

Technology Infrastructure

Butler Group Subscription Services

Thin Client

TECHNOLOGY AUDIT

Neoware

Thin Client Appliances and Management Software

Abstract *Neoware's thin client appliances and management software enable organisations to exploit the significant potential of server-based computing, by extending the reach of applications to users in environments or situations where the traditional PC would either be too expensive or inappropriate. Server-based computing is no longer a purely tactical option for many organisations, and so the ability to encompass thin client devices within an enterprise management solution is fast becoming a mandatory requirement. Neoware understands that these devices must be managed along with other end-user computing devices, such as the traditional desktop PC, and so it now includes Open Management features in all of its thin client devices, thereby enabling them to be managed by enterprise systems management products. Organisations considering thin client devices should evaluate Neoware's products and technologies either direct, or through one of the company's partners (such as IBM) or resellers.*

KEY FINDINGS

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| ✓ A cohesive range of thin client appliances. | ✓ Standards based Open Management. |
| ✓ Comprehensive terminal emulation capabilities for host connectivity. | <i>i</i> ThinPC software can turn an old PC into a useful thin client. |
| <i>i</i> Strong partnership with IBM. | <i>i</i> Offers Linux, Windows CE, and Windows XPe solutions. |

Key: ✓ Product Strength ✗ Product Weakness *i* Point of Information

LOOK AHEAD

Butler Group believes that the market for thin client appliances will continue to grow as organisations continually seek ways to reduce the cost and complexity of desktop IT infrastructure. In the next 12 to 18 months we would expect Neoware to extend its Open Management support to accommodate enterprise systems management products from other vendors.

► FUNCTIONALITY

Minimising IT costs while maximising operational efficiency is the holy grail of IT management, and while the PC may well contribute to the latter, it most definitely impacts the former. When it comes to assessing IT Total Cost of Ownership (TCO), the humble PC is seen by many as the greatest drain on resources in terms of time and money; yet how many organisations could run their businesses without them?

Product Analysis

One solution to this perennial problem is the so-called 'thin client.' The term thin client stems from the fact that unlike a traditional 'fat' PC, which runs a large sophisticated operating system and applications locally, a thin client is powered by a server, with the output from user applications transmitted across the network and displayed on the thin client. This reliance on a centralised server has led to the term Server-Based Computing (or SBC) being adopted by many in the industry.

By deploying thin client devices, or appliances as vendors are apt to call them, and installing applications on centralised terminal servers, organisations have an alternative means of providing access to key business systems. Perverse as it might sound; server-based computing can also deliver applications to traditional PCs in much the same way, simply by installing a small piece of client software.

There are many business problems which can be addressed through the use of thin client and server-based computing solutions; however, the suit-spots are typically related to enterprise application deployment, remote office connectivity, workforce mobility, and business continuity and security.

For many IT managers, the thought of rolling out Enterprise Resource Planning (ERP), Customer Relationship Management (CRM), or even a new version of Microsoft Office, is one that makes the blood run cold – especially if it involves hundreds or thousands of PCs distributed across multiple sites. Software deployment can be a challenge at the best of times – even with the latest enterprise systems management tools – but by using a combination of Windows Terminal Services (with or without the Citrix extensions and add-ons) and thin client devices, the size and nature of the desktop challenge can be reduced considerably. Over a hundred users could be running an application within minutes of it being installed just once onto a high-end (but commodity) server running Microsoft Windows Terminal Services. By clustering these servers into a so-called 'server farm', an organisation could roll-out a line-of-business application to thousands of users in a fraction of the time it would take using traditional methods.

Providing application access to branch or overseas offices is another compelling use for thin client and SBC solutions, as the technology not only reduces the amount of IT effort required to provide these locations with access to applications, but it is also likely to improve the quality of service delivery and support, as all application management and desktop support can be performed from a centralised location.

We are spending more time away from our desks than ever before, and yet we still demand access to corporate information, enterprise applications, and our familiar desktop environment while we are away. Laptops are an expensive solution to this problem, but by deploying inexpensive thin client appliances around a site as much as we do telephones, employees can access information and applications without the need to go back to their desks, and as a result business processes can run far smoother and quicker. The security features built into Neoware's appliances ensure that only authorised users can access commercially sensitive information and applications, and because these appliances are not PCs, they can be deployed into public areas, such as retail outlets, more readily.

Because applications and data reside on central servers, the security and resilience offered by thin client solutions is generally higher than that offered by a traditional PC client. Whilst a SBC architecture requires a reliable communications infrastructure in order to succeed, this does not necessarily mean that you need lots of it. Indeed one of the attractive features of this method of IT delivery is the potential for a reduction in expensive WAN bandwidth, as the remote display protocols used are very efficient.

Another potential benefit offered by this technology is business continuity. If a building is damaged by earthquake, fire, flood, or insurrection, then so long as the centralised servers are made accessible from another location, business can carry on as usual once replacement terminals have been provided.

The attractive opportunities afforded by SBC are now driving significant growth in this market, and while companies like Microsoft, Citrix, and Visionapp continue to develop the server-side of the market, companies like Neoware are adding value to the terminal side of the equation.

By adding Open Management capabilities to its range of thin client devices, Neoware is finally addressing one of few weaknesses associated with this technology – device management. Organisations using Tivoli, Microsoft Systems Management Server, or Altiris, can now manage all thin client devices from Neoware using these tools.

Whilst Neoware still has to extend its Open Management support to vendors such as Computer Associates and BMC, Butler Group believes that the management features introduced by the company will enable it to compete even more aggressively with dominant thin client vendor Wyse Technology.

Thin client devices are not quite like the ‘dumb’ green-screen terminals they so often replace, and for organisations committed to SBC, getting these devices under the control of a systems management tool represents a significant step forward in terms of TCO.

Neoware's Products

Neoware is best known for its thin client appliances, and the company's current offerings are based around three main platforms: Windows XPe, Windows CE, and Linux. By offering its thin clients on each of these operating systems, the company can provide an affordable terminal to suit any given usage scenario.

Windows XPe

Windows XPe – the embedded version of Microsoft's latest desktop operating system – provides organisations with perhaps the closest thing to a PC, and forms the basis of the top-end **Capio** appliance, which ships with 192 MB of flash memory and 256 MB of RAM. Supporting video resolution up to a maximum of 1280 x 1024 and 16-bit colour, this device can connect to a server over Microsoft's Remote Desktop Protocol (RDP) or Citrix Systems' Independent Computing Architecture (ICA) protocol. The Capio also includes Neoware's **TeemTalk** host access software, which enables this device to communicate with a variety of hosts, ranging from IBM mainframes to DEC minicomputers.

The Capio has the capability to run local Microsoft Windows applications as well as server-based applications from a terminal server. Internet Explorer 6.0 also forms part of the platform, therefore enabling some degree of independence. However, organisations should remember that plug-ins may be required to run some browser-based applications, and therefore these applications should be closely scrutinised before deciding to go down the thin client route. Having said that, it is of course quite possible to run the browser from a terminal server, and indeed some organisations do just that in order to maintain absolute control over the end-user computing environment.

The **Eon e100** is based on an X86 processor and includes the VIA integrated chipset. This enables the device to accommodate high resolution graphics equal to, and in some cases beyond, that found on most desktop PCs. Supporting resolutions up to 1600 x 1200 and 32-bit colour, the Eon has been designed to accommodate the needs of the knowledge worker, engineer, or clinician. If space is at a premium then the **Eon e300** is perhaps worth considering, as this is an integrated flat-panel thin client device which also supports a wide variety of external devices through two USB ports.

Linux

Neoware recently introduced a Linux thin client appliance in order to address the extremely price-conscious end of the market. Starting at just £129, the Linux version of the Capiro will undoubtedly enable many organisations to make line-of-business and personal productivity applications available to staff where a PC would either be too expensive or inappropriate.

Neoware's Linux appliances are based on industry standard, Red Hat Linux. All terminals have serial, parallel, PS/2, and USB ports, and the top-of-the-range **Eon e300** can also accommodate an optional PCMCIA adapter.

While the entry level Capiro appliances only support fairly limited connectivity options, the Eon range comes complete with Netscape Navigator and an X Windows client. The Eon range can also be customised to include customer specific applications – a feature which Butler Group believes will be of particular interest to some markets.

Windows CE

A modular operating system, Windows CE.NET is an ideal platform for thin client devices. Designed from the ground-up to run without a hard drive or other such PC paraphernalia, the Neoware Windows CE-based devices are considered by many to be the purest form of thin client.

With one Capiro model and four Eon models, these Windows CE devices support ICA and RDP protocols; include Internet Explorer 6.0 and TeemTalk terminal emulation software; and like the entire range of Neoware appliances, include support for the company's ezRemote Manager software.

The **Eon e500** is a lightweight Table PC like device with a swing-away handle. It has no hard drive, floppy drive, or CD-ROM drive, and so is totally silent. Although the device can be used with an optional USB keyboard, this thin client has obviously been designed to be used with the kiosk market in mind. Although the Eon e500 Active Matrix screen boasts a wide viewing angle, this might not be ideal in a kiosk environment, where privacy might be important. Organisations considering this appliance should not confuse it with Microsoft Tablet PC; while the device does indeed have a touch sensitive screen, it does not perform handwriting recognition in the same way that the Tablet PC does.

The Eon e500 includes audio-in and audio-out jacks, an integrated battery charger, and a Li-Ion battery to power the device for up to five hours.

Even though Neoware has streamlined its thin client product line down to just two brands, the Capiro and the Eon family of appliances still offer plenty of choice for organisations seeking a broad but cohesive range of thin client devices.

TeemTalk

Although replacing green-screen terminals with thin client devices can make good sense, many organisations have fallen foul of the restrictions imposed by terminal emulation packages running under Windows Terminal Services, and while this now appears to have been addressed by vendors, Butler Group still believes that in most cases, terminal emulation is best left to the terminal itself.

Neoware's TeemTalk software not only enables Microsoft Windows 98, ME, XP, NT, and 2000 desktops to access just about any host, it is also compatible with servers running Microsoft Terminal Services and Citrix MetaFrame Presentation Server too. TeemTalk emulation is included in all Eon products (Linux, Windows CE, and Windows XPe) as well as the Capiro One appliance.

TeemTalk can be configured to speed up host application usage through the use of macros, and keyboard re-mapping is supported to ease the transition from dedicated green-screen terminal to thin client. IBM 3270 (including LU Printing) and 5250 emulation are supported, along with DEC VT, HP, Tektronix, Wyse, and many others. Kermit, FTP, and IBM IND\$FILE file transfer protocols are also supported – something often found missing in similar solutions.

ThinPC

ThinPC converts a standard PC into a thin client, thereby enabling organisations to extend the useful life of equipment deemed unsuitable for the latest Microsoft Windows operating system or application. By installing ThinPC, IT managers can turn a personal computer into a fully managed thin client appliance, and thereby make a saving on the purchase of new hardware.

ThinPC can be configured to allow users to run applications locally, but the key difference is that the IT department maintains full centralised control of the device as though it were a Neoware appliance. The minimum hardware requirement for ThinPC is a 90MHz Pentium processor with 32MB RAM and 20MB available disk space, and by our reckoning this specification goes back around 10 years to 1994, and so is likely to be an attractive option to organisations seeking to avoid or defer significant capital outlay.

ezRemote Manager

All Neoware hardware products are supplied with ezRemote Manager, an enterprise-class server-based management system designed to facilitate the ongoing management and administration of thin client devices. There are two versions of the product: Enterprise Edition and Limited Edition, with only the former of any real interest to organisations deploying thin clients. ezRemote Manager fully integrates the management of devices running Neoware software anywhere on the corporate network, ranging from PCs running ThinPC to the latest Neoware appliance.

Through an intuitive point-and-click interface, ezRemote Manager enables thousands of appliances to be managed efficiently and effectively. Running from a central location, ezRemote Manager enables IT administrators to:

- Locate devices running Neoware software anywhere on the corporate network.
- View the current configuration of appliances and PCs running Neoware software.
- Select, group, and print detailed lists of these devices.
- Export information collected by ezRemote Manager into other applications, e.g. asset and inventory management applications.
- Manage device IP addresses.
- Centrally manage and configure device security.
- Selectively push and pull software updates and patches to Neoware thin clients.
- Remotely configure and modify server connection profiles on Neoware appliances.
- Shadow any Neoware thin client device in order to provide end-user assistance or to diagnose a problem.
- Schedule tasks such as configuration updates and software download.

According to Neoware, SBC has the potential to reduce the desktop TCO by as much as 80%, with much of this saving (up to 50%) attributed to a reduction in support calls that would typically be generated by someone using a traditional PC.

Based on open, industry-standard protocols, Neoware ezRemote Manager is now compatible with three of the industry's most popular systems management tools: IBM Tivoli, Microsoft Systems Management Server, and Altiris Client Management Suite. This means that management of Neoware appliances can now be integrated with that of standard server and desktops – a feature likely to be welcomed by IT managers everywhere.

► DEPLOYMENT

Neoware thin client appliances can be deployed extremely quickly. Once out-of-the-box, and if a customer's Dynamic Host Configuration Protocol (DHCP) server provides the location for configuration information, an appliance can be up and running without any software set-up whatsoever. If DHCP support is not available, then a simple start-up Wizard guides the installer through the necessary configuration process, thereby enabling the device to connect to the network and access the appropriate servers. This set-up process is relatively straightforward, and could easily be accomplished by non-IT staff – an important consideration to consider if roll-out costs are to be minimised.

Minimal technical skills are required to install and configure the Neoware ezRemote Manager tool. It is installed through InstallShield and administrators can typically install and begin using ezRemote Manager in less than ten minutes. Product documentation is comprehensive, well structured, and easy to understand, and although specialist skills are not essential, they are readily available from a range of VARs and SIs. While the basic set-up and configuration of Windows Terminal Services and Citrix MetaFrame Presentation Server can be accomplished by any reasonably experienced systems engineer, Butler Group recommends engaging with a specialist firm for large or complex server-based computing roll-outs.

Neoware ezRemote Manager runs on Windows 2000 Server and above. The ezUpdate distributed configuration management component of ezRemote Manager runs on any server running either an FTP service or NFS services. In a Microsoft Terminal Services environment, the servers must, at a minimum, be running either Windows NT 4.0 Terminal Services Edition, or Windows 2000 Server Edition. Optionally, the customer may choose to install Citrix MetaFrame to enhance their Terminal Services environment.

Neoware is able to provide on-site sales engineers along with extensive Citrix training and consultancy. The company is a Citrix Authorized Learning Center (CALC), and provides the complete range of Citrix certifications as well as certified consultants to help customers design and implement enterprise-level SBC infrastructure.

According to Neoware, many customers initially deploy thin clients as replacements for green-screen terminals, using the terminal emulation features provided by TeemTalk to access their mainframe or departmental server applications, and then only after successful completion of this phase of the roll-out do organisations provide users with access to Windows applications using Terminal Services.

Neoware provides Level 1 support for all of its products, with various options for extended support agreements. The company also appears to be very committed to the support of its products for many years after their sale, and it strives to provide software upgrades in a timely fashion, with the latest versions of the ICA, RDP, browser, and terminal emulation components for the installed base of Neoware, Boundless, and IBM thin clients, regardless of when they were purchased.

► PRODUCT STRATEGY

Neoware says that its share of the thin client market has continued to grow significantly over the past three years, making it the number two vendor ahead of HP and behind Wyse. Key markets continue to be healthcare, manufacturing, retail, branch banking, local government and public sector organisations, education, call centres, hospitality, and insurance companies. The company also targets enterprise-sized organisations with numerous remote sites.

Neoware believes that it has a distinct advantage over its main competitors in this market as its business model is software rather than hardware based. Neoware is keen to emphasise that all of its Research and Development spend is on software, and it carries out all of its own software development with source code licensed from Citrix, Microsoft, Sun, and IBM.

The company sells through its partner channel in Europe, and by direct sales and partner channel in the US and the rest of the world. It has a global strategic alliance with IBM, and Getech Ltd, Centia, and Interface Solutions are its UK distributors.

Neoware regards Wyse Technologies as its key competitor in the thin client market; however, the company currently faces no real competition in the enterprise systems management integration area. The company intends to continue to enhance its products to meet the needs of the end customer by enhancing the end-to-end thin client experience.

The company believes that the market for thin client appliances has been growing, and will continue to grow at 30% or more. It maintains that this growth will be driven by organisations seeking lower TCO, increased security, and desktop client manageability.

► COMPANY PROFILE

Neoware (NASDAQ:NWRE) was formed in 1995 and has its headquarters at King of Prussia, PA in the US with offices located in Australia, Germany, France, The Netherlands, and the UK. The company was the result of a merger between Human Designed Systems, Inc., a privately held technology company, and Information Systems Acquisition Corporation, a public company, and it was initially named HDS Network Systems, Inc. In 1997, the company name was changed to Neoware Systems, Inc.

In June 2001 Neoware purchased the thin client business of Boundless Technologies, Inc., and in December of that year it acquired the assets of Telcom Assistance Center Corporation. At the beginning of 2002, Neoware entered into a worldwide alliance with IBM Corporation making it the preferred provider of thin client appliance products to IBM and its customers. It also licensed from IBM the intellectual property associated with its thin client appliance products. In March 2002, Neoware acquired the assets of the ThinSTAR product line from Network Computing Devices, Inc.

Neoware has over 150 employees worldwide, 28 of whom are based in Europe. It expects to grow its number of employees by between 10% and 15% over the next year.

Annual data	30/06/2003 (US\$ millions)	30/06/2002 (US\$ millions)	30/06/2001 (US\$ millions)
Total Revenue	57.5	34.3	17.7
Change on previous year	68%	94%	60%
Net income/(loss)	6.3	4.6	(0.5)

The figures presented here represent worldwide sales, with European business accounting for around 40% of business. Neoware has over 5,000 customers including: Safeway, Remploy, Debenhams, Ministry of Defence, and HMV.

► SUMMARY

Butler Group believes that Neoware's focus on industry standards has enabled it to deliver products that are reliable, manageable, affordable, and secure, and with much longer lifecycles than desktop PCs. By utilising the economies of scale associated with the PC market, Neoware asserts that it can specify higher quality designs to its Original Design Manufacturers, and the company's Just-In-Time delivery model also ensures the latest advances are rapidly incorporated into its models. Neoware has very little capital invested in inventory and so this allows the company to focus on what is of core benefit to the customer, i.e. its embedded software and server side management software.

Neoware offers a cohesive range of high quality multi-platform thin clients together with enterprise-ready management software that enables organisations to manage thousands of distributed units in a variety of usage scenarios. As a platinum Citrix partner, Neoware provides an end-to-end support service for its USA direct sales operation, and its channels in Europe provide a full support service.

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