

Choosing the right thin client devices, OS & management software

> What to look out for when buying thin client software and hardware

Server Based Computing is a must for any company wanting to control spiraling fat client management costs. However, a company should carefully consider catering for the following issues when deciding what devices to use as thin clients and what management software to select for their management.

- Vendor independent thin client management software
- Linux based thin client OS
- Centralized terminal server connection setting management.
- User/Department based Connection profiles

> Introduction

Thin client / server-based computing is booming. Companies are realizing it's the only way to solve the rapidly escalating problem of fat client management. Thin clients eliminate the tremendous effort required by fat clients for hardware upgrades, software updates, application deployment, security, and backup of data stored on fat clients.

In a server-based computing environment, only the servers need to be managed. Data and applications reside on a few servers rather than on hundreds or thousands of clients. PCs become terminals and can be replaced by simpler, less expensive - and most importantly - easier to manage devices called "thin clients".

An additional advantage of server-based computing is that employees can telework/roam more easily.

In short, thin client computing is a "must" for any company that wants to control spiraling PC management costs. However, how can a company best jump onto the thin client computing bandwagon? The following issues must be considered:

- Choice of back-end terminal server - Windows or Linux?
- If Windows, is Citrix required or can Windows Terminal Server suffice?
- Current enterprise applications—are they terminal server ready?
- Which hardware will be used for thin clients and how will they be managed? What about all those existing PCs in which a company has invested?
- What about all the data stored on the PCs?

This white paper focuses on the choice of thin client devices, their operating system, and the thin client management software.

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> What type of thin client device?

Almost any computer or device can serve as a thin client. After all, it only needs to run the client software to access the terminal server. You can choose to:

- 1 Convert existing PCs into thin clients (free)
- 2 Buy new low cost PCs and convert them to thin clients
- 3 Buy a brand name thin client devices, such as Wyse or HP (generally \$300 and up)
- 4 Buy low cost client devices, such as MaxSpeed, DevonIT, Expert (generally \$150 and up).

Let's take a closer look at each of these options:

- 1 Converting PCs into thin clients. This option is very attractive because you can continue to use your existing computers, therefore requiring no further investment. An additional advantage of using existing PCs as thin clients is that the user can continue to use the hard disk for data

that has been stored there. Furthermore, if the thin client OS of choice can be installed as a dual boot option, the computer can also boot into its former OS for transition purposes. On the flip side though, existing computers use more power than thin clients device and have a shorter MTBF (mean time before failure), because they have more moving parts.

- 2 Buy new low cost PCs and convert them to thin clients. PCs are so cheap nowadays that sometimes they are hardly more expensive than a thin client device. In fact many branded thin client devices are more expensive than normal PCs! Therefore, buying a PC and installing a thin client OS can be an attractive option. It also buys you the flexibility to use the PC as a fat client later on if required. We recommend buying a PC that has a PXE booting capability—that allows you to manage the thin client OS more easily because you can configure it to download the latest OS at boot.
- 3 Buy branded thin client devices. Buying a dedicated thin client device is attractive because of its smaller footprint, reduced electricity consumption, low noise level and less heat generation. However, some thin clients are very expensive, up to \$1000. Be careful when buying thin client devices from a main stream company. They often charge extra for essentials software options (RDP etc.) and for the management software to manage the thin client devices. In addition they often can only manage thin client devices from that manufacturer itself!
- 4 Buy low cost thin client devices. There are a large number of low cost thin client device manufacturers (Expert electronics, DevonIT/NTAVO, Maxspeed) that can provide thin clients from as little as \$149 each. There is often nothing wrong with the hardware, it's just that the management software that comes with them is limited. In many situations, these thin client devices can suffice.

If you decide to buy a dedicated thin client device, you should look for the following specs:

- PXE booting is recommended. This allows you to easily manage the thin client OS because the thin client will retrieve the latest version of the OS each time it boots up
- Memory of at least 64 megabytes gives you basic minimum performance
- Quality VGA chips (for example ATI) with at least 8 Mb RAM. (Evaluate the VGA quality of different thin client models by comparing screen redraw and responsiveness at higher resolutions. This will determine much of the experience of the thin client for the user.)

Should Thin Client OS be Windows or Linux?

A further choice to consider is whether the OS on the actual device should be Windows CE, Windows XP embedded, or Linux. Note that this option is completely independent of the choice of desktop (Windows or Linux) that you will present to the user. If you use Linux, the user may never know that his thin client device is actually running Linux.

Many thin clients nowadays actually run Linux. The reason for this is that there is excellent support for all terminal servers (RDP for Windows, ICA for Citrix, and X/NX for Linux). Also Linux can easily be customized by the manufacturer. Software and management options are less flexible on Windows CE, because Windows CE requires software specifically developed for it. A Windows XP embedded client license costs \$90 and requires 250 Mb just for the OS. This drives up the cost of the actual thin client device.

Advantages of running Linux on the thin client:

- Windows XP embedded has a much larger footprint (up to 256 Mb) and therefore requires much more storage and cannot be booted via PXE. This means that it requires more effort to update the thin client software. Windows CE has limited software support because it requires software to be developed specifically for the CE platform

- Embedded Windows operating systems require a license fee which drives up the thin client device costs (\$3 for CE basic, \$16 for CE professional, and \$90 for XP Embedded)
- The Linux thin client gives you the option of a Linux desktop, which for some organizations can be a way to save substantial Microsoft licensing fees.

Disadvantages of running Linux on the thin client:

- A Windows XP or CE client comes bundled with Internet Explorer. If the user will only use a browser on his/her thin client, and the web applications that you want them to connect to support Internet Explorer only, then you will need to use a Windows XP or CE client
- Windows-only companies will have to learn some Linux skills to manage and support the Linux thin client devices.

Software for management of thin clients

An important consideration should be how you plan to manage the thin clients. The central aim of server-based computing is reduced administration, so your thin client management tool should focus on this. Important considerations include:

- In order to have the flexibility to choose thin client devices from different vendors, or even convert PC's to thin clients, consider thin client management software that supports different types of thin client devices. This allows you to add different types of thin clients or to change thin client vendors.
- The actual thin client OS must be very easy to update, allowing for easy deployment of updates to the terminal server client software (RDP, ICA & NX clients) and possible addition of new features/software.
- Connection profiles (the settings that a user / terminal client software will use to connect, including terminal server name, resolution and so on) and other configuration settings, ideally, should be managed and stored at the server level and not on the local storage of the thin client. It should not be necessary to push out the connection settings to the thin client. It is more complex and takes more time to have the management software push out the settings to the thin clients.
- User or department-based connection settings (not just thin client-based): Most thin client management software associates a connection setting with a thin client device. It can be useful for thin client management software to have the ability to link a connection profile to a user, group of users or a department (OU). This reduces administration because you can make group or department wide profiles and allows a user to roam more easily.

Conclusion

This paper discussed a number of key issues for your thin client strategy: Thin client hardware options, OS of the thin client and considerations for the management software.

- There are several good options for thin clients. You should choose a strategy that allows you to use PCs, low cost and higher cost thin client devices
- Choose management software that is vendor independent and allows you to manage different types of thin client devices
- Management software should allow for easy, centralized updating of the thin client OS and control of the connection settings.

About 2X ThinClientServer

Thin client OS for existing PCs and thin clients

2X ThinClientServer provides a complete solution for the central deployment, configuration and management of thin clients.

Manage thin client settings centrally

A small footprint Linux distribution is deployed to thin clients (all popular thin clients are supported) or to normal PCs, allowing you to convert existing PCs to thin clients. Thin client settings (screen size, which terminal servers to log into, etc) can be controlled centrally.

2X ThinClientServer makes centrally managed, load balanced, and fault-tolerant server based computing easy and inexpensive.

2X ThinClientServer Features:

- Convert old PCs to powerful thin clients
- Use low cost thin clients
- Thin client vendor independent
- Manage connections settings based on user name or device
- Connection settings can be linked to Active Directory users, OUs or groups
- Web-based management interface
- Connect to either Windows, Citrix, or Linux terminal services
- Built-in load balancing and redundancy of terminal servers
- Easy updates of thin client operating system & software
- Thin clients can boot via PXE, CD ROM, USB, floppy or hard disk
- Thin clients can be configured to log to Syslog for easy troubleshooting
- Thin clients can be discovered via SNMP, allowing you to use other network management software
- Supports Microsoft RDP, Citrix ICA, and 2X & Nomachine NX protocols thin client computing protocols.

> About 2X

2X Software Ltd (“2X”) is a new company that develops software for the booming server-based computing market. The thin client market is forecasted to grow at 22.8% each year until 2008 (IDC). The yearly number of thin clients sold will increase from 1.5 million to 3.4 million in 2007.

The company’s product line includes a terminal server and a thin client server. Both products leverage the open source Linux operating system.

2X is a privately held company. Its management team is backed by years of experience in developing and selling network infrastructure software. 2X is a Novell & IBM ISV partner.



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