

Technology Infrastructure

Butler Group Subscription Services

Thin Client

TECHNOLOGY AUDIT

Wyse

Winterm

Abstract *Wyse Winterm terminals offer an attractive alternative to the rich client PC on many desktops. Organisations face the constant hail of virus attacks, the need to reduce costs, achieve quicker deployment, and improve manageability. Wyse Winterm thin clients have benefited from years of development and a maturing infrastructure, and the market is now showing significant growth, testimony that the lower total cost of ownership message is getting through. Wyse has not stood still as a market leader; it has extended its hardware range with new client-side Linux offerings, and new software products, such as Alcatraz for PC management and Wyse Expedian™ for Terminal Server capacity enhancement, that reinforces its greater market penetration. This growth is now backed up by a new channel certification and training program. Butler Group believes that Wyse Winterm offers a viable alternative to the desktop PC for many, making access to business data and applications easy, secure, and affordable.*

KEY FINDINGS

✓ Provides easier deployment and management of desktops.	i Thin client management and PC migration software available.
✓ Improved reliability, security, and backup/recovery.	X Terminals are inoperative if the server or network is unavailable.
✓ Low upfront and maintenance costs.	X Unsuitable for high-end graphics and some high-performance applications.

Key: ✓ Product Strength X Product Weakness i Point of Information

LOOK AHEAD

Butler Group believes Wyse is realising Winterm's potential with first signs of mainstream market acceptance, as the trend in the use of low-cost thin clients acquires pace. Wyse's extended offering of Linux will see it secure its market-leader position. The thin client market is also likely to start seeing consolidation, as the smaller players become 'squeezed' out.

► FUNCTIONALITY

Product Analysis The problems facing organisations in achieving cost reduction, increasing security, quicker deployment, and improved manageability has led them to search for centralised control of their IT systems. Server centric architectures offer an attractive alternative to the installation of a PC on every business desktop.

Thin clients allow organisations to get the most out of such architectures by giving users easy and affordable access to their server-based applications and data. Thin clients combined with the server centric architecture enable the key benefits of Total Cost of Ownership, security, reliability, flexibility, manageability, and control to be realised.

Wyse has been a pioneer of thin client technology and its Winterm terminals are small, simple, and inexpensive devices. The company has now added Linux products to its range – on the strength of demand from its customers and in recognition that Linux is now the fastest growing thin client platform, with X-Windows and Java ideal for running on Linux. One reason for this may be that the 32-bit Windows applications barrier on Linux is no longer an issue since all applications run on the server, whilst users can also benefit from full JVM functionality on the client-side.

The thin client model is an alternative to client server or so-called fat client architectures. Although thin client computing has a smaller installed base than client-server, it overcomes many associated drawbacks. With data and applications residing on the server, administration and control are much simpler.

Thin client deployment can cut costs, particularly software maintenance and upgrade overheads. In addition, access and data security are more robust, and routes for virus/worm attacks are limited. Fat clients, also known as PCs, can also be centrally managed, although they are comparatively complex and expensive to maintain. Issues arising from the actions of PC users consequently create time-consuming support burdens.

To the user, an application on a thin client device appears identical to one on a familiar PC, yet thin clients eliminate the management problems that PC administrators face. Device reliability is improved because there are no moving parts, and network utilisation is less intense than with the client/server model, since data is moved between servers and not to the client.

Wyse characterises its current product line as offering the users choice of simple, powerful, or flexible devices in price bands to match the functionality required.

Product Operation Thin clients are terminals that run a base operating system with additional software modules for the various clients involved, such as ICA, RDP, and Web browser, in order to access through the network server-based applications. Data and applications are stored and executed on the server. The thin client only sends to the server keyboard and mouse entries, and displays locally the remote application. The client-side OS is locked in flash memory and is stable and tamper free, and any changes can be made centrally from the server.

Wyse offers a wide range of thin client models, which span user requirements from low-cost devices to highly expandable terminals. The low-end Winterm 1200 incorporates Wyse's own Blazer (BSD-based) client technology that delivers extremely high performance, which is said to be the equivalent to an 800 MHz Pentium running Citrix ICA. This model requires minimal set-up, but does not include a local Web browser or legacy terminal emulation. It starts at a price of £189/€279/US\$299 plus VAT, and includes Wyse™ Rapport® management software.

The next model in the price range is the new Linux platform 512SE (see figure 1). A basic model is priced at £269/€399/US\$399, which supports Netscape's browser, ICA, RDP, X Windows, legacy terminal emulation, VNC, Rapport, and optional WiFi networking, but with limited expandability. The other new Linux model (see figure 1) 5455XL has higher features and is intended for users possibly needing peripheral extension, a faster processor, and more memory for embedded local Linux or Java applications. There is also a full JVM from Sun on the client. The aftermath of the Microsoft/Sun litigation over Java has seen patchy JVM support on Windows, so Wyse's 5000 series Linux thin clients fill this gap, and at a relatively low price. The Wyse Winterm 5000 series thin clients are based on the SUSE flavour of Linux.

The next highest models on the power scale are the Windows CE.NET-based devices, the Winterm 3000 series, which include ICA, RDP, legacy terminal emulation and Internet Explorer for CE.

At the high end are the Windows XP embedded Winterm 9000 models which are capable of running any 32-bit Windows application or driver locally in flash memory. They also come with a full Microsoft Internet Explorer 6 browser and media player both of which can accept plug-ins.

The options available at various levels include monitors and input-device selections, IO capabilities, software modules, and memory to suit the intended application.



Figure 1: Winterm 5125SE on the left and 5455XL on the right

Wyse™ Rapport®

Wyse™ Rapport® management software enables administrators to centrally manage and control their thin clients desktops centrally. A licence for the Workgroup version of Wyse™ Rapport® is bundled with each terminal. The latest version 4 features new pull architecture and offers scalability up to hundreds of thousands of devices. Facilities include:

- The collection of terminal information such as serial, IP and MAC address numbers, even if a terminal is switched off.
- The ability to group terminals into logical areas, such as by department or geographical region.

- Network 'attach-and-go' capability by recognising a device upon first network connection, giving it the right firmware and settings, and allocating it to the right logical group in the management hierarchy.
- The upgrading of terminal firmware by logical group. Very unusually for a management tool, this is done down to the BIOS level, making it possible to remotely repair devices with flash memory corruption.
- The addition of terminal connections or change settings.
- The addition or changing of local software drivers, including BIOS level drivers.
- The ability to limit bandwidth used by Wyse™ Rapport® on each segment of the WAN to prevent network flooding.
- Viewing audit trails of all terminal changes.
- Shadowing user screens to provide support.
- Performing terminal diagnostics.
- Writing and executing change and asset management reports.

Global Fortune 50 companies and small businesses can benefit from the effectiveness and efficiencies of server-based computing. The Enterprise edition of Wyse™ Rapport® management software scales up to hundreds of thousands of devices. This is achieved through a multi-threaded architecture and the combination of SQL Server and IIS Server (with their Windows Enterprise clustering capabilities). The limiting factors on Rapport scalability are the bandwidth of the network and the capacity of the management servers.

Wyse™ Alcatraz™™

Wyse™ Alcatraz™™ is a software product that allows customers to remotely manage a diverse environment of PCs based on any 32-bit version of Windows (Windows 95 and upwards). Administrators can rapidly develop templates and profiles, using pre-supplied parameters, which determine how the PC will behave. This could be by removing the control panel or local hard drive from view, swapping the Windows desktop for a Winterm thin client interface, or turning the PC into a kiosk running one application only when powered on. Its chief function is for migrating legacy PCs to thin clients using a flexible lockdown approach. In place of image-based standardisation, Alcatraz uses groups, views, and profiles to provide total control of PCs in a mixed operating system and machine specification environment. A major added benefit is that it offers remote management of a diverse PC environment beyond mere lockdown.

Wyse Technology's Product Range Expanded

Two recent additions to the Wyse product range have been a tablet solution and server software.

- The Winterm 3820TX Tablet thin client provides a rich mobile terminal and addresses the market need for mobile facilities. The product offers easy access to Windows applications within the vicinity of a wireless LAN connection. It is a fully featured XGA tablet, running Windows CE wireless portable, with access to server-based applications through ICA, RDP, and local Microsoft Internet Explorer browser.
- Wyse Expedian™ is software that can increase the capacity of a terminal server and ensure it delivers optimal performance where it is needed. It does this in two ways. Firstly, by optimising page file usage in memory hungry terminal servers. By minimising disk access and moving memory- hungry applications into RAM, it increases terminal server capacity by 30% to 35%. The latest version of Wyse Expedian™ is also capable of application shaping and throttling. This feature allows systems administrators to limit the amount of terminal server CPU usage that any application or user places on the system. It operates with Citrix, Microsoft, and New Moon servers. Wyse asserts that this optimisation will enable customers to make significant improvements in response times, and reduce the need to upgrade their hardware. It is a cost-effective way to increase the number of users on a server and save ongoing management costs by reducing the number of servers required.

Product Emphasis Butler Group believes that Wyse has developed a credible alternative to PCs. It is now broadening its offerings to significantly expand its market appeal to prospective customers. These should enable the thin client benefits to be more apparent, and help in gaining acceptance of the thin client message against organisational inertia. The market for high-end graphics and some high-performance applications are areas that thin clients do not cater for, however, such requirements are small compared with the majority of business desktop needs, and organisations are realising the savings that can be made by eliminating unnecessary hardware. Customer reluctance to relinquish the user-controlled desktop is beginning to wane, given the huge benefits thin clients offer, particularly in today's difficult economic times. The most prominent issue against thin clients is that terminals become inoperative if the server or network goes down, however, this type of problem is also decreasing as server fail-over and network reliability is improved.

The extent of thin client penetration into the business desktop market as a whole is becoming significant, and if current trends continue Wyse believes that in two years time the market will be characterised as 'beyond early adopter' and 'beginning mainstream'.

► DEPLOYMENT

In the deployment of a Wyse Winterm solution, the main effort is required to build the server side component and network. Once this has been achieved, the implementation of the terminals requires much less skills than the support of PCs. The standard product includes the unit, keyboard, mouse, and Wyse™ Rapport® management software, Workgroup edition. For integrated models, it is a complete desktop ready to connect to the network. These can be regarded as out-of-the-box as they can be quickly set up and added to the network using a simple Wizard.

Technical skills are required for the server side set-up, but once this has been carried out, terminals can be deployed using DHCP attach-and-go plus Rapport's ability to automatically configure a terminal upon initial connection. Most Winterm project installations are carried out by Wyse's network of VARs and SIs.

Winterm solutions can be deployed in a modular manner, and a thin client can be deployed in five to ten minutes if the network and server are set up correctly. According to Wyse many of its customers deploy Winterm by shipping the units straight from the warehouse to the end-users, who unpack the unit, connect it and switch it on ready for use.

The Wyse™ Rapport® management tool is delivered as standard with Winterm terminals. It enables the management and upgrading of firmware remotely over the network, or through a modem from a central location. An administrator can manage hundreds of thousands of devices from one location. They can be configured and have their firmware or settings updated or changed at any time, and in any order, by utilising flexible scheduling features.

The Rapport user interface is a Microsoft Management Console snap-in that has the look-and-feel of Windows Explorer. An administrator can transfer client software and settings using an easy-to-use interface whilst maintaining a comprehensive view of each client on the network. Thin clients can be grouped in whatever configuration the customer demands, and this simplifies the management and reporting. Rapport also provides software and hardware asset management.

To enable the management of many thousands of users in many locations around the globe, without bandwidth problems, Rapport Enterprise can be installed with multiple management consoles and multiple update repositories. This eliminates the need for local support teams to add, delete, or change application software, client firmware, or user settings.

The company also supplies a two-day, in-depth technical training course on how to use the Rapport management product for technical systems administrators and desktop support specialists. This is provided at a number of global Wyse™ Rapport® training centres, which are equipped with the latest thin client and software technology. Ongoing support is provided via the Web and by telephone. Wyse has an automated support database that can be queried via the Web.

The client side environments that are supported are as follows:

- Microsoft Windows NT Embedded (NTE).
- Windows XP Embedded (XPe).
- Linux.
- Wyse Blazer OS.
- HTML or Java using a built-in Web browser.
- Legacy green screen using built-in legacy terminal emulation.

To access server-based Windows applications, Wyse Winterm terminals require servers running operating systems such as Citrix Metaframe or Microsoft Windows 2000/2003 Server. These operating systems contain a terminal services feature that allows applications to be hosted on the server and displayed remotely. The server runs the application, terminal services uses a protocol to send what the screen should look like to the client over the standard network, and the client displays the applications as if they were running locally.

Two common protocols are used to send the screen updates to the desktop, and the keyboard and mouse commands back to the server, one is RDP from Microsoft, and the other is ICA from Citrix Systems. Citrix MetaFrame® acts as a software layer on top of the core Windows capabilities, and their package is often a choice for companies that are setting up enterprise-level server centric computing.

Wyse Winterm terminals run on Microsoft RDP, Citrix ICA, and New Moon RDP, and Rapport runs on Access, MSDE, or SQL Server databases. Winterm devices can be inexpensively equipped with biometric security sensors or smart-card readers in the event that password access control alone is insufficient. Organisations wishing to access browser-based applications, such as many ERP applications, can do so by using the local browser in the terminal.

Security and business continuity are of increasing importance to organisations, and Wyse asserts that they are inherent in a Winterm infrastructure. As there is no data contained in the Winterm device, the loss of any device will not impinge on corporate security or business continuity. Defence against hacking and virus/worm threats can be concentrated at the server end, and it therefore does not depend on user compliance or workstation updates.

► PRODUCT STRATEGY

Wyse asserts that it is the market leader in thin client desktop devices and has more than 40% of the global market. Its target market is reached through Wyse's channel of VARs and distributors. This is extended by its OEM partnerships. The company sees Neoware as its key competitor in the thin client market, and HP (which used to be an OEM customer) is now present in the market as an independent supplier, taking third position. However, a larger market share than HP is taken by 'Others' and Wyse expects this segment to shrink, and also for consolidation to take place amongst the smaller players.

According to Wyse, the European market is expanding fast and may well equal the US market in volume sales within a year or two. The size of the market is also significantly up, although the bulk of the increase in unit sales has tended to be at the lower-priced unit end. However, Wyse is confident that as a price entry lead, the higher value proposition will become realised as customers become better aware of the potential in thin clients.

The company is also able to support other vendor's thin clients in its Rapport management software, which is important for clinching deals with customers, which have a heterogeneous thin client and PC environment.

The entry of new microchip suppliers into the thin client market is also a sign that the IT industry as a whole is beginning to turn its attention to this growth sector. In particular VIA and Transmeta have entered the market to compete with the established National Semiconductor, which has recently sold its thin client processor unit to AMD. The effect of this activity is to drive chip prices down and increase the pace of technological progress.

The company provides free lifetime web based and email support for Winterm thin clients. All the terminals are supplied with a one-year warranty. For non-integrated units, without CRT or LCD screens, this warranty can be extended to three years when the product is registered for warranty within 90 days of purchase.

The purchase of Winterm hardware includes a Rapport Workgroup client licence, and this can be upgraded by customers to the Rapport Enterprise Edition.

There are separate packages for support and maintenance: **Priority Plus Maintenance** includes all software upgrades during the contract period, is charged on a per seat basis and can be subscribed for one, two, or three years. **Priority Plus Support** provides enhanced technical support, including unlimited telephone support, and Web-based training. It is charged on a per organisation basis, with subscription periods of one or two years.

Both Priority Plus packages are available for the three software products: Wyse™ Rapport®, Alactraz™, and Wyse™ Expedian™. Pricing for Priority Plus is based on the software product and model, for example: One year Priority Plus Maintenance for Rapport Workgroup 4.0 is £4/€5/US\$5 per seat, and Priority Plus Support for Rapport Workgroup is £700/€1000/US\$1000 per organisation.

Wyse has also recently announced new Services Programs to enhance and upgrade the standard warranty of its Winterm terminals. These chargeable options offer warranty extensions for one or two years beyond the original warranty period and/or advance replacement service to provide a replacement unit within one business day at customer's site.

Wyse has a new Partner Program that is designed to be simple to operate and helps partners to grow their Wyse server-based computing business. There are no fees and no complex legal documents involved, the authorisation level is linked to knowledge and commitment through what has also been recently unveiled, a comprehensive certification programme backed by the Wyse Web University. Authorisation is available at three levels – Authorized, Gold, and Platinum– and certification in Wyse General Information, and Wyse Winterm Sales Certification is available. An Advanced Wyse Winterm Sales Certification, and Wyse Software Sales Certification are only available at the Platinum level.

Students can learn through their Web browser by downloading HTML slides and accompanying audio, and then taking a Web-based exam. The on-line courses are available in English, German, and French. Wyse is the only thin client vendor to offer certification, and the Web-based training is of particular value to locations further afield like Australia, New Zealand, and South Africa.

The major competitive alternative to Wyse Winterm is the low-cost PC. However, the European and global market is growing fast and Wyse sees no decline in the expansion, as the current recession, concerns over security, and the spread of viruses helps to foster the greater adoption of thin clients. Wyse expects a 50 % unit growth over the current year. Europe represents 30% of Wyse's global revenues.

The company is now extending its market position beyond desktop thin clients. This is being achieved through strategic initiatives focused on server enhancements, personal computer management solutions, mobile devices, and professional services. Through this expanded range of products and services, in conjunction with its strategic partners Microsoft® Corp. and Citrix® Systems, Wyse intends to maintain its thin client market share lead and accelerate the growth of server-centric computing.

Wyse has a number of business and technology alliances with other companies including:

- Microsoft.
- National Semiconductor.
- Identix.
- Expand Networks.
- Netilla Networks.
- Citrix.
- Schlumberger.
- Insignia Solutions.
- Tarantella.

► COMPANY PROFILE

Wyse was founded in 1981 and has grown to be a global business with US\$200 million annual revenues. Approximately 10% of the company's gross revenue is spent on research and development.

The company's headquarters are in San José, California, and it employs over 550 employees globally, with about 50 located in Europe. Production facilities for Winterm products are in Taiwan, and Wyse software engineering is carried out in the US and Taiwan.

Wyse started out with text terminals, and introduced the first Windows-based terminal in 1995. The company has led the thin client market for the last six years. Wyse is currently taking strategic initiatives by extending its product range through server enhancement software, PC management solutions, mobile devices, and professional services.

Wyse sells its products mainly indirectly through distribution channels, which are supported by a direct sales force for larger customers. It has shipped about 2 million Winterm terminals. Wyse reports that its products have been well received in most industry sectors, and its key clients include:

The Royal Mail (UK), CarPhone Warehouse (UK), National Health Service (UK), Swinton Insurance (UK), ING (NL), Eidgenössische Zollverwaltung (Switzerland), ITS Reisen (Germany), Landeskrankenhilfe Lüneburg (Germany), Sernam (France), Flight Centre (Australia), FNAIM (France), NBC (US), and Fedex (US).

► SUMMARY

The case for thin client alternatives to PCs is becoming stronger, and there is evidence for greater demand driven by customers with less push required by vendors. The products and the infrastructure are now mature, and a commoditisation is taking place in the industry, with, for example, more microchip manufacturers entering the market.

These market developments are driving the cost of thin clients downwards, and the fastest growth area is in Linux client-side, which further lowers the cost. Organisations have much to gain in security, reduced support costs, and improved manageability by choosing the desktop product that is required to do the job. The implementation of a PC-replacement strategy, in those functional areas where a thin client such as Winterm fits the requirement, can generate immediate savings.

Butler Group believes that Wyse's expanded product offering, including greater Linux product choice, and incorporating mobile and wireless terminals, together with enhanced management tools, can provide significant benefits to most organisations. Its PC lockdown and migration software, Wyse™ Alcatraz™, offers an easy entry for companies to the thin client environment so that they can assess for themselves the benefits to be gained. And Wyse Expedian™ can provide savings through better server management. The emphasis on software functionality is becoming a key differentiator in the thin client market and Wyse has strong products to maintain its leading position.

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