name	Does this rule apply to all local ports or specific local ports?
	All local ports
	Specific local ports: 2 2031
	Example: 80, 443, 5000-5010
	3
	< Back Next > Cancel

TCP Port 2031 is required by ThinManager for the Terminal Monitor Connection as well as for the delivery of the Terminal Profile to the terminal when it is booting up.

5. From the Action panel of the New Inbound Rule Wizard, select the Allow the connection radio button and click the Next button.



6. From the **Profile** panel of the **New Inbound Rule Wizard**, check the **Domain** checkbox and <u>un</u>-check the **Private** and **Public** checkboxes. Click the **Next** button.



7. From the **Name** panel of the **New Inbound Rule Wizard**, enter *TCP2031* as the **Name** and *ThinManager* as the **Description**. Click the **Finish** button.

<b>@</b>	New Inbound Rule Wizard	x
Name		
Specify the name and description o	f this rule.	
Steps:		
Rule Type		
Protocol and Ports		
Action		
Profile	Name:	
Name	1 TCP2031	
	Description (optional):	
	2 ThinManager	
	3	
	< Back Finish Cance	el

8. If you return to ThinManager, you should see the **Terminal Monitor Connection** is restored for **VersaView5200** since its icon has returned to **Green**. Terminal shadowing should be restored as well.

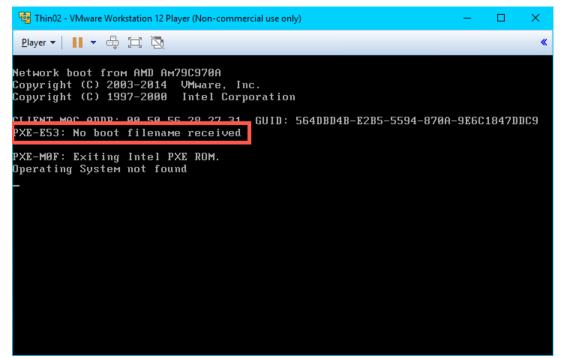
8	Edit Mana	ge Install	Tools View	<ul> <li>Remote Vie</li> </ul>	w Help						
Packages	Restore Back	Backup E 🔊 🖉 Backup E		PXE ThinM	anager er List		ninal	Accounts	Synchronize Se Passwords	2 ettings	Mana Resolv
Packages		Configuratio	n	<u>]</u>	Manage		4	Ad	tive Directory	33	
Terminals			Cor	nfiguration N	Iodules Schedule	Properti	ies	Event Log	Shadow	Repo	rt
⊡ <u>,</u> T	erminals			0					_		
	💄 VersaView52 📕 ZenPad	00			Rockw	ell	4	*	2/7/20	196:2	9:06 /
				Au	tomatio	DN	5			4	L O
				_	Overviev		/lixe ecij		eposito	or	Ove
									-		
				1. S.			~	9		1.1	
				1		1		2	19	7.2 k	g

Terminal **shadowing** actually uses **TCP5900** for communication. This **outbound port** on **RDS1** was already enabled, but the **Terminal Monitor Connection** is first required before being able to establish a **shadow**.

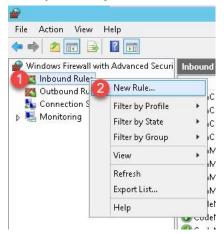
9. Switch to the virtual thin client so we can restart it and watch the boot process. Click the **Player** drop down, followed by the **Power** menu item then the **Restart Guest** item. Click the **Yes** button to the confirmation dialog box.



10. After a few seconds of attempting to acquire a DHCP address, the PXE boot process will timeout. Recall we configured ThinManager to use a Standard DHCP Server. Since VMWare Player is configured for NAT, it will issue the IP address. The error indicates that it probably received the IP address, but that is only 1 part of the PXE boot process – the virtual thin client also needs the boot server IP address(es) and the boot filename, which is supposed to be supplied by ThinManager in our current configuration. We will need to address this requirement in the Windows firewall.



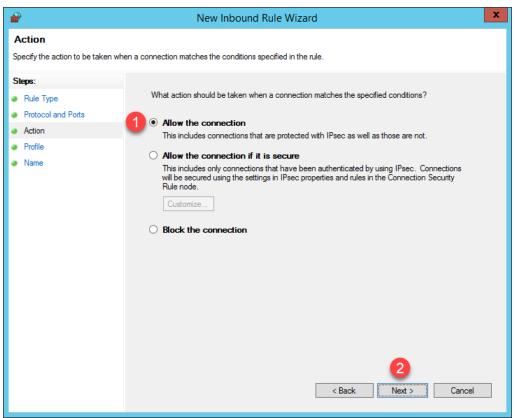
11. While we have addressed the **Terminal Monitor Connection** issue, the virtual thin client will still be unable to boot from **RDS1** with the current **Firewall** configuration. To address this, return to the **Windows Firewall and Advanced Security** window, right click the **Inbound Rules** tree item and select **New Rule.**.



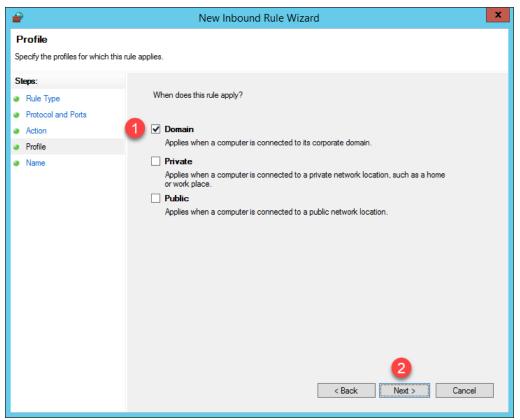
12. From the **Protocol and Ports** panel of the **New Inbound Rule Wizard**, select the **UDP** radio button and enter 67 in the **Specified local ports** field. Click the **Next** button.

🔗 New Inbound Rule Wizard	ı X
Protocol and Ports	
Specify the protocols and ports to	which this rule applies.
Steps:	
Rule Type	Does this rule apply to TCP or UDP?
Protocol and Ports	
Action	● <u>U</u> DP
<ul> <li>Profile</li> </ul>	-
<ul> <li>Name</li> </ul>	Does this rule apply to all local ports or specific local ports?
	○ <u>All local ports</u>
	Specific local ports: 2 67
	Example: 80, 443, 5000-5010
	3
	< Back Next > Cancel

13. From the Action panel of the New Inbound Rule Wizard, select the Allow the connection radio button and click the Next button.



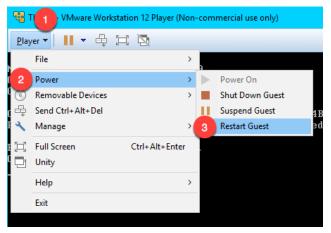
14. From the **Profile** panel of the **New Inbound Rule Wizard**, check the **Domain** checkbox and <u>un</u>-check the **Private** and **Public** checkboxes. Click the **Next** button.



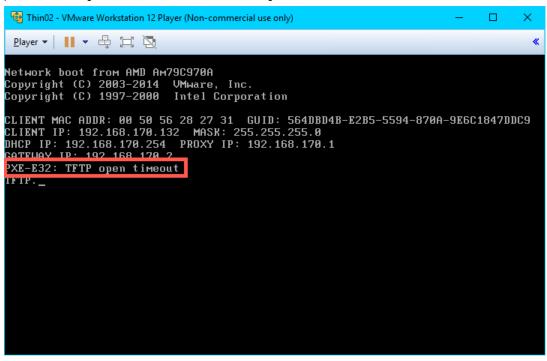
15. From the Name panel of the New Inbound Rule Wizard, enter *UDP67* as the Name and *ThinManager* as the Description. Click the Finish button. Leave the Windows Firewall with Advanced Security window open.

🔗 New Inbound Rule Wizard	l de la construcción de la constru	×
Name Specify the name and description of	of this rule.	
Steps:		
Rule Type		
Protocol and Ports		
Action		
Profile		
Name		
	2 ThinManager	

16. Let's see the result of this firewall change. Return to the virtual thin client, click the **Player** drop dropdown, followed by the **Power** menu item then the **Restart Guest** item. Click the **Yes** button on the confirmation dialog box.

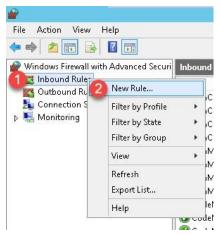


17. This time, the virtual thin client receives an IP address, but now it appears to timeout during the **TFTP** stage of the boot process. Once again, this is due to our firewall blocking this traffic.

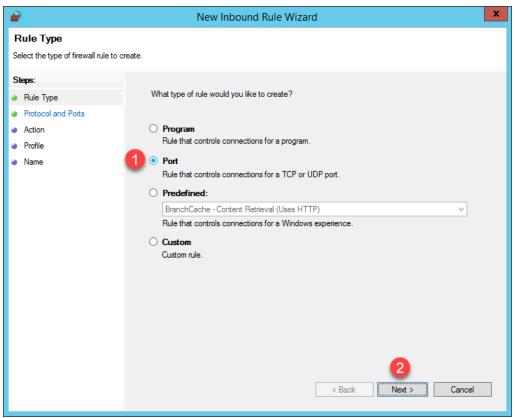


Your IP addresses will most likely be different. The 192.168.x.y subnet is being issued by **VMWare Player** since the virtual thin client is configured for **NAT**.

18. To address this, return to the **Windows Firewall and Advanced Security** window, right click the **Inbound Rules** tree item and select **New Rule..** 



19. From the **Rule Type** panel of the **New Inbound Rule Wizard**, select the **Port** radio button, followed by the **Next** button.

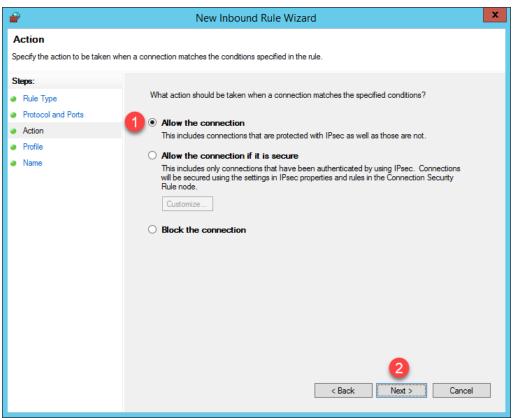


20. From the **Protocol and Ports** panel of the **New Inbound Rule Wizard**, select the **UDP** radio button and enter 69 in the **Specified local ports** field. Click the **Next** button.

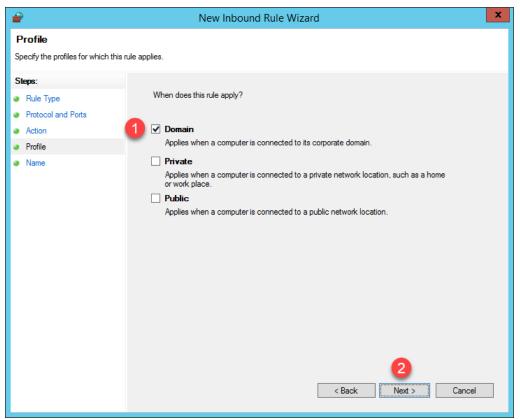
💣 New Inbound Rule Wiza	rd ×
Protocol and Ports	
Specify the protocols and ports t	to which this rule applies.
Steps:	
Rule Type	Does this rule apply to TCP or UDP?
Protocol and Ports	О ТСР
<ul> <li>Action</li> </ul>	UDP O UDP
Profile	
Name	Does this rule apply to all local ports or specific local ports?
	○ All local ports
	Specific local ports: 2
	Example: 80, 443, 5000-5010
	3
	< Back Next > Cancel

UDP Port 69 is required by ThinManager to transfer the firmware to ThinManager Compatible terminals (PXE), like the virtual thin client(s) in this Cloud lab. This transfer is accomplished using Trivial File Transfer Protocol (TFTP). ThinManager Readey terminals, which have the ThinManager BIOS extension image embedded in them by the vendor, also use TFTP but requires a different port. Namely, UDP 69 for TFTP of the firmware.

21. From the Action panel of the New Inbound Rule Wizard, select the Allow the connection radio button and click the Next button.



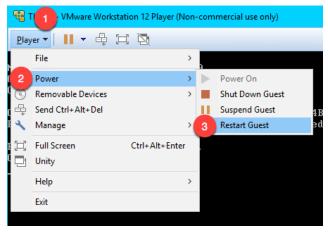
22. From the **Profile** panel of the **New Inbound Rule Wizard**, check the **Domain** checkbox and <u>un</u>-check the **Private** and **Public** checkboxes. Click the **Next** button.



23. From the **Name** panel of the **New Inbound Rule Wizard**, enter *UDP69* as the **Name** and *ThinManager* as the **Description**. Click the **Finish** button.

ú	🛉 New Inbound Rule Wizard					>	×
	lame becify the name and description	of this rule.					
S	eps:						
۲	Rule Type						
۲	Protocol and Ports						
۲	Action						
۲	Profile		Name: UDP69				
۲	Name		00165				
			Description (optional):				
		2	ThinManager				
					3		
				< <u>B</u> ack	<u>F</u> inish	Cancel	

- 24. Close the Windows Firewall with Advanced Security window and the Control Panel.
- 25. Once again return to the virtual thin client, click the **Player** drop down, followed by the **Power** menu item then the **Restart Guest** item.



26. This time, the virtual thin client should complete the boot process.

📲 Thin02 - VMware Workstation 12 Player (Non-commercial use only) –	×
<u>P</u> layer ▼   <b>  </b> ▼ ⊕ [□] ဩ	*
Rockwell Automation ThinManager Network Boot Loader v2.5	
Status : Loading Firmware from ThinManager Server 192.168.170.1	
Terminal IP Information           IP Method         PROXY           Terminal IP         192.168.170.132           ThinManager Server         192.168.170.1           Router         192.168.170.2           Subnet Mask         255.255.255.0           MAC Address         00:50:56:28:27:31	

In addition to the communication ports mentioned in the above steps, **TCP3389** is essential for the **Remote Desktop Protocol** traffic between the **RDS Servers** and the client devices. This port was pre-configured in the **Firewall Rules** when the **Remote Desktop Services** role was added in <u>Section 1</u>. Sometimes it is desired to change the default **RDP** port. This can be accomplished on the **RDS Server** side by modifying a registry entry at:

HKEY\_LOCAL\_MACHINE\System\CurrentControlSet\Control\TerminalServer\WinStations\RDP-Tcp\PortNumber

...and then on the Client side by adding the **RDP Port Module** to the ThinManager **Terminal Profile**. **ThinManager Modules** will be covered in <u>Section 12</u>.

Also keep in mind that you may have hardware-based firewalls to consider and configure accordingly.

One final word on **Firewalls**, ThinManager 9.0 introduced a **Firewall Compatible TFTP** option. Why is this important? As just mentioned, both **ThinManager Ready** and **ThinManager Compatible Terminals** use **TFTP** (Trivial File Transfer Protocol) to transfer the ThinManager firmware to thin/zero clients. The **TFTP** conversation starts at the client side on a specific port (UDP4900 for **ThinManager Ready** terminals, UDP69 for **ThinManager Compatible** terminals). By default, the **ThinManager Server** will respond on a random port per the **TFTP** specification. The random nature of this response can make **firewall** configuration (hardware and/or software) challenging. Most managed **firewalls** can be configured for **TFTP** and intelligently handle the opening and closing of random ports. If not, then a fairly broad range of ports must be opened, which is generally not desirable. By enabling the **Firewall Compatible TFTP** option, ThinManager will respond on the same port initiated by the client (UDP4900 for **ThinManager Ready** terminals, UDP69 for **ThinManager Compatible** terminals), making **firewall** configuration much simpler. This option is available from the **ThinManager Server Configuration Wizard** which is accessible by double clicking the **ThinManager Server** of interest from the **ThinManager Servers** tree.

Checkpoint Question: https://thinmanager.com/cloudlabs/section11/

This completes the section **ThinManager Redundancy and Firewall Configuration**. Please continue on to learn more about **Modules**.

# Section 12: Modules

### Overview

The concept of **modules** was introduced earlier in the lab. **Firmware Packages** were introduced as part of the product as a way to **package** the **firmware** and its associated **modules** in a single unit. A **module** is essentially like a driver that provides additional capability to the **Terminal**. There are **modules** for touchscreen controllers, badge readers and redundant Ethernet, just to name a few. **Modules** will be explored in more detail in this section by experimenting with some of the ones that can be demonstrated in a Cloud environment. Unfortunately, the more common Modules like the USB Touch Screen Driver, Redundant Ethernet Module are not demonstrable in this format.

In this section, you will be performing the following tasks:

- 1. Key Block Module
- 2. Locate Pointer Module
- 3. MultiSession Screen Saver Module

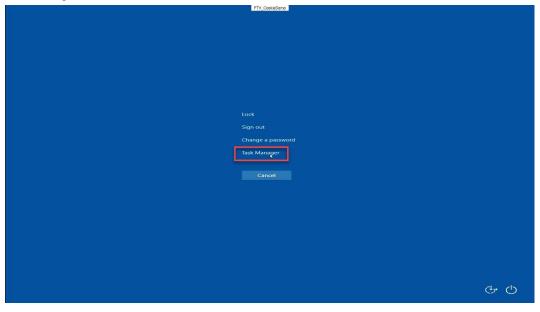
# Key Block Module

Let's explore some of the more commonly used ThinManager Modules.

1. From the virtual thin client hit the CTRL-ALT-DEL icon in the toolbar to send that key sequence to the virtual thin client.



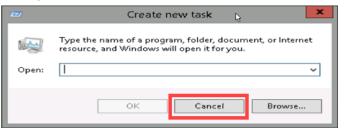
2. Notice this results in the ability to Lock, Sign out, Change a password or even access Task Manager! Click the Task Manager link.



3. From the **Task Manager** window, click the **More details** button at the bottom left, then select the **File** menu item, followed by the **Run new task** item.

1			Τe	as <mark>k</mark> Mar	nager		_ 0	×
Run new task			Services					
Exit	sers D	etails	Services					
					30%	89%		
lame			Status		CPU	Memory		
Apps (2)								
Display client Runtin	me Fram	new			0%	21.4 MB		
🖻 🙀 Task Manager					0.3%	8.4 MB		
Background processe	es (54)	)						
Adobe Acrobat Upd	late Serv	ice			0%	0.7 MB		
🚁 AlmProxyCli Module (32 bit)				0%	3.3 MB			
AOA Server (32 bit)				0%	3.2 MB			
CodeMeter Runtime	e Server				0%	6.7 MB		
COM Surrogate					0%	2.5 MB		
Command Client Se	erver (32	bit)			0%	4.0 MB		
CommandErrorLog	Srv Mod	lule (			0%	2.7 MB		
👂 🍗 Commons Daemon Service Run			0%	168.3 MB				
Data Acquisition RT	Server				0%	2.9 MB		
Datalog Read Client	Module	e (32			0%	2.8 MB		
Fewer details							End ta	sk

4. At this point, we have effectively defeated the intent of using Application Link (eliminating access to other elements within the Windows Desktop) in ThinManager, as the user could launch any application they wish – on the Remote Desktop Server no less! Click the Cancel button and close Task Manager on the virtual thin client.



5. Return to the ThinManager Admin Console. Click the Terminals tree selector icon.



6. This problem is easily rectified using the **Key Block Module** in ThinManager. Double click the **VersaView5200** terminal.



- 7. Click the Next button on the Terminal Name page of the wizard.
- 8. Click the **Next** button on the **Terminal Hardware** page of the wizard.
- 9. Click the Next button on the Terminal Options page of the wizard.
- 10. Click the Next button on the Terminal Mode Selection page of the wizard.
- 11. Click the Next button on the Display Client Selection page of the wizard.
- 12. Click the **Next** button on the **Terminal Interface Options** page of the wizard.
- 13. Click the Next button on the Hotkey Configuration page of the wizard.
- 14. Click the Next button on the Log In Information page of the wizard.
- 15. Click the Next button on the Video Resolution page of the wizard.

16. Click the Add... button on the Module Selection page of the wizard.

🕿 Terminal Configuration Wizard	×
Module Selection Select the modules that load on this terminal at boot up.	$\mathfrak{S}$
Installed Modules	
Module	
RDP Experience Module	
RF Ideas pcProx USB Module	
Add Remove	Move Up Move Down
< <u>B</u> ack <u>N</u> ext > Finish	Cancel Help

17. Scroll down and select the Key Block Module. Click the OK button.

Attach	Module to Terminal	×
Module Type	All Modules	<b>_</b>
	Show Advanced M	odules 🗖
eGalax Touch Scre		^
Elographics Touch Firmware Update M		
Gunze AHL Touch	Screen Driver	
Hampshire TSHAR(	C Touch Screen Driver	≡
Key Block Module		
Key Block Single Ke		
Keyboard Configura		
Locate Pointer Mod		
MicroTouch Touch		
Monitor Configuratio	n Moc 2	~
	C C	ancel

You may notice the **Key Block Single Key Module** and the **Keyboard Configuration Module** as well. The **Key Block Single Key Module** allows you to block specific keys, like CTRL-B, or any other combination, like ALT-S. The **Keyboard Configuration Module** provides the ability to set the initial state of the **Num Lock**, **Caps Lock**, etc., **Repeat Delay** and **Rate** as well as **Keyboard Layout** options.

18. Double click the Key Block Module item in the Installed Modules list to configure it.

😂 Terminal Configuration Wizard
Module Selection Select the modules that load on this terminal at boot up.
Installed Modules
Module
RDP Experience Module
RE Ideas.oc Prox. USB. Module Key Block Module
Move Up Move Down
Add Configure Remove
< Back Next > Finish Cancel Help

19. Notice the default **Block** settings. Accept the defaults and click the **Done** button.

	Module Properties	x
Block Ctrl	NO 🔽	^
Block Ctrl+Alt+Del	YES 🔽 🚽	
Block Ctrl+Alt+Enter	YES 🔽	
Block Ctrl+Esc	YES 💽 🚽	
Block Alt		=
Block Alt+F4	ND	
Block Alt+F	NO	
Block Alt+Tab	NO	
Block Alt+Space	NO	
Block Windows Key	YES 💽 🚽	
Plack Monu Kou	luo l	~
Set to Default		
	[Done] Canc	el

20. Click the **Finish** button.

8	Terminal Configuration Wizard
	Module Selection Select the modules that load on this terminal at boot up.
	Installed Modules
	Module
	RDP Experience Module
	RF Ideas pcProx USB Module
	Key Block Module
	Move Up Move Down
	Add Configure Remove
	< Back Next > Finish Cancel Help

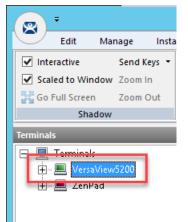
- 21. Right click the VersaView5200 terminal and select the Restart Terminal item. Click the Yes button to confirm.
- 22. Return to the virtual thin client and click the CTRL-ALT-DEL icon from the toolbar again to verify it is now blocked.



#### Locate Pointer Module

The Locate Pointer Module is very useful on high resolution screens and/or with MultiMonitor deployments.

1. Double click the **VersaView5200** terminal.

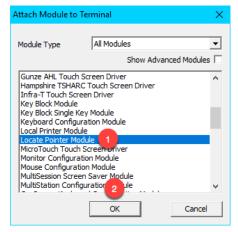


- 2. Click the Next button on the Terminal Name page of the wizard.
- 3. Click the Next button on the Terminal Hardware page of the wizard.
- 4. Click the **Next** button on the **Terminal Options** page of the wizard.
- 5. Click the **Next** button on the **Terminal Mode Selection** page of the wizard.
- 6. Click the **Next** button on the **Display Client Selection** page of the wizard.
- 7. Click the Next button on the Terminal Interface Options page of the wizard.
- 8. Click the Next button on the Hotkey Configuration page of the wizard.
- 9. Click the Next button on the Log In Information page of the wizard.
- 10. Click the Next button on the Video Resolution page of the wizard.

11. Click the Add... button on the Module Selection page of the wizard.

🕿 Terminal Configuration Wizard	×
Module Selection Select the modules that load on this terminal at boot up.	>
Installed Modules	
Module	
RDP Experience Module	
RF Ideas pcProx USB Module	
Key Block Module	
	Move Up Move Down
	Move up Move Down
Add Remove	Configure
< <u>B</u> ack <u>N</u> ext >	Finish Cancel Help

12. Scroll down and select the Locate Pointer Module. Click the OK button.



13. Back at the **Module Selection** page of the wizard, double click the **Locate Pointer Module**.

🕿 Terminal Configuration Wizard	×
Module Selection Select the modules that load on this terminal at boot up.	$\mathfrak{a}$
Installed Modules	
Module	
RDP Experience Module	
RF Ideas pcProx USB Module	
Key Block Module Locate Pointer Module	
	Move Up Move Down
Add Remove	Configure
< Back Next > F	inish Cancel Help

14. From the **Module Properties** page of the wizard, match the settings in the screen shot below and click the **Done** button.

Locate Pointer Hotkey	1	F5 💌
Locate Pointer Hotkey Modifier	2	NONE
Home Pointer Hotkey	3	F6 💌
Home Pointer Hotkey Modifier	4	NONE
Locator Inactivity Time (seconds)	5	5
Home Pointer Inactivity Time (sec	6	10
Locator Display Time (seconds)	7	3

15. From the Module Selection page of the wizard, click the Finish button.

🕿 Terminal Configuration Wizard	×
Module Selection Select the modules that load on this terminal at boot up.	$\mathfrak{>}$
Installed Modules	
Module	
RDP Experience Module	
RF Ideas pcProx USB Module	
Key Block Module	
Locate Pointer Module	
Move Up	Move Down
Add Remove	Configure
< <u>Back</u> <u>N</u> ext > <u>Finish</u> Cancel	Help

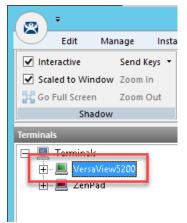
- 16. Right click the VersaView5200 terminal and select the Restart Terminal item. Click the Yes button to confirm.
- 17. Return to the virtual thin client, click in an open area of the screen to ensure the focus is there, then hit the *F5* key on your keyboard. You should see a large crosshair indicating the location of your pointer. If you quickly hit the *F6* key, the pointer locator will move to the center of the screen.



#### MultiSession Screen Saver Module

If you recall from <u>Section 7</u>, **MultiSession** is the term used to define when we deliver more than one **Display Client** to a **Terminal**. We used **Tiling Mode** and **Virtual Screens** to demonstrate the **Visualization** options for **MultiSession**. The **MultiSession Screen Saver Module** operates like a **Screen Saver** in that it can be configured to be triggered after a specific amount of inactivity at the terminal. It can be set to cycle through the **MultiSession Display Clients** on a configurable interval, or it can be set to return to the main **MultiSession Display Client**.

1. Double click the **VersaView5200** terminal.



- 2. Click the Next button on the Terminal Name page of the wizard.
- 3. Click the **Next** button on the **Terminal Hardware** page of the wizard.
- 4. Click the Next button on the Terminal Options page of the wizard.
- 5. Click the Next button on the Terminal Mode Selection page of the wizard.

 From the Display Client Selection page of the wizard, make sure you have the FTV\_CookieDemo, FTV\_InstantFizz, FTV\_SuperJuice and IPC\_Video Display Clients added to the Selected Display Clients listbox. Click the Next button.

🕿 Terminal Configuration Wizard	×
Display Client Selection Select the Display Clients to use on this termin	
Available Display Clients	Selected Display Clients
Edit Display Clients	Override
2 < <u>B</u> ack <u>N</u> ext >	Finish Cancel Help

- 7. Click the **Next** button on the **Terminal Interface Options** page of the wizard.
- 8. Click the **Next** button on the **Hotkey Configuration** page of the wizard.
- 9. Click the Next button on the Log In Information page of the wizard.
- 10. Click the **Next** button on the **Video Resolution** page of the wizard.

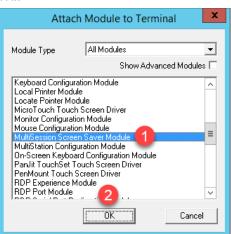
11. Let's remove the Locate Pointer Module by selecting it and then clicking the Remove button.

🕿 Terminal Configuration Wizard	×
Module Selection Select the modules that load on this terminal at boot up.	$\mathfrak{a}$
Installed Modules	
Module	
RDP Experience Module	
RF Ideas pcProx USB Module	
Key Block Module	
1 Locate Pointer Module	
	Move Up Move Down
2	
Add Remove	Configure
< <u>B</u> ack <u>N</u> ext >	Finish Cancel Help

12. Click the Add... button on the Module Selection page of the wizard.

🕿 Terminal Configuration Wizard	$\times$
Module Selection Select the modules that load on this terminal at boot up.	lpha
Installed Modules	
Module	
RDP Experience Module	
RF Ideas pcProx USB Module	
Key Block Module	
Move Up Move Dow	vn
Add Remove Configure.	
< <u>B</u> ack <u>N</u> ext > Finish Cancel He	lp

13. From the Attach Module to Terminal window, select the MultiSession Screen Saver Module and click the OK button.



14. Double click the MultiSession Screen Saver Module from the Installed Modules list.

🞇 Terminal Configuration Wizard	×
Module Selection Select the modules that load on this terminal at boot up.	$\mathfrak{a}$
Installed Modules	
Module	
RDP Experience Module	
RF Ideas pcProx USB Module	
Key Block Module	
USB Touch Screen Driver	
Redundant Ethemet Module MultiSession Screen Saver Module	
	Move Up Move Down
Add Remove	Configure
< <u>B</u> ack <u>N</u> ext > Fi	nish Cancel Help

15. Keep the Mode set to Cycle, enter 30 in the Start Delay Time in secs field, enter 10 in the Switch Interval in secs (Cycle) field, and click the Done button.

Module Properties	;
Mode Start Delay Time in secs 2 30 Switch Interval in secs (Cycle 3 10	
Set to Default Cancel	

16. Click the Finish button.

🕿 Terminal Configuration Wizard	×
Module Selection Select the modules that load on this terminal at boo	tup.
Installed Modules	
Module	
RDP Experience Module	
RF Ideas pcProx USB Module	
Key Block Module	
MultiSession Screen Saver Module	
	Move Up Move Down
Add Remove	Configure
< Back Next >	Finish Cancel Help

- 17. Right click the VersaView5200 terminal and select the Restart Terminal item. Click the Yes button to confirm.
- Once VersaView5200 reboots, do not interact with the virtual thin client for approximately 30 seconds. The MultiSession Screen Saver Module should trigger and begin cycling through the Display Clients every 10 seconds.

Another commonly used module is the **Custom Video Mode Module**. If you have connected a display to your ThinManager-managed terminal and it appears to boot properly, but the end result is a blank screen that can still be shadowed from the **Admin Console**, try applying the **Custom Video Mode Module** with default settings to your terminal's configuration, and reboot your terminal. This module will change the default video timings used by the ThinManager firmware.

Checkpoint Question: https://thinmanager.com/cloudlabs/section12/

This completes the **Modules** section. Please continue on to the **Terminal Groups**, **Overrides**, **Schedules and Mouse Button Mapping** section or jump to any of the remaining sections.

# Section 13: Terminal Groups, Overrides, Schedules and Mouse Button Mapping

## Overview

This section is a bit of a catch-all for some under-utilized, but very effective and powerful features of ThinManager.

In this section, you will be performing the following tasks:

- 1. Terminal Groups
- 2. Overrides
- 3. Schedules
- 4. Mouse Button Mapping
- 5. Remove Override and Mouse Button Mapping

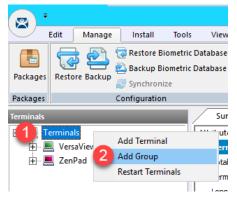
## **Terminal Groups**

**Terminal Groups** provide 2 key capabilities: (1) terminal organization and (2) settings inheritance. With terminal organization, you can create **Terminal Groups** much like folders in Windows Explorer, and then add **Terminals** to the **Terminal Group**. The other key benefit of **Terminal Groups** is that you can assign **Terminal** settings at the **Terminal Group** level and choose to make these settings a **Group Setting**. By doing so, each **Terminal member** of the **Terminal Group** would receive that setting as defined in the **Terminal Group**. In both cases, nested **Terminal Groups** are support as well.

1. Click the **Terminals** tree selector icon.



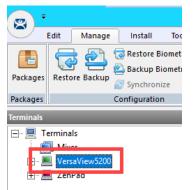
2. Right click the Terminals root item in the Terminals tree and select Add Group.



3. From the **Terminal Group Name** of the **Terminal Configuration Wizard**, enter *Mixer* as the **Group Name**. Click the **Finish** button.

Terminal Configuration Wizard
Terminal Group Name Enter the name for the terminal group
Group Name
Mixer This must be a unique name using letters, numbers, hyphens (-), and underscores (_) only.
Description
Terminal Group
< Back Next > Finish Cancel Help

4. Double click the **VersaView5200** terminal.



5. From the **Terminal Name** page of the **Terminal Configuration Wizard**, click the **Change Group** button.

🕿 Terminal Configuration Wizard	×	
Terminal Name Enter the name for this terminal, select the terminal group to which this terminal belongs, or choose to copy the configuration from another terminal.		
Teminal Name Versa View5200 This must be a unique name using letters, numbers, hyphens (-), and underscores (_) only.	n	
Terminal Group — Change Gro	υp	
Copy Settings Copy Settings from another Terminal Copy From	n	
Permissions		
< <u>B</u> ack <u>N</u> ext > Finish Cancel	Help	

6. From the **Select Terminal Group** window, select **Mixer** and click the **OK** button.

- 7. Click the **Finish** button.
- 8. Let's say we would like all of the **Terminals** added to the **Mixer Terminal Group** to have the **Key Block Module**. Instead of assigning it to each individual **Terminal Profile**, we will add it to the **Terminal Group**. Double click the **Mixer Terminal Group**.

(R) -				
	Edit M	lanage	Install	To
Packages	Restore B	ackup	🛃 Restore Bio 칠 Backup Bio 🥑 Synchroniz	me
Packages		(	Configuration	
Terminals			_	
	rminals Mixer Dep Vers ZenPad	aView52	200	

- 9. Click the Next button from the Terminal Group Name of the Terminal Configuration Wizard.
- From the Terminal Group Options page of the wizard, notice the Group Setting checkboxes. Checking any of those checkboxes will result in that setting or group of settings to be inherited by the Terminal members of the Terminal Group. Do not check any of them just click the Next button.

8	Terminal Configuration Wizard
	Select the options for terminals in this group.
	Terminal Options Group Setting ☐ ✓ Allow replacement at terminal if off line □ Put Terminal in Admin Mode at Startup □ Enforce Boot Priority
[	Terminal Schedule Group Setting □ Ferminal Effects ⊽ Enable Terminal Effects ⊽ Show terminal status messages
	Shadowing Group Setting Group Setting Allow teminal to be shadowed YES I
	< Back Next > Finish Cancel Help

- 11. Click the Next button on the Terminal Mode Selection page of the wizard.
- 12. Click the **Next** button from the **Terminal Mode Selection** page of the wizard.
- 13. Click the Next button on the Display Client Selection page of the wizard.
- 14. Click the **Next** button on the **Terminal Interface Options** page of the wizard.
- 15. Click the Next button on the Hotkey Configuration page of the wizard.
- 16. Click the Next button on the Log In Information page of the wizard.
- 17. Click the Next button on the Group Video Resolution page of the wizard.
- 18. Click the **Next** button on the **WinTMC** page of the wizard.

**WinTMC** is an application that can be installed on a **Windows OS** (like Windows 7/Vista/8/10) that essentially emulates a <u>ThinManager Client</u>. You would create a **Terminal Profile** for a **WinTMC** client in much the same way that you would for an actual thin/zero client.

- 19. Click the Next button from the Mobile Device Group Options page of the wizard.
- 20. Click the Add... button from the Module Selection for this Group page of the wizard.

8	Terminal Configuration Wizard	x
Module Selection fo Select the modules	r this Group that load on Terminals in this group at boot up.	$\aleph$
	Installed Modules	
Module	Packages	
	Move Up Mo	ve Down
Add	Configure	lemove
		ioinio vo
< Back	Next > Finish Cancel	Help

21. Scroll down and select the Key Block Module. Click the OK button.

Attach	Module to Terminal
Module Type	All Modules 🗨 Show Advanced Modules 🗖
Infra-T Touch Scree	icreen Driver dule Creen Driver =
Key Block Module Key Block Single Kej Keyboard Configurati Local Printer Module Locate Pointer Modu MicroTouch Touch S Monitor Configuration	ion Module Ile Screen Driver

22. Click the Finish button.

🕿 Terminal Configuration Wizard	×
Module Selection for this Group Select the modules that load on Terminals in this group a	t boot up.
Installed Modules	
Module	Packages
Key Block Module	5,8.1,8.2
1	Move Up Move Down
Add Remove	Configure
< <u>B</u> ack <u>N</u> ext >	Finish Cancel Help

23. Double click on the VersaView5200 terminal.

·	Edit	Manage	Install	Тоо
E Packages	Restor	e Backup	ন্তি Restore। 🖄 Backup I 🧭 Synchroi	Biometri
Packages Terminals			Configuratio	on
	erminals Mixe Dixe ZenP	r /ersaView:	5200	

- 24. Click the Next button on the Terminal Name page of the wizard.
- 25. Click the Next button on the Terminal Hardware page of the wizard.

- 26. Click the Next button on the Terminal Options page of the wizard.
- 27. Click the Next button on the Terminal Mode Selection page of the wizard.
- 28. Click the Next button on the Display Client Selection page of the wizard.
- 29. Click the Next button on the Terminal Interface Options page of the wizard.
- 30. Click the Next button on the Hotkey Configuration page of the wizard.
- 31. Click the **Next** button on the **Log In Information** page of the wizard.
- 32. Click the **Next** button on the **Video Resolution** page of the wizard.
- 33. From the Module Selection page of the wizard, notice the group-inherited Key Block Module (indicated with the Group icon). Select the other Key Block Module listed. This is the one added in Modules lab section to this specific Terminal Profile. Click the Remove button.

🕿 Terminal Configuration Wizard	×
Module Selection Select the modules that load on this terminal at boot up.	$\mathfrak{S}$
Installed Modules	
Module Rey Block Module RDP Experience Module RF Ideas pcProx USB Module Key Block Module MultiSession Screen Saver Module	
Add Remove	Move Up Move Down Configure
< <u>B</u> ack <u>N</u> ext >	Finish Cancel Help

34. While still on the **Module Selection** page of the wizard, remove the **MultiSession Screen Saver Module** followed by the **Finish** button.

🕿 Terminal Configuration Wizard	×
<b>Module Selection</b> Select the modules that load on this terminal at boot up.	$\aleph$
Installed Modules	
Module	
🔜 Key Block Module	
RDP Experience Module	
RF Ideas pcProx USB Module	
MultiSession Screen Saver Module	
Move Up	Move Down
2	
Add Remove	Configure
< <u>B</u> ack <u>N</u> ext > Finish Cancel	Help

- 35. Right click the VersaView5200 terminal and select the Restart Terminal item. Click the Yes button to confirm.
- 36. Confirm that **CTRL-ALT-DEL** is still blocked, and therefore proving that the **Key Block Module** is successfully inherited from the **Mixer Terminal Group**.

🙀 Thin02 - VMwar	e Work	station 12 Player (Non-cor
<u>P</u> layer ▼   <b>   </b> ▼	đ	H N
📮 CookieDer	no12	280 - FactoryTalk \
the second se	_	ckwel
Auto	DI	natior

## Overrides

The **Override** feature allows you to change the default behavior of a **Display Client** when applied to a **Terminal**. For instance, maybe you need a particular **Display Client** to launch as a different user than what is assigned to the **Terminal Profile**. This can be accomplished using the **Override** feature.

1. Double click the **VersaView5200** terminal.



- 2. Click the **Next** button on the **Terminal Name** page of the wizard.
- 3. Click the **Next** button on the **Terminal Hardware** page of the wizard.
- 4. Click the Next button on the Terminal Options page of the wizard.
- 5. Click the Next button on the Terminal Mode Selection page of the wizard.
- 6. Select the FTV\_CookieDemo Display Client from the Selected Display Clients list and click the Override button.

🕿 Terminal Configuration Wizard		×
Display Client Selection Select the Display Clients to use on this terminal		$\aleph$
Available Display Clients          Remote Desktop Services         Camera         Terminal Shadow         Workstation         VNC         Virtual Screen	Selected Display Clients  FTV_Cookie Demo FTV_InstantFizz FTV_SuperJuice FTV_Video   V  V  V  V  V  V  V  V  V  V  V  V	► ▼
< <u>B</u> ack <u>N</u> ext >	Finish Cancel	Help

 From the Override Settings window, check the Override checkbox on the Windows Login Settings frame, enter labuser@tmlab.loc as the Username, enter rw as the Password. Click the Verify User button to confirm the credentials entered. Click the OK button twice.

Display Name				
Display Name			Override	4
Windows Login Settings			Override	1
Username 2	labuser@tmlab	o.loc	Searc	ch
Password 3	**		Password Op	otions
			o 11	_
			- Override	· -
Domain	]		Verify L	Jser
AppLink Command Line -				
Command Line Options			Override	
Video Settings			Override	Г
	olution	Color Depth	-	
240x320	<b>T</b>	256 Colors		
		0	K Ca	ncel

In addition to user credentials, the **Domain** can be overridden, along with the **AppLink Command Line** and **Video Settings**.

8. Notice the **Display Client** icon has changed for **FTV\_CookieDemo**, indicating that an **Override** has been applied to it for this **Terminal**. Click the **Finish** button.

🕿 Terminal Configuration Wizard		×
Display Client Selection Select the Display Clients to use on this terminal	>	$\prec$
Available Display Clients Remote Desktop Services Camera Camera Terminal Shadow Workstation Concern VNC Virtual Screen	Selected Display Clients FTV_CookieDemo FTV_InstantFizz FTV_SuperJuice IPC_Video	▲ ▼
Edit Display Clients	Override	
< Back Next >	Finish Cancel Help	

9. Right click the VersaView5200 terminal and select the Restart Terminal item. Click the Yes button to confirm.

10. At the virtual thin client, you should see a new instance of the FTV\_CookieDemo launching. Instead of launching as the user assigned to the VersaView5200 Terminal Profile (thin01@tmlab.loc), it is now launched as labuser@tmlab.loc. Navigate to Terminals->Mixer->VersaView5200->FTV\_CookieDemo from the Terminals tree and select the RDS1 node, followed by the Users tab. Here you will see the new session launched with the labuser credentials.

Edit Manage Install Tool		uration	8 1		-	
Packages Configuration		Default Terminal Mana	ge Synchronize Settings	Manage Access Settings Resolvers Groups Relevance		
erminals	Configuration Properties Schedule.	Users Sessions	Processes Graph	~ ~ ~	Report	•
- 📃 Terminals - 🔜 Mixer 🔍 VersaView5200	User Session thin01 RDP-To	p#42	Session ID 4	State Initial I Active C:\	Program Logon Time Program Fi 2019-04-02	
VESTICATION VESTI	labuser RDP-Tc	p=+3	6	Active C∶¥	Program Fi 2019-04402	18:23:14

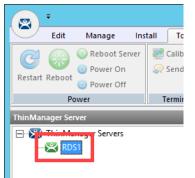
#### Schedules

**ThinManager** has a rich scheduling environment that can be applied to **Terminals**, **Remote Desktop Servers** and **Relevance Users**. For example, maybe certain **Terminals** should only be available at certain times of the day and/or certain days of the week. The same can be applied to **Relevance Users**. So, **Schedules** can be used to further enhance your **Security** initiatives. You can also schedule automatic ThinManager configuration backups, or regular **Touchscreen Calibrations**!

1. From ThinManager, click the **ThinManager** icon in the button bar.



2. Double click the **RDS1** item in the **ThinManager Servers** tree.



- 3. Click the Next button on the Introduction page of the ThinManager Server Configuration Wizard.
- 4. Click the Next button on the Unknown Terminals page of the wizard.
- 5. Click the **Next** button on the **Terminal Replacement** page of the wizard.
- 6. Click the **Next** button on the **Historical Logging** page of the wizard.

7. Click the Edit Schedule button on the System Schedule page of the wizard.

Server Configuration Wizard	x
System Schedule Edit the system schedule	$\mathfrak{C}$
System Schedule	
< Back Next > Finish Cancel	Help

8. From the **Event Schedule** window, select **system** from the **Select Event Category** drop down list and click the **Add** button.

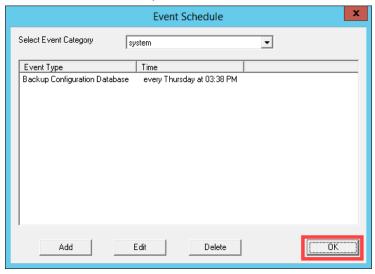
Ev	vent Schedule
Select Event Category	•
Event Type Time	
Add Edit	Delete OK

You may notice that is you select **terminal**, **terminalserver** or **user** from the drop down list, the **Add** button will become disabled. That is because **schedules** for these items are created on their respective objects. For example, to set a **terminal schedule** you would do that using the **Terminal Configuration Wizard** of the targeted terminal. This could also be accomplished at a **Terminal Group** level as well. You could then **Edit** or **Delete** those schedules from this dialog box.

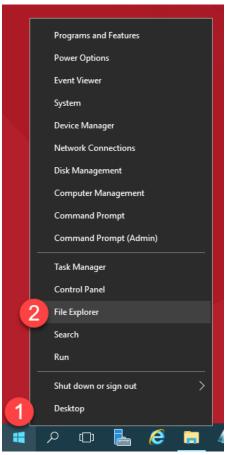
Select Backup Configuration Database from the Event Type drop down list. Leave Auto Generate Filename checked. Leave the Weekly / Daily radio button selected. Check today's day (Thursday in the screen shot) checkbox in the Weekly Schedule frame and set the time to 2 minutes past the current time of the RDS1 virtual machine's time (3:38 PM in the screen shot). Click the OK button.

Schedule
Event Type
1 Backup Configuration Database
Backup File Auto Generate Filename Browse Browse Browse
• Weekly / Daily C Monthly C Yearly
Weekly Schedule Monday Tuesday Wednesday Friday Saturday Sunday
Time 3 3:38 PM 4 ÷ Cancel 0K

10. Click the **OK** button followed by the **Finish** button.



11. When the time on **RDS1** reaches the set schedule from above, right click the **Windows Start Button**, and select the **File Explorer** item.



12. Navigate to the following folder: C:\Program Files (x86)\Rockwell Software\ThinManager. You should see a new ThinManager configuration backup there. Close the File Explorer and return to ThinManager.

🛃 📙 🖛   ThinMana	- -			- 0	> >
File Home Share	View				$\sim$
> 1 « Pro	gram Files (x86) > Rockwell Software > ThinManage	er >	✓ Ö Search Thi	nManager	م ر
📰 Pictures 🛛 🖈 ^	Name	Date modified	Туре	Size	
Advanced	PocoFoundation.dll	12/13/2018 11:51	Application extens	1,196 KB	
Installs	PocoNet.dll	12/13/2018 11:49	Application extens	730 KB	
Lab Files	🚳 termcap	4/1/2019 5:59 PM	Data Base File	4,612 KB	
TMConfigs	😰 ThinManager	12/14/2018 1:09 PM	Compiled HTML	44,723 KB	
Internings	🚳 ThinManager	4/2/2019 11:12 AM	Data Base File	536 KB	
💻 This PC	ThinManager.db.shutdown.bak	4/2/2019 11:12 AM	BAK File	536 KB	
E Desktop	ThinManager.db.startup.bak	4/2/2019 11:12 AM	BAK File	536 KB	
🔮 Documents 📐	🔀 ThinManager	2/11/2019 12:08 PM	Application	11,538 KB	
Downloads	ThinManagerConfigBackup_2019_04_02_18_36	4/2/2019 6:36 PM	Data Base File	536 KB	
Music	ThinServer	2/11/2019 12:07 PM	Application	6,775 KB	
-	🚳 thinservercl.dll	12/20/2018 3:41 PM	Application extens	13 KB	
	ThinServerSubscriptionCom.dll	12/20/2018 3:39 PM	Application extens	41 KB	
Videos	ThinServerSubscriptionCom.tlb	12/20/2018 10:13	TLB File	4 KB	
🏪 Local Disk (C:)	📄 tmboot32.bin	8/13/2018 1:52 PM	BIN File	461 KB	
🛖 Shared Folders (	📄 tmboot64.bin	8/13/2018 1:52 PM	BIN File	631 KB	
A Network	TMHistory	4/2/2019 11:12 AM	Data Base File	28 KB	
Network	TMMaster	4/1/2019 6:36 PM	LIC File	2 KB	
4 items 1 item selected	N:	10/00/0010 10.14	A	1 704 1/0	

### **Mouse Button Mapping**

Enhanced **mouse button mapping** was added with the release of ThinManager 9.0. You can assign and perform the following ThinManager-related actions to any mouse button.

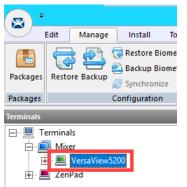
- Calibrate Touchscreen
- Tile
- Swap
- Full Screen
- Go To Next Display Client
- Go To Previous Display Client
- Log On Relevance User
- Main Menu
- Scroll Up
- Scroll Down
- Virtual Keyboard

Different actions can be defined for different physical or Virtual Screens.

1. Click the **Terminals** icon from the button bar.



2. Double click the VersaView5200 terminal.



- 3. Click the Next button on the Terminal Name page of the wizard.
- 4. Click the Next button on the Terminal Hardware page of the wizard.
- 5. Click the Next button on the Terminal Options page of the wizard.
- 6. Click the Next button on the Terminal Mode Selection page of the wizard.
- 7. Click the Next button on the Display Client Selection page of the wizard.
- 8. Click the **Next** button on the **Terminal Interface Options** page of the wizard.
- 9. Click the Mouse Button Mapping button on the Hotkey Configuration page of the wizard.

Terminal Configuration Wizard			
Hotkey Configuration Configure the hotkeys to apply to this terminal			
Terminal Hotkeys			
Enable Instant Failover Hotkey	Change Hotkey		
Enable Display Client Hotkeys	Change Hotkeys		
Enable Tiling Hotkey	Change Hotkey		
Enable Swap Hotkey	Change Hotkey		
Enable Fullscreen Hotkey	Change Hotkey		
Enable Main Menu Hotkey	Change Hotkey		
	Mouse Button Mapping		
< Back Next > F	Finish Cancel Help		

10. Earlier, we assigned the **Tile** action to the **Right Mouse** button. Change **Button 1 (Left Mouse)** to **Go to next display client**. Click the **OK** button.

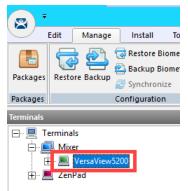
Mouse Button Mapping		×
Mouse Button Action		
Button 1 (Left Mouse)	Go to next display client	^
Button 2 (Middle Mouse)	Default	
Button 3 (Right Mouse)	Tile	
Button 4 (Scroll Wheel Up)	Default 💌	
Button 5 (Scroll Wheel Down)	Default	
Button 6	Default 💌	
Button 7	Default 💌	
Button 8	Default 💌	
Button 9	Default	J
	2	*
	OK Ca	ncel

- 11. Click the **Finish** button.
- 12. Right click the VersaView5200 terminal and select the Restart Terminal item. Click the Yes button to confirm.
- 13. At the virtual thin client, verify that a Left Click (or touch) switches to the next Display Client.

#### Remove Override and Mouse Button Mapping

Since we will not need these settings in the remaining lab sections, let's remove them before continuing.

1. Double click the **VersaView5200** terminal.



- 2. Click the Next button on the Terminal Name page of the wizard.
- 3. Click the **Next** button on the **Terminal Hardware** page of the wizard.
- 4. Click the **Next** button on the **Terminal Options** page of the wizard.
- 5. Click the Next button on the Terminal Mode Selection page of the wizard.
- 6. From the **Display Client Selection** page of the wizard, select the **FTV\_CookieDemo Display Client** and click the **Override** button.

🕿 Terminal Configuration Wizard	×
Display Client Selection Select the Display Clients to use on this terminal	$temp{}$
Available Display Clients     Selected Display Clients       Image: Clients     Image: Clients       Image: Clients	•
Edit Display Clients Override	
< Back Next > Finish Cancel	Help

7. From the **Override Settings** window, <u>un</u>-check the **Override** checkbox and click the **OK** button.

Override Settings for 'FTV	CookieDemo' Disp	olay Client		×
Display Name Display Name			Override	
Windows Login Settings		- 1	Override	
Username	labuser@tmlab.loc		Search	
Password			Password Opt	tions
Domain			Override	
			Verify U	ser
AppLink Command Line -				
Command Line Options			Override	
Video Settings			Override	Г
Reso 240x320	lution	Color Depth	oremac	
		ОК	i Can	icel

8. From the **Display Client Selection** page of the wizard, notice the **FTV\_CookieDemo Display Client** no longer has the **Override** icon assigned to it. Click the **Next** button.

🕿 Terminal Configuration Wizard	×
Display Client Selection Select the Display Clients to use on this terminal	times
Available Display Clients	•
Edit Display Clients Override	
< Back Finish Cancel	Help

- 9. Click the **Next** button on the **Terminal Interface Options** page of the wizard.
- 10. Click the **Mouse Button Mapping** button on the **Hotkey Configuration** page of the wizard.

Terminal Configuration Wizard		
Hotkey Configuration Configure the hotkeys to apply to this terminal		
Terminal Hotkeys		
Enable Instant Failover Hotkey	Change Hotkey	
Enable Display Client Hotkeys	Change Hotkeys	
✓ Enable Tiling Hotkey	Change Hotkey	
Enable Swap Hotkey	Change Hotkey	
Enable Fullscreen Hotkey	Change Hotkey	
Enable Main Menu Hotkey	Change Hotkey	
	Mouse Button Mapping	
< Back Next >	Finish Cancel Help	

11. Return Button 1 (Left Mouse) to Default. Click the OK button.

louse Button Action		
Button 1 (Left Mouse)	1 Default	• /
Button 2 (Middle Mouse)	Default	•
Button 3 (Right Mouse)	Tile	•
Button 4 (Scroll Wheel Up)	Default	-
Button 5 (Scroll Wheel Down)	Default	•
Button 6	Default	-
Button 7	Default	•
Button 8	Default	-
Button 9	Default	-

- 12. Click the **Finish** button.
- 13. Right click the VersaView5200 terminal and select the Restart Terminal item. Click the Yes button to confirm.

Checkpoint Question: https://thinmanager.com/cloudlabs/section13/

This completes the section **Terminal Groups**, **Overrides**, **Schedules and Mouse Button Mapping**. Please continue on to the **Securing the ThinManager Adin Console** section of the lab.

# Section 14: Securing the ThinManager Admin Console

## Overview

By default, only local administrator user accounts can access the **ThinManager Admin Console**. For ThinManager systems on an **Active Directory** (AD) domain, AD users who will administer the ThinManager system must initially be added to the local Administrators group on the ThinManager server. To add access for other local or domain accounts, **ThinManager Security Groups** can be configured to allow varying levels of access and control to the Admin Console. In this section we will explore requirements for an AD user to gain access and rights in the **ThinManager Admin Console**.

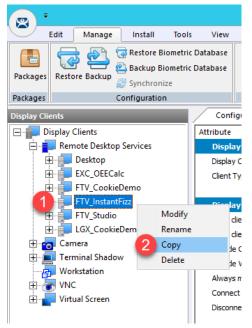
- 1. Create ThinManager Admin Console Display Client
- 2. Assign Admin Console Display Client to Terminal
- 3. ThinManager Security Groups

## Create ThinManager Admin Console Display Client

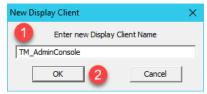
1. From ThinManager, click the **Display Clients** tree selector.



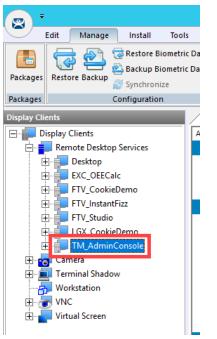
2. Expand the Remote Desktop Services tree item, right click the FTV\_InstantFizz Display Client and select Copy.



3. From the **New Display Client** dialog box, enter *TM\_AdminConsole* and click the **OK** button.



4. Double click the **TM\_AdminConsole Display Client**.



- 5. From the **Client Name** page of the wizard, click the **Next** button.
- 6. From the **Display Client Options** page of the wizard, click the **Next** button.
- 7. From the Remote Desktop Services and Workstation Options page of the wizard, click the Next button.
- 8. From the Screen Resolution / Scaling Options page of the wizard, click the Next button.
- 9. From the **Display Client Members** page of the wizard, click the **Next** button.

10. From the **AppLink** page of the wizard, enter the following path for the **Program Path and Filename** field (you can also copy this from the **LabPaths.txt** file). <u>Clear the **Command Line Options** text box</u>. Click the **Finish** button.

### Program Path and Filename:

```
C:\Program Files (x86)\Rockwell Software\ThinManager\ThinManager.exe
```

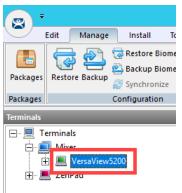
🞇 Display Client Wizard	×
App Link Enter the linked application path.	$\mathfrak{>}$
AppLink Path Program Path and Filename Togram Files (x86)\Rockwell Software\ThinManager\Thi	nManager.exe
<b>T</b>	Browse
Command Line Options	
Start in the following folder	Browse
	Browse
Sack Next > Finish Can	cel Help

## Assign Admin Console Display Client to Terminal

1. Click the Terminals tree selector icon.



2. From the Terminals tree, double click the VersaView5200 terminal



- 3. Click the Next button from the Terminal Name page of the wizard.
- 4. Click the Next button from the Terminal Hardware page of the wizard.
- 5. Click the Next button from the Terminal Options page of the wizard.
- 6. Click the Next button from the Terminal Mode Selection page of the wizard.
- 7. On the **Display Client Selection** page, <u>remove</u> the existing **Display Clients** from the **Selected Display Clients** list box, and <u>add</u> the **TM\_AdminConsole Display Client**. Click the **Finish** button.

🕿 Terminal Configuration Wizard		×
Display Client Selection Select the Display Clients to use on this terminal		$ttep{}$
Available Display Clients          Image: Client services         Image: Client service services         Image: Client service service services         Image: Client service	Selected Display Clients	•
Edit Display Clients	Override	
< Back Next >	Finish Cancel He	lp

8. Right click the VersaView5200 terminal from the Terminals tree and select Restart Terminal to apply the changes.

Click **Yes** to the confirmation dialog.

9. After the terminal has restarted and launched the **TM\_AdminConsole Display Client**, you will see a permissions error message at the virtual thin client. By default, only local **Administrators** have access to the **ThinManager Admin Console**.

ThinManager Server Error	×
You do not have permission to pe	rform this action.
	ОК

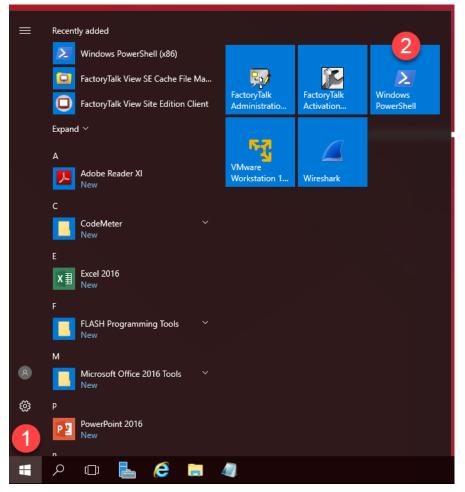
10. Recall that the user account assigned to the VersaView5200 terminal is thin01@tmlab.loc. You can verify this by double clicking the VersaView5200 terminal profile and advancing through the Terminal Configuration Wizard until you reach the Log In Information page. Since the thin01@tmlab.loc user account is not a member of the local Administrators group, it cannot launch the Admin Console by default. Click the Cancel button.

😤 Terminal Configura	tion Wizard			×
Log In Information Enter the log in in some of the fields		atically. Leave the log in	n information blank or fill onl	, X
Windows Log In Inf	omation	-		
Usemame	thin01@tmlab.loc 🧲		Search	
Password		-	Password Options	
Domain			Venfy	
	< <u>B</u> ack <u>N</u> ex	t > Finish	Cancel	Help

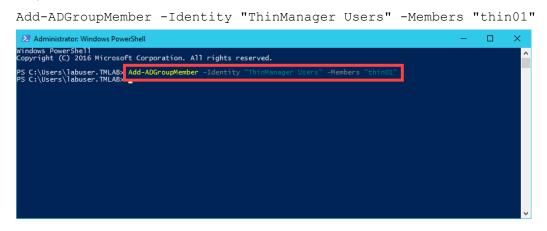
## ThinManager Security Groups

The Windows Security Groups utilized in this section of the lab have been pre-created within Active Directory. If you do not have a domain, these Security Groups could also be Local Security Groups.

1. We would like to add the thin01@tmlab.loc user to the Active Directory Security Group ThinManager Users. To do so, click the Windows Start Button, right click Windows Power Shell and select Run as Administrator.



 In the PowerShell window, enter the following command (you can also copy this from the LabPaths.txt file) and hit ENTER. This will add the thin01 user to the ThinManager Shadow Users ActiveDirectory Security Group. Once completed, close the PowerShell window.

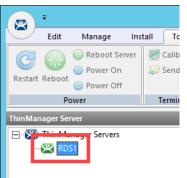


The ServerManager PowerShell module was preinstalled on RDS1 as well as the ActiveDirectory PowerShell feature.

3. From ThinManager, click the **ThinManager** icon in the button bar.



4. Double click the **RDS1** item in the **ThinManager Servers** tree.



- 5. Click the Next button on the Introduction page of the ThinManager Server Configuration Wizard.
- 6. Click the **Next** button on the **Unknown Terminals** page of the wizard.
- 7. Click the **Next** button on the **Terminal Replacement** page of the wizard.
- 8. Click the **Next** button on the **Historical Logging** page of the wizard.
- 9. Click the **Next** button on the **System Schedule** page of the wizard.

10. From the ThinManager Security Groups page of the wizard, notice that the pre-selected Administrators group has every Available list box permission in the Allowed list box. This indicates that, by default, members of the local Administrators group where ThinManager is installed have full permissions within the Admin Console. Click the Windows User Group drop down list and select ThinManager Users. As can be viewed from the ThinManager Security Groups page of the wizard, the available permissions are quite granular.

🕿 ThinManager Server Configuration Wizard	×
ThinManager Security Groups Assign access to ThinManager functions for Windows User Group	os. 阕
Windows User Group Delete	Group
1 Administrators	Group
Administrators	aroup
V ThinManager Administrators ThinManager Interactive Shadow Users	
A ThinManager Power Users	
Thin Manager Shadow Users Thin Manager Users	^
Interactive Shadow	
Reset Sessions	
Kill Processes Beboot Terminal Servers	
Connect to Terminal Servers	5
Logoff TemSecure Users Administer ThinManager Ser	
	> veis v
	-
Current Permi	
Current Permi	ssions
< Back Next > Finish Cancel	Help

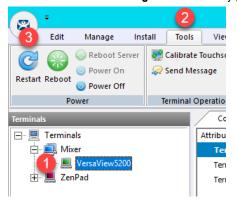
11. The **ThinManager Users** group is permitted to **Connect** only by default and can essentially do nothing else within the **Admin Console**. Scroll to the **Restart Terminals** permission and double click it to add it to the **Allowed** list. Click the **Finish** button.

ThinManager Server Configuration Wizard	×
ThinManager Security Groups Assign access to ThinManager functions for V	Vindows User Groups.
Windows User Group	Delete Group
ThinManager Users	Add Group
Windows User Group Permissions	
Available Allowed	
Reset Sessions Kill Processes Reboot Terminal Servers Connect to Terminal Servers Logoff TermSecure Users Administer ThinManager Servers Create Terminals	Terminals
	Current Permissions
<pre></pre>	Cancel Help

12. Now that thin01@tmlab.loc is a member of the ThinManager Users ActiveDirectory Security Group, let's reset the session associated with the TM\_AdminConsole Display Client. From the Terminals tree, navigate to Terminals->Mixer->VersaView5200->TM\_AdminConsole and select RDS1. With RDS1 selected, select the Users tab, right click the session listed and select Reset Session. This will reset the TM\_AdminConsole session on the virtual thin client.

Edit Manage	Install	I Tools	View	Remote View	Help							
Restart Reboot @ Power On @ Power Off		🛃 Calibrat 💭 Send M	e Touchscreen essage	👍 Enable 🙅 Disable	Clear							
Power		Terminal	Operations	Enable/Disable	Event Log							
Terminals			Config	ration Prope	rties Schedul	Users	Sessions	Processes	Graph	Event Log	Connect Report	
🖃 📃 Terminals			User		Session				Session ID	State	Initial Program	Logon Time
🖃 🛄 Mixer			thin01	-	RDP-T	cp#87				Active	C:\Program Fi	2019-04-03 16:31:43
😑 💻 VersaView5200				2 Reset S	ession							
🖻 🣴 TM_Admi	nConso	ole		Discon	nect Session							
1 - FRDS1 ⊕ ■ ZenPad				Send N	lessage							

13. Return to the virtual thin client. The TM\_AdminConsole Display Client should now be delivered. Since right click is being mapped to Tiling in the VersaView5200 terminal profile, we will use an alternative way to perform a Restart Terminal action. Select the VersaView5200 terminal then select the Tools ribbon followed by clicking the Restart icon. Click Yes to the confirmation dialog box. The terminal should restart since the thin01@tmlab.loc user account is a member of the ThinManager Users security group, which now has the Restart Terminals permission.



Adding users to **Security Groups** as we did in this lab section do not immediately get recognized within **ThinManager**, since there is no way to be notified of these changes through **Active Directory**. **ThinManager** does check for **Security Group** membership updates every 4 minutes or any time a change is made in **ThinManager** to one of its **Security Groups** (i.e.: a permission is added/removed from an existing **Security Group**). You can also force an update by restarting the **ThinServer** service. Since we made a change to the **ThinManager Users** group (by adding the **Restart Terminals** permission), **ThinManager** refreshed its **Security Group** membership and detected that **thin01@tmlab.loc** had been added to the **ThinManager Users** group.

This completes the **Securing the ThinManager Admin Console** section of the lab. Please continue on to the **ThinManager SmartSession** section of the lab.

# Section 15: ThinManager SmartSession

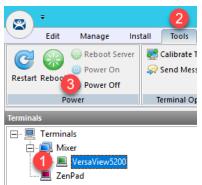
## Overview

With SmartSession, Remote Desktop Services Display Clients will be started on the least loaded Display Server assigned to the Display Client. ThinManager determines the least loaded Display Server by performing a load calculation based on the CPU and RAM utilization along with the number of sessions running on each Display Server. Once a Display Client is launched on a Display Server, ThinManager does not attempt to move it dynamically to maintain a balanced load (i.e.: this calculation and determination only occurs when a Display Client is launched). In this section we will configure the RDS1 and RDS2 Display Servers to utilize SmartSession to balance session loading as a FactoryTalk View SE Client application is deployed multiple times to the virtual thin client.

- 1. Power Off Terminal and Reset Sessions
- 2. Configure Display Servers for SmartSession
- 3. Create Display Clients for SmartSession
- 4. Assign Display Clients with SmartSession to Terminal
- 5. Power Off Terminal and Reset Sessions

### Power Off Terminal and Reset Sessions

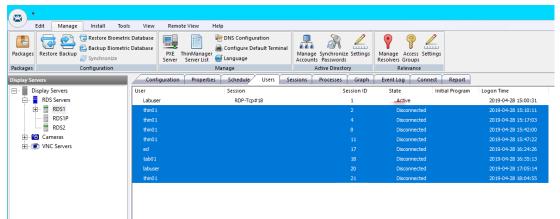
1. Power off the virtual thin client by selecting the VersaView5200 terminal, followed by the Tools ribbon, then click the Power Off icon.



2. Navigate to the **Display Servers** tab in the **ThinManager Admin Console**.



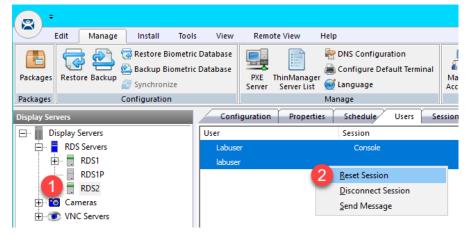
3. Expand **RDS Servers**, select **RDS1** and click the **Users** tab. Here you will see information about all of the user sessions established on **RDS1**. You may see more and/or different sessions than the screen shot below.



In order for ThinManager to gather this session information from a Remote Desktop Server, you must assign an account to the ThinServer service that is a member of the local Administrator group on the ThinManager Server. This same account also needs to be assigned to the Remote Desktop Server Display Server. This can be done by double clicking the Display Server and advancing to the Remote Desktop Server Name page of the wizard and entering the account's credentials in the Log In Information frame. In an Active Directory deployment, this should be a domain account, and should be assigned to the ThinServer service on both ThinManager installations (if using Redundancy) and assigned to every Remote Desktop Server Display Server. These steps have already been completed for you in the lab. 4. Select all of the sessions except the Active session for the User Labuser (this is your current session into RDS1). Right click the other sessions select Reset Session. Click the Yes button on the confirmation dialog box. <u>NOTE:</u> The list of sessions running at your lab station may differ from the screen shot below. None of the sessions should relaunch since we have powered down the virtual thin client.

Edit Manage Install Too	ls View Remo	te View Help			
ackages Restore Backup Biometri	ic Database 🚟	ThinManager Server List	Manage Synchronize Settings Accounts Passwords	Manage Access Settings Resolvers Groups	
ackages Configuration		Manage 💙	Active Directory	Relevance	
splay Servers	Configuration	Properties Schedule Users S	Sessions Processes Graph	Event Log Connect	Report
Display Servers	User	Session	Session ID	State Initi	al Program Logon Time
- RDS Servers	Labuser	RDP-Tcp#18	1	Active	2019-04-28 15:00:31
(1) 🖶 RDS1	thin01		2	Disconnected	2019-04-28 15:10:11
RDS1P	thin0.1			Disconnected	2019-04-28 15:17:03
RDS2	Reset a	Il sessions except the Active	e Labuser session (wh	nich is yours).	2019-04-28 15:42:00
🗄 - 🖸 Cameras					2019-04-28 15:47:22
Cameras     VNC Servers	ed		17	Disconnected	2019-04-28 15:47:22 2019-04-28 16:24:26
	ed tab01		17 18	Disconnected Disconnected	
					2019-04-28 16:24:26
	tab01			Disconnected	2019-04-28 16:24:26 2019-04-28 16:35:13
	tab01 labuser	3		Disconnected Disconnected	2019-04-28 16:24:26 2019-04-28 16:35:13 2019-04-28 17:05:14
	tab01 labuser		18 20 21	Disconnected Disconnected	2019-04-28 16:24:26 2019-04-28 16:35:13 2019-04-28 17:05:14

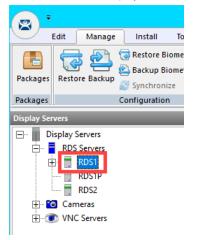
5. Now select RDS2, and once again click the Users tab. Reset all sessions.



### Configure Display Servers for SmartSession

In this section, we will enable SmartSession on the RDS1 and RDS2 Display Servers and review the configuration options.

1. Double click **RDS1** Display Server to begin configuration.



- 2. Click the **Next** button on the **Introduction** page of the wizard.
- 3. Click the Next button on the Remote Desktop Server Name page of the wizard.
- 4. From the **Remote Desktop Server Capabilities** page, check the **Available for Display Clients using SmartSession** checkbox. Click **Next** the button.

🕿 Remote Desktop Server Wizard	×
Remote Desktop Server Capabilities Select the capabilities of this Remote Desktop Server.	$temp{}$
Supported Connection Types	
Citrix ICA	
🗖 Citrix Device Services	
Microsoft Remote Desktop Protocol	
Remote Desktop Server Options	
Available for Display Clients using SmartSession	
2	

5. On the **Data Gathering** page of the wizard, select the **Custom** radio button and reduce the **SmartSession Data Update Interval** to 2 seconds. Click the **Next** button.

😤 Remote Desktop Server Wizard				×
Data Gathering Enter the Data Gathering intervals.				$\aleph$
Data Gathering Intervals				
C Fast				
C Medium				
C Slow				
1 © Custom				
-				
SmartSession Data Update Interval	22	•	seconds	
Process Update Interval	5		seconds	
Session Update Interval	8	*	seconds	
3				
< <u>B</u> ack <u>N</u> ext >	Finish	Cance	I	Help

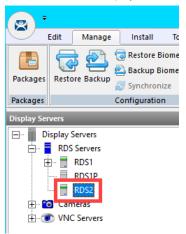
Smart Session Data Update Interval is the amount of time between the retrieval of SmartSession data – CPU usage, memory usage, and session count, from the Remote Desktop Server. This setting affects the update speed of the Server Rankings used in SmartSession load balancing. Faster rates will lead to quicker updates but will add more network traffic.

6. On the **SmartSession Configuration** page we will leave the default settings for the lab. The limits configured on this page make up the 0% to 100% scale used to gauge each utilization marker. Click the **Finish** button.

Remote Desktop Server	r Wizard		>
Smart Session Configu Enter the Smart Session	<b>ration</b> on limits for this Remote	Desktop Server	>
CPU Utilization			
	Minimum	0.0	%
	Maximum	100.0	%
Memory Utilization		0.0	<u>.</u>
	Minimum		%
	Maximum	100.0	%
Sessions			
	Minimum	0	
	Maximum	50	
Values are not prevente and Maximum values rej			ow the minimum. Minimum n" respectively.
< <u>B</u> ack	Next >	ish Ca	ancel Help

An example of why the defaults might be changed: You may want to consider the RDS server to be at 100% utilization when 25 sessions are running, instead of the default 50. Or you may want to consider the RDS server at 100% utilization when 70% of memory is consumed, instead of 100%.

7. Double click **RDS2** Display Server to begin configuration.



- 8. Click the **Next** button on the **Introduction** page of the wizard.
- 9. Click the Next button on the Remote Desktop Server Name page of the wizard.

10. From the **Remote Desktop Server Capabilities** page, check the **Available for Display Clients using SmartSession** checkbox. Click **Next** the button.

Select the capabiliti	es of this Remote D	esktop Server.	
Supported Connection	Types		
🔲 Citrix ICA			
🔲 Citrix Device S	ervices		
🗹 Microsoft Rem	ote Desktop Protoc	ol	
Available for D	isplay Clients using	SmartSession	 
Available for D	isplay Clients using	SmartSession	 
Available for D	isplay Clients using	Smart Session	 
Available for D	isplay Clients using	SmartSession	 

11. On the **Data Gathering** page, select the **Custom** radio button and reduce the **SmartSession Data Update Interval** to **2** seconds. Click the **Finish** button.

😤 Remote Desktop Server Wi	zard				×
Data Gathering Enter the Data Gathering	intervals.				$\aleph$
c c		<b>2</b> 2 5	4	seconds	
Session Update Interval		8 Finish	Cancel	seconds	Help
	<u> </u>	FILIST	Cancel		nop

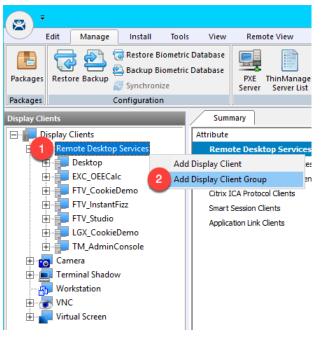
## Create Display Clients for SmartSession

To demonstrate, we will assign six **FactoryTalk View SE Display Clients** configured for **SmartSession** to the virtual thin client. The end result will be three sessions running on RDS1 and three running on RDS2.

1. From ThinManager, click the **Display Clients** tree selector.



2. First, let's create a **Display Client Group** for our new **SmartSession Display Clients**. Right click the **Remote Desktop Services** tree item and select **Add Display Client Group**.



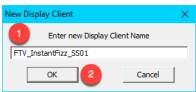
3. From the **Client Name** page of the wizard, enter *SmartSession* as the **Client Name**. Click the **Finish** button.

🕿 Display Client Wizard	×
Client Name Enter the Display Client name.	$temp{}$
Display Client Name Client Name Set a Display Name	
Type of Display Client	Group
	nissions
2           < Back	Help

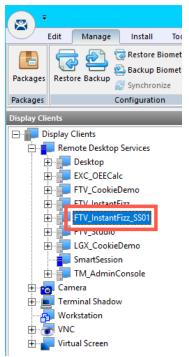
4. Since the **FTV\_InstantFizz Display Client** is most like the new **Display Client** we want to create, right click it and select **Copy**.

<b>•</b>						
	Edit	Manage	Ins	stall	Tools	View
Packages	Resto	re Backup	-	kup B	iometric	Database Database
Packages		(	Config	uratio	n	
Display Clie	ents	_				Confi
🖃 👘 Di	isplay	Clients				Attribute
÷	Ren	note Desktop	Servio	ces		Displa
Ē	3	Desktop				Display
Ē				Client 1		
H		FTV_Cookie				
		FTV_Instant FTV Studio	FIZZ			Disola
4		LGX Cookie	Dama		Modify	
		SmartSessio			Renam	e
- F		TM Admin	-	2	Сору	:
		nera	201130		Delete	
	-	minal Shado	N			Always
	Wo	rkstation				Connec
÷	NN VN	2				Disconr
<u> </u>	Virt	ual Screen				
						Remo

5. From the New Display Client dialog box, enter FTV\_InstantFizz\_SS01 and click the OK button.



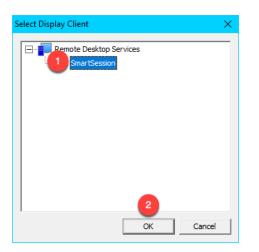
6. Double click newly created **FTV\_InstantFizz\_SS01 Display Client**.



7. From the **Client Name** page of the wizard, click the **Change Group** button.

🞇 Display Client Wizard	×
Client Name Enter the Display Client name.	times
Display Client Name Client Name FTV_InstantFizz_SS01 Set a Display Name	
Type of Display Client Remote Desktop Services	
Display Client Group	Change Group
	Permissions
< Back Next > Finish	Cancel Help

8. From the Select Display Client window, select the SmartSession Display Client Group and click the OK button.



9. Back at the **Client Name** page of the wizard, click the **Next** button.

🕿 Display Client Wizard	×
Client Name Enter the Display Client name.	$\aleph$
Display Client Name Client Name FTV_InstantFizz_SS01 Set a Display Name	
Type of Display Client Remote Desktop Services Display Client Group	
Smart Session Change Group	
Permissions	
< Back Next > Finish Cancel H	elp

10. From the **Display Client Options** page of the wizard, <u>un</u>-check the **Connect at boot-up** checkbox. Click the **Next** button.

😤 Display Client Wizard	×
Display Client Options Select the options that apply to this Display Client	$\aleph$
┌─ Client Options	
Allow Display Client to be tiled	
Allow Display Client to be moved	
Include Camera Overlays	
Include Virtual Screen Overlays	
Connection Options	
Always maintain a connection	
Connect at boot-up	
Disconnect in the background	
2	
< Back Next > Finish Cancel	Help

The **Connect at boot-up** checkbox controls whether the **Display Client** will automatically connect and initiate a Remote Desktop Server session when the terminal boots up. We don't want this to happen in this section because we want to control the timing of when the **Display Clients** launch to demonstrate **SmartSession**.

11. From the **Remote Desktop Services and Workstation Options** page of the wizard, make sure the **Application Link** checkbox and the **Smart Session** checkbox are both checked. Click the **Next** button.

😂 Display Client Wizard	×
Remote Desktop Services and Workstation Options Select the options for this Display Client	$\aleph$
Connection Options Allow Auto-Login Application Link Smart Session Enforce Primary Instant Failover	
3       < Back	Help

12. Click the Next button on the Session Resolution / Scaling Options page of the wizard.

13. From the **Display Client Members** page of the wizard, move both **RDS1** and **RDS2** to the **Selected Remote Desktop Servers** listbox. Click the **Next** button.

🕿 Display Client Wizard	×
Display Client Members Select the Remote Desktop Servers for this Display Client.	$temp{}$
Available Remote Desktop Servers Selected Remote Desktop Serv	ers
1 RDS1 (10.6.1.51) RDS2 (10.6.1.52)	
	•
Edit Server List	
2	
< <u>B</u> ack [Next > Finish Cancel	Help

14. We will adjust the SmartSession Weights to affect how the load is calculated for this Display Client. Enter a 0.0 for the CPU Utilization Weight category and enter a 0.0 for the Memory Utilization Weight category. Leave the Sessions Weight category at 1.0. Click the Finish button. By setting the CPU and Memory weights to 0.0 in the previous step, we will only use number of sessions to determine load. The default behavior is to equally factor CPU and memory utilization into the equation as well, however we will modify the weights in this way to put more emphasis on number of sessions.

🕿 Display Client Wizard	×
SmartSession Settings Enter the SmartSession weights for this Display Client	lpha
Smart Session Weights       1       0.0       •         CPU Utilization Weight       2       0.0       •         Memory Utilization Weight       2       0.0       •         Sessions Weight       1.0       •       •         Queuing	
Infinite	p

The formula that ThinManager uses to calculate SmartSession load balancing per application is

SmartSession Load = (CPU weight X the CPU Use %) + (Memory weight X Memory Use %) + (Session weight X Session Number %)

15. From the **AppLink** page of the wizard, enter the following path for the **Program Path and Filename** field and **Command Line Options** field and click the **Finish** button (you can also copy and paste these paths from the **LabPaths.txt** file by right clicking the **Notepad** icon pinned to the start bar and selecting **LabPaths.txt**):

#### Program Path and Filename:

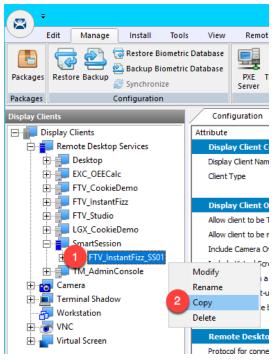
C:\Program Files (x86)\Rockwell Software\RSView Enterprise\DisplayClient.exe

#### **Command Line Options:**

"C:\Lab Files\SmartSession\InstantFizzSS01.cli"

🞇 Display Client Wizard			×
AppLink Enter the linked application path			X
AppLink Path Program Path and Filename			_
Im Files (x86)\Rockwell Software	RSView Ente	erprise\DisplayClient Browse	
Command Line Options		Drowse	;
2 "C:\Lab Files\SmartSession\Insta	antFizzSS01.c	li"	
<b>T</b>		Browse	•
Start in the following folder			
		Browse	,
	3		
< <u>B</u> ack <u>N</u> ext>	Finish	Cancel	Help

16. Right click the FTV\_InstantFizz\_SS01 Display Client and choose Copy.



17. From the New Display Client dialog, enter FTV\_InstantFizz\_SS02 and click the OK button.



18. Double click the FTV\_InstantFizz\_SS02 Display Client.

8-					
	Edit	Manage		Install	Tools
	5	2	_	Restore Bi	
Packages	Rest	ore Backup	-	Backup Bi	
			~	Synchroni	
Packages			Cor	nfiguration	1
Display Clie	ents	_		_	
🖃 👘 Di	isplay	Clients			
	Ren	note Deskto	op Se	ervices	
	]	Desktop			
Ē	]	EXC_OEEC			
FTV_CookieDemo					
FTV_InstantFizz					
FTV_Studio					
EGX_CookieDemo					
SmartSession					
TTV_InstantFizz_SS02					
Camera					
Terminal Shadow					
Workstation					
⊞… 💽 VNC ⊕… 🔚 Virtual Screen					
	- ****	uar screen			

- 19. From the **Client Name** page of the wizard, click the **Next** button.
- 20. From the **Display Client Options** page of the wizard, click the **Next** button.
- 21. From the **Remote Desktop Services and Workstation Options** page of the wizard, click the **Next** button.
- 22. From the Screen Resolution / Scaling Options page of the wizard, click the Next button.
- 23. From the **Display Client Members** page of the wizard, click the **Next** button.

24. From the **AppLink** page of the wizard, update the **Command Line Options** per below and click the **Finish** button (you can also copy and paste this path from the **LabPaths.txt** file by right clicking the **Notepad** icon pinned to the start bar and selecting **LabPaths.txt**):

### Program Path and Filename:

C:\Program Files (x86)\RSView Enterprise\DisplayClient.exe

### Command Line Options:

"C:\Lab Files\SmartSession\InstantFizzSS02.cli"

🕿 Display Client Wizard	×
AppLink Enter the linked application path.	$temp{}$
AppLink Path	_
Program Path and Filename	
Im Files (x86)\Rockwell Software\RSView Enterprise\DisplayClient.exe	
Command Line Options           "C:\Lab Files\SmartSession\Instant         S02cli	
Start in the following folder	
Browse	
2	
< <u>Back</u> <u>N</u> ext > Finish Cancel	Help

Repeat steps 16-24 to create 4 more Display Clients: FTV\_InstantFizz\_SS03, FTV\_InstantFizz\_SS04,
 FTV\_InstantFizz\_SS05 and FTV\_InstantFizz\_SS06. When complete, you should have Display Client Group called SmartSession, with 6 Display Clients inside it.

· · · · ·	Edit Manage	Install	Тоо			
	<del>(</del>	a Restore Biom	netr			
Deskanse	Restore Backup	🖄 Backup Biom	etr			
Packages	Restore backup	🧾 Synchronize				
Packages		Configuration				
Display Clie	ents					
🖃 👘 Di	splay Clients					
	Remote Deskto	op Services				
	Desktop					
l i		alc				
ļ ļ	FTV_Cook	ieDemo				
ļ ļ		ntFizz				
ļ Ē		D				
LGX CookieDemo						
FTV_InstantFizz_SS03						
FTV_InstantFizz_SS04						
FTV_InstantFizz_SS05						
FTV_InstantFizz_SS06						
		Console				
E 🗄 📩	Camera					
<u> </u>	Terminal Shad	ow				
	Workstation					
E 🗄 💆	VNC					
<u></u>	Virtual Screen					

## Assign Display Clients with SmartSession to Terminal

1. Click the Terminals tree selector icon.



2. From the Terminals tree, double click the VersaView5200 terminal to launch the Terminal Configuration Wizard.



- 3. Click the Next button on the Terminal Name page of the wizard.
- 4. Click the **Next** button on the **Terminal Hardware** page of the wizard.
- 5. Click the Next button on the Terminal Options page of the wizard.
- 6. Click the **Next** button from the **Terminal Mode Selection** page of the wizard.

7. On the **Display Client Selection** page, remove any existing **Display Clients** and assign each of the **FTV\_InstantFizz\_SS0x Display Clients** to the **Selected Display Clients** list box. Click the **Next** button.

🕿 Terminal Configuration Wizard		×
Display Client Selection Select the Display Clients to use on thi	is terminal	$\mathfrak{C}$
Available Display Clients	Selected Display Clients          Image: FTV_InstantFizz_SS01         FTV_InstantFizz_SS02         FTV_InstantFizz_SS03         FTV_InstantFizz_SS04         FTV_InstantFizz_SS05         FTV_InstantFizz_SS06	•
Edit Display Clients	Override 2 Next > Finish Cancel	Help

8. From the **Terminal Interface Options** page of the wizard, <u>un-check</u> the **Enable Tiling** checkbox. Click the **Next** button.

🞇 Terminal Configuration Wizard		×
Terminal Interface Options Select the display client selector and main menu option	s that will be available on the terminal.	$temp{}$
Display Client Selection Options		
Show Selector on Terminal	Selector Options	
1 Enable Tiling	Tiling Options	
Screen Edge Display Client Selection		
Allow Display Clients to move to/from scree	en	
Main Menu Options	Main Menu Options	
PIN Pad Options	PIN Pad Options	
< Back Next > )	Finish Cancel	Help

- 9. Click the **Next** button on the **Hotkey Configuration** page of the wizard.
- 10. Click the **Next** button on the **Log In Information** page of the wizard.
- 11. Click the **Next** button on the **Video Resolution** page of the wizard.

12. From the **Module Selection** page of the wizard, select the **RDP Experience Module** and click the **Remove** button. Click the **Finish** button.

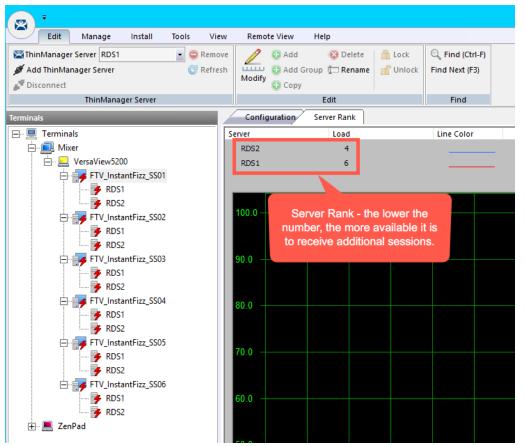
🕿 Terminal Configuration Wizard 🛛 🗙
Module Selection Select the modules that load on this terminal at boot up.
Installed Modules
Module
Key Block Module           RDP Experience Module           RF Ideas pcProx USB Module
Move Up Move Down
2
Add Remove Configure
3
< <u>B</u> ack <u>N</u> ext > Finish Cancel Help

We previously used the **RDP Experience Module** as an alternative way to stagger the starting of multiple sessions on the virtual thin client using the **Duplicate Server Connect Delay (seconds)** property. In general, a non-zero value for this property can result in unexpected results with **SmartSession**.

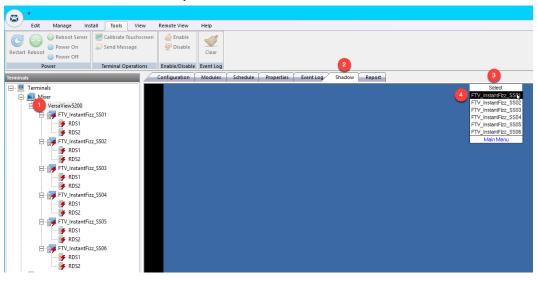
13. Double click the Thin01 shortcut on the RDS1 desktop to launch the virtual thin client.



14. While the VersaView5200 terminal boots, click the plus next to each of the FTV\_InstantFizz\_SS0x Display Clients to enable viewing of the RDS1 and RDS2 servers. Select the FTV\_InstantFizz\_SS01 Display Client and then click the Server Rank tab. This console view will allow you to monitor how the six Display Clients are distributed across the RDS1 and RDS2 Display Servers. Only FTV\_InstantFizz\_SS01 was configured to automatically start. The remaining InstantFizzSS0x Display Clients were configured not to Connect at boot-up (this is configured in the Display Client Wizard). This was done in order to stagger the connections of the Display Clients. RDS1 should have a higher rank initially since you are connected to it via RDP for your remote session.



15. From the virtual thin client or a shadow of VersaView5200, click and hold the DisplayClient Selector and hover over FTV\_InstantFizz\_SS01 and release your mouse button to launch it.

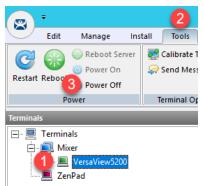


16. Repeat the process in the previous step by selecting the other **Display Clients** to launch them, waiting a few seconds in between. You should see the **Display Clients** alternate between **RDS1** and **RDS2** as **Smart Session** attempts to balance the load based on number of sessions running on each.

	÷						
	Edit	Manage	Install	Tools	View		
a	🙋 🚱 Reboot Server 🖉 Calibrate Touc						
Pertart	Reboot	One of the second se	4	Send Mes	sage		
Restart	Reboot	Power Off					
	Po	ower		Terminal O	perations		
Terminal	5	_		_			
	Termina	als					
<u> </u>	🛄 Mix						
	÷	VersaView52					
			antFizz_S	S01			
	_	🗲 🌽 RDS					
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		RDS	antFizz_S	502			
		G RDS					
	<u> </u>		antFizz_S	503			
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	/	📕 🦩 RDS	2				
FTV_InstantFizz_SS04							
📴 RDS1							
FTV_InstantFizz_SS05							
-	_	🔶 🦩 RDS					
		RDS					
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÷	💻 Zer	-					

### Power off Terminal and Reset Sessions

1. Power off the virtual thin client by selecting the VersaView5200 terminal, followed by the Tools ribbon, then click the Power Off icon.



2. Navigate to the **Display Servers** tab in the ThinManager Administration Console.



3. Expand **RDS Servers**, select **RDS1** and click the **Users** tab. Select all of the user sessions except for the **Active labuser** user (this is your session into RDS1), right click and select **Reset Session**.

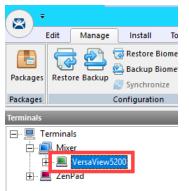
® <u>-</u>							
	ols View	Remote View Help					
	rate Touchscreen I Message	Cle	2 ar				
Reset all session Labuser se		able Event	: Log Schedule	2 Users	Sessions	Processes	Graph
Display Servers	U. Y		Session			Se	ession ID
RDS Servers	Labuser		RDP-Tcp#	18			1
(1) 🖶 RDS1	thin01		RDP-Tcp#	35			26
RDS1P	thin01		RDP-Tcp#	38			27
🛨 📑 RDS2	thin01		RDP-Tcp#	39			28
🗄 🗠 ত Cameras				3	Reset Sess	ion	
⊡ 💽 VNC Servers					Disconne	t Session	
					Send Message		

- Ŧ × Remote View Edit Manage Install Tools View Help Calibrate Touchscreen 🛞 Reboot Server 👍 Enable -C Over On 🥋 Send Message 🥐 Disable Restart Reboot Clear Over Off 2 Terminal Operations Enable/Disable Event Log Power **Display Servers** Configuration Properties Schedule Users Sessions Processes Graph 🖃 📗 Display Servers User Session Session ID RDS Servers RDP-Tcp#24 thin01 🗄 🖷 👖 RDS1 thin01 RDP-Tcp#25 . RDS1P RDP-Tcp#26 18 RDS2 3 Reset Session Ē Cameras Disconnect Session E VNC Servers Send Message
- 4. Now select RDS2 and click the Users tab. Reset all sessions.

5. Click the **Terminals** tree selector icon.

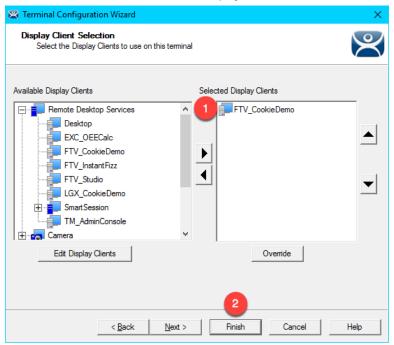


6. Double click the **VersaView5200** terminal.



- 7. Click the Next button on the Terminal Name page of the wizard.
- 8. Click the Next button on the Terminal Hardware page of the wizard.
- 9. Click the Next button on the Terminal Options page of the wizard.
- 10. Click the **Next** button on the **Terminal Mode Selection** page of the wizard.

11. From the **Display Client Selection** page of wizard, remove all of the **Display Clients** from the **Selected Display Clients** list. Select the **FTV\_CookieDemo Display Client** from the **Available Display Clients** list and click the **Right Arrow** button to move it to the **Selected Display Clients** list. Click the **Finish** button.



This completes the section **RDS Load Balancing with ThinManager SmartSession** of the lab. Please continue on to the **Language Support** section of the lab.

# Section 16: Language Support

## Overview

Prior to version 11, ThinManager offered multi-language support only <u>within</u> Remote Desktop Server sessions delivered to ThinManager-managed terminals. This was accomplished using the Keyboard Configuration Module which supports 43 different languages. However, this module only permits localized keyboard entry <u>within</u> the Remote Desktop Server session. This means that only English keyboards are supported within ThinManager firmware dialog boxes with this module – like Relevance User login prompts, etc. Similarly, object names for Terminals, Display Clients, etc. within the ThinManager Admin Console could only be named with English characters. These localization limitations have been greatly improved with the release of ThinManager v11.

- 1. Keyboard Configuration Module
- 2. Default Language Selection and Firmware Package 8.2
- 3. Terminal Language Selection
- 4. Remove Language Selection Module

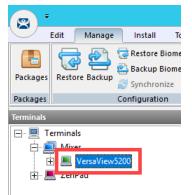
# Keyboard Configuration Module

As previously mentioned, the **Keyboard Configuration Module** enables a ThinManager managed thin client to support non-English keyboard input, but only within Remote Desktop Server sessions. This section will show how to apply and configure the **Keyboard Configuration Module** for this purpose, but since we only have English keyboards at your lab stations, we will be unable to demonstrate the results. The **Keyboard Configuration Module** does <u>not</u> require ThinManager v11.

1. Click the Terminals tree selector icon.



2. From the Terminals tree, double click the VersaView5200 terminal to launch the Terminal Configuration Wizard.

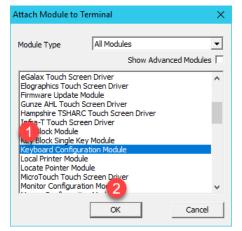


- 3. Click the Next button on the Terminal Name page of the wizard.
- 4. Click the **Next** button on the **Terminal Hardware** page of the wizard.
- 5. Click the Next button on the Terminal Options page of the wizard.
- 6. Click the Next button on the Terminal Mode Selection page of the wizard.
- 7. Click the Next button on the Display Client Selection page of the wizard.
- 8. Click the Next button on the Terminal Interface Options page of the wizard.
- 9. Click the Next button on the Hotkey Configuration page of the wizard.
- 10. Click the **Next** button on the **Log In Information** page of the wizard.
- 11. Click the Next button on the Video Resolution page of the wizard.

12. Click the Add... button on the Module Selection page of the wizard.

🕿 Terminal Configuration Wizard	×
Module Selection Select the modules that load on this terminal at boot up.	$temp{}$
Installed Modules	
Module	
Key Block Module	
RF Ideas pcProx USB Module	
	Move Up Move Down
Add Remove	Configure
< <u>B</u> ack <u>N</u> ext >	Finish Cancel Help

13. From the Attach Module to Terminal window, select the Keyboard Configuration Module and click the OK button.



14. Back at the Module Selection page of the wizard, double click the Keyboard Configuration Module.

🕿 Terminal Configuration Wizard	×
Module Selection Select the modules that load on this terminal at boot up.	$temp{}$
Installed Modules	
Module	
Key Block Module	
RE Ideas pcProx LISB Module Keyboard Configuration Module	
Move Up	Move Down
Add Remove	Configure
< <u>B</u> ack <u>N</u> ext > Finish C	Cancel Help

15. From the **Module Properties** window, you will see that you can set general keyboard properties for the terminal. Click the **Keyboard Layout** drop down list and review the available languages. Just to reiterate, selecting a language from this drop down list will support that language within any Remote Desktop Server sessions delivered to the ThinManager-managed terminal to which this module is applied. Click the **Cancel** button.

Module Properties			×
Num Lock State	On_At_Startup	•	
Caps Lock State	Off_At_Startup	•	
Scroll Lock State	Off_At_Startup	•	
Repeat Delay (ms)	500	•	
Repeat Rate (chars/sec)	30		
Disable Repeat for Enter Key	NO	•	
Keyboard Layout	English(UnitedStates)	•	
Use Event Interface	Czech Danish	^	
	Dutch(Belgium) Dutch(Netherlands)	~	
Set to Default			2
		Done	Cancel

16. Again, since we have an English keyboard connected to our virtual thin client, we cannot see the results of selecting a different language, so click the **Cancel** button.

🕿 Terminal Configuration Wizard	×
Module Selection Select the modules that load on this terminal at boot up.	$\mathfrak{S}$
Installed Modules	
Module	
Key Block Module	
RF Ideas pcProx USB Module	
Keyboard Configuration Module	
Move Up	Move Down
Add Remove	Configure
< <u>B</u> ack <u>N</u> ext > Finish	cel il Help I

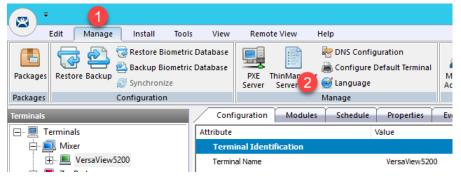
# Default Language Selection and Firmware Package 8.2

With ThinManager v11, the Windows components of ThinManager and associated Firmware Package (8.2 or newer) have been updated to accept Unicode characters, enabling broader support for non-English characters. With ThinManager 11.0 and Firmware Package 8.2, a new Language Selection Module enables support for the following languages:

- French
- French (Swiss)
- German
- German (Swiss)
- Russian
- Spanish

Unlike the **Keyboard Configuration Module**, the **Language Selection Module** will allow you to enter any of these Languages listed above not only within the **Remote Desktop Server session** but also within ThinManager firmware specific input fields, like **Relevance User Services** username and password fields. With **Firmware Package 8.2**, the **On-Screen Keyboard Configuration Module** has been updated to support these languages as well. With regard to Interactive Shadowing from the Admin Console, if your ThinManager Host Operating System is set to the same language as the Terminal being shadowed, you will be able to provide keyboard input via an interactive shadow in the Languages listed above seamlessly into both Remote Desktop Server sessions as well as ThinManager firmware specific input fields. Lastly, ThinManager 11.0 with Firmware Package 8.2 supports non-English characters for ThinManager objects like Display Servers, Display Clients, Terminals, Locations, etc. While we will continue to add support for additional languages, if you need support for a language that is not provided, you may still use the **Keyboard Configuration Module**, but this would limit language support to within the Remote Desktop Server sessions as explained in the previous section.

1. Let's set the default language for all of the terminals configured to run **Firmware Package 8.2** or newer. From the **ThinManager Admin Console**, select the **Manage** ribbon followed by the **Language** icon.

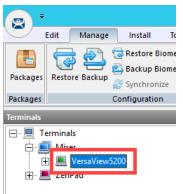


2. From the Terminal Language Selection window, select Spanish from the drop down list and click the OK button.



The **Terminal Language** drop down list will only be populated with languages if you are running ThinManager 11 and have **Firmware Package 8.2** or newer installed.

3. From the Terminals tree, double click the VersaView5200 terminal to launch the Terminal Configuration Wizard.



- 4. Click the **Next** button on the **Terminal Name** page of the wizard.
- 5. From the **Terminal Hardware** page of the wizard, click the **Terminal Firmware Package** drop down list and select **8.2**. Click the **Next** button.

·	ation Wizard	
Terminal Hardwa Select the manu	<b>e</b> facturer and model of this terminal.	$\succ$
Use this to configure	the type of hardware for this terminal.	
Make / OEM	Allen-Bradley	<b>v</b>
Model	6200T-NA	<b>v</b>
Video Chipset In	tel Valleyview	
Video Chipset In Terminal Firmware		<b>_</b>
·	Package	
Terminal Firmware	Package 1 8.2	Clear Edit
Terminal Firmware	Package 1 8.2	Clear

In **ThinManager**, a **Firmware Package** is a version of **Firmware** along with the **Modules** that are associated with it. As previously mentioned, a **Module** provides some additional functionality to the **Firmware**, like a touchscreen or badge reader driver, etc. Individual Modules can be updated independent of a **Firmware Package**.

- 6. Click the Next button on the Terminal Options page of the wizard.
- 7. Click the **Next** button on the **Terminal Mode Selection** page of the wizard.
- 8. Click the Next button on the Display Client Selection page of the wizard.

9. From the **Terminal Interface Options** page of the wizard, click the **Main Menu Options** button.

🕿 Terminal Configuration	on Wizard					×
Terminal Interface C Select the display o		nd main menu op	tions that w	ill be available or	n the termina	a. 阕
Display Client Selectio	n Options					
Show Show	Selector on Ter	minal		Selector Opti	ons	
Enable	Tiling			Tiling Optio	ns	
✓ Screen	Edge Display	Client Selection	-			
Allow [	)isplay Clients t	o move to/from s	creen			
- Main Menu Options			[	Main Menu Op	tions	
PIN Pad Options				PIN Pad Opti	ons	
	< Back	Next >	Finis	h Can	cel	Help

10. From the **Main Menu Options** window, check the **Show Virtual Keyboard** checkbox. Click the **OK** button, followed by the **Finish** button.

Main Menu Options	<b>2</b> ×
Allow reboot / restart	OK
Show Main Menu on Selector	Cancei
Show Virtual Keyboard	

The **Virtual Keyboard** will automatically popup when an input from the ThinManager firmware is required (i.e.: Relevance User username or password entry).

11. Double click the virtual thin client Thin01 from your desktop to launch it.



12. Once the VersaView5200 terminal reboots, hit CTRL-m on the keyboard either on the virtual thin client or a shadow of it to launch the terminal's Main Menu. Touch the Log In button.



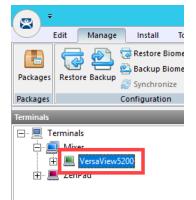
13. This should launch a **Spanish On Screen Keyboard** and allow you to enter a non-English character as part of the **Relevance Username**. After a few seconds, the **Relevance Logon** dialog box will time out.

						Ente	vance Logon ir username:							
a 2 \	! " 1  2		#	\$ 4	% i 5 i	8x /			) <mark>-</mark> 9 0		? i ' ¿	Del	Esc	
Tab	Q	w	E	R	т	Y	U	I	0	P	î.	+]	÷	
А	s	D		F	G	н	J		к	L	Ñ	, , {	Ç}	
Shift	> <	z	x	с	v	в	N	м	;	:		Com pose	Shift	$\mathbf{K}$
Done	Caps Lock	M	eta						AltGr		← →	1	Ļ	NAGER

# **Terminal Language Selection**

If you need to assign different languages to different terminals, this can be accomplished using the Language Selection Module which is included in Firmware Package 8.2.

1. From the Terminals tree, double click the VersaView5200 terminal to launch the Terminal Configuration Wizard.

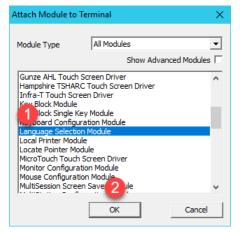


- 2. Click the Next button on the Terminal Name page of the wizard.
- 3. Click the **Next** button on the **Terminal Hardware** page of the wizard.
- 4. Click the Next button on the Terminal Options page of the wizard.
- 5. Click the **Next** button on the **Terminal Mode Selection** page of the wizard.
- 6. Click the Next button on the Display Client Selection page of the wizard.
- 7. Click the **Next** button on the **Terminal Interface Options** page of the wizard.
- 8. Click the **Next** button on the **Hotkey Configuration** page of the wizard.
- 9. Click the Next button on the Log In Information page of the wizard.
- 10. Click the Next button on the Video Resolution page of the wizard.

11. From the **Module Selection** page of the wizard, click the **Add**... button.

🙁 Terr	minal Configuratio	n Wizard					×
	<b>Jule Selection</b> Select the modules the	nat load on this	terminal at boot u	р.			$\aleph$
		Installed Modu	les				
	dule						
	Key Block Module						
	RF Ideas pcProx US	SB Module					
					Move Up		Move Down
	Add	Remove	1				Configure
		11011070				_	Configure
		< <u>B</u> ack	<u>N</u> ext >	Finish	C	ancel	Help

12. From the Attach Module to Terminal window, select the Language Selection Module.



13. Back at the **Module Selection** page of the wizard, double click the **Language Selection Module**.

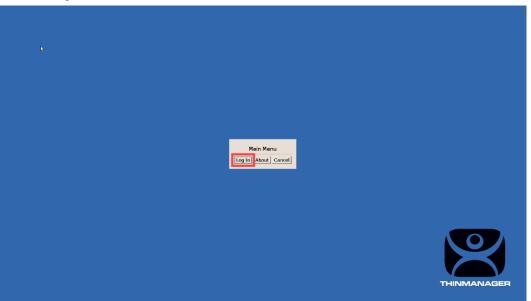
🕿 Terminal Configuration Wizard	×
Module Selection Select the modules that load on this terminal at boot up.	$\mathfrak{S}$
Installed Modules	
Module	
Key Block Module	
RE Ideas ocPmx USB Module Language Selection Module	
Move Up	Move Down
Add Remove	Configure
< <u>B</u> ack <u>N</u> ext > Finish Cancel	Help

14. From the **Module Properties** window, select **German** from the **Terminal Language** drop down list and click the **Done** button, followed by the **Finish** button.

Module Properties		$\times$
Terminal Language German	<b>1</b>	
Set to Default	2 Done Cance	el

As previously noted, the Language Selection Module is only available on terminal's that have Firmware Package 8.2 or newer applied to them.

- 15. Right click the **VersaView5200** terminal from the **Terminals** tree and select **Restart Terminal** to apply the changes. Click **Yes** to the confirmation dialog.
- 16. Once the terminal restarts, hit CTRL-m on the keyboard at the virtual thin client to launch the terminal's **Main Menu**. Touch the **Log In** button.



17. This should launch a **German On Screen Keyboard** and allow you to enter a non-English character as part of the **Relevance Username**. After a few seconds, the **Relevance Logon** dialog box will time out.

									ance Logor							
								Enter	username	-						
E	Esc	! 1'	" 2 ²	ş 3	3	\$ 4£	% 5 ¬	<u>ок</u> 6©	Cancel	) 2 ] 8		D}	D	, o , ^	#	
	Tab	0@		w	E	R	Т	Z	U	I	0	Р	Ü	* +~	Del	
	A	s		D		F	G	H	1	J	K L			Ö	Ä	
	Shift	> <		Y	×	с	v	В	N	Mμ	;	:	=	Com pose	Shift	$\mathbf{S}$
	Done	Caps Lock	5	Me	ta					AltG	r	÷	<b>→</b>	t	÷	NAGER

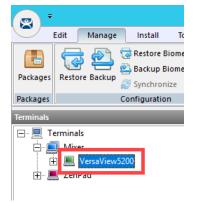
Also as previously mentioned, additional languages will continue to be added to the new Language Selection capability that is part of ThinManager v11. Additional languages will be added to Firmware Packages 8.2 or newer and will be deployable by simply downloading, installing and deploying the updated Firmware Package.

Please refer to <u>AID1084359 – ThinManager Language Support</u> which summarizes most of the information from this section for future reference and will be updated as new languages are released.

#### Remove Language Selection Module

We will complete the remaining lab sections with an English keyboard, so we can remove **Firmware Package 8.2** and the **Language Selection Module**.

1. From the Terminals tree, double click the VersaView5200 terminal to launch the Terminal Configuration Wizard.



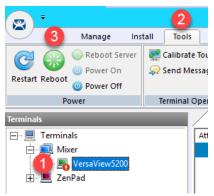
- 2. Click the **Next** button on the **Terminal Name** page of the wizard.
- 3. From the Terminal Hardware page of the wizard, select 8.1 from the Terminal Firmware Package drop down list.

🕿 Terminal Configuration	n Wizard			×
Terminal Hardware Select the manufactu	rer and model of this term	inal.		$temp{}$
Use this to configure the ty	ype of hardware for this te	eminal.		
Make / OEM	GENERIC			•
Model	PXE			-
OEM Model PXE Video Chipset Unknov Terminal Firmware Pack		1		<b>_</b>
⊤Terminal ID and IP Addrn Terminal ID 0	ess )05056282731		Clear E dit	
	2			
	< <u>B</u> ack <u>N</u> ext >	Finish	Cancel	Help

- 4. Click the Next button on the Terminal Options page of the wizard.
- 5. Click the Next button on the Terminal Mode Selection page of the wizard.
- 6. Click the Next button on the Display Client Selection page of the wizard.
- 7. Click the Next button on the Terminal Interface Options page of the wizard.
- 8. Click the Next button on the Hotkey Configuration page of the wizard.
- 9. Click the Next button on the Log In Information page of the wizard.
- 10. Click the Next button on the Video Resolution page of the wizard.
- 11. From the **Module Selection** page of the wizard, select the **Language Selection Module** and click the **Remove** button, followed by the **Finish** button.

🕿 Terminal Configuration Wizard	×
Module Selection Select the modules that load on this terminal at boot up.	$\aleph$
Installed Modules	
Module	
Key Block Module	
RF Ideas pcProx USB Module	
Language Selection Module	
Move Up	Move Down
2	
Add Remove	Configure
< <u>B</u> ack <u>N</u> ext > Finish Cance	el Help

12. From the **Terminals** tree, select the **VersaView5200** terminal, followed by the **Tools** ribbon, then click the **Reboot** icon. You can continue to the next section while the terminal completes its reboot process.



This completes the Language Support section of the lab. Please continue on to the Relevance and Geo-Fencing section of the lab.

# Section 17: Relevance Location Services - Geo-Fencing

# Overview

Location based content delivery was introduced in the <u>Section 10</u>, where we created a simple Location Resolver using a QR Code. Scanning the QR Code as a member of our Maintenance group delivered Logix Designer with an associated ACD file to our mobile (yet tethered!) device. A QR Code is one of four Location Resolver technologies currently supported by ThinManager. Additionally, Bluetooth Beacons, WiFi Access Points and GPS can be used to define Locations in ThinManager. In this section of the lab, we are going to create a geo-fence using a Bluetooth Beacon, such that certain content will be available within the geo-fence, but unavailable outside of it. We are also going to present some unique ways that our tablet can interact with our thin client.

In this section, you will be performing the following tasks:

- 1. Create a Maintenance Access Group
- 2. Create a Maintenance User Group
- 3. Create a Maintenance User
- 4. Register a Bluetooth Beacon Location Resolver
- 5. Register a QR Code Location Resolver
- 6. Create Parent (Geo-Fence) Location
- 7. Create Child Location
- 8. Assign Default Location to Terminal
- 9. Reassign Display Client to Public Display Server
- 10. See the Results
- 11. Remove Default Location from Terminal

#### Create Maintenance Access Group

Access Groups are used to control access to Terminals, Display Clients and/or Locations. We previously created an Engineer Access Group in the <u>Section 10</u>. We will create another Access Group for Maintenance now.

1. Click the Manage ribbon, followed by the Access Groups icon.



2. From the Access Groups popup, click the Add button.

x
<u> </u>
Edit
(Add
Delete
Calc Permissions

3. Click the Select Windows Security Group button.

	Access Group	x
Enter Group Name	Select Windows Security Group	OK Cancel Edit Members

The Select Windows Security Group provides the ability to link an Access Group to a Widows Security Group. Therefore, you could manage access to ThinManager resources (Terminals, Display Clients, etc.) through Windows Security Groups as well. You could also use the TermMon ActiveX within an ActiveX container, like View SE, to detect when a ThinManager logon event occurs and then to determine that user's Windows Security Group membership to determine their appropriate access within the application. 4. From the Select Security Group to Add window, expand the Users item and select the Maintenance group, followed by the OK button.

Select Security Group to Add	x
Schema Admins     Supervisor     WinRMRemoteWMIUsers	<b>■</b>
	el

5. From the Access Group window, click the OK button.

	Access Group	X
Enter Group Name	Maintenance	OK
	Select Windows Security Group	Cancel
		Edit Members

6. From the Access Groups window, click the OK button.

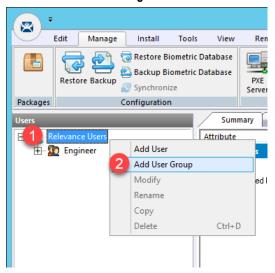
Access Groups	×
Unrestricted All Users All Terminals All Locations Engineer Maintenance	Edit Add Delete Calc Permissions

## Create Maintenance User Group

1. Click the **Users** icon *i* in the ThinManager tree selector.



2. From the **Relevance Users** tree, right click the **Relevance Users** node and select **Add User Group**. This will launch the **Relevance User Configuration Wizard**.

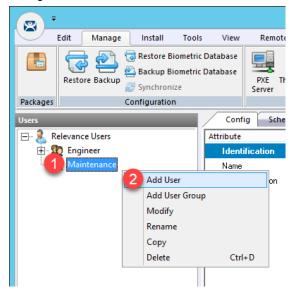


3. From the **Relevance User Group Information** page of the wizard, enter *Maintenance* as the **User Name** in the **Group Name** frame. Click the **Finish** button.

🕿 Relevance User Configuration Wizard 🛛 🗙
Relevance User Group Information Enter the Relevance User Group name.
Group Name
User Name Maintenance
Password
Verify Password
Customize
Password Options PIN Options Group Setting
Group Change Group
Permissions
<u>All Rest</u> > Finish Cancel Help

#### **Create Maintenance User**

- 1. Expand the **Relevance Users** node.
- 2. Right click the newly created **Maintenance User Group** and select **Add User**. This will launch the **Relevance User Configuration** wizard.



3. From the **Relevance User Information** page of the wizard, check the **Active Directory User** checkbox if it is not already checked. Click the **Search** button.

🕿 Relevance User Configuration Wizard	$\times$
Relevance User Information Enter Relevance username, password and permission information.	$\prec$
Active Directory User Relevance User Information AD User Name Customize Password Options PIN Options	
Group Change Group Change Group	
Copy Settings from another User Copy From Permissions	
< <u>₿</u> ack <u>N</u> ext> Finish Cancel Help	

4. From the **Search for AD User** dialog box, click the **Search** button.

		Search for AD User	x
Filter	Contains 💌	Recurse Security Groups	Locations
Name	U	ser Principal Name	
1		OK	Cancel

5. Select **Mike** from the user list and then click the **OK** button.

	Search for AD User	Locations
	Recurse 🔽	
Filter Contai	ns 💌	
Name	User Principal Name	_
loc01	loc01@tmlab.loc	100 L
loc02	loc02@tmlab.loc	
loc03	loc03@tmlab.loc	
loc04	loc04@tmlab.loc	
loc05	loc05@tmlab.loc	=
Mike 1	mike@tmlab.loc	
oscar	oscar@tmlab.loc	
sid	sid@tmlab.loc	
tab01	tab01@tmlab.loc	
tab02	tab02@tmlab.loc	
tab03	tab03@tmlab.loc	
tab04	tab04@tmlab.loc	Y
	ок	Cancel

6. Back at the **Relevance User Information** page of the wizard, click the **Finish** button.

Active Directory L	
AD User Name	Mike Search
-Group	Customize Password Options PIN Options
Copy Settings	Change Group
Copy S	ettings from another User Copy From
	Permissions

## Register a Bluetooth Beacon Location Resolver

A Bluetooth Beacon uses Bluetooth Low Energy (BTLE) to transmit a signal continuously, hence the name beacon. This signal includes a Received Signal Strength Indicator (RSSI). Version 4.0 of the Bluetooth Standard, which a majority of today's mobile devices support, included support for BTLE. The closer the mobile device is to the Bluetooth Beacon, the stronger the signal strength (less negative). The further away the mobile device is from the Bluetooth Beacon, the weaker the signal strength (more negative). This signal strength can be used within ThinManager to create a Location that is defined by an entry and exit point, each represented by a specific signal strength value. We will use a common Bluetooth Beacon for the lab that will be used as our geo-fence.

Since this is a Cloud lab, we will not have access to a Bluetooth Beacon, but we will walk through the process of manually registering an **iBeacon**. With an actual beacon, you would be able to register it using a ThinManager mobile client like aTMC, iTMC or WinTMC. First, in order for ThinManager to use an **iBeacon**, you must tell ThinManager the **Universally Unique Identifier** (**UUID**) of the **beacon**. For Radius Network **beacons**, you can use their free App called **RadBeacon** to configure their beacons.

1. From ThinManager, click the **Manage** ribbon followed by the **Settings** icon within the **Relevance** group.

	1													
	Edit Manage	Install	Tools	View	Remo	ote View	Help							2
Packages	Restore Backup	🛃 Restore Bi 🔄 Backup Bi 🍠 Synchroni	ometric Da		PXE Server	ThinManag Server List	er 📆	Default Terminal		Synchronize Passwords	Settings	Manage Resolvers		
Packages	C	Configuration	1 I				Manage		A	ctive Director	Ŋ	R	elevance	

2. From the Relevance Settings window, click the Add button in the iBeacon GUIDs frame.

Relevance Settings			×
Location Transfer Timeout	15	seconds	
Location Transfer Extension Time	15	seconds	
Bluetooth Device Name Filter Prefix	ACP-		
-iBeacon GUIDs			
			Add
			Delete
			Edit
Enable iPhone Beacons			
Allow New Resolvers to be registered	V		
		OK	Cancel

Enter the following in the GUID field 2F234454-CF6D-4A0F-ADF2-F4911BA9FFA6 (you can also copy and paste this path from the LabPaths.txt file by right clicking the Notepad icon pinned to the start bar and selecting LabPaths.txt). Click the OK button.

	Enter iBeacon GUID X
Enter GUID	2F234454-CF6D-4A0F-ADF2-F4911BA9FFA6

- 4. Click the **OK** button.
- 5. Click the **Manage** ribbon followed by the **Manage Resolvers** icon.

Edit     Manage     Install     Tools     View     Remote View     Help       Image     Image     Image     Image     Image     Image     Image       Image     Image     Image     Image     Image     Imag	
📳 🥁 🗟 Restore Biometric Database 📑 🖗 DNS Configuration 💂 🐊 🖉 🂡 🤗	
Packages Restore Backup and Access Setting Manage Access Setting	
Synchronize Server Server List 💆 Language Accounts Passwords Resolvers Groups	
Packages Configuration Manage Active Directory Relevance	

7. From the **Resolver Management** window, click the **Add** button.

Resolver Management		×
Name	Туре	Add
器 LGX_CookieDemo	QR Code	Delete
		Edit
		Search
		ОК

 From the Add New Resolver window, enter *btb* as the Name, select Bluetooth as the Type and enter or copy/paste 2F234454-CF6D-4A0F-ADF2-F4911BA9FFA6.1.1 into the Data field. Click the OK button followed by the OK button again.

Add New Reso	lver X
Name	в
Description	
Туре	2 Bluetooth
Data	3 2F234454-CF6D-4A0F-ADF2-F4911BA9FFA6.1.1
	OK Cancel

# Register a QR Code Location Resolver

1. From the aTMC Main Menu, touch the Settings button (3 vertical dots below the DemoKit button), followed by the Manage ThinServer button.

⊡ ± ⊚ ⊡			💲 🗔 🔞 🖬 3:54 PM
aTMC			
DemoKit 10.6.10.51 Manage ThinServer Remove ThinServer			
	5		

2. From the aTMC **Settings** window, touch the **Register QR Code** button.

			💲 🗔 📑 12:35 PM
Settings			
RELEVANCE RESOLVERS			
Register QR Code			
Register Bluetooth Beacon			
Register WiFi Access Point			
CAMERA			
Set Camera Location			
DEBUGGING			
Debug Logging: Disabled			
	Ĵ		

3. Back at the **aTMC Settings** window, touch the **Register QR Code** button.

1 🖬 🖻			🖇 😑 <->! 🛢 7:41
Settings			
RELEVANCE RESOLVERS			
Register QR Code			
Register GPS Location			
Register Bluetooth Beacon			
Register WiFi Access Point			
CAMERA			
Set Camera Location			
DEBUGGING			
Debug Logging: Disabled			
	4	0	

4. A camera window will appear. Point the Tablet camera at the **QR Code** below.



5. Once the **QR Code** is scanned by **aTMC**, you must give it a name. Touch the **Use Data as Name** button which will use the data embedded in the **QR Code** as the name of the new **Location Resolver** (**MixerHMI**). Touch the **OK** button.

		윓 🗔 📑 2:15 PM
aTMC	ENTER IDENTIFIER NAME	
	Data: LGX_CookieDemo	
	Enter Name: MixerHMI	
	CANCEL USE DATA AS NAME OK	
MixerHMI Missel IPI	ModerN MiddlETOn MiserY MuseuMS Muse	euM MisogYNY Mod
WIXEFHIMI WISSOURI	Modern MiddleTOIT Miser Museums Muse	
1 2 @	3 <sup>#</sup> 4 <sup>\$</sup> 5 <sup>%</sup> 6 <sup>^</sup> 7 <sup>&amp;</sup>	8 * 9 ( 0 )
q <sup>I</sup> w <sup>1</sup>	ertyu i	o p * 💌
a s	d f g h ; ; ł	( Done
ी z	x c v b n m'	!? î
<b>‡</b> 1@#		, :-)

6. You should receive a successful confirmation dialog. Touch the **OK** button, followed by the **Back** button to return to the **Main Menu**.

<b>□ ±</b> □ ⊘ 0,		🖁 🔜 2:15 PM
aTMC	ENTER IDENTIFIER NAME	
	Data: LGX_CookieDemo	
	Enter Name: MixerHMI	
5	SUCCESS	
MixerHMI MissoU	Resolver Successfully Registered	sogYNY Mod
1 2		9 ( 0 )
q [ w ]	ок	p * 🛛
a s	d f g h j k	Done
û z	x c v b n m <sup>7</sup> !	? 🕆
<b>‡</b> 1@#	2 <u> </u>	. :-)

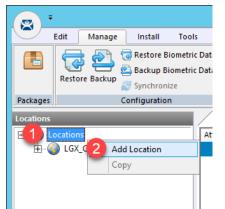
# Create Parent (Geo-Fence) Location

The example you are about to create will require two **Locations** in ThinManager. One will be the **Parent** representing the **geo-fence**, to which the **Bluetooth Beacon Location Resolver** will be assigned. The second will be the **Child** to which we will assign the **CookieDemo Display Client** and the **QR Code Location Resolver**.

1. Click the **Locations** icon in the tree selector. This icon will only be present if you have a **Relevance** license activated.



2. Right click the **Locations** tree item and select **Add Location**.



3. From the Location Name page of the Location Configuration Wizard, enter *Mixer\_Fence* as the Location Name. Click the Next button.

S Location Configuration Wiza	rd 🛛 🗙
Location Name Enter Name for this location	
Docation Name Mixer_Fence	
This must be a unique name using letters, numbers, hypher and underscores (_) only.	ns (-).
Des	cription
Location GroupChang	je Group
Copy Settings	y From
Permissions 2 < Back Next > Finish C	Cancel Help

4. From the **Location Options** page of the wizard, keep the defaults and click the **Next** button.

Due to the fact that you are tethered, we will not actually be enforcing the Fence in this example. If we wanted to enforce the fence, we would check the **Enforce Location Fencing** checkbox.

5. Click the Next button on the Display Client Selection page of the wizard.

If we assigned a **Display Client** here it would be automatically delivered to the tablet when within the defined range of the **Beacon**, and automatically removed when outside the range of the **Beacon**. For the example we are building, we want to require the scan of a **QR Code** while within range of the **Beacon** to trigger the content delivery.

6. Click the Next button on the Windows Log In Information page of the wizard.

Since we have not assigned a Display Client to this Location, we don't need to provide Login Credentials.

7. Click the Add button from the Relevance Resolver Selection page of the wizard.

8	Location Configurat	ion Wizard
<b>Relevance Res</b> Assign Releva	olver Selection nce Resolvers to this location	
Relevance Resolv	ers	
Name	Туре	Action
۲. Add	III Delete Edit	
< Back	Next> Finish	Cancel Help

8. Select **btb** from the **Resolver Name** drop down list and **Clone** from the **Choose Action** page of the wizard. Click the **Settings** button.

Choose a Relevance Res	olver	×
Resolver Name	1 БР	Only Show Unassigned Resolvers
Resolver Description		
Resolver Type	Bluetooth	
Choose Action	2 Clone	▼ 3 Settings
		Permissions
		OK Cancel

9. The **RSSI to Log In** value is the one captured when you registered the Beacon. The **RSSI to Log Out** is just 10 less than the **RSSI to Log In**. For the purposes of this lab, do not change the values. Click the **OK** button.



10. Click the **OK** button again.

Choose a Relevance Resolver		×
		Only Show Unassigned Resolvers 🗌
Resolver Name	btb	•
Resolver Description		
Resolver Type	Bluetooth	
Choose Action	Clone	•
		Settings
		Permissions
		OK Cancel

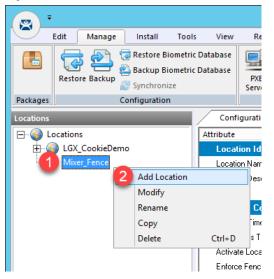
#### 11. Click the **Finish** button.

Name	Туре	Action	
btb	Bluetooth	Clone	
Add	Delete Edi		

## **Create Child Location**

We will assign the CookieDemo Display Client to the Child Location and the QR Code Location Resolver we just registered.

1. Right click the **Mixer\_Fence** location and select the **Add Location** item.



2. From the Location Name page of the Location Configuration Wizard, enter *Mixer\_HMI* as the Location Name. Click the Next button.

Location Configuration Wizard	x
Location Name Enter Name for this location	
Location Name Mixer_HMI	
This must be a unique name using letters, numbers, hyphens (-), and underscores (_) only.	
Description	
Location GroupChange Group	
Copy Settings	
Copy Settings from another Location	
Pemissions	
< Back Next > Finish Cancel	Help

- 3. Click the **Next** button on the **Location Options** page of the wizard.
- 4. From the **Display Client Selection** page of the wizard, remove all existing **Display Clients** and move the **FTV\_CookieDemo Display Client** to the **Selected Display Clients** list. Click the **Next** button.

🕿 Location Configuration Wizard	×
Display Client Selection Select the display clients to use at this location	
Available Display Clients           Remote Desktop Services           Desktop           EXC_OEECalc           FTV_CookieDemo           FTV_Instant Rizz           FTV_Studio           LGX_CookieDemo           Smart Session	Selected Display Clients
Edit Display Clients	Override
< <u>Back</u> <u>N</u> ext >	Finish Cancel Help

5. From the **Windows Log In Information** page of the wizard, enter *loc02@tmlab.loc* as the **Username** and *rw* as the **Password**. Click the **Verify** button to validate the credentials entered. Click the **Next** button.

8	Location Configuration Wizard
	In information ows usemame and password information.
⊢ Windows Log	In Information
Usemame Password	1 loc02@tmlab.loc Search 2
Domain	Verify           Password Options
	4
< Bac	ck Next > Finish Cancel Help

6. From the **Relevance Resolver Selection** page of the wizard, click the **Add** button.

8	Location Configura	ntion Wizard	×
Relevance Reso Assign Releva	Iver Selection nce Resolvers to this location		
Relevance Resolve	rs Type	Action	
	1.750		
<	Ш	>	
Add	Delete Edit		
< Back	Next > Finis	sh Cancel	Help

7. Select MixerHMI as the Resolver Name and Force Transfer as the Choose Action. Click the Permissions button.

Choose a Relevance Resolver			
Resolver Name	Only Show Unassigned Resolvers		
Resolver Type Choose Action 2	QR Code Force Transfer		
	Settings           OK         Cancel		

8. From the **Permissions** window, remove **Unrestricted** from the **Member Of** list and add **Engineer**. Click the **OK** button.

Ре	rmissions
TermSec	ure Access Groups
Available All Terminals All Users Maintenance Unrestricted	Member Of Engineer

9. Click the **OK** button.

Choose a Relevance Resolver		
	Only Show Unassigne	d Resolvers 🗍
Resolver Name	MixerHMI	•
Resolver Description		
Resolver Type	QR Code	
Choose Action	Force Transfer	•
		Settings
		Permissions
	ОК	Cancel

10. Click the **Add** button.

Location Configuration Wizard						
	Relevance Resolver Selection Assign Relevance Resolvers to this location					
Relevance Resolver	S					
Name	Туре	Action				
MixerHMI	QR Code	Force Transfer				
< Add	III Delete Ec	lit l				
< Back	Next > F	inish Cancel	Help			

11. <u>Select MixerHMI as the Resolver Name and Shadow as the Choose Action</u>. Click the Permissions button.

Choose a Relevance Resolver					
Resolver Name MixerHMI Resolver Description	Only Show Unassigned Resolvers				
Resolver Type QR Code Choose Action	Settings 3 Permissions OK Cancel				

12. From the **Permissions** window, remove **Unrestricted** from the **Member Of** list and add **Maintenance**. Click the **OK** button.

Permissions					
	TermSecure Access Groups				
Available All Terminals All Users Engineer Unrestricted	Member Df Maintenance				

13. Click the **OK** button.

Choose a Relevance Resolver					
	Only Show Unassign	ed Resolvers 🔲			
Resolver Name	MixerHMI	•			
Resolver Description					
Resolver Type	QR Code				
Choose Action	Shadow	•			
		Settings			
		Permissions			
	ОК	Cancel			

#### 14. Click the **Finish** button.

Location Configu	iration Wizard				×
Relevance Reso Assign Relevar	<b>Iver Selection</b> nce Resolvers to this lo	cation			
Relevance Resolve	rs				
Name	Туре		Action		
MixerHMI MixerHMI	QR Code QR Code		Force Transfer Shadow		
Add	Delete	Edit	]		
	< <u>B</u> ack	<u>N</u> ext >	Finish	Cancel	Help

# Reassign Display Client to Public Display Server

When we created the **FTV\_CookieDemo Display Client** in the previous sections, we assigned the **RDS1** and **RDS2 Display Servers** to it, which have private IP addresses of 10.6.10.51 and 10.6.10.52, respectively. These IP addresses will not be reachable by your remote tablet, so we will reassign the **Display Client** to **RDS1P**.

1. From ThinManager, click the **Display Clients** icon **International From the ThinManager tree selector**.



- 2. From the **Display Clients** tree, expand the **Remote Desktop Services** branch and double click the **FTV\_CookieDemo Display Client**.
- 3. Click the **Next** button from the **Client Name** page of the wizard.
- 4. Click the **Next** button from the **Display Client Options** page of the wizard.
- 5. Click the Next button from the Remote Desktop Services and Workstation Options page of the wizard.
- 6. Click the Next button from the Session Resolution / Scaling Options page of the wizard.

7. From the **Display Client Members** page of the wizard, remote **RDS2** from the **Selected Remote Desktop Servers** list box and add **RDS1P** instead. Click the **Finish** button.

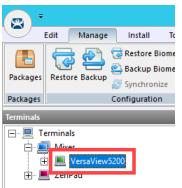
🕿 Display Client Wizard	×
Display Client Members Select the Remote Desktop Servers for this Display Client.	$\aleph$
Available Remote Desktop Servers Selected Remote Desktop Server	ers
RDS1 (10.6.1.51) RDS2 (10.6.1.52)	
	•
Edit Server List	
2	
< Back Next > Finish Cancel	Help

### Assign Default Location to Terminal

1. Click the Terminals tree selector icon.



2. From the Terminals tree, double click the VersaView5200 terminal to launch the Terminal Configuration Wizard.



- 3. Click the **Next** button on the **Terminal Name** page of the wizard.
- 4. Click the Next button on the Terminal Hardware page of the wizard.
- 5. Click the Next button on the Terminal Options page of the wizard.

6. From the **Terminal Mode Selection** page of the wizard, make sure **Enable Relevance User Services** is checked. Also check the **Enable Relevance Location Services**. This is required to use this **Terminal** with **Relevance**. Click the **Next** button.

Terminal Configuration Wizard	×
Terminal Mode Selection Select the operating modes for this terminal	$\mathfrak{A}$
- Terminal Mode	
✓ Enable Relevance User Services	
■ Enable Relevance Location Services	
Enable MultiMonitor	
Enable MultiStation	
2	
< Back Next > Finish Cancel	Help

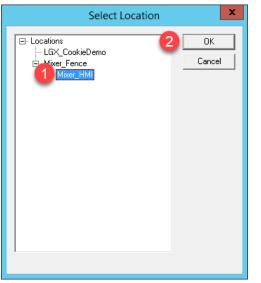
7. Ensure all **Display Clients** are removed from the **Selected Display Clients** list. Click the **Next** button.

🕿 Terminal Configuration Wizard	×
Display Client Selection Select the Display Clients to use on this terminal	times
Available Display Clients   Remote Desktop Services  Camera  Camera  Terminal Shadow  Workstation  VNC  VNC VIVC VIVual Screen	Selected Display Clients
Edit Display Clients	Override
< <u>B</u> ack <u>Next</u> >	Finish Cancel Help

- 8. From the **Terminal Interface Options** page of the wizard, click the **Next** button.
- 9. From the **Relevance Options** page of the wizard, click the **Change** button.

🕿 Terminal Configuration Wizard				
Relevance Options Select the types of Relevance Resolvers to use on this client. Optionally choose an assigned location for this client				
Assigned Location Change Cear				
Options       Enabled Resolver Types         Image: Enable QR Code Location Ids       Enable Bluetooth Locations         Image: Enable GPS Locations       Enable GPS Locations         Image: Enable Wi-Fi Locations       Enable Wi-Fi Locations         Image: Use Force Transfer to restore Assigned Location       Allow selection of Location manually         Image: Enforce fencing on manual Location selection       Confirm before entering a location         Resolver Update Interval       3000       ms				
< Back Next > Finish Cancel Help				

10. From the Select Location popup, select Mixer\_HMI. Click the OK button.



11. Click the **Finish** button.

Terminal Configuration Wizard	X			
Relevance Options Select the types of Relevance Resolvers to use on this client. Optionally choose an assigned location for this client				
Assigned Location Mixer_Fence\Mixer_HMI	Change Clear			
Options       Enabled Resolver Types         Image: Enable Resolver Types       Image: Enable QR Code Location Ids         Image: Enable Bluetooth Locations       Image: Enable GPS Locations         Image: Enable GPS Locations       Image: Enable GPS Locations         Image: Image: Enable Wi-Fi Locations       Image: Enable GPS Locations         Image: Image: Image: Image: Image: Enable GPS Locations       Image:				
< Back Next > Finish Cancel	Help			

Notice the **Allow selection of Location manually** checkbox. With this checked, the **Terminal** to which this profile is assigned will be able to manually login to **Locations** that permit this action. In this scenario, if the **Enforce fencing on manual Location selection** is not checked, then the **Terminal** to which this profile is assigned will be able to login to any geo-fenced **Location** even when not within the geo-fence.

12. Right click the VersaView5200 terminal from the Terminals tree and select Restart Terminal to apply the changes. Click Yes to the confirmation dialog.

After restarting the **Terminal**, you will notice that the **FTV\_CookieDemo** application is still delivered to the virtual thin client. This is because we assigned the **FTV\_CookieDemo Display Client** to the **Mixer\_HMI Location** and then assigned this **Location** to the **VersaView5200 Terminal**. The more interesting part of the configuration is how the **Mixer\_Fence** and **Mixer\_HMI Locations** were configured. Using a mobile device, the **MixerHMI QR Code** can be scanned if and only if the mobile device is within the defined range of the btb **Bluetooth Beacon** AND the user logged in is a member of either the Engineer or Maintenance **Access Groups**. If the user is a member of the Engineer group, the **FTV\_CookieDemo Display Client** would be transferred from **VersaView5200** and redirected to the mobile device. If the user is a member of the Maintenance **Access Group**, **VersaView5200** would be shadowed from the mobile device. In both cases, the **Display Client** would remain on the mobile device as long as it stays within the range of the **Bluetooth Beacon**, which is acting as a **geo-fence**. The user can also choose to manually **Leave** the **Location** from the mobile device. Experiment with the results in the last section!

#### See the Results

1. Return to **aTMC** on your mobile device. If so, you may also have to reconnect **aTMC** to the **DemoKit** server listed.

<b>⊡ ±</b> 🤜 📾			💲 🗔 😨 🖬 3:52 РМ
aTMC			
DemoKit :			
	5	D	

2. Select the **ZenPad** terminal profile if prompted.

📼 🛓 🤋 📾				🖇 🗔 🔞 🖬 3:53 PM
aTMC				
	Select Terminal to Rep Create new Terminal ZenPad	lace:		
			CANCEL	
	<b>•</b>	۲	Ū	

3. If not already logged in as Ed, touch the LOGIN button and enter a username of *ed* and a PIN of *1234*. You should have received the FactoryTalk View Studio Display Client because this is assigned to the Engineer User Group, of which Ed is a member. Once logged in as Ed, touch the SCANID button in the top right corner.

m 💀 🖬 🕻					*	K ⊟ ??	12:55 AM
Ed	FTV_Studio			u u	EAVE SCANID	SCAN L	OGOFF
ø		FactoryTalk View	Studio - View Site Edition (Netv	ork Distributed)	_		- 8 ×
	Tools Window Help						
🖬 🗟 🍈 🗅 💕	E 🛛 🗿 👧 🗘 🖻						
Explorer	X						
	annmand Line Tags Ings Ings Inkis Sabal Objects Inbiol Objects Indiates Sabal Objects Indiates Sabal Objects Indiates In						
		Ç	ά	G			

There is also a SCAN button available to the right of SCANID that enables the scanning of barcodes within the delivered applications.

4. The camera window will open within aTMC. Scan the QR Code below (this is the same QR Code we registered earlier).



5. Since you are logged in as a member of the Engineer group, you should see the CookieDemo Display Client transferred from the virtual thin client and delivered to the tablet. However, you should only be able to keep this Display Client while within the geo-fence established by the Bluetooth Beacon. Since we do not have a beacon for the Cloud lab, you can simulate this behavior by touching the Leave button. This should result in the CookieDemo Display Client returning to the virtual thin client.

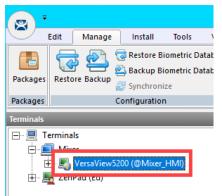
To see the signal strength of your beacon(s) at any time, touch the **More Options** (3 vertical dots) button in the top right corner followed by the **Beacons** item.

#### Remove Default Location from Terminal

1. Click the Terminals tree selector icon.



2. From the Terminals tree, double click the VersaView5200 terminal to launch the Terminal Configuration Wizard.



- 3. Click the Next button on the Terminal Name page of the wizard.
- 4. Click the **Next** button on the **Terminal Hardware** page of the wizard.
- 5. Click the Next button on the Terminal Options page of the wizard.
- 6. Click the **Next** button on the **Terminal Mode Selection** page of the wizard.

7. Assign FTV\_InstantFizz to the Select Display Clients listbox. Click the Next button.

🕿 Terminal Configuration Wizard	×
Display Client Selection Select the Display Clients to use on this terminal	$temp{}$
Available Display Clients           Remote Desktop Services           Desktop           EXC_OEECalc           FTV_CookieDemo           FTV_Instant Fizz           FTV_Studio           LGX_CookieDemo           Smart Session           TM_AdminConsole	Selected Display Clients
Edit Display Clients	

8. From the **Terminal Interface Options** page of the wizard, check the **Enable Tiling** checkbox.

🖀 Terminal Configuration Wizard		×
Terminal Interface Options Select the display client selector and main menu options that	will be available on the terminal.	$\aleph$
Display Client Selection Options		
Show Selector on Terminal	Selector Options	
1 🔽 Enable Tiling	Tiling Options	
Screen Edge Display Client Selection		
Allow Display Clients to move to/from screen		
Main Menu Options	Main Menu Options	
PIN Pad Options	PIN Pad Options	
< Back Next > Fin	ish Cancel I	Help

9. From the **Relevance Options** page of the wizard, click the **Clear** button followed by the **Finish** button.

🕿 Terminal Configuration Wizard	×
Relevance Options Select the types of Relevance Resolvers to use on this client. Optionally choose an assigned location for this client	$\aleph$
Assigned Location	
Mixer_Fence\Mixer_HMI	
Options Enabled Resolver Types	
Enable QR Code Location Ids	
Enable GPS Locations	
Use Force Transfer to restore Assigned Location     Allow selection of Location manually     Enforce fencing on manual Location selection	
Confirm before entering a location Resolver Update Interval 3000 ms	
2	
< Back Next > Finish Cancel	Help

10. Right click the **VersaView5200** terminal from the **Terminals** tree and select **Restart Terminal** to apply the changes. Click **Yes** to the confirmation dialog.

This completes the section Relevance and Geo-Fencing. Please continue on to the TermMon ActiveX section of the lab.

# Section 18: ThinManager TermMon ActiveX

## Overview

The **ThinManager TermMon ActiveX** enables programmatic control of many aspects related to ThinManager from an **ActiveX Container**. For example, from an **ActiveX Container** like **FactoryTalk View SE**, you can programmatically access ThinManager managed terminal properties like the IP address, MAC address, currently logged in user, connection state, **Relevance Location**, etc. You can also launch the touchscreen calibration utility, manipulate **IP camera overlays**, etc. In this section we will embed the ActiveX in the **FactoryTalk View SE** InstantFizz application to allow an operator to control the visibility of an IP camera overlay.

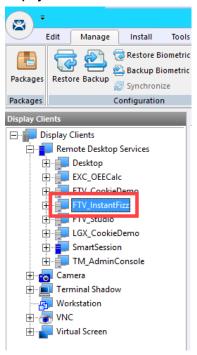
- 1. Create Camera Overlay
- 2. Registering and Updating the TermMon ActiveX Control
- 3. Add TermMon ActiveX to HMI Application
- 4. Test Camera Overlay Visibility
- 5. Explore TermMon Test Display

#### **Create Camera Overlay**

1. From ThinManager, click the **Display Clients** tree selector.



2. From the **Display Clients** tree, expand the **Remote Desktop Services** branch and double click the **FTV\_InstantFizz Display Client**.



3. From the **Client Name** page of the wizard, click the **Next** button.

4. From the **Display Client Options** page of the wizard, check the **Include Camera Overlays** checkbox. Click the **Next** button.

🕿 Display Client Wizard	×
Display Client Options Select the options that apply to this Display Client	$\aleph$
┌ Client Options ──	
Allow Display Client to be tiled	
Allow Display Client to be moved	
1 🔽 Include Camera Overlays	
Include Virtual Screen Overlays	
Connection Options	
Always maintain a connection	
Connect at boot-up	
Disconnect in the background	
0	
< Back Next > Finish Cancel	Help

- 5. From the **Remote Desktop Services and Workstation Options** page of the wizard, click the **Next** button.
- 6. From the Screen Resolution / Scaling Options page of the wizard, click the Next button.
- 7. From the **Display Client Members** page of the wizard, click the **Next** button.
- 8. From the **AppLink** page of the wizard, click the **Next** button.
- 9. On the Overlay Layout page, setup the Display Size to 1920x1080, click the Add Overlay button.

😤 Display Client	t Wizard		×
Overlay Layo Select the		of the camera overla	ys 🔀
Choose Camera	a Layout	Custom	Add Overlay Remove Overlay
Display Size	1920x1080	- 1	
< <u>B</u> ack	<u>N</u> ext >	Finish	Cancel Help

10. In the **Overlay Name** field enter *Camera\_Overlay*. Enter 250 in the **Left** position field, 375 in the **Top** position field, 385 in the **Width** size field, and 325 in the **Height** size field. Click the **OK** button, followed by the **Next** button.

Custom Overlay	(		×
Overlay Name	Camera_Ove	erlay	ОК
	-		Cancel
Position 2 Left 250	Top 3 375	Width 4 385	Height 5 325

11. From the **Overlay Cameras** page of the wizard, uncheck the **All Cameras Available** checkbox in the **Cameras to show** frame and click the **Add** button.

😤 Display Client W	/izard			×
Overlay Camera Select the ca	<b>as</b> meras available in	the overlay		$temp{}$
Overlay Name	Camera_Over	ay		
Position / Size – Left 250 Leras to show All Cameras	-	Width 385	Height 325 2 C Delete Set Initial Camera	
			Overlay Options	
< <u>B</u> ack	<u>N</u> ext >	Finish	Cancel	Help

12. Select the **Axis** camera and click the **OK** button.

Select Camera or Group	<b>2</b> ×
Axis	OK Cancel

13. Back at the **Overlay Cameras** page of the wizard, click the **Overlay Options** button.

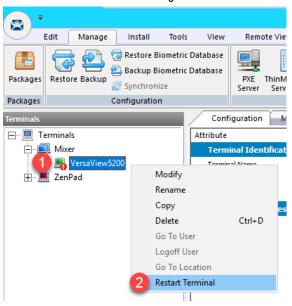
😰 Display Client V	/izard			×
Overlay Camera Select the ca	<b>as</b> meras available in	the overlay		$\aleph$
Overlay Name	Camera_Over	lay		
Position / Size -				7
Left	Тор	Width	Height	
250	375	385	325	
Cameras to sho All Cameras			Add	
1.00				
			Delete	
			Set Initial Camera	
			Overlay Options	
< <u>B</u> ack	<u>N</u> ext >	Finish	Cancel H	elp

14. From the **Overlay Options** window, un-check the **Enable Overlay** checkbox and check the **Scale** checkbox. Click the **OK** button, followed by the **Finish** button.

Overlay Options		<b>3</b> ×
General Options ■ Enable Overlay ■ Interactive ■ Scale ■ Crop ■ Show Complete O Border Size	Camera Name	OK Cancel
Title Options	Тор	•
Title Size	Normal	•
Cycling Options		
Cycle Time (secs)	0	

Unchecking the **Enable Overlay** button will disable the camera by default when the terminal starts up. We will use the **ActiveX Control** to programmatically enable and disable it, so the operator has control of the camera visibility with a button.

15. Right click the **VersaView5200** terminal from the **Terminals** tree and select **Restart Terminal** to apply the changes. Click **Yes** to the confirmation dialog.



# Registering and Updating the TermMon ActiveX Control

Starting with FactoryTalk View SE version 10.0, the TermMon.ocx ActiveX Control is automatically installed on FactoryTalk View SE Server and FactoryTalk View SE Client installations. Therefore, no steps are required here for the lab since we are running FactoryTalk View SE 11.0.

If you need to update the version of **TermMon.ocx** for these installations, you will need to replace the **TermMon.ocx** file located in the **FactoryTalk View SE** installation folder, and then re-register the control. This task would need to be completed on **FactoryTalk View SE Server** as well as **FactoryTalk View SE Client** installations.

You can find the latest version of the TermMon.ocx from the ThinManager Downloads Webpage.

To register TermMon.ocx, execute the following command from an Administrative Command Prompt:

32-bit operating systems:

regsvr32 c:\path\to\termmon.ocx

64-bit operating systems:

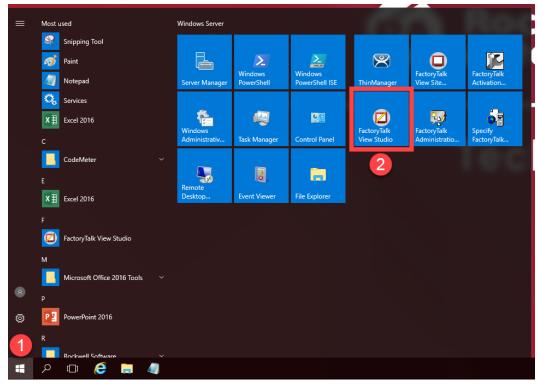
C:\windows\syswow64\regsvr32 c:\path\to\termmon.ocx

## Add TermMon ActiveX to HMI Application

1. To begin this section, launch a remote desktop session on RDS2 if you don't already have one open.



2. While still on **RDS2**, open **FactoryTalk View Studio** from the **Windows Start Menu**.



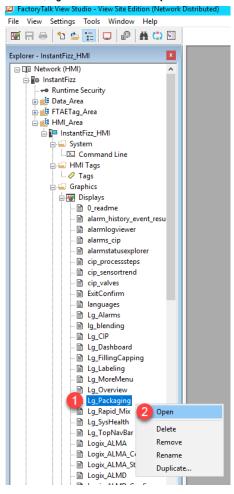
3. Select View Site Edition (Network Distributed), click Continue



4. Select the **InstantFizz** application and click the **Open** button.

New/Open Site Edition	n (Network Distributed) Application
New Existing	
Application Name CookieFactory FTViewDemo InstantFizz	
Language:	English (United States), en-US
	<u>Open</u> Cancel

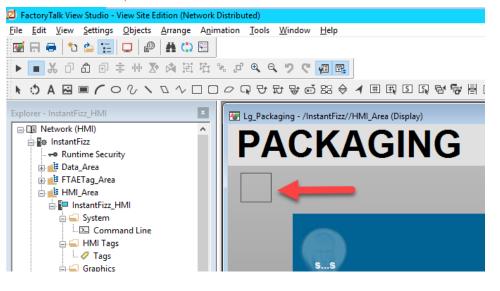
 Browse to the HMI\_Area > InstantFizz\_HMI > Graphics > Displays > Lg\_Packaging display object in the Explorer Window, right click and select Open.



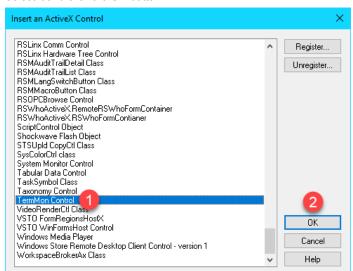
6. Click the Objects drop down menu, and select ActiveX Control

	iew Site Edition (Network Distributed)
<u>File Edit View Sett</u>	Objects Arrange Animation Too
₩ Fi 🖶 🔁 📩 🔁 ▶ ■ ¥ 0 û 0 :	✓ <u>S</u> elect <u>R</u> otate
N O A 🖂 🗏 🖊 C	Drawing Push Button 두
Explorer - InstantFizz_HMI	Imp <u>o</u> rt Symbol <u>F</u> actory

7. Click and drag within the Lg\_Packaging display window to draw the ActiveX object into the display. The object will be invisible once it is drawn, this is ok.



8. The **Insert an ActiveX Control** menu will display. Scroll down near the bottom and locate the **TermMon Control**. Select it and click the **OK** button.



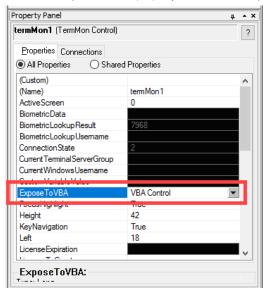
9. It may take a few seconds for the **TermMon Control Properties** configuration window to open. Once it does, click the **OK** button.

TermMon Control Properties	×
General Common Connections	
TermMon ActiveX Control. ©1999-2019 Rockwell Automation.	
OK Cancel Apply	Help
Curicor /ppiy	rioip

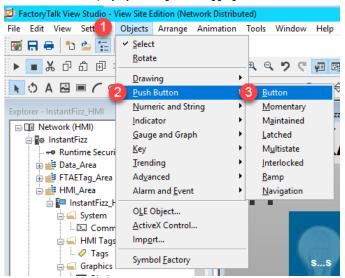
10. In the right-hand pane of View Studio, within the Object Explorer menu, click on the TermMonControl1 object. The Property Panel below will show the Properties and Connections tabs of the object. You may have to temporarily expand the size of the right-hand pane menus to read the properties. Make sure the Properties tab is selected and click inside the (Name) property field to rename the object to termMon1.

🐨 🐨 🖌 Group20	
··· ✔ Text4	
🗄 🗹 Group15	
Trend1	
🖶 🗹 Group14	
🗎 🖌 🖌 Group9	
🖶 🔽 Group10	
🗹 Panel34	
… ✔ Image14	
⊞ 🔽 Group387	
⊞ · 🔽 Group386	
⊞ 🔽 Group278	
i⊞- 🔽 Group187	
i⊞- 🔽 Group141	
ier ✔ Group13	
Highlighting on Settings	
Expand Collapse Help	
Property Panel	<b>д т</b> ,
TermMonControl1 (TermMon Control)	?
Properties Connections	
All Properties	
(Custom)	^
(Name) termMon1 (2)	

11. Locate the ExposeToVBA property in the same Properties panel and set it to VBA Control.



12. Add a **button** object to the display by clicking on the **Objects** menu item and select **Push Button > Button**. Draw the button on to the display by clicking and dragging.



13. The **Button Properties** configuration will popup, click on the **Up Appearance** tab and input *Show Camera* into the **Caption** field.

Button Properties	×
General Action Up Appearance Down Appearance Disabled Appearance Commo	n
General	
Back style: Solid ✓	
Pattern style: Back color	
None  V Pattern color	
Caption	
Show Camera 2	
Eont:     Size:       Arial Unicode !      10          B     I     U	
Image settings <u>No</u> image <u>I</u> mage:	
O Use image reference	
Scale image	
OK Cancel Help	

14. Still on the **Button Properties** window, click the **Common** tab, and enter *cmdShowCamera* in the **Name** property. Click the **OK** button.

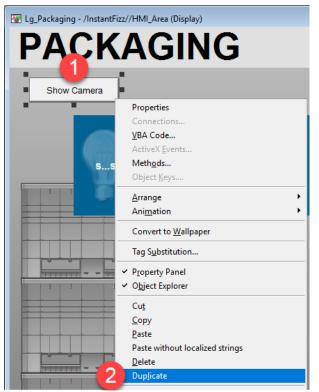
	operties				
General	Action	Up Appearance	Down Appearance	Disabled Appearance	Common
Size:			Position		
Hei	ght:	Width:	Top:	Left:	
36		130	73	28	
01					
Other					
Nar	ne: dShowCa		Visible		
-			<b>Nabic</b>		
Too	olTip text:				
				0	
			Insert V	/ariable	
			3		
			OK	Cancel	Help

15. Return to the **Object Explorer** pane on the right-hand side of **View Studio**, select the newly created **cmdShowCamera** object. From the Property Panel set the **ExposeToVBA** property to **VBA Control**.

Object Explorer	Į ≁ X
🖃 🔽 Display	
- CmdShowCamera	
🔽 termMon1	
🖶 🔽 Group20	
Text4	
🖶 🖌 Group15	
Trend1	
🖶 🖌 🖌 Group14	
🗄 🗹 Group9	
i Group10	
Panel34	
··· ✓ Image13 	
Eroup386	
B Group278	
Group187	
Group141	
Image8	
Highlighting on Settings	
Expand Collapse Help	
Property Panel	<b>μ • ×</b>
cm 2 wCamera (Button)	?
Properties Connections	
All Properties     O Shared Properties	
(Name) cmdShowCamera	~
BackColor 00F0F0F0	
BackStyle Solid	
Expose To VBA VBA Control	•

16. Add another push button to the Lg\_Packaging display next to the Show Camera button just created. To do this, right click the Show Camera button and select Duplicate. Move the duplicated button along-side the initial Show Camera

button. Double click the new button to open the **Button Properties** window.



17. The **Button Properties** configuration will popup, click on the **Up Appearance** tab and input *Hide Camera* into the **Caption** field.

Button Properties	1			×
General Action	Up Appearance	Down Appearance	ce Disabled Appearance	Common
General Back style: Solid Pattern style: None Caption	~	Fore	color k color em color	
Hide Camer Font: Arial Unicode 1	Size:	Inse	t Variable	
Image settings No image Use image re Import file [None] Scale image	eference	nage: Import		
		ОК	Cancel	Help

18. Still on the **Button Properties** window, click the **Common** tab, and enter *cmdHideCamera* in the **Name** property. Click the **OK** button.

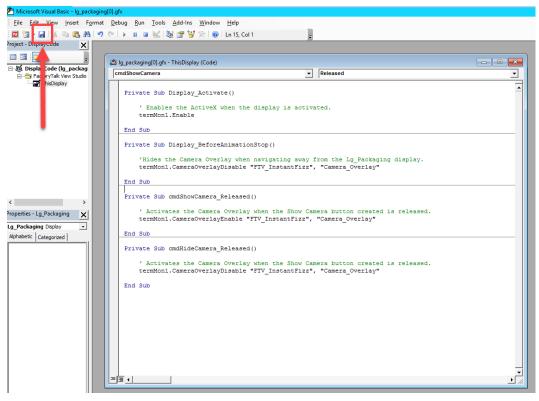
General	Action	Up Appearance	Down Appearance	Disabled Appearance	e Common
Size: Heigl 36		Width:	Position Top: 73	Left:	
	e: HideCar Tip text:		Visible		
			Insert V	ariable	
			ОК	Cancel	Help

Since we duplicated the Show Camera button, the ExposeToVBA property will already be properly set to VBA Control for the Hide Camera button.

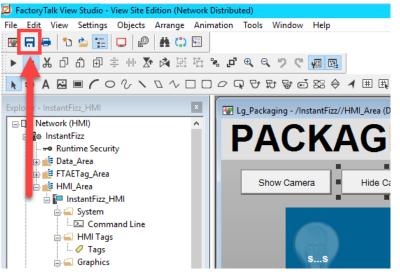
19. Inside the Lg\_Packaging display, right click on the Show Camera button and select VBA Code...



20. The Microsoft Visual Basic Editor will open (you may have to select it in the Windows Taskbar ) with the DisplayCode for the Lg\_Packaging display. First, select all of the text in the code window and Delete it. Then copy all of the text from the C:\Lab Files\ActiveX VBA Code.txt file and Paste it into the DisplayCode window. Please find comments in the text file to explain the functions used in this example. Click the Save icon and close the Visual Basic Editor.



21. Save the changes to the Lg\_Packaging display from the main menu.



### Test Camera Overlay Visibility

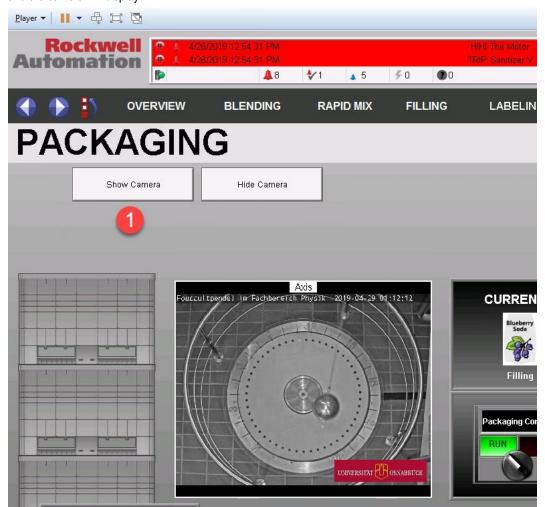
1. Close the remote desktop session on rds2.tmlab.loc to return to RDS1. Click the OK button on the confirmation dialog box.



2. From the virtual thin client, click on the **PACKAGING** button on the main overview screen from the navigation bar. It may take a few seconds for the **Lg\_Packaging** screen to load.



3. Click the **Show Camera** button. The **CameraOverlayEnable** method of the **TermMon ActiveX** control will be called and the camera will display.



- 4. Click the **Hide Camera** button to hide the camera. This calls the **CameraOverlayDisable** method.
- 5. The disable method is also called when navigating away from the Lg\_Packaging screen. Test this by enabling the camera and then navigating back to the overview screen without clicking the disable button.

As demonstrated in the previous steps, the **TermMon.ocx** is embedded within an ActiveX container – FactoryTalk View SE in the example provided. Then an instance of the FactoryTalk View SE application is running within a Remote Desktop Server session and is delivered to the virtual thin client. When the Lg\_Packaging display is launched in View SE, the Display\_Activate event fires and the termMon1.Enable method is called. This method establishes a connection between the **ActiveX** control and the terminal on which it is running.

There also exists the **TermMon ActiveX Configuration Module**, which can be applied to a specific terminal from the **ThinManager Admin Console**. This module allows you to specify whether the terminal will permit **ActiveX** connections, and if so, if they can be established from local or remote sessions. If remote sessions are permitted, this would enable **TermMon** to control other terminals remotely. Version 7.9.0 of **TermMon** also permits the ability to enable/disable **Relevance User Changed Events**, which essentially allows you to enable/disable **Authentication Pass Through** for FactoryTalk View SE.

Earlier versions of **TermMon.ocx** (versions prior to 7.8.0) only supported a single event called **OnEvent**. It included an **EventCode** parameter that would indicate which event had been raised (i.e.: EventCode = 17 would indicate the terminal's **Relevance Location** had changed). With 7.8.0 and newer, there are now separate events. So to respond to a **Relevance Location** change event, you can use the **OnRelevanceLocationName** event, which includes the current **RelevanceLocationName** as a parameter).

# Explore TermMon Test Display

1. From the **PACKAGING** display, click the **MORE**... navigation button followed by the **TERMMON** menu item.



2. The **TERMMON** display demonstrates a majority of the **TermMon.ocx Object Model**. To start exploring, first click the **Enable** button in the top left corner of the display. This calls the **Enable** method of the **ActiveX** control and initiates a connection between the **InstantFizz Display Client** and the terminal to which it is being delivered.

Rockwell Automation	19529111 PM 1941 The Motor 1 19529111 PM 7700 SantzerV, 1 ▲9 \$73 ▲ 6 \$0 ●0	FTV_InstantFizz					V # 🛛 🗘	<i>Factory<b>Talk</b>'</i> View SE
🜗 🌔 🎒 OVERVIEW	BLENDING RAPID MIX FILLING LABELING	PACKAGING	CIP	ALARMS	DASHBOARD	SYSTEM HEALTH	MORE	
Central Information Source Enable Local Remote Disable Original Source Source Information Source Disable Outro	Display Client Navigation         Get Display Client Screen           Provide         Next           Till Start         Man Nexy           Till Start         Man Nexy           Till Start         Cont Screen           Get Screen         Screen 4:	Active Screen						
Terminal Information           Nime           Park Address:           Mole Address:           Mole Address:           Boot Rock Versen:           Mole Address:           Mole Address:	Reference User           Terrificant Journes:           Terrificant Journes:           Vortaine:           Operation:           Operation:           Reprove:           Operation:	Watchdog Court: 0 Seconds: 10 Marual Update Auto Update Restart Reboot Calitrate Seconds: Control Disconnet Logoff						
Biometric Scans: 0 Data:	Log On Log Off Scan and Query Scan Data Response:	19						
Cameras Display Client Display Client Name Overlay: Overlay Name Consen Name Virtual Screens Display Client: Singolay Client Name	Broble         Dauble         Switch by harre         X(D)         Y(D)         More process         More process         More process         Brance         More process         More proces         More process         More proces <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>							
Overlay: Overlay: Overlay Name Virtual Screen: Virtual Screen Name	Tile Start Tile End Previous Next	Version 7.9.0						

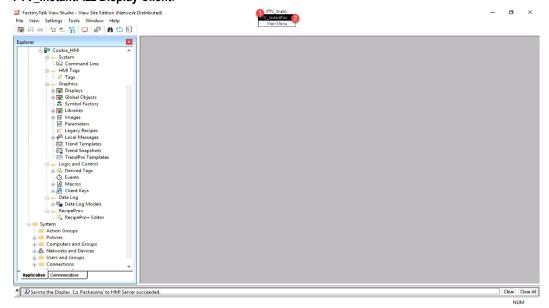
# 3. Upon clicking the **Enable** button, the **Terminal Information** frame should fill in the **Properties** listed.

Control Information Source	Display Client Navigation Get Displ	ay Client Screen Active Screen
Enable Local Remote	Previous Next Display Clie	ent Name:
Disable IP Address: Enter Remote IP	Tile Start Main Menu Instant Failover FTV_Instan	ntFizz
Current: VersaView5200	Tile End Go To Enter Name Get Scr	
Terminal Information	Relevance User	Watchdog
Name: VersaView5200	TermSecure Username: Check Access Group	Count: 0
IP Address: 10.6.10.10	Username:	Seconds: 0
MAC Address: 34C0F9A4CCBD	Windows Username: Access Group:	Check Manual Update
Firmware Version: 8.1.21	· ·····	
Boot ROM Version: 7.5	User ID: Response: Success	0 Auto Update
Model: Allen-Bradley 6200T-NA		
Term Win User: thin01@tmlab.loc	Relevance User Specific Log On Relevance User	-Terminal Control
Display Clients: FTV_InstantFizz	Log Off Relevance User Username:	Restart
	Disconnect User Sessions Password:	Log On Reboot
	Log Off User Sessions Response: Success	0 Calibrate
Display Client: FTV_InstantFizz		
Connection State: Connected	Relevance Location	
Session Win User: thin01	Current Location/Path:	
RDS Name: RDS1	New Location/Path: Action:	Disconnect
		Logoff
Biometric	Log On Log Off	50
Scans: 0	Scan and Query Sc	an Data
Data:	Response:	
Cameras		
Display Client: Display Client Name	Enable Disable Switch by Name X: 0 Y: 0	Move
Overlay: Overlay Name	ycle Start Cycle Stop Enter Fullscreen H: 0 W: 0	Resize
Camera: (Camera Name	Previous Next Exit Fullscreen Move & Resiz	e
Virtual Screens		
Display Client: Display Client Name	Enable Disable Switch by Name	
	Tile End	
	Previous Next	Version 7.0.0
		Version 7.9.0

4. In the Log On Relevance User frame, enter ed in the Username input box and rw in the Password input box. Click the Log On button. You should be presented with a PIN dialog – enter 1234. This will programmatically login Ed as a Relevance User and deliver the FTV\_Studio Display Client (since this Display Client was assigned to the Engineer Relevance User Group in the Section 9).

Control Information Source	Display Client Navigation Get Display Client Screen	Active Screen
Enable Local Remote	Previous Next Display Client Name :	0
Disable IP Address: Enter Remote IP	Tile Start Main Menu Instant Failover FTV_InstantFizz	Set
Current: VersaView5200	Tile End Go To Enter Name Get Screen Screen #:	Set
Terminal Information	Relevance User	Watchdog
Name: VersaView5200	Termoccare osciname.	Count: 0
IP Address: 10.6.10.10	Mike Username:	Seconds: 0
MAC Address: 34C0F9A4CCBD	Windows Username: Access Group: Check	Manual Update
Firmware Version: 8.1.21		
Boot ROM Version: 7.5	User ID: Response: Success 0	Auto Update
Model: Allen-Bradley 6200T-NA		
Term Win User: thin01@tmlab.loc	Relevance User Specific Log On Relevance User	-Terminal Control-
Display Clients: FTV_InstantFizz	Log Off Relevance User Username: ed 1 3	Restart
	Disconnect User Sessions Password: rw 2 Log On	Reboot
	Log Off User Sessions Response: Success 0	Calibrate
Display Client: FTV_InstantFizz		
Connection State: Connected	Relevance Location	Session Control
Session Win User: thin01	Current Location\Path:	
RDS Name: RDS1	New Location/Path: Action:	Disconnect
		Logoff
Biometric	Log On Log Off Scan and Query Scan Data	32
Scans: 0	Scan and Query Scan Data	
Data:	Response:	
Cameras		7
Display Client: Display Client Name	Enable Disable Switch by Name X: 0 Y: 0 Move	
Overlay: Overlay Name	ycle Start Cycle Stop Enter Fullscreen H: 0 W: 0 Resize	
	Previous Next Exit Fullscreen Move & Resize	
Virtual Screens		7
Display Client: Display Client Name	Enable Disable Switch by Name	
	Tile Start Tile End	
Virtual Screen: Virtual Screen Name	Previous Next	Version 7.9.0

5. Click and hold the **Display Click Selector**, hover over the **FTV\_InstantFizz Display Client** release to return to the **FTV\_InstantFizz Display Client**.



# 6. From the **Display Client Navigation** frame, click the **Next** button.

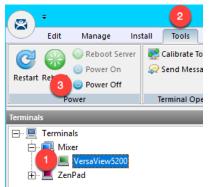
Control Information Source	Display Client Navigation	Active Screen
Enable Local Remote	Previous Next Display Client Name :	0
Disable IP Address: Enter Remote IP	Tile Start Main Menu Instant Failover FTV_InstantFizz	Set
Current: VersaView5200	Tile End Go To Enter Name Get Screen Screen #:	Set
Terminal Information	Relevance User	Watchdog
Name: VersaView5200	Termisecure oscinante.	Count: 0
IP Address: 10.6.10.10	Ed Username:	Seconds: 0
MAC Address: 34C0F9A4CCBD	Windows Username: Access Group: Check	Manual Update
Firmware Version: 8.1.21	tmlab.loc\ed@tmlab.loc	
Boot ROM Version: 7,5	User ID: Response: Success 0	Auto Update
Model: Allen-Bradley 6200T-NA		
Term Win User: thin01@tmlab.loc	Relevance User Specific Log On Relevance User	-Terminal Control-
Display Clients: FTV_InstantFizz,FTV_St udio	Log Off Relevance User Username: ed	Restart
	Disconnect User Sessions Password: rw Log On	Reboot
	Log Off User Sessions Response: Success D	Calibrate
Display Client: FTV_InstantFizz		Canbrate
Connection State: Connected	Relevance Location	Session Control
Session Win User: thin01	Current Location/Path:	
RDS Name:	New Location/Path: Action:	Disconnect
		Logoff
Biometric	Log On Log Off Scan and Ouery Scan Data	0
Scans: O		
Data:	Response:	
Cameras		7
Display Client: Display Client Name	Enable Disable Switch by Name X: 0 Y: 0 Move	
	ycle Start   Cycle Stop   Enter Fullscreen   H: 0   W: 0   Resize	
Camera: Camera Name	Previous Next Exit Fullscreen Move & Resize	
Virtual Screens		
	Enable Disable Switch by Name	
	ile Start Tile End	
	Previous Next	
		Version 7.9.0

7. Click and hold the **Display Click Selector**, hover over the **FTV\_InstantFizz Display Client** release to return to the **FTV\_InstantFizz Display Client**.

8. From the **Display Client Navigation** frame, click the **Tile Start** button. This should trigger Tile Mode to start.

Control	Information Source	Display Client Navigat	ionG
Enable	Local Remote	Previous	Next D
Disable	IP Address: Enter Remote IP	Tile Start Main Mer Tile End Go To	
-Terminal Inform	ation	Relevance User	
IP Addres MAC Addres Firmware Version Boot ROM Version		TermSecure Username: Ed Windows Username : tmlab.loc\ed@tmlab.loc User ID :	Check Access Gro Username: Access Group: Response: Succ

- Feel free to explore some more with TermMon test display. You can return to RDS2 and open the termmon display from View Studio to inspect some of the associated VBA code. To find out more about the TermMon ActiveX control, please refer to this <u>ThinManager Knowledgebase Article</u>.
- 10. When finished power off the VersaView5200 terminal.



This completes the section **Programmatic Terminal Monitoring and Control with ThinManager TermMon ActiveX** of the lab. Please continue on to the **Virtual Thin Clients, PXE Server and Wireshark** section of the lab.

# Section 19: Virtual Thin Clients, PXE Server and Wireshark

## Overview

To review from <u>Section 4</u>, ThinManager supports 2 types of thin or zero clients:

- ThinManager Ready
- ThinManager Compatible

ThinManager Ready terminals have the ThinManager BIOS extension image embedded in them by the manufacturer. When these terminals are powered on, they know how to find a ThinManager Server right out of the box. Once found, the ThinServer service delivers the terminal's firmware and configuration. The VersaView 5200 (Catalog #: 6200T-NA) box thin client used in this lab is an example of a ThinManager Ready terminal.

ThinManager Compatible terminals do <u>not</u> have the ThinManager BIOS extension image. However, the ThinManager firmware is hardware compatible with the majority of thin clients on the market. This is because the ThinManager firmware is compiled for the x86 platform, and the majority of thin clients are x86-based. In order to deliver the ThinManager firmware to these devices, **PXE** is utilized. <u>P</u>reboot e<u>X</u>ecution <u>E</u>nvironment (PXE) is an Intel standard whereby an operating system can be delivered over the network.

Functionally, there is no real difference between a ThinManager Ready terminal and a ThinManager Compatible terminal.

In this section we will create a virtual thin client and configure **ThinManager** as a **PXE Server** in order to deliver the **ThinManager** firmware to it. We will also introduce **Wireshark** to examine how **ThinManager** managed thin clients actually boot from a network perspective, and how this process differs slightly for **ThinManager Ready** and **ThinManager Compatible** terminals.

- 1. Create Virtual Thin Client
- 2. Modify PXE Server Mode
- 3. Create Terminal for Virtual Thin Client
- 4. Re-Enable Firewall Rules
- 5. Start Wireshark Capture
- 6. Troubleshoot the Boot Process
- 7. Boot Virtual Thin Client via UEFI

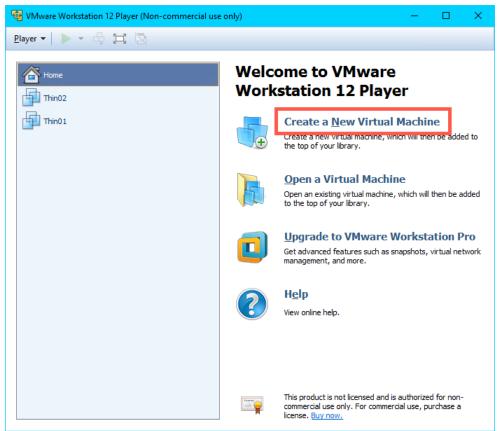
# **Create Virtual Thin Client**

As demonstrated through this Cloud lab, a virtual thin client is fairly simple to create and can be a great tool for troubleshooting, testing and education. In this section, we will use VMWare's free Workstation Player to create a new virtual machine without an Operating System, which we will subsequently boot via ThinManager's PXE Server.

1. Double click the VMWare Player shortcut on the RDS1 desktop.



2. From VMWare Workstation Player click the Create a New Virtual Machine link.



3. From the New Virtual Machine Wizard, select the I will install the operating system later radio button. Click the Next button.

New Virtual Machine Wizard	×
Welcome to the New Virtual Machine Wizard A virtual machine is like a physical computer; it needs an operating system. How will you install the guest operating system?	
Install from:	
◯ Installer <u>d</u> isc:	
No drives available $\sim$	
◯ Installer disc image file (iso):	
Browse	
1	
I will install the operating system later.	
The virtual machine will be created with a blank hard disk.	
2	
Help < Back Next > Cance	1

4. From the Select a Guest Operating System page of the wizard, select the Other radio button, Other from the Version drop down list and click the Next button.

New Virtual Machine Wizard		×
Select a Guest Operating Sys Which operating system will b	<b>item</b> be installed on this virtual machine?	
Guest operating system		
Version Other		~
	3	
Help	< Back Next > 0	Cancel

5. From the **Name the Virtual Machine** page of the wizard, enter *Thin03* as the **Virtual machine name**. You can leave the default **Location**. Click the **Next** button.

New Virtual Machine Wizard	×
Name the Virtual Machine What name would you like to use for this virtual machine?	,
Virtual machine name:	
C:\Users\labuser.TMLAB\Documents\Virtual Machines\Thin03	B <u>r</u> owse
2	

6. Click the **Next** button on the **Specify Disk Capacity** page of the wizard, keeping the defaults.

New Virtual Machine Wizard			×
Specify Disk Capacity How large do you want th	nis disk to be?		
The virtual machine's hard disk is : physical disk. These file(s) start sr files, and data to your virtual mac Maximum disk <u>size</u> (GB):	mall and become la		
Recommended size for Other: 8 G			
○ St <u>o</u> re virtual disk as a single fil	e		
Split virtual disk into <u>multiple</u> fil	les		
Splitting the disk makes it easi but may reduce performance			other computer
Help	< <u>B</u> ack	Next >	Cancel
· · · · ·			

7. Click the Customize Hardware button on the Ready to Create Virtual Machine page of the wizard.

Ne	w Virtual Machine	Wizard	Х
	Ready to Create Click Finish to o	Virtual Machine reate the virtual machine. Then you can install Other.	
1	The virtual machine v	vill be created with the following settings:	
[	Name:	Thin03	^
	Location:	C:\Users\abuser.TMLAB\Documents\Virtual Machines	
	Version:	Workstation 12.0	
	Operating System:	Other	
	Hard Disk:	8 GB, Split	
	Memory:	256 MB	
	Network Adapter:	NAT	
	Other Devices:	CD/DVD, Sound Card	¥
	<u>C</u> ustomize Hardw	are	
		< <u>B</u> ack Finish Cance	

8. From the **Hardware** window, select the **Network Adapter** device and click the **Bridged** radio button. Click the **Close** button.

Device	Summary	Device status
Memory	256 MB	Connected
Processors	1	Connect at power on
New CD/DVD (	Auto detect	
Network Adapter		Network connection
🕖 Sound Card	Auto detect	Pridged: Connected directly to the physical network
Display	Auto detect	Replicate physical network connection state
		Configure Adapters
		O NAT: Used to share the host's IP address
		○ <u>H</u> ost-only: A private network shared with the host
		○ C <u>u</u> stom: Specific virtual network
		VMnet0 (Bridged)
		O LAN segment:
		O gran degalerite
		~
		LAN <u>S</u> egments Ad <u>v</u> anced
	€Add <u>R</u> emu	ove 3

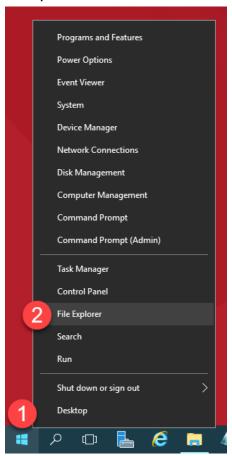
We have been using NAT for our virtual thin clients to this point in the lab. We will switch to Bridged in this section so we can see the desired network traffic in Wireshark. With that said, we will need to modify our PXE Server settings so that ThinManager will issue IP addresses for PXE requests.

9. Back at the **Ready to Create Virtual Machine** page of the wizard, click the **Finish** button.

Ne	w Virtual Machine	Wizard	$\times$
	Ready to Create Click Finish to c	Virtual Machine reate the virtual machine. Then you can install Other.	
1	The virtual machine v	vill be created with the following settings:	
[	Name:	Thin03	^
	Location:	C:\Users\abuser.TMLAB\Documents\Virtual Machines	
	Version:	Workstation 12.0	
	Operating System:	Other	
	Hard Disk:	8 GB, Split	
	Memory:	256 MB	
	Network Adapter:	Bridged (Automatic)	
	Other Devices:	CD/DVD, Sound Card	¥ .
	<u>C</u> ustomize Hardwa	are	
		< <u>B</u> ack Finish Cance	1

The default 8GB of hard disk space and 256MB RAM is plenty for our virtual thin client.

10. Because this virtual thin client is running on a virtual machine (**RDS1**), which is referred to as **nesting**, we need to add a special setting to the virtual machine configuration file for **Thin03**. Right click the **Windows Start Button** and select **File Explorer**.



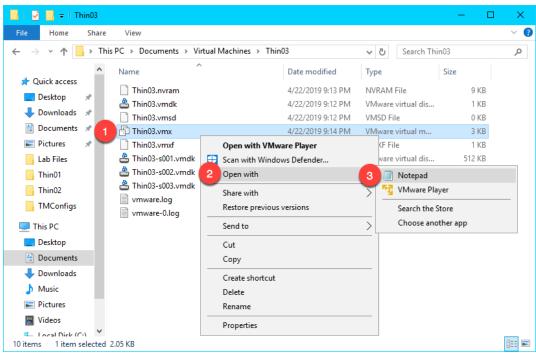
11. Within File Explorer, navigate to Documents->Virtual Machines->Thin03.

🛃 🔜 🖛   Thin03				- 🗆	×
File Home Share	View				$\sim$
🛧 📙 > Th	is PC > Documents > Virtual Machines >	Thin03	✓ ט Search Thi	in03	Q
^	Name	Date modified	Туре	Size	
📌 Quick access	Thin03.nvram	4/22/2019 9:13 PM	NVRAM File	9 KB	
📃 Desktop 🛛 🖈	A Thin03	4/22/2019 9:13 PM	VMware virtual dis	1 KB	
🕂 Downloads 🖈	Thin03.vmsd	4/22/2019 9:12 PM	VMSD File	0 KB	
🔮 Documents 🖈	Thin03	4/22/2019 9:14 PM	VMware virtual m	3 KB	
E Pictures 🖈	Thin03.vmxf	4/22/2019 9:12 PM	VMXF File	1 KB	
Lab Files	A Thin03-s001	4/22/2019 9:12 PM	VMware virtual dis	512 KB	
Thin01	📥 Thin03-s002	4/22/2019 9:12 PM	VMware virtual dis	512 KB	
Thin02	🐣 Thin03-s003	4/22/2019 9:12 PM	VMware virtual dis	64 KB	
	vmware	4/22/2019 9:13 PM	Text Document	185 KB	
TMConfigs	vmware-0	4/22/2019 9:12 PM	Text Document	29 KB	
💻 This PC					
Desktop					
Documents					
Downloads					
Music					
Pictures					
_					
Videos					
0 items					

12. Click the View menu item and check the File name extensions checkbox.

🔜   🛃 📑 🖛   Thin03	1		– 🗆 🗙
File Home Share	View		-** 😮
Navigation Details pane	Image: Extra large icons       Image: Large icons         Image: Ima	Sort by → Hidden items	
Panes	Layout Thin03.vmdk	Current view Show/hide 4/22/2019 9:12 PM VMware virtual dis	1 KB
👆 Downloads  🖈	Thin03.vmsd	4/22/2019 9:12 PM VMWare Virtual dis 4/22/2019 9:12 PM VMSD File	0 KB
🛱 Documents 🖈	Thin03.vmx	4/22/2019 9:12 PM VMsD File 4/22/2019 9:14 PM VMware virtual m	3 KB
Pictures 🖈	Thin03.vmxf	4/22/2019 9:12 PM VMXF File	1 KB
Lab Files	A Thin03-s001.vmdk	4/22/2019 9:12 PM VMware virtual dis	512 KB
Thin01	🐣 Thin03-s002.vmdk	4/22/2019 9:12 PM VMware virtual dis	512 KB
Thin02	🚔 Thin03-s003.vmdk	4/22/2019 9:12 PM VMware virtual dis	64 KB
TMConfigs	vmware.log	4/22/2019 9:13 PM Text Document	185 KB
- incomigs	wmware-0.log	4/22/2019 9:12 PM Text Document	29 KB
💻 This PC			
E Desktop			
Documents			
Downloads			
b Music			
Pictures			
😽 Videos			
Local Disk (C)			
10 items			

13. Right click Thin03.vmx and select Open with...



14. Scroll to the bottom of the text file and enter the following on a new line (you can also copy and paste this text from the **LabPaths** file accessible from the RDS1 desktop). **Save** the file and close **Notepad**.

vmx.allowNested = "TRUE"

Thin03.vmx - Notepad	- 0	×
<u>File E</u> dit F <u>o</u> rmat <u>V</u> iew <u>H</u> elp		
numa.autosize.cookie = "10001"		^
uuid.bios = "56 4d 34 2a 54 40 1f 45-4e dd 27 9f 49 c0 a2 5e"		
uuid.location = "56 4d 34 2a 54 40 1f 45-4e dd 27 9f 49 c0 a2 5e"		
<pre>migrate.hostlog = ".\Thin03-8d6ed9e3.hlog"</pre>		
ide0:0.redo = ""		
pciBridge0.pciSlotNumber = "17"		
<pre>pciBridge4.pciSlotNumber = "21"</pre>		
<pre>pciBridge5.pciSlotNumber = "22"</pre>		
<pre>pciBridge6.pciSlotNumber = "23"</pre>		
<pre>pciBridge7.pciSlotNumber = "24"</pre>		
<pre>scsi0.pciSlotNumber = "16"</pre>		
ethernet0.pciSlotNumber = "32"		
sound.pciSlotNumber = "33"		
vmci0.pciSlotNumber = "34"		
ethernet0.generatedAddress = "00:0c:29:c0:a2:5e"		
ethernet0.generatedAddressOffset = "0"		
vmci0.id = "1237361246"		
<pre>monitor.phys bits used = "42"</pre>		
<pre>vmotion.checkpointFBSize = "33554432"</pre>		
vmotion.checkpointSVGAPrimarySize = "33554432"		
cleanShutdown = "TRUE"		
softPowerOff = "FALSE"		
ide1.0.etertConnected "FALSE"		
vmx.allowNested = "TRUE"		
		×
<		2.1

Again, the **vmx.allowNested = "TRUE"** setting is only required if you are running your virtual thin client on a virtual host.

#### Modify PXE Server Mode

1. From the ThinManager Admin Console, select the Manage ribbon, followed by the PXE Server icon.



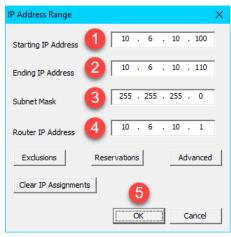
- 2. Click the Next button from the PXE Server Configuration page of the wizard.
- 3. From the Network Interface Configuration page of the wizard, select AWS PV Network Device #0 from the Select Interface to Configure drop down list, and select the Not using standard DHCP server option button. Click the Next button.

🔀 PXE Server Wizard	×
Network Interface Configuration Select the settings for each network interface	$\aleph$
Select Interface to Configure	
AWS PV Network Device #0 1	·
Interface Primary IP Address 10.6.1.51	
PXE Server Mode C Using standard DHCP server C Using standard DHCP server on this machine C Using standard DHCP server with Boot Options (PXE Disabled) C Not using standard DHCP server PAddress Conflict Detection	
Address Conflict Detection	
C None	
Allow New PXE clients      Allow New PXE cl	elp

4. From the **IP Address Range Configuration** page of the wizard, click the **Add** button.

🕿 PXE Server Wizard	$\times$
IP Address Range Configuration Configure each range of IP Addresses	lpha
Beginning IP Address Ending IP Address	
Delete Edit	]
< <u>B</u> ack <u>N</u> ext> Finish Cancel He	lp

- 5. From the **IP Address Range** window, enter the following and click the **OK** button.
  - Starting IP Address = 10.6.10.100
  - Ending IP Address = 10.6.10.110
  - Subnet Mask = 255.255.255.0
  - Router IP Address = 10.6.10.1



6. Back at the **IP Address Range Configuration** page of the wizard, click the **Finish** button.

👺 PXE Server Wizard		×
IP Address Range Configue Configure each range of IP		×
Reginging IP Address 10.6.1.100	Ending IP Address 10.6.1.110	
Add	Delete	Edit
< Back Next >	Finish	Cancel Help

## **Create Terminal for Virtual Thin Client**

We will create a new ThinManager Terminal Profile to assign to our Virtual Thin Client.

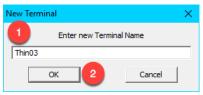
- 1. Return to the **ThinManager Admin Console**.
- 2. Click the Terminals tree selector icon.



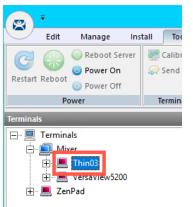
3. From the Terminals tree, right click the VersaView5200 terminal and select Copy terminal and select Copy.

8	Ŧ								
U	Edit	Manage	Ins	tall	Tools	Vie	N	Remote	e Vie
		🛞 Reboot Ser	rver	<b>S</b>	Calibrate T	ouchs	reen	4	Enab
Pactart	Reboot	🥘 Power On		R	Send Mess	sage		<i>.</i>	Disat
Kestart	Rebool	Over Off							
	Po	ower		Т	erminal Op	peratio	ns	Enabl	e/Dis
Terminal	5						$\square$	Configu	uratio
	Termina	als					Attri	bute	
<u> </u>	📃 Mix	er					٦	<b>Fermin</b> a	al Ide
	1 💻	VersaView520	0				Т	erminal I	Name
Ē.	📃 Zer	Pad		Ν	lodify				esci
				R	ename				
			2	c	ору				Pr
				D	elete		C	trl+D	er
				G	o To User				ber
				L	ogoff User	r			rolle
				G	o To Loca	tion			en 1
				R	estart Terr	ninal			ack

4. Enter *Thin03* as the new **Terminal Name** and click the **OK** button.



5. With the new terminal created, double click the Thin03 terminal to launch the Terminal Configuration Wizard.



- 6. Click the **Next** button on the **Terminal Name** page of the wizard.
- 7. Click the Next button on the Terminal Hardware page of the wizard
- 8. Click the Next button on the Terminal Options page of the wizard.
- 9. Click the Next button on the Terminal Mode Selection page of the wizard.
- 10. From the **Display Client Selection** page of the wizard, remove any existing **Display Clients** from the **Selected Display Clients** list box. Move the **Desktop Display Client** to the **Selected Display Clients** list. Click the **Next** button.

🕿 Terminal Configuration Wizard	×
Display Client Selection Select the Display Clients to use on this termina	
Available Display Clients  Remote Desktop Services  BCC_OEECalc  FTV_CookieDemo  FTV_InstantFizz  FTV_Studio  GCC SmartSession	Selected Display Clients
Edt Display Clients	Override
2 < <u>Back</u> <u>Next</u> >	Finish Cancel Help

- 11. Click the **Next** button on the **Terminal Interface Options** page of the wizard.
- 12. Click the Next button on the Relevance Options page of the wizard.
- 13. Click the Next button on the Hotkey Configuration page of the wizard.
- 14. On the Log In Information page of the wizard, enter *thin02@tmlab.loc* as the Username and *rw* as the Password. Click the Verify button which should confirm that the credentials entered are valid. Click the Next button.

😤 Terminal Configura	tion Wizard			×
Log In Information Enter the log in in some of the fields	formation to log in automatically. L to force manual log in.	leave the log in infor	mation blank or fill only	$\aleph$
Windows Log In Info	omation			
Usemame 🚺	thin02@tmlab.loc		Search	
Password 2			Password Options	
	-			
Domain			3 Verify	
L			-	
	4			
		Finish	Cancel	Help
	< <u>B</u> ack <u>N</u> ext >	1 milSf1	Cancer	Tielb

7. From the Video Resolution page of the wizard, select **1024x768** from the Resolution drop down list. Click the Finish button.

8	Terminal Configuration Wizard		×
	Video Resolution Select the video resolution for	this terminal.	$\cong$
	Select Video Resolution		
	These are the resolution	is supported by the Thin Client model you se	lected.
	Resolution	Color Depth	Refresh Rate
	1024x768 💌	64K Colors 🗾 60	)Hz 💌
	-		
		2	
	< <u>B</u> ack		Cancel Help

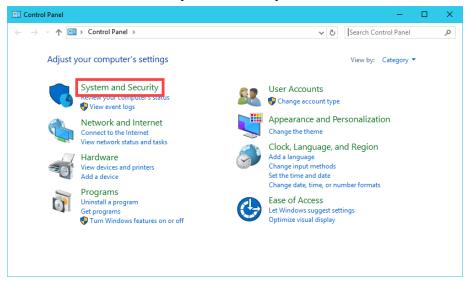
#### **Re-enable Firewall Rules**

In <u>Section 11</u>, we turned on the Windows Firewall and created specific Firewall Rules to permit our virtual thin clients to boot. In this section, we are going to disable each of those rules, and use Wireshark to troubleshoot the boot process step by step.

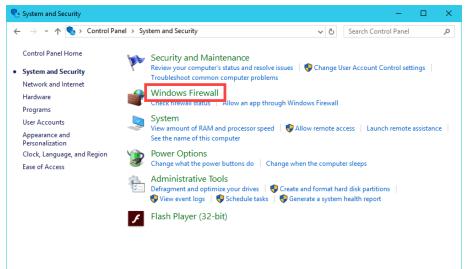
1. While still on RDS1, right click the Windows Start Button and select Control Panel.

	Programs and Features
	Power Options
	Event Viewer
	System
	Device Manager
	Network Connections
	Disk Management
	Computer Management
	Command Prompt
	Command Prompt (Admin)
	Task Manager
	2 Control Panel
	File Explorer
	Search
	Run
	Shut down or sign out
1	Desktop
	P 🖬 占 🥭 🚊 4

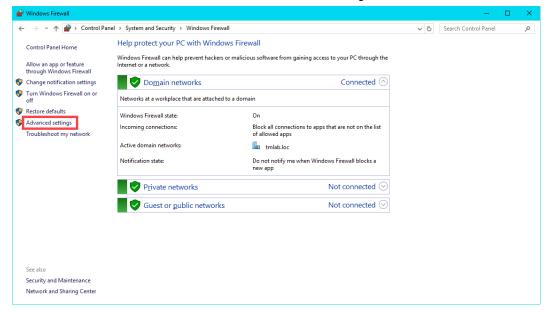
2. From the Control Panel, click the System and Security link.



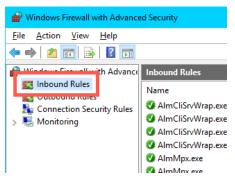
3. From the System and Security page of the Control Panel, click the Windows Firewall link.



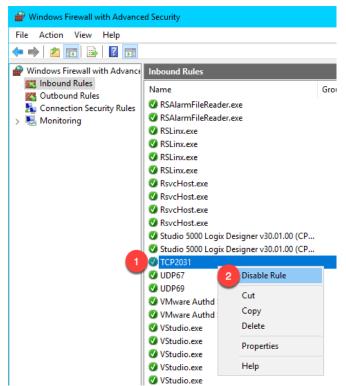
4. From the Windows Firewall Control Panel, click the Advanced settings link on the left hand side.



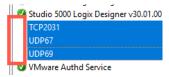
5. From the Windows Firewall and Advanced Security window, click the Inbound Rules item.



6. Scroll down through the **Inbound Rules** until you find the **TCP2031** rule we added in <u>Section 11</u>. Right click it and select **Disable Rule**.



7. Repeat the previous step for the **UDP67** and **UDP69** rules, so that all 3 rules are disabled. Verify that these 3 rules do not have green check marks beside them. When finished, leave the **Windows Firewall with Advanced Security** window open.



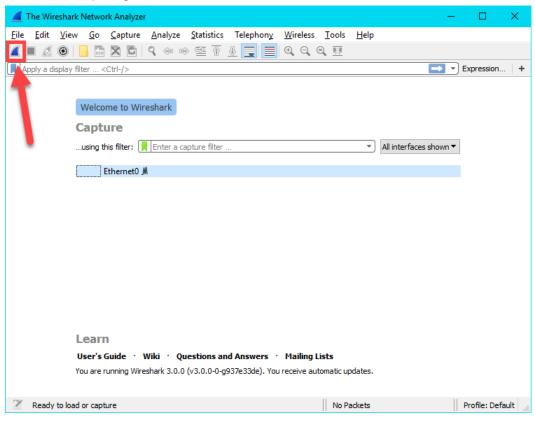
## **Start Wireshark Capture**

Wireshark is a free and open source packet analyzer. It is often used for network troubleshooting and is a tremendous help when diagnosing thin client boot issues. The ThinManager support team can generally pinpoint network issues by analyzing a Wireshark capture file.

1. Double click the **Wireshark** shortcut on the **RDS1** desktop.



2. Click the Start Capturing Packets icon in the Wireshark toolbar.



3. When the network capturing begins, you will see a consistent stream of network packets in the capture pane. We want to filter the packets initially to only look at bootp packets, so enter *bootp* followed by the ENTER key in the filter field. This should result in clearing the capture pane, since we have not attempted to boot a client yet.

e Ed		Capture A	•					elp								
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bootp														🛋 🔹 Exp	pression	
	Time	Source		[	Destination		Port Src	Port Des	Protocol	Length Info						
98	1 1 67994	Vmware_	10:25:ce	e 6	Broadcast				ARP	60 Who has	10.6.10.254? Te	11 10.6.10.5	9			
	2 16.7 7424	10.6.10			10.6.10.51		4241	50012	TCP		50012 [PSH, ACK]					
	3 16.728 19	10.6.10		1	10.6.10.50		50012	4241	TCP		4241 [PSH, ACK]				2	
	4 16.73803.	10.6.10			10.6.10.51			50012	TCP		50012 [ACK] Seq		3 Win=2049 L	en=0		
	5 16.830659				10.6.10.52		49784		NBSS		ntinuation Messa					
	6 16.830700	10.6.10			10.6.10.52		49785		NBSS		ntinuation Messa					
	7 16.830714	10.6.10			10.6.10.52		49786		NBSS		ntinuation Messa					
	8 16.830858	10.6.10			10.6.10.51			49784	TCP		9784 [ACK] Seq=					
	9 16.830858	10.6.10			10.6.10.51			49785	TCP		9785 [ACK] Seq=					
99	0 16.830858	10.6.10	.52	1	10.6.10.51		445	49786	TCP	66 445 → 49	9786 [ACK] Seq=:	L Ack=2 Win=20	050 Len=0 SL	E=1 SRE=2		
		l Version 4, trol Protoco	, Src: 1	0.6.10.	52, Dst: 1	0.6.10.50	-			:10:25:ce) 0						
		l Version 4	, Src: 1	0.6.10.	52, Dst: 1	0.6.10.50	-			,						
Tran:	smission Con 90 0c 29 10	1 Version 4, trol Protoco 25 ce 00 50	, Src: 1 ol, Src 56 2e	0.6.10. Port: 4 87 3a 0	52, Dst: 1 9746, Dst 8 00 45 00	0.6.10.50 Port: 1332	- :, Seq: :	1, Ack:		,						
Tran: 00 @	smission Con 90 Oc 29 10 90 28 0b 8d	1 Version 4,	, Src: 1 ol, Src 56 2e 06 d2	0.6.10. Port: 4 87 3a 0 0a 06 0	52, Dst: 1 9746, Dst 8 00 45 00 a 34 0a 06	0.6.10.50 Port: 1332	- ., Seq: 1 P V4	E.		,						
Tran: 00 @ 10 @	smission Con 00 Oc 29 10 10 28 0b 8d 1a 32 c2 52	1 Version 4. trol Protoco	56 2e 06 d2 06 d2	0.6.10. Port: 4 87 3a 0 0a 06 0 81 9e c	52, Dst: 1 9746, Dst 8 00 45 00 a 34 0a 06	0.6.10.50 Port: 1332	- ., Seq: 1 P V4	E.		,						
'ran: 0 0 0 0	smission Con 00 Oc 29 10 10 28 0b 8d 1a 32 c2 52	1 Version 4. trol Protoco 25 ce 00 50 00 00 80 06 05 34 10 56	56 2e 06 d2 06 d2	0.6.10. Port: 4 87 3a 0 0a 06 0 81 9e c	52, Dst: 1 9746, Dst 8 00 45 00 a 34 0a 06	0.6.10.50 Port: 1332	- ., Seq: 1 P V4	E.		,						
6 6 0 6	smission Con 00 Oc 29 10 10 28 0b 8d 1a 32 c2 52	1 Version 4. trol Protoco 25 ce 00 50 00 00 80 06 05 34 10 56	56 2e 06 d2 06 d2	0.6.10. Port: 4 87 3a 0 0a 06 0 81 9e c	52, Dst: 1 9746, Dst 8 00 45 00 a 34 0a 06	0.6.10.50 Port: 1332	- ., Seq: 1 P V4	E.		,						
Tran: 00 @ 10 @	smission Con 00 Oc 29 10 10 28 0b 8d 1a 32 c2 52	1 Version 4. trol Protoco 25 ce 00 50 00 00 80 06 05 34 10 56	56 2e 06 d2 06 d2	0.6.10. Port: 4 87 3a 0 0a 06 0 81 9e c	52, Dst: 1 9746, Dst 8 00 45 00 a 34 0a 06	0.6.10.50 Port: 1332	- ., Seq: 1 P V4	E.		,						
Tran: 00 @ 10 @	smission Con 90 Oc 29 10 90 28 0b 8d 9a 32 c2 52	1 Version 4. trol Protoco 25 ce 00 50 00 00 80 06 05 34 10 56	56 2e 06 d2 06 d2	0.6.10. Port: 4 87 3a 0 0a 06 0 81 9e c	52, Dst: 1 9746, Dst 8 00 45 00 a 34 0a 06	0.6.10.50 Port: 1332	- ., Seq: 1 P V4	E.		,						
Tran: 00 @ 10 @ 20 @	smission Con 90 Oc 29 10 90 28 0b 8d 9a 32 c2 52	1 Version 4. trol Protoco 25 ce 00 50 00 00 80 06 05 34 10 56	56 2e 06 d2 06 d2	0.6.10. Port: 4 87 3a 0 0a 06 0 81 9e c	52, Dst: 1 9746, Dst 8 00 45 00 a 34 0a 06	0.6.10.50 Port: 1332	- ., Seq: 1 P V4	E.		,						
Fran: 0 6 0 6	smission Con 90 Oc 29 10 90 28 0b 8d 9a 32 c2 52	1 Version 4. trol Protoco 25 ce 00 50 00 00 80 06 05 34 10 56	56 2e 06 d2 06 d2	0.6.10. Port: 4 87 3a 0 0a 06 0 81 9e c	52, Dst: 1 9746, Dst 8 00 45 00 a 34 0a 06	0.6.10.50 Port: 1332	- ., Seq: 1 P V4	E.		,						
Tran: 00 @ 10 @	smission Con 90 Oc 29 10 90 28 0b 8d 9a 32 c2 52	1 Version 4. trol Protoco 25 ce 00 50 00 00 80 06 05 34 10 56	56 2e 06 d2 06 d2	0.6.10. Port: 4 87 3a 0 0a 06 0 81 9e c	52, Dst: 1 9746, Dst 8 00 45 00 a 34 0a 06	0.6.10.50 Port: 1332	- ., Seq: 1 P V4	E.		,						

#### Troubleshoot the Boot Process

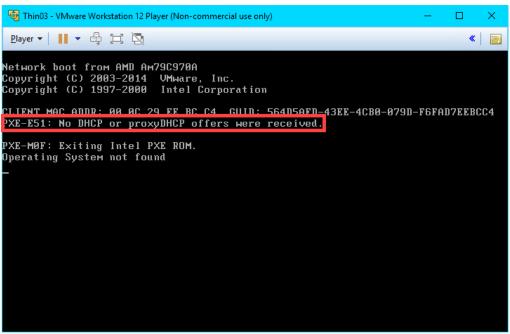
1. Return to VMWare Player. If it is closed, you can re-launch it by double clicking its shortcut on the desktop. Select the Thin03 virtual image we created earlier and click the Play virtual machine link.

🔁 VMware Workstation 12 Player (Non-commercial use only) — 🛛					
<u>P</u> layer 🕶 🕨 🖛 🖽 🔯					
Home Thin03 Thin02 Thin01	Thin03				
	State: Powered Off				
	OS: Other				
	Version: Workstation 12.0 virtual mach	nne			
2	<ul> <li>Play virtual machine</li> <li>Edit virtual machine settings</li> </ul>				

2. Click the **No** button to the connect virtual device message box.



3. Since we have not installed an Operating System in our virtual machine, it will attempt to PXE boot. After a few seconds, we receive a PXE-E53 error indicating No boot filename received. Recall that PXE is inherently dependent on DHCP. As part of this dependence, any PXE client needs 3 things to boot – (1) an IP address, (2) a boot server IP address and (3) a boot file name. We have the virtual thin client configured for NAT, so VMWare Player will provide a NAT'd IP address, but we need ThinManager to provide the boot server IP address(es) as well as the boot file name. We configured ThinManager's PXE Server Mode accordingly to be Using standard DHCP server. We know that we just disabled some important Firewall Rules that we created in Section 11, but let's imagine that we didn't know this.



**TFTP**, **Trivial File Transfer Protocol**, is used by all ThinManager managed thin clients to deliver the boot file, the firmware, as well as the terminal configuration.

4. Return to **Wireshark** so we can investigate what might be the problem. As we can see from the capture log, a **DHCP Discover** packet was sent to a **Port Destination of 67**, but no **DHCP Offers** were made from **ThinManager**.

			Statistics Telephony Wireles		
	0	X C 9 0 0	ା 🗟 🗿 👲 📃 📃 ପ୍ ପ୍	. 🔍 🎹	
boo	ъф				🛆 🔀 📼 💌 Expression
	Time	Source	Destination	Port Src Port Des Pro	tocol Length Info
7	7990 45.316310	0.0.0.0	255.255.255.255	68 67 DH	CP 590 DHCP Discover - Transaction ID 0x2ac0a25e
7	7991 45.316316	0.0.0.0	255.255.255.255	68 67 DH	CP 590 DHCP Discover - Transaction ID 0x2ac0a25e
8	3352 46.028403	0.0.0.0	255.255.255.255	68 67 DH	CP 590 DHCP Discover - Transaction ID 0x2bc0a25e
8	353 46.028407	0.0.0.0	255.255.255.255	68 67 DH	CP 590 DHCP Discover - Transaction ID 0x2bc0a25e
8	3687 47.401297	0.0.0.0	255.255.255.255	68 67 DH	CP 590 DHCP Discover - Transaction ID 0x2cc0a25e
8	3688 47.401303	0.0.0.0	255.255.255.255	68 67 DH	CP 590 DHCP Discover - Transaction ID 0x2cc0a25e
9	851 51.267418	0.0.0	255.255.255.255	68 67 DH	CP 590 DHCP Discover - Transaction ID 0x2dc0a25e
Eti In Us	hernet II, Src: ternet Protocol er Datagram Prot	Vmware_c0:a2:5e Version 4, Src: tocol, Src Port:		Broadcast (ff:ff:ff:	
Eti In Us	hernet II, Src: ternet Protocol er Datagram Prot	Vmware_c0:a2:5e Version 4, Src:	(00:0c:29:c0:a2:5e), Dst: 0.0.0.0, Dst: 255.255.255 68, Dst Port: 67	Broadcast (ff:ff:ff:	
Eti In Us Dyi	hernet II, Src: ternet Protocol er Datagram Prot namic Host Confi	Vmware_c0:a2`5e Version 4, Src: tocol, Src Port: iguration Protoco	(00:0c:29:c0:a2:5e), Dst: 0.0.0.0, Dst: 255.255.255 68, Dst Port: 67 1 (Discover)	Broadcast (ff:ff:ff:	
Eti In Uso Dyo 00	hernet II, Src: ternet Protocol er Datagram Prot namic Host Confi ff ff ff ff ff	Vmware_c0:a2:5e Version 4, Src: tocol, Src Port: iguration Protoco	(00:0c:29:c0:a2:5e), Dst: 0.0.0.0, Dst: 255.255.255 68, Dst Port: 67 1 (Discover) a2 5e 08 00 45 00	Broadcast (ff:ff:ff: 5.255	
Et In Us Dy 20	hernet II, Src: ternet Protocol er Datagram Prot namic Host Confi ff ff ff ff ff ff 62 40 00 00 00 ff ff 00 44 00	Vmware_c0:a2:5e Version 4, Src: cocol, Src Port: iguration Protoco ff 00 0c 29 c0 00 14 11 a4 ae 0 43 02 2c 4b fd	(00:0c:29:c0:a2:5e), Dst: 0.0.0.0, Dst: 255.255.255 68, Dst Port: 67 1 (Discover) a2 5e 08 00 45 00 00 00 00 00 ff ff 01 01 06 00 2a c0	: Broadcast (ff:ff:ff: 5.255	
Eti In Us Dyn 20 10 20 30	hernet II, Src: ternet Protocol er Datagram Prot namic Host Confi ff ff ff ff ff ff ff 02 40 00 00 ff ff 00 44 00 a2 5e 00 04 80	Vmware_c0:a2:5e Version 4, Src: cocol, Src Port: Iguration Protoco ff 00 0c 29 c0 00 14 11 a4 ae 43 02 2c 4b fd 00 00 00 00 00 00	(00:0c:29:c0:a2:5e), Dst: 0.0.0.0, Dst: 255.255.255 68, Dst Port: 67 1 (Discover) a2 5e 08 00 45 00 00 00 00 00 ff ff e1 01 06 00 2a co	: Broadcast (ff:ff:ff: 5.255	
Eti In Us Dy 20 30 40	hernet II, Src: ternet Protocol er Datagram Prot namic Host Confi ff ff ff ff ff ff 02 40 00 00 00 ff ff 00 44 00 a2 5e 00 04 80 00 00 00 00 00	Vmware_c0:a2:5e Version 4, Src: tocol, Src Port: iguration Protoco f ff 00 0c 29 c0 0 00 14 11 a4 ae 43 02 2c 4b fd 0 00 00 00 00	(00:0c:29:c0:a2:5e), Dst: 0.0.0.0, Dst: 255.255.255 66, Dst Port: 67 1 (Discover) a2 5e 08 00 45 00 00 00 00 00 ff ff 01 01 06 00 2a c0 00 00 00 00 00 a2 5e 00 00 00 00 a2 5e 00 00 00 00	: Broadcast (ff:ff:ff: 5.255	
Eti In Uso Dyn 20 20 30 40 50	hernet II, Src: ternet Protocol er Datagram Prot namic Host Confj ff ff ff ff ff ff 02 40 00 08 00 ff ff 00 44 00 a2 5e 00 04 08 00 00 00 00 00 00 00 00 00	Vmware_c0:a2:5e Version 4, Src: tocol, Src Port: iguration Protoco fff 00 0c 29 c0 00 14 11 a4 ae 43 02 2c 4b fd 00 00 00 00 00 00 00 00 00 c 29 c0 00 00 00 00 00 00	(00:0c:29:c0:a2:5e), Dst: 0.0.0.0, Dst: 255.255.255 68, Dst Port: 67 1 (Discover) a2 5e 08 00 45 00 00 00 00 0fff 01 01 06 00 2a c0 00 00 00 00 00 00 00 00 00 00 	: Broadcast (ff:ff:ff: 5.255	
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5. Return to the **Windows Firewall with Advanced Security** window. Right click the **UDP67** firewall rule and select **Enable Rule**. This is the rule that permits UDP67 traffic through the firewall, which enables **DHCP** traffic.

💣 Windows Firewall with Advance	d Security							
File Action View Help								
Prindows Firewall with Advance	Inbound Rules							
🗱 Inbound Rules 🌠 Outbound Rules	Name	Group						
Security Rules	RSAlarmFileReader.exe RSAlarmFileReader.exe							
· · · · · · · · · · · · · · · · · · ·	SLinx.exe							
	Ø RSLinx.exe							
	RSLinx.exe     RsvcHost.exe							
	RsvcHost.exe							
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	TCP2031	, (Cr						
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	VMware Authd Service	Cut						
	VMware Authd Service (private) VStudio.exe	Сору						
	🔮 VStudio.exe	Delete						
	VStudio.exe VStudio.exe	Properties						
	VStudio.exe	Help						
	🔇 VStudio.exe							

6. Return to VMWare Player. Select the Player drop down menu, followed by the Power item then the Restart Guest item. Click Yes to the confirmation dialog.

<b>1</b>	1 - VMware Workstati	on 12 Player (Non-com	nmercial use only)	-		×
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	<u>F</u> ile	>				
2	Power	> 🕨	<u>P</u> ower On			
$\odot$	Removable Devices	>	Shut D <u>o</u> wn Guest			
[ ÷	Send <u>C</u> trl+Alt+Del	<u> </u>	Suspend Guest	2A-5440-1F45-4EDD-279	F49CØA	25E
1	<u>M</u> anage	→ <mark>(</mark> 3)	<u>R</u> estart Guest	ed.		
i jiji	Full Screen	Ctrl+Alt+Enter				
	<u>U</u> nity					
i i	<u>H</u> elp	>				
	E <u>x</u> it					

7. After restarting the virtual thin client, we receive a **TFTP** timeout. It looks like we might be getting a little closer. This time we receive the necessary IP information from ThinManager. This indicates that **ThinManager** responded to the **DHCP Request** with a **DHCP Offer**. Let's confirm this with **Wireshark**.

😼 Thin03 - VMware Workstation 12 Player (Non-commercial use only)	-	-		×
Player ▼   📕 ▼ 🛱 🛱			<b>«</b>	
Network boot from AMD Am79C970A Copyright (C) 2003-20 Copyright (C) 1997-20 Receives IP address				
CLIENT MAC ADDR: 00 0C 25 C0 A2 5E GUID: 564D342A-5440-1F45- CLIENT IP: 10.6.1.100 MASK: 255.255.255.0 DHCP IP: 10.6.1.5 GATEWAY IP: 10.6.1.1 PXE-E32: TFTP open timeout TFTPfrom ThinManage	1	79F4	9C0A2	25E
PXE-E32: TFTP open timeout				

 Sure enough, we see that this time we received a DHCP Offer from 10.6.10.51 which includes the boot server (10.6.1.51) and the boot filename (acpboot.bin). So our virtual thin client should have all it needs to boot, but we are still receiving a TFTP timeout.

File	Edit View Go	Capture Analyze Sta	stistics Telephony W	/ireless Tools Help					
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b	ootp						A	Expressi	ion
). ).	Time	Source	Destination	Port Src Pr	ort Des Protocol	Length Info			
	37864 174,083146	10.6.10.51	255,255,255,25		68 DHCP	377 DHCP Offer	- Transaction ID	0x2deebcc4	
	37865 174.083151	10.6.10.51	255,255,255,25		68 DHCP	377 DHCP Offer	- Transaction ID		
	42986 190,165497	0.0.0.0	255,255,255,25		67 DHCP		- Transaction ID		
	42987 190.165502	0.0.0.0	255.255.255.25		67 DHCP		- Transaction ID		
	42988 190.166079	10.6.10.51	255.255.255.25	55 67	68 DHCP	377 DHCP ACK	- Transaction ID		
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	Client MAC addr	address: 0.0.0.0 ess: Vmware_ee:bc:c address padding: 0							
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0f	Client MAC addr Client hardware Server host nam Boot file name: Magic cookie: D > Option: (67) Bo > Option: (67) Ve > Option: (53) DH	ess: Vmware_ee:bc:c address padding: 6 e: RDS1 acpboot.bin HCP otfile name ndor-Specific Infor <u>CP Message Type (Of</u> 00 00 00 00 00 00	mation (PXEClient)	NƏ İ					
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0f 10 11 13 14 15	Client MAC addr Client hardware Server host nam Boot file name: Magic cookie: D > Option: (67) Bo > Option: (67) Bo > Option: (53) DH > Ootion: (53) DH 0 00 00 00 00 00 0 00 00 00 00 0 00 00	ess: Vmware_ee:bc:c address padding: 6 : RD51 acpboot.bin HCP otfile name ndor-Specific Infor CP_Messaee_Tvoe (Of 00 00 00 00 00 00 00 63 82 53 63 43 69 66 00 2b 60 00 33 ff 35 61 02 01 01 42 00 31 30 2e 43 50 5f 50 58 43 43 56 5f 50 58 43 43 60 66 00 66	mation (PXEClient) (fer) 0 00 00 00 00 00 0 00 00 00 00 0 01 0f 06 07 00 0 01 ff ff 00 0 01 ff ff 00 0 01 ff 00 0 01 ff 00 0 02 58 45 3 3 3 04 00 55	00 00 00 00 00 00 00 00 00 00					

9. Return to the **Windows Firewall with Advanced Security** window. Right click the **UDP69** firewall rule and select **Enable Rule**. This is the rule that permits UDP69 traffic through the firewall, which is required for **TFTP** communication for **PXE** clients.

🔗 Windows Firewall with Advance	d Security	
File Action View Help		
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Windows Firewall with Advance	Inbound Rules	
🗱 Inbound Rules 🕵 Outbound Rules	Name	Group
Security Rules	🔇 RSAlarmFileReader.exe	
> S Monitoring	RSAlarmFileReader.exe	
	🔇 RSLinx.exe	
	🔇 RSLinx.exe	
	🔇 RSLinx.exe	
	SLinx.exe	
	SkycHost.exe	
	RsvcHost.exe RsvcHost.exe	
	SvcHost.exe	
	Studio 5000 Logix Designer v30.01.0	0.(CD
	Studio 5000 Logix Designer v30.01.0	
	TCP2031	0 (01
	Ø UDP67	
	1 UDP69	
	VMware Authd Service	2 Enable Rule
	🧭 VMware Authd Service (private)	Cut
	🔮 VStudio.exe	
	🔮 VStudio.exe	Сору
	🔮 VStudio.exe	Delete
	VStudio.exe	Properties
	VStudio.exe	Help
	VStudio.exe	Heip
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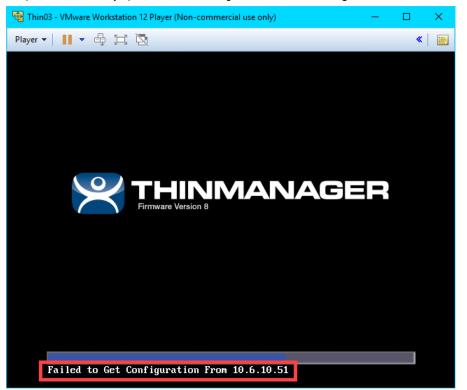
10. Return to VMWare Player. Select the Player drop down menu, followed by the Power item then the Restart Guest item. Click Yes to the confirmation dialog.

<b>1</b>	1 - VMware Workstation 12 Player	(Non-co	mmercial use only)	_		×
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$\odot$	Removable Devices	>	Shut D <u>o</u> wn Guest			
t 🕂	Send <u>C</u> trl+Alt+Del	- II	Suspend Guest	2A-5440-1F45-4EDD-279	9F49CØf	125E
Х.	<u>M</u> anage	→ <mark>(</mark> 3	<u>R</u> estart Guest	ed.		
j (jic)	Full Screen Ctrl+Alt+Er	nter				
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11. This time, the Virtual Thin Client should begin to boot. It will first receive the boot loader (acpboot.bin for Legacy PXE clients like this one), and then the firmware. Notice that the IP Method is listed as PXE, which indicates that ThinManager acted as a DHCP Server to deliver the IP address for the terminal, the IP address of the ThinManager Server and the boot filename.

🖷 Thin03 - VMware Workstation 12 Player (Non-commercial use only)	-		×
Player 🕶 📕 🗢 🛱 🔀		×	
Rockwell Automation ThinManager Network Boot Loader v2.5			
Status : Loading Firmware from ThinManager Server 10.6.10.51			
Terminal IP Information           IP Method         PXE           Terminal IP         10.6.10.100           ThinManager Server         10.6.10.51           Router         10.6.10.1           Subnet Mask         255.255.255.0           MAC Address         00:0c:29:ee:bc:c4			

12. We will now see the final hurdle to clear, which is the delivery of the terminal profile, which requires **TCP2031**. Since this port is not currently open, we are receiving a **Failed to Get Configuration From 10.6.10.51** error message.



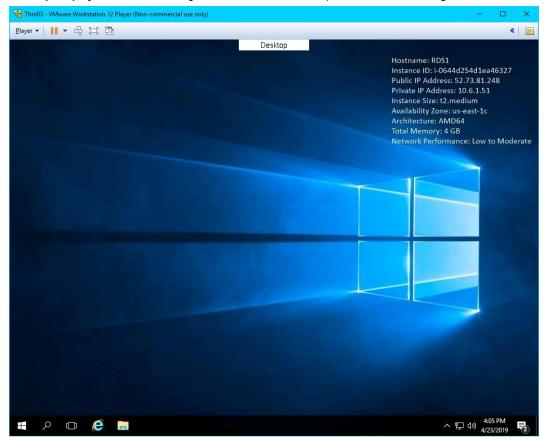
13. Return to the Windows Firewall with Advanced Security window. Right click the TCP2031 firewall rule and select Enable Rule. This is the rule that permits TCP2031 traffic through the firewall, which is required for the delivery of the terminal profile and for communication between ThinServer and the terminal.

Provide the second seco	d Security	
File Action View Help		
Windows Firewall with Advance Inbound Rules Outbound Rules Connection Security Rules Monitoring	Inbound Rules Name RSAlarmFileReader.exe RSAlarmFileReader.exe RSLinx.exe RSLinx.exe RSLinx.exe RSLinx.exe RSUDSLexe RSVCHost.exe RsvcHost.exe RsvcHost.exe RsvcHost.exe RsvcHost.exe Studio 5000 Logix Designer v30. Studio 5000 Logix Designer v30.	
	1 TCP2031 2 UDP67 2 UDP69 2 VMware Authd Service 2 VMware Authd Service (pr 2 VStudio.exe 3 VStudio.exe 3 VStudio.exe 3 VStudio.exe 3 VStudio.exe 3 VStudio.exe 3 VStudio.exe 3 VStudio.exe 3 VStudio.exe	Enable Rule Cut Copy Delete Properties Help

14. Return to the virtual thin client once more and we should now see the terminal profile assignment screen. Arrow down to select the **Mixer Terminal Group** followed by the **Thin03** terminal profile.

😼 Thin03 - V	/Mware Wor	kstation 12 Player (Non-commercial use only)	-		×
<u>P</u> layer ▼		H A		«	
		This Terminal is Undefined on Server RDS1 Choose the Terminal to Replace or Action		]	
Status :	Name	Type			
	Mixer ZenPad	Group			

15. The boot process should continue now delivering the terminal's profile, with the ultimate result being the delivery of the **Desktop Display Client** that we assigned to the **Thin03** terminal profile in the **ThinManager**.



16. Return to **Wireshark** and replace the **bootp** capture filter with *tftp*. Now you can see the delivery of the boot loader, the firmware and the terminal profile (including the associated modules).

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tfl										•			Expression
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		3217.5			5.10.51			.6.10.10			777 52146	TETP	1205 Data Packet, Block: 14 (last) 1205 Data Packet, Block: 14 (last)
		3217.5			5.10.10			.6.10.5			146 56777	TETP	46 Acknowledgement, Block: 14
		3217.5			5.10.10			.6.10.5			146 56777	TETP	46 Acknowledgement, Block: 14
		3218.0			5.10.10			.6.10.5			445 69	TETP	96 Read Request, File: 8.2\\module usbtouch.mod, Transfer type: oc
		3218.0			5.10.10			.6.10.5			445 69	TETP	96 Read Request, File: 8.2\\module_usbtouch.mod, Transfer type: oc
		3218.0			5.10.51			.6.10.10			778 36445	TETP	69 Option Acknowledgement, tsize=29250, blksize=1432
		3218.0			5.10.51			.6.10.10			778 36445	TETP	69 Option Acknowledgement, tsize=29250, blksize=1432
		3218.0			5.10.10			.6.10.5			445 56778	TETP	46 Acknowledgement, Block: 0
		3218.0			.10.10			.6.10.5			445 56778	TETP	46 Acknowledgement, Block: 0
					10 51			6 10 10			778 36445	TETD	1478 Data Packet Block: 1
I	nterne		tocol	Versio		c: 10.6			2), bst. 10.6.10.		50.04.07	(00:00:25	9c:d4:c7)
I	nterne		tocol	Versio	n 4, Sr	c: 10.6					50.04.07	(00:00:25	99c:d4:c7)
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In 10 10 10 10 10 10 10 10 10 10	00 00 00 00 00 00 00	0c 29 59 08 65 03 00 14 45 00 69 6e	9c d4 42 06 11 7e 29 ee 00 6f	Versic lessage c7 00 0 00 80 i d9 00 0 40 00 0 49 00 i d9 00 0 63 74	50 56 01 09 00 00 06 04 01 61 65 74	c: 10.6 ol 27 4c 7 c1 0a 6 65 0a 6	2 08 6 0a 9 00 6 0a 2 6f	00 45 0 00 45 0 31 08 0 31 08 1 36 00 0 31 08 1 6f 74 2	10.6.10. 0 ··)· 6 ·Y·B b ·e·5 f ···· a bin(	101 	r··E· ··1· ·· boot.	(00:00:23	
In 10 000 000 000 000 000 000 000	00 00 00 00 00 00 00	0c 29 59 08 65 03 00 14 45 00 69 6e	9c d4 42 06 11 7e 29 ee 00 6f	Versic lessage c7 00 0 00 80 6 d9 00 2 04 0a 39 00	50 56 01 09 00 00 06 04 01 61 65 74	c: 10.6 ol 27 4c 7 c1 0a 6 00 45 6 65 0a 6 63 70 6	2 08 6 0a 9 00 6 0a 2 6f	00 45 0 00 45 0 31 08 0 31 08 1 36 00 0 31 08 1 6f 74 2	10.6.10. 0 ··)· 6 ·Y·B b ·e·5 f ····5 f ····5	101 	r··E· ··1· ·· boot.		:9c:d4:c7)

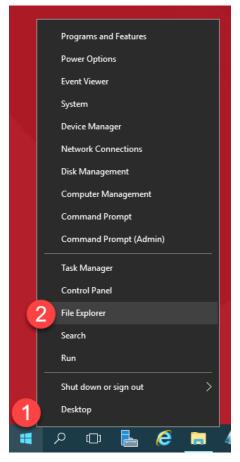
17. Return to VMWare Player and close it. Click the Power Off button.

VMware Workstation 15 Player									
$\bigcirc$	How do you want to close the virtual machine?								
•	Suspending will preserve your environment and data for later use.								
	If powering off, make sure that the virtual machine is in a safe state for shutdown.								
	Suspend Power Off Cancel								

## Boot Virtual Thin Client via UEFI

ThinManager v11 introduces support for **UEFI** (**Unified Extensible Firmware Interface**). Also referred to as EFI, UEFI is a new generation of system firmware and is stored in ROM or Flash ROM. Essentially, UEFI provides the first instructions used by the CPU to initialize hardware and subsequently pass control to an operating system or bootloader. UEFI is intended to replace traditional BIOS and is also capable of running on platforms other than PCs. Adding support for UEFI enables ThinManager to continue to support a very broad range of thin client offerings.

1. We need to configure our Virtual Thin Client to use UEFI instead of traditional BIOS. To do so, right click the Windows Start button on RDS1 and select File Explorer.



15. Within File Explorer, navigate to Documents->Virtual Machines->Thin03, right click Thin03.vmx and select Open With... followed by Notepad.

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File	Home	Sh	are	View							~ 🕐
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📌 Q	uick access		^	Name			Date modified	Туре		Size	
	Desktop	*		Thin03.nvram			4/23/2019 4:22 PM	NVRAM		73 KB	
_	Downloads	*		🐣 Thin03.vmdk			4/23/2019 12:40 PM		e virtual dis	1 KB	
· ·	Documents	4		Thin03.vmsd			4/23/2019 12:40 PM	VMSD		0 KB	
			2	Thin03.vmx		Open with VMw			e virtual m	3 KB	
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	Lab Files			Thin03-s001.vmdk	3	Open with	ws Derender		e virtual dis	512 KB	
	Thin01			Thin03-s002.vmdk	3	Open with		4	Notepad		
	Thin02			Thin03-s003.vmdk		Share with		$\rightarrow$	VMware Pl	layer	
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💻 T	his PC			vmware-0.log		Send to		>	Choose an	other app	
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۵.	Music					Delete					
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10 items   1 item selected 2.06 KB											

16. Scroll to the bottom of the text file and enter the following on a new line (this can also be copied and pasted from the LabPaths.txt file from the RDS1 Desktop). Save the file and close Notepad.

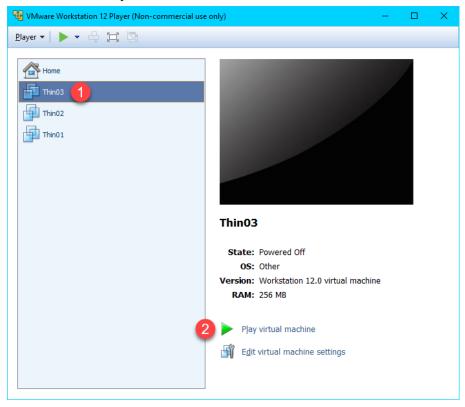
firmware	= "efi"
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Thin03.vmx - Notepad	—	×
File Edit Format View Help		
<pre>He Edit Format View Help numa.autosize.cookie = "10001" uuid.bios = "56 4d 34 2a 54 40 1f 45-4e dd 27 9f 49 c0 a2 5e" uuid.location = "56 4d 34 2a 54 40 1f 45-4e dd 27 9f 49 c0 a2 5e" migrate.hostlog = ".\Thin03-8d6ed9e3.hlog" ide0:0.redo = "" pciBridge0.pciSlotNumber = "17" pciBridge4.pciSlotNumber = "21" pciBridge5.pciSlotNumber = "22" pciBridge6.pciSlotNumber = "23" pciBridge7.pciSlotNumber = "24" scsi0.pciSlotNumber = "16" ethernet0.pciSlotNumber = "32" sound.pciSlotNumber = "33" vmci0.pciSlotNumber = "34" ethernet0.generatedAddress = "00:0c:29:c0:a2:5e" ethernet0.generatedAddress = "00:0c:29:c0:a2:5e" ethernet0.generatedAddress = "3554432" vmction.checkpointFBSize = "33554432" vmotion.checkpointFBSize = "33554432" vmotion.checkpointFSize = "33554432" vmotion.checkpointFUE" softPowerOff = "FALSE" ide1:0_startConnected = "FALSE" firmware = "efi"</pre>		
<		>

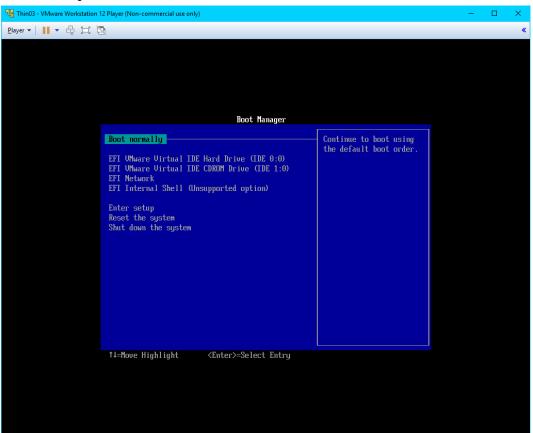
17. Double click the VMWare Player shortcut on the RDS1 desktop.



18. Return to VMWare Player by double clicking its shortcut on the desktop. Select the Thin03 virtual image we created earlier and click the Play virtual machine link.



19. The **VirtuaITC** image should now attempt to **PXE** boot via **UEFI** as opposed to **BIOS**. You should see the following screen indicating that it was unable to boot.



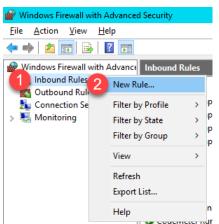
20. Let's return to **Wireshark** and examine the capture. Enter *bootp* as the capture filter again and scroll towards the bottom of the capture window.

The 1st thing to notice is the **DHCP Offer** from **10.6.10.51** which is our **RDS1** virtual image where we have **ThinManager** installed. This capture item is selected in order to see the data included in the packet. As you can see from the screen shot below, the response from **10.6.10.51** includes the **boot server – 10.6.10.51**, as well as the boot filename – **tmboot32.efi**.

🔏 \*Ethernet File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help ◢ ■ ⊿ ⑧ 📄 🖀 🖄 🗳 ۹. ⇔ 🕾 🗿 🕹 🚍 📃 ۹. ۹. ۹. ୩ bootp Expression. + Destination Port Src Port Des Protocol Length Info Time Source 2705... 749.665139 0.0.0.0 255,255,255,255 68 67 DHCP 389 DHCP Discover - Transaction ID 0xf1eb431c 2705... 749.675610 2705... 749.675615 68 DHCP 363 DHCP Offer 363 DHCP Offer 10.6.10.51 255.255.255.25 Transaction ID 0xf1eb431c 10.6.10.51 255.255.255.255 68 DHCF Transaction ID 0xf1eb431c 2715... 753.616990 2715... 753.616994 Transaction ID 0xf1eb431c Transaction ID 0xf1eb431c 0.0.0.0 255.255.255.255 68 67 DHCP 0.0.0.0 255.255.255.255 401 DHCP equest ACK 2715... 753.617463 - 2715... 753.617467 10.6.10.51 255.255.255.255 67 68 DHCP 363 DHC - Transaction ID 0xf1eb431c 255.255.255.255 АСК 10.6.10.51 68 DHCP 363 DH Transaction ID 0xf1eb431c 67 2715... 753.626415 2715... 753.626418 4011 4011 DHCP 10.6.10.100 10.6.10.51 389 XVDHCP Request Transaction TD 0x3acacb3d roxyDHCP Request - Transaction ID 0x3acacb3d roxyDHCP Request - Transaction ID 0x3acacb3d roxyDHCP Request - Transaction ID 0x3acacb3d 10.6.10.51 4011 4011 DHCP 10.6.10.100 389 2717... 754.622061 10.6.10.100 10.6.10.51 4011 4011 DHCP < Hops: 0 ^ Transaction ID: 0xf1eb431c Seconds elapsed: 0 > Bootp flags: 0x8000, Broadcast flag (Broadcast) Client IP address: 0.0.0.0 Your (client) IP address: 10.6.10.100 Next server IP address: 10.6.10.51 Relay agent IP address: 0.0.0.0 
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 0 ot32.efi ·5····· 0.51 · AC P\_PXE<·P XEClient 6····33· ···~@···· ·1· 🔴 🍸 Relay agent IP address (dhcp.ip.relay), 4 bytes Packets: 291112 · Displayed: 69 (0.0%) Profile: Default

The 2<sup>nd</sup> thing to notice is the proxyDHCP Request(s) on port 4011. UEFI requires that we also open UDP Port 4011.

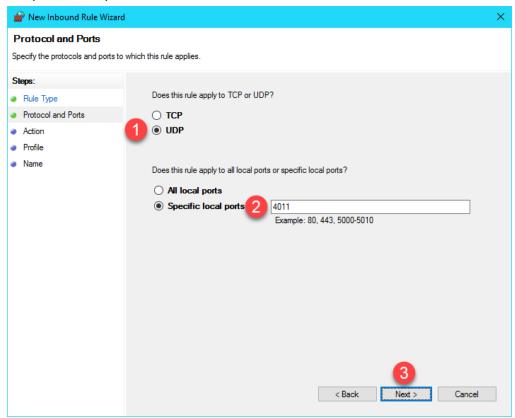
- 21. Return to the **Windows Firewall and Advanced Security** window.
- 22. Let's add a new Inbound Rule to permit the UDP4011 port. Right click the Inbound Rules item and select the New Rule... item.



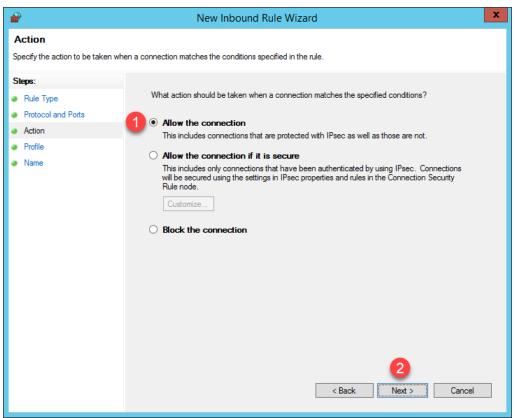
23. From the **Rule Type** panel of the **New Inbound Rule Wizard**, select the **Port** radio button, followed by the **Next** button.

<i> <b> </b></i>	New Inbound Rule Wizard	x			
Rule Type Select the type of firewall rule to c	Rule Type Select the type of firewall rule to create.				
Steps: Protocol and Ports Action Profile Name	What type of rule would you like to create?         Program Rule that controls connections for a program.         Pot Rule that controls connections for a TCP or UDP port.         Predefined: BranchCache - Content Retrieval (Uses HTTP)         Rule that controls connections for a Windows experience.         Custom Custom rule.				

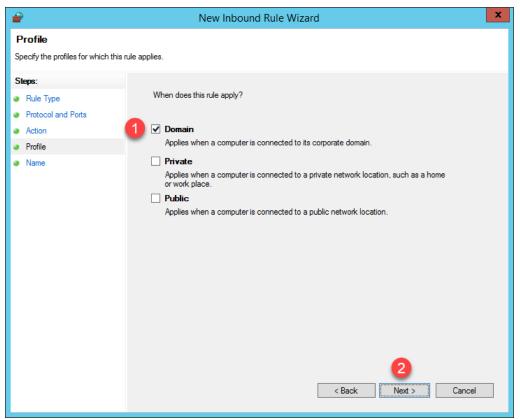
24. From the **Protocol and Ports** panel of the **New Inbound Rule Wizard**, select the **UDP** radio button and enter 4011 in the **Specified local ports** field. Click the **Next** button.



25. From the Action panel of the New Inbound Rule Wizard, select the Allow the connection radio button and click the Next button.



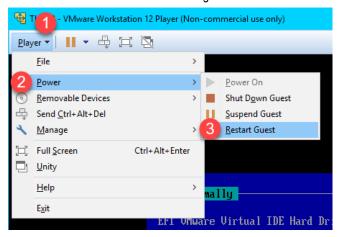
26. From the **Profile** panel of the **New Inbound Rule Wizard**, check the **Domain** checkbox and <u>un</u>-check the **Private** and **Public** checkboxes. Click the **Next** button.



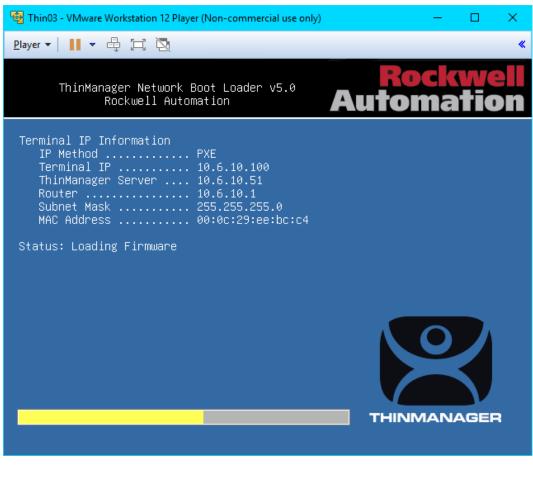
27. From the Name panel of the New Inbound Rule Wizard, enter *UDP4011* as the Name and *ThinManager* as the **Description**. Click the **Finish** button. Leave the **Windows Firewall with Advanced Security** window open.

🔐 New Inbo	🔐 New Inbound Rule Wizard						×	
Name Specify the nam	Name Specify the name and description of this rule.							
Steps:								
Rule Type								
Protocol and	l Ports							
Action								
Profile			ame: JDP4011					
Name			JDF 4011					
			escription (optional):					
		2	Thin Manager					
					< Back	3 Finish	Cancel	

28. Return to VMWare Player. Select the Player drop down menu, followed by the Power item then the Restart Guest item. Click Yes to the confirmation dialog.



29. This time, the Thin03 image should successfully boot via UEFI PXE.



A couple of final words on **ThinManager Compatible Terminals** (**PXE**). In general, you will want to make sure that you have only one **PXE Server** on a single network segment/VLAN, otherwise it becomes very difficult with managing which **PXE Server** responds to **PXE** requests. Furthermore, since **PXE** inherently depends on **DHCP**, it is important to note that you will need to set up a **DHCP Relay** on a managed switch if you need to boot **PXE** terminals that are on a different network segment than ThinManager.

This completes the hands on lab. Thank you for your time, attention and interest in ThinManager. The ThinManager team truly appreciates it!

## Appendix

## Install FactoryTalk View Site Edition Client in RD-Install Mode

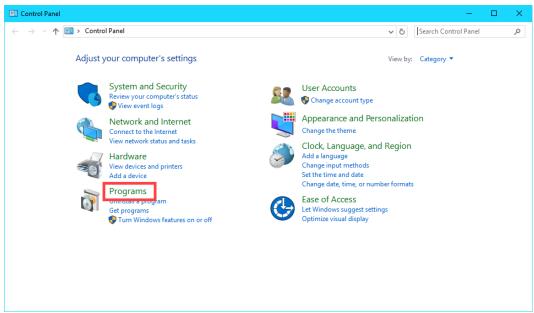
## These steps are for reference only. <u>Do not complete</u> during the lab session, as these steps have already been completed.

Installation of applications for use in a Remote Desktop Session Host environment should be installed through RD-Install mode. In addition, they should always be installed **AFTER** the Remote Desktop Services role services have been installed and configured. This allows the server to capture and preserve per-user installation data to be applied across all sessions. This section walks you through the installation of the FactoryTalk View Site Edition Client in RD-Install mode.

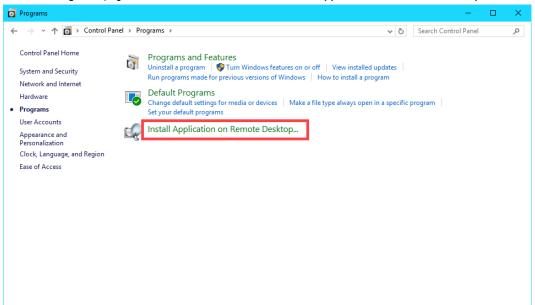
1. Right click the **Windows Start** button and click the **Control Panel** item.

	Programs and Features	
	Power Options	
	Event Viewer	
	System	
	Device Manager	
	Network Connections	
	Disk Management	
	Computer Management	
	Command Prompt	
	Command Prompt (Admin)	
	Task Manager	
	2 Control Panel	
	File Explorer	
	Search	
	Run	
	Shut down or sign out >	
1	Desktop	
-	୮ନ 🗅 占 🥭 🗔	4

2. From the Control Panel, click the Programs link.



3. From the Programs page of the Control Panel, click the Install Application on Remote Desktop... link.



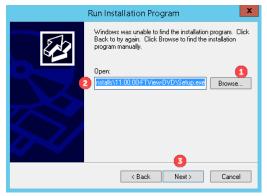
4. Click the Next button of the Install Program From Floppy Disk or CD-ROM wizard.

Install Prog	Install Program From Floppy Disk or CD-ROM			
	Insert the product's first installation floppy disk or CD-ROM, and then click. Next. The application will be installed in RD-Install mode.			
	< Back Next > Cancel			

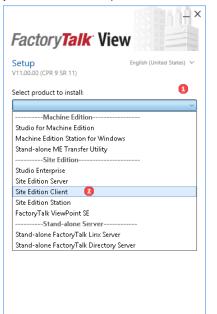
5. Click the Browse... button from the Run Installation Program page of the wizard.

Run Installation Program
Windows was unable to find the installation program. Click Back to try again. Click Browse to find the installation program manually.
Open: Browse
< Back Next > Cancel

- 6. In the Browse dialog, browse to the folder C:\Tools\Installs\11.00.00-FTView-DVD, select Setup and click Open.
- 7. Click Next> to launch the FactoryTalk View Site Edition installation program.



8. From the FactoryTalk View Setup 11.00.00 (CPR 9 SR 11) common installer, select Site Edition Client in the Select product to install dropdown box. Click Install now>.



9. From the End User License Agreements page, click the Accept all button.

It may take 5 to 10 minutes to complete the install. In the meantime, we can review some other relevant FactoryTalk settings on **RDS2**, where we have pre—installed the FactoryTalk View SE Client for you, while the install completes. There are other FactoryTalk policy settings that have specific impacts to a Remote Desktop Services environment. One of which was taken care of in <u>Section 5</u>, and will not be repeated here. Namely, creating a **Computer Account** in the **FactoryTalk Directory** for each **Terminal Name** created in ThinManager. **VersaView5200** and **ZENPAD** have already been added for you in this lab.

- 10. Switch to the **RDS2** image.
- 11. On **RDS2**, start the **FactoryTalk Administration Console** by clicking the **Windows Start** button, followed by the **Down Arrow** at the bottom left corner of the Start Menu screen.
- 12. From the Apps Start Menu screen, find and select the shortcut for the FactoryTalk Administration Console.
- 13. On the Select FactoryTalk Directory dialog, make sure Network is selected and click the OK button.

Select FactoryTalk Directory	x
Select the directory you want to use.	
Network	~
OK Cancel Help	

14. In the Explorer view, browse to Network (HMI) →System→Policies→System Policies→Security Policy and double click on Security Policy or right click on Security Policy and select Properties... from the menu.

📝 FactoryTalk Adm	irvistration Console
File View Tools Window Help	
Explorer Network (HMI) CookieFactory FTViewDemo Action Groups Policies Policies Policies FractoryTalk Alarms and Events Application Authorization User Rights Assignment Live Data Policy Health Monitoring Policy Audit Policy Computers and Groups Networks and Devices Users and Groups Connections Permission Sets	

15. Scroll down to the **Computer Policy Settings** section. The **Require computer accounts for all client machines** policy is by default set to *Enabled* and the **Identify terminal server clients using the name of** policy setting is set to *Terminal client*. Click **Cancel** to close the dialog. Close the **FactoryTalk Administration Console**.

Security Policy Properti	es 🔰	x		
Policy Settings				
Logon session lease	1 hour ^	1		
Account lockout threshold	0 invalid logon attempts	11		
Account lockout auto reset	15 minutes	Ш		
Keep record of deleted accounts	Disabled	Ш		
Show deleted accounts in user list	Disabled	н		
Computer Policy Settings	-			
Require computer accounts for all client machines	Enabled 🗸			
Identify terminal server clients using the name of	Terminal client	н		
E Directory Froiection Folicy Settings		н		
Support non-secure clients	Allow	41		
Audit non-secure client connections	Enabled	Ш		
Directory cache expiration	0 hours before expiration			
Password Policy Settings		Ш		
Passwords must meet complexity requirements	Disabled	-11		
Minimum password length	6 characters	1		
Require computer accounts for all client machines Determines whether or not a client computer account must exist in the directory to login.				
OK Cancel	Apply Help			

These two policies significantly effect security, activity logging, and auditing. They should not be changed from default values without fully understanding the consequences.

### Require computer accounts for all client machines

Determines whether **client** computers can access the FactoryTalk Network Directory without having a computer account in the Directory.

**Enabled** allows users to log on to FactoryTalk only if they are logging on from a client computer that has an account in the FactoryTalk Directory. Even if set to Enabled, Terminal Services clients can still log on to FactoryTalk Directory without computer accounts if the **Identify terminal server clients using the name of** policy is set to **Server Computer**. See below.

- Advantage tighter security...only authorized clients can access the system
- Disadvantage you must add the name of every authorized computer to the FTD

**Disabled** allows users to log on to FactoryTalk from any *client* computer, even if that computer has no computer account in the FactoryTalk Network Directory.

- Advantage when you have many client computers that will be connected/disconnected and you will not
  have control over when new clients will be connected to the system, or don't want to manage all of the
  clients.
- Disadvantage allows ANY computer to connect as a client, even if not part of the directory.

**Important!** Even when this setting is disabled, you must still create computer accounts for any computers hosting **servers** — for example, Terminal Servers, Rockwell Automation Device Servers (RSLinx Enterprise), OPC data servers, Tag Alarm and Event Servers, or HMI servers. Without the server computer accounts, you will not be able to configure the servers from client computers on the network because the FactoryTalk Network Directory Server cannot locate these servers on the network without their computer accounts.

#### Identify terminal server clients using the name of

Determines what computer name identifies clients connecting to the FactoryTalk Directory through Terminal Services. This policy also affects whether client computers connecting through Terminal Services require computer accounts in the FactoryTalk Directory.

**Server Computer** allows client computers to connect through Terminal Services without requiring accounts in the FactoryTalk Directory, even if the **Require computer accounts for all client machines** policy is **Enabled**. This is possible because Remote Desktop clients are identified by the Remote Desktop Server name, and the Remote Desktop Server must always have an account configured in the FactoryTalk Directory.

- Advantage: There is no need to add the name of each RDP client to the FactoryTalk Directory.
- Disadvantage: Any computer can use an RDP client to remote into the system. Remote Desktop clients
  are identified by the Remote Desktop Server name, thus actions are logged using the server name
  instead of the client name, so troubleshooting and auditing actions may be more difficult.

### Results of combining the two policies

If set to **Terminal Client** and the **Require computer accounts for all client machines** policy is **Enabled**, client computers must have computer accounts in the FactoryTalk Directory to access FactoryTalk applications.

- Advantage: tighter security...only authorized clients can access the system, even using RDP. All
  activity is logged using the client name.
- Disadvantage: you must add the name of every authorized computer to the FTD, including RDP clients.

If set to **Terminal Client** and the **Require computer accounts for all client machines** policy is **Disabled**, client computers do not require computer accounts in the FactoryTalk Directory to access FactoryTalk applications. This combination of settings is useful for diagnostic logging because the name of the client computer where actions originate can be logged.

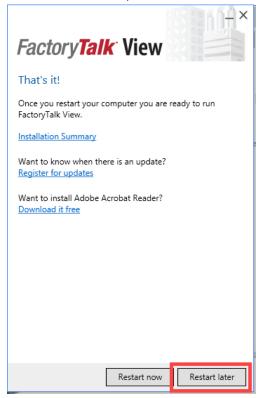
- Advantage: There is no need to add the name of each RDP client to the FactoryTalk Directory. The client name is used for logging.
- Disadvantage: Any computer can connect a client to the system. This include thick client as well as RDP clients.

Please consult the FactoryTalk Security online help for a detailed explanation of behaviors by clicking the **Help** button in the **Security Policy Properties** dialog.

16. Return to the **RDS1** virtual machine by clicking the **RDS1** tab at the top of your screen to check the status of the install process.

🖋 👩 Eile Edit View VM Iabs Help | 👖 🕶 | 🖶 | 💭 💭 💭 | 💷 🚍 🖾 🔯 | 🐻 🗗 DC × 🗗 HMI × 🗗 RDS1 × 🗗 RDS2 × 📼 🚳 🐹 |

17. After the installation completes, on the Installation Summary page, click the Restart later button.



18. After the dialog box is closed, you will be returned to the **Install Application on Remote Desktop Session Host** tool on the **Finish Admin Install** page. Click the **Finish** button.

 Finish Admin Install
When the installation has ended (successfully or not), please click the Finish button or the Cancel button. DO NOT CLICK THE BUTTONS BEFORE INSTALLATION HAS ENDED!
< Back Finish Cancel

19. Continue to the next section. Do not restart yet, you will be asked to restart after configuring the network directory.

## Configure the FactoryTalk Directory to Point to a Network Directory

# These steps are for reference only. <u>Do not complete</u> during the lab session, as these steps have already been completed.

Once the FactoryTalk View Site Edition client installation has completed, the machine needs to be configured to log on to the Network FactoryTalk Directory hosting the application. The network directory is located on the server **HMI** which has already been configured for you.

- 1. Launch the FactoryTalk Directory Server Location Utility by clicking the Windows Start button, followed by the Down Arrow icon in the bottom left corner of the Windows Start screen.
- 2. From the Apps Start Menu screen, scroll to the right and click the Specify FactoryTalk Directory Location shortcut.
- 3. From the FactoryTalk Directory Server Location Utility, click the Browse button.

FactoryTalk Directory Server Location Utility	x
Use this dialog to change the Network directory that this computer belongs to. This setting affects all software that connects to the Network directory from this computer.	
Use the FactoryTalk Directory installed on:	ОК
Computer hosting directory server (connected)	Cancel
localhost	Help

4. You will be prompted to log on to the local directory. Use *labuser* as the username and *rw* as the password and click **OK**.

	Login Use	r 🗶
User name:	labuser	1
Password:	××	2
3	<u>ОК</u>	Cancel

5. On the FactoryTalk Directory Server Configuration dialog, select the Remote computer option, type in *HMI* and click OK.

FactoryTalk Di	rectory Server Conf	figurati	ion X
Use the FactoryTalk Directory in	nstalled on:	2	OK Cancel
Remote computer     HMI	1		

- 6. In the FactoryTalk Directory Server Location Utility, click the OK button to continue.
- 7. Click **OK** on the dialog notifying you that a restart of the computer is required.
- 8. You will then be prompted to log on to the new server. Use *labuser* as the username and *rw* as the password and click **OK**.

Log On to Fa	ctoryTalk (Ne	w Server) ×
User name:	labuser	1
Password:	×	2
3	OK	Cancel

9. Now you can restart the computer by right clicking the **Windows Start** button and selecting **Shut down or sign out** →**Restart**. If prompted about other users being connected to the Server, click the **Restart Anyway** link.

Programs and Features	
Power Options	
Event Viewer	
System	
Device Manager	
Network Connections	
Disk Management	
Computer Management	
Command Prompt	
Command Prompt (Admin)	
Task Manager	
Control Panel	
File Explorer	
Search	
Run	
Shut down or sign out 🔹 🕨	Sign out
Desktop	Shut down
	3 Restart

This completes the section Installation and Configuration of FactoryTalk View Site Edition Client on Remote Desktop Server. Continue to the next section to install and activate ThinManager.

## Notes

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