

ACP White Paper

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Automation Control Products

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Thin Client Total Cost of Ownership and ACP ThinManager Enterprise Software Advantages

Abstract: This document shows the cost savings associated with adopting thin clients and ACP's ThinManager centralized management software at the corporate enterprise level.



Introduction

What began 10 years ago as a bright idea in the mind of one IBM engineer has now become a mainstay of most medium to large scale IT infrastructures. Terminal Services and Windows based thin clients have risen on the wave of “Total Cost of Ownership” (TCO) from their inauspicious beginnings and are now widely deployed with a near 100% rate of success. Even as the sales of workstation PC’s continues to drop, Windows terminal manufacturers see increasing demand and improving sales. Much of this success can be attributed to the fact that a transition from workstation PC architectures and their high maintenance costs to Windows based thin clients and a lower TCO is relatively seamless. Thin clients can be deployed on top of existing Windows PC network architectures and can run native Windows 16 and 32-bit applications reinstalled to Terminal Servers with little or no code modification. Standard Windows NT, 2000 and 2003 technologies like authentication, security, policies and profiles remain intact. Thin Client screens look and feel no different than their Windows workstation counterparts. Interactions between Windows based terminals, Windows servers, and workstations remain unchanged.

Expected Audience

This document is intended to help in the decision making process associated with moving an entire company, or a significant portion thereof, from a distributed personal computer deployment to a more centralized thin client system. As such, it assumes that the reader has working knowledge of the following:

- Enterprise level software deployment
- Personal Computer ongoing maintenance and upkeep issues
- Microsoft Terminal Services
- Thin client technology

Thin Clients and TCO

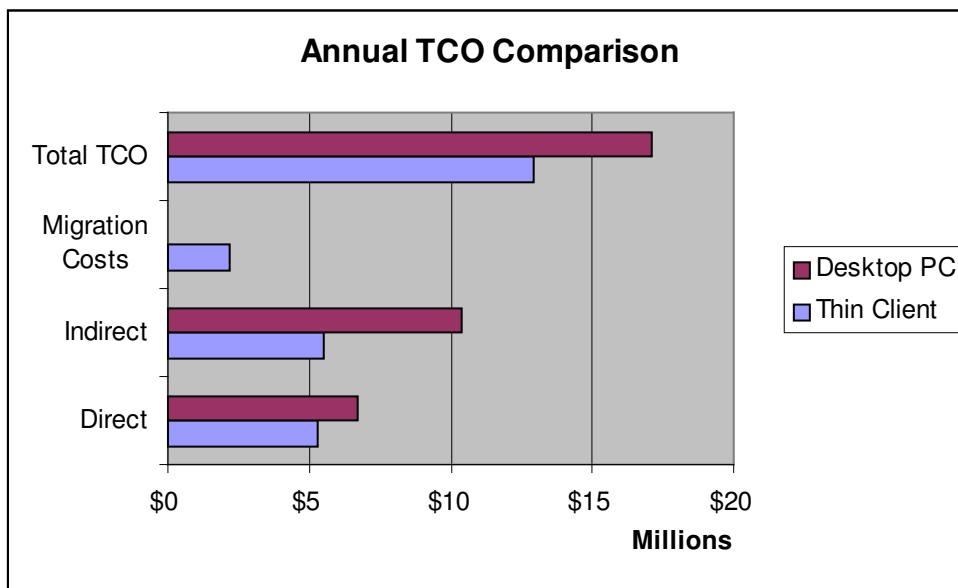
According to fairly extensive analysis by the Gartner Group, the overall Total Cost of Ownership (TCO) benefit of Thin Client terminals over standard PCs is about 32 percent. They found that much of this saving comes from the fact that PCs are not typically locked down (i.e., the users can install their own software), are not managed (i.e., tools for software distribution, remote control, inventory) and are not maintained through an active asset management process. Thin-client deployment also offers a quick return on investment, with a payback period of three months for thin clients compared with unmanaged PCs.

Gartner Group Analysis

The analysis was performed using Gartner's own Ti2 ("TI squared") software, with assumptions based on 2,500 desktops and 35 servers accessed by users from a central site and from two remote sites. The overall annual TCO is \$12.9 million (or \$5,160 per user) for thin clients, compared with \$17.1 million (or \$6,840 per user) for standard Windows 2000 PCs.

TCO Results:

TCO	Thin Client	Desktop PC
Direct	\$5,276,197	\$6,710,772
Indirect	\$5,478,388	\$10,402,545
Migration Costs	\$2,176,204	
Total TCO	\$12,930,789	\$17,113,318
Payback Period		0.34 months



Source: Gartner Research

Explanation of Costs

Direct costs included staffing and administration costs for hardware and software, as well as acquisition and maintenance costs for the hardware (including network equipment and a thin client management tool, such as ACP ThinManager). Indirect costs include peer support, casual learning, self-support, file and data management and formal learning. While fewer people are needed to manage the Terminal Servers than for the 2,500 PCs, their labor costs are higher.

The inclusion of migration cost is very likely on the high side, especially if the thin clients are being added to replace PCs as the PCs become obsolete - in that case an even higher cost would be incurred for switching to a new PC than for switching from a PC to a thin client.

Configuration Management

From the very beginning ACP had a vision that Configuration and Management of Windows based terminals would become a critical component of large-scale deployment. For the purposes of this paper we will term the configuration and management requirements associated with a Windows based hardware platform as its Configuration and Management Quotient (CMQ). A low CMQ equates to a device that is extremely easy to support from within an IT environment. A high CMQ equates to a device that is extremely hard to support from within an IT environment.

Relative to Windows workstation PC's with full-blown operating systems and local applications installed, thin clients have a much lower CMQ. When real world thin client installations become mass rollouts, differences in product CMQ's become and ever increasing issue. Every point at which CMQ increases is magnified by the size of the rollout and every point of savings is of greater importance.

Thin Client Management

Key to the thin client technology strategy ACP has developed is a separation between the "thin client configuration, management and functionality" and the "thin client hardware device". ACP's own vision states that "*ACP enabled thin client hardware should remain independent of the ThinManager management and configuration interface*" and that "*client functionality should be an inherited feature, limited only by the individual hardware components available across platforms*".

In more generalize terms, ACP provides an enabling technology that converts existing x86-based PC platform hardware into "ACP Enabled" thin client hardware. This enabling is provided as a software component to selected manufacturers who are interested in selling ACP enabled thin clients to their customers.

An x86-based PC without an installed operating system or applications is a paperweight. Although easy to support, it has limited functionality. Differences between PC hardware offerings can be classified by terms like CPU speed, video resolution and mass storage size. These component differences, however, have little or no impact on the CMQ of a device. The largest increase in PC CMQ occurs as the operating system and local applications are installed.

The CMQ of a thin client device climbs most directly due to client side configuration, management and upgrade requirements. ACP has worked hard to provide a solution that can be more adequately compared to a toaster. A toaster's primary function is to make toast. An ACP enabled thin client's primary function is to act like a Windows workstation PC. A toaster's CMQ is extremely low, limited to plugging in or replacing upon failure. Through the use of hardware enabling and ThinManager centralized configuration and management software ACP has brought to market a thin client technology that surpasses all others with greater features and functionality, better configuration and manageability and yet an overall lower CMQ. Simultaneously, ACP provides for a larger selection of available client hardware platforms with more component features and higher end performance specifications.

CMQ Comparison

ACP ThinManager (lowest CMQ)	Other Thin Clients
One Step "Quick Replace" - Select your target client configuration from the ACP boot screen (replace or create a new configuration)	Client-side hardware and session configuration required for replacement
"Auto-create" client configuration - Simply attach ACP enabled client and a configuration will be created for you.	N/A
"Remote Boot" - Instant upgrade every client reboot	Firmware boot (also adds cost to clients)
"Remote Flash" (For units with local flash device) - Re-flashes local flash memory, manual or automatic selectable on reboot	Re-flash requires return to manufacturer or dedicated support resources
Remote configuration maintenance - Make changes and reboot remotely without physical access to the client device	Configuration changes must be made at the client device requiring physical access.
Remote System Management - ThinManager remote connect and management capabilities from any authorized server or workstation.	Single System Management Node
Terminal Server system visualization - See thin clients and the terminal servers they are connected to.	Thin client only views

Imagine the thin client enterprise system discussed above with 2,500 client devices. One configuration change requirement at each of the 2,500 devices could require physical access to each individual device. If that change was a new firmware release it might even require return shipment of every client to the manufacturer for the re-flashing process. ACP ThinManager remote configuration and management features with “Remote boot”, and “Remote Flash” for firmware-based clients, does away with the need for physical access and lowers your CMQ.

Commercial Management

ACP began by developing ThinManager to support thin clients within industrial automation environments. Over the past 4 and one half years ACP has activated over 5,000 licenses of ThinManager for use within industrial and commercial installations. Seven different ACP enabled thin client hardware manufacturers have sold over 4,000 ACP enabled devices in 20 different models for use with ThinManager. The success of ThinManager within industrial installations has spawned uses within commercial or enterprise installations. Features that were originally intended for use in industrial environments have shown great value in enterprise application.

ACP vs. The Competition

ThinManager Features	The Competition
Failover - Giving the client the intelligence to monitor Terminal Server connections and switch from a failed terminal server to its backup.	N/A
Instantaneous Failover - Giving the client the ability to create sessions on two terminal servers simultaneously. If the primary terminal server is lost the client is already on the backup and switches to the backup session screen immediately.	N/A
Instantaneous Failover with hot-switching - Same as above with the extended feature for switching between terminal server session on the client using a hot key sequence. This allows a single client to have two accessible sessions on two different terminal servers.	N/A
Redundant ThinManager - In the case that the ThinManager server fails, this feature allows a backup ThinManager to take over seamlessly.	N/A
ThinManager Synchronization - Move complete system configuration between two ThinManager servers with the click of the mouse. Makes creating a backup ThinManager server a breeze!	N/A
ThinManager Module Support - Extend the functionality of any ACP Enabled thin client with a ThinManager module. Current modules support features like: <ul style="list-style-type: none"> • Share keyboard and mouse – one keyboard and mouse on a single ACP Enabled thin client can become the keyboard and mouse for up to 5 additional clients. Simply move the mouse from screen to screen and use the keyboard in the screen the mouse resides. • Instantaneous Failover – from above • High Speed Serial – more robust serial between Terminal Server and client supporting more com-based applications. • Xterm – Turn your ACP Enabled thin client into an Xterminal and connect to your favorite Unix box. • Touch Screen Support – by far the most complete set of touch screen drivers for thin clients 	Specific support for limited hardware platforms and applications.
Configuration Wizards - Add terminals to the system with ease.	N/A
ThinAdapter - A PC adapter card that converts your old PC into an ACP Enabled thin client. Just slip the card into an available slot and you're off.	N/A
ThinAdapter Plus - Better support for ThinAdapter by adding a supported video card.	N/A

ThinManager Enterprise

Beginning with ThinManager Version 2.4 ACP has started adding Enterprise functionality. These changes will continue as evidenced by features planned for upcoming releases:

ThinManager Version 2.4.1 (Release Date: 08/31/03)

- RDP 5.0 support ACP release 1

ThinManager Version 2.5 (Release Date: 11/02/03)

- ACP Load Balanced Servers
- ACP Application Publishing
- Session Process monitoring
- Terminal Services Administration features
- View only mode

ThinManager Version 2.6 (Release Date: Q2 2004)

- Usage and status reporting
- Extended support for client grouping and view filters
- RDP 5.0 support ACP release 2

ThinManager Version 3.0 (Anticipated Release: Q4 2004)

- ThinManager Server Clustering
- Asset Management & reporting
- Extended Print Management
- New Client Visualization and configuration
- .Net implementation with web services connectors
- RDP 5.0 support ACP release 3

Beginning with ThinManager Version 2.5 there will be a branching of the code. Customers who purchase Enterprise and continue to pay the annual comprehensive support fee will receive versions with complete Enterprise functionality. Customers who purchase the license pack versions will receive the Standard Edition. Features like ACP Load Balanced Servers will come as part of the Enterprise Edition. Standard Edition users will need to purchase ACP Load Balanced Servers separately.

With the broadest range of features, the best selection of clients and the lowest overall CMQ, ThinManager and ACP Enabled thin clients are the best choice for Enterprise Thin Client Systems.

Summary

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The overall annual TCO is \$12.9 million (or \$5,160 per user) for thin clients, compared with \$17.1 million (or \$6,840 per user) for standard Windows 2000 PCs.

Relative to Windows workstation PC's with full-blown operating systems and local applications installed, thin clients have a much lower Configuration and Management Quotient, or CMQ. Key to the thin client technology strategy ACP has developed is a separation between the "thin client configuration, management and functionality" and the "thin client hardware device". ACP enabled thin client hardware is independent of the ThinManager management and configuration interface, and client functionality is an inherited feature, limited only by the individual hardware components available across platforms. In more generalize terms, ACP provides an enabling technology that converts existing x86-based PC platform hardware into "ACP Enabled" thin client hardware. CMQ of thin clients climbs most directly due to client side configuration, management and upgrade requirements. An ACP enabled thin client's primary function is to act like a Windows workstation PC.

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