Multiple connection options: IGEL thin clients with Windows Embedded

By definition, thin clients should be lean. Although this does not apply to devices with Windows Embedded, they still deserve to fit into this category. Especially when manufacturers such as IGEL Technology offer features designed to get the Microsoft OS ready for use in thin clients.

Contents:

- How does Windows Embedded perform as a thin client OS compared to IGEL Linux?
- What strengths can users take advantage of, what weaknesses need to be compensated for by providers?
- Approaches for efficient, standardized remote management?
- Complementary security features?
- How can devices, drivers and local applications be rolled out centrally?

IGEL®
TECHNOLOGY

WITHOUT 26.2%	LINUX 26.1%
	OTHERS 6.5%
WINDOWS 41.1%	

Success story: 41% of all thin client systems sold around the world in 2014 were based on Windows (source: IDC, 2015)

The IDC figures speak volumes. Over 40% of the thin clients sold globally in 2014 were based on Embedded versions of Microsoft Windows, even though the Microsoft OS was not specially developed for thin clients and uses far more resources than Linux-based operating systems. So where do the strengths and weaknesses of the compact operating system lie?

The strengths of Windows thin clients

Apart from the native look and feel of the local GUI, the most convincing argument in favor of thin clients with Windows Embedded is their 100 % compatibility with the associated ecosystem, primarily Windows Server with its RemoteApp, Remote Desktop Services (RDS) and Remote Desktop Gateway server-based computing, VDI and cloud computing solutions. The RDS Client and the Remote Desktop Protocol RDP allow access to them. As a recognized industry standard, Windows Embedded also ensures an optimum working relationship with centralized IT and cloud environments based on Citrix XenApp / XenDesktop and VMware Horizon. The corresponding Windows client software appears prompt and reliable at all times.

However, Windows is the absolute standard for peripheral manufacturers too. Windows thin clients are therefore the ideal choice when it comes to connecting specific devices or ensuring driver support for them. Typical examples are scanners which require a TWAIN interface but also webcams, headsets, WLAN sticks and touchscreens and as sector-specific devices.

REASONS IN FAVOR OF WINDOWS EMBEDDED AS A THIN CLIENT OS

► **Connectivity: 100% compatible with peripherals for the Windows ecosystem, e.g. scanners, smartcard readers and touchscreens**

► **Native access to Microsoft provision solutions: RemoteApp / Remote Desktop Services via RDP and RemoteFX or Remote Desktop Gateway**

► **Recognized industry standard: new clients for remote access available immediately (e.g. Citrix Receiver, VMware Horizon etc.)**

The weaknesses and useful add-ons from IGEL

Given that it wasn't primarily developed for thin clients, Windows Embedded lacks a number of important features. In order to increase the benefits for thin client environments, the thin, zero and software thin client specialist IGEL makes specific enhancements to the firmware. These range from terminal emulation systems[1], VPN clients[2] and smartcard drivers to practical tools for USB redirection and management[3] or endpoint security[4]. IGEL also integrates frequently used applications such as the Java Runtime Environment or PDF readers into the firmware.
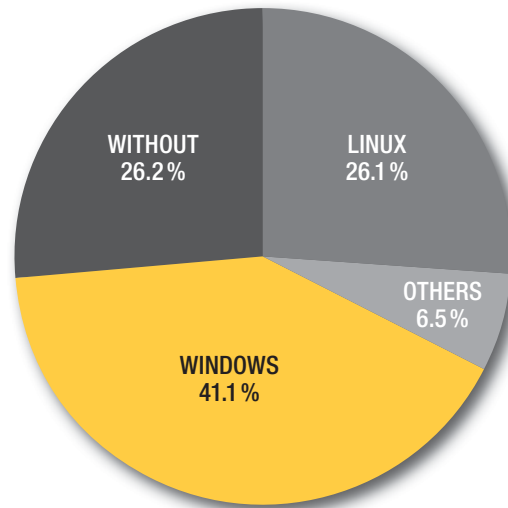
WINDOWS EMBEDDED

Windows Embedded

The Windows Embedded product range from Microsoft includes the embedded operating systems tools and services. The overriding goal is to help companies use customer-specific intelligent system solutions for collecting, storing and processing data and thus obtain usable business intelligence and actual business results. Microsoft caters for various objectives with a range of Windows Embedded families including Industry, Pro, Standard and Handheld, Compact, Automotive and Server. Windows Embedded Standard or Industry is typically used on thin clients.

A further characteristic of Windows Embedded is its greater use of resources compared to Linux-based thin client operating systems. In order to provide additional storage space for Windows-typical updates as well as receiver, browser, driver and protocol upgrades, IGEL offers the „W7+" option with a larger flash memory.
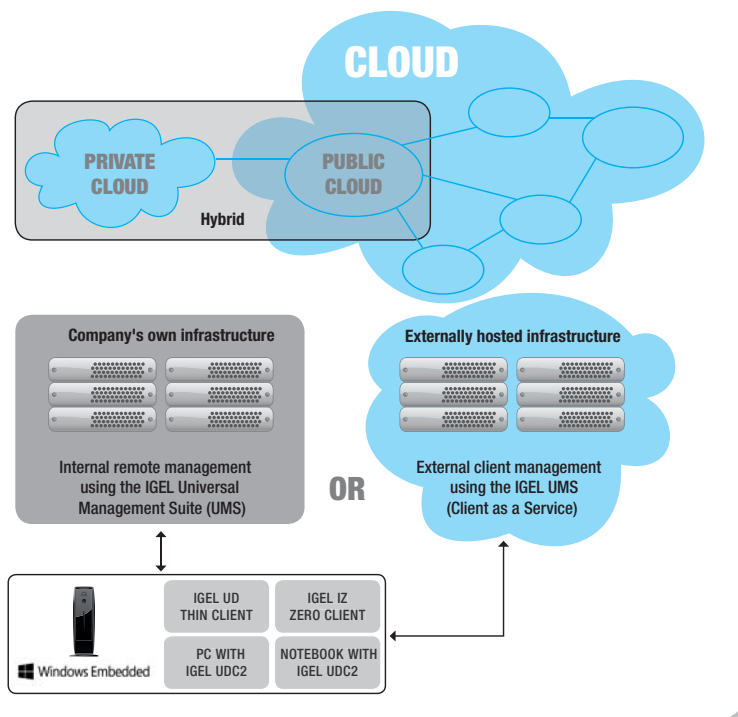
Help with remote management

Windows Embedded can be managed with many systems. There are a range of standard solutions for the remote management of Windows-based clients, which are mainly geared to the needs of fat clients as opposed to the specific needs of thin client users. Much of IGEL's development work therefore focuses on maximizing the integration of Windows Embedded thin clients into its Universal Management Suite (UMS) remote management solution. This ensures a particular depth of administration and an unusually high degree of automation not only in exclusively Microsoft environments but also under Citrix XenApp/XenDesktop and VMware Horizon.

Unified management with Active Directory

With a view to ensuring standardized management of thin, zero and software thin clients, IGEL has structured the configuration profiles for Linux and Windows Embedded-based end devices in the same way. For users, this system-independent design means reliable profile assignment, even if devices with different operating systems are swapped over. If individual features are not available, they are automatically ignored during remote configuration by the UMS. This ensures that availability is maintained whatever happens.

Many functions. One device.

CLOUD

PRIVATE CLOUD

PUBLIC CLOUD

Hybrid

Company's own infrastructure

Externally hosted infrastructure

Internal remote management using the IGEL Universal Management Suite (UMS)

OR

External client management using the IGEL UMS (Client as a Service)

Windows Embedded

IGEL UD THIN CLIENT

IGEL IZ ZERO CLIENT

PC WITH IGEL UDC2

NOTEBOOK WITH IGEL UDC2

Unified management: With the IGEL UMS, thin and zero clients with different operating systems can be rolled out and managed remotely and in a standardized manner.

Availability is key

A key benefit of centralized or cloud-hosted IT environments with thin clients as lean and efficient end devices lies in the high level of availability and business continuity that they offer. In order to take this into account during remote management, all Windows devices from IGEL feature an additional Embedded Linux Management system. This intelligent software works in the background behind Windows Embedded, managing update processes in a fail-safe manner, maintaining manageability in the event of boot problems or blue screens. If necessary. administrators can read out errors or restart the device with changed settings. If enterprise and/or compliance regulations stipulate high availability of the remote management solution itself, this is possible with the optional UMS High Availability (HA) extension.

The issue of security

When it comes to security, IGEL has made some practical enhancements to Windows Embedded in order to provide Windows systems with extra functionality. The File Based Write Filter (FBWF) typical of Windows Embedded was extended by IGEL so that it is automatically disabled and enabled again by the UMS for administrative purposes. This ensures optimum write protection on the file level at all times. Other security features added by IGEL include USB rights management which can be set according to granularity and access control for USB devices.

Although the width and depth of the administrable protocols are slightly reduced compared to IGEL Linux, the Windows-based Universal Desktop thin clients from IGEL can be fully integrated into the company administration system on the basis of Active Directory. This way, the clients' domain affiliation can be fully managed via the UMS and the rollout can be handled quickly via remote configuration. Profile-based device configuration which can be prepared centrally including display, entry devices and power management and rolled out via the UMS ensures a high degree of automation which has a positive effect on company resources too.

COMPLIANCE THANKS TO HIGHLY AVAILABLE REMOTE MANAGEMENT WITH REDUNDANT UMS ARCHITECTURE

IGEL thin clients remain configured and ready for use at all times. The High Availability IGEL UMS extension makes remote management itself highly available.

UMS SERVER 1

UMS DATABASE

UMS SERVER 2

UMS LOAD BALANCER (REDUNDANT)

UMS SERVER 3
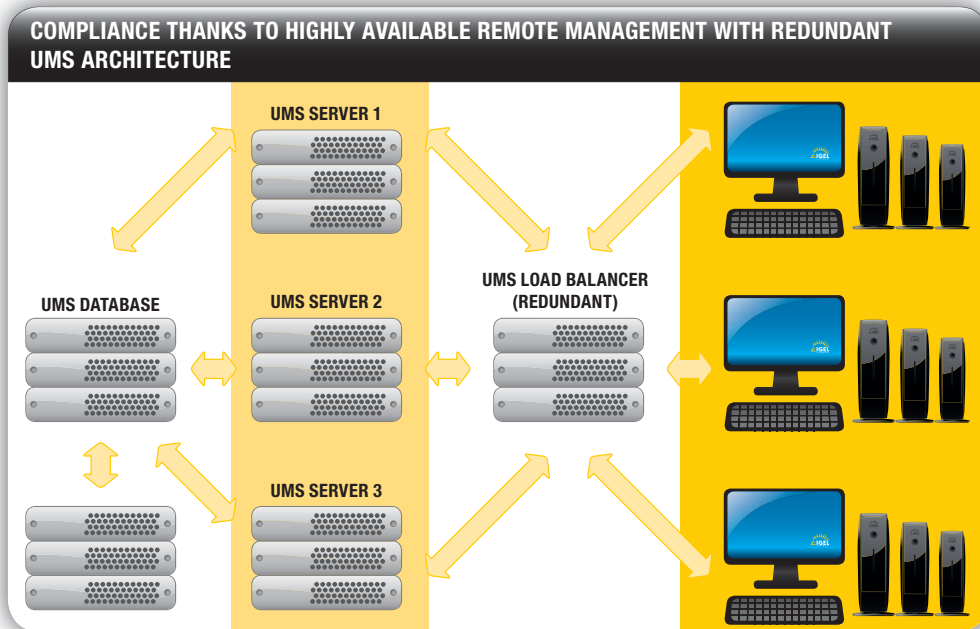
Remote management of all IGEL thin and zero clients is always certificate-based and SSL-encrypted. User support makes it easier to use an SSL-encrypted shadowing function including rights management and audit compliance which is integrated into IGEL's UMS management solution. With IGEL, firmware updates are carried out remotely, with encryption in a reliable manner. With the „Partial Update" feature hot fixes as well as drivers and other additional software can be rolled out in a way which conserves bandwidth.

Firmware changes made easy

The partial firmware update plays a central role when standardized firmware changes are to be made. In the case of Windows Embedded devices, these are possible with the optionally licensable[5] IGEL Universal Customization Builder (UCB) UMS extension. During a guided, well-documented process including templates, debugging and versioning, registry keys can be set or drivers and applications installed and rolled out securely even without an in-depth knowledge of scripting. Typical applications include the provision of sector applications such as checkout software for use at a POS[6]. In the same way, kiosk systems which work independently of the company network can be used as time recording terminals for example.

Conclusion: good for special tasks

Windows Embedded offers the strengths and the look and feel of the latest PC operating system on a thin client. It is of interest primarily for users who work in an IT environment dominated by Microsoft solutions, who need to connect special peripherals or would like to put in place other usage scenarios with special requirements. Compared to specialized thin client operating systems such as IGEL Linux, however, it requires more resources, incurs additional licensing fees and cannot be remote managed in such a comprehensive manner. Nevertheless, with the right thin client provider, the shortcomings compared to specialized thin, zero and software thin clients can be largely compensated for. With Unified Management, a standardized, future-proof thin client environment can be created. In a heterogeneous OS landscape, this offers a company maximum potential for savings.

UPDATING WINDOWS FIRMWARE WITH UCB

With the **IGEL Universal Customization Builder (UCB)**, the Windows Embedded firmware for IGEL Universal Desktop thin clients can easily and reliably be expanded and adapted to meet your needs. Key benefits and features
▶ Lower project costs: firmware expansion packages (Partial Update) can be created, packaged and rolled out easily
▶ Ease of use: predefined templates: task-oriented for typical application scenarios
▶ Transparency: automatic versioning within customization projects
▶ Reliable functions: automatic packaging with syntactical checks (debugging) as well as support for the packages created from the IGEL Helpdesk
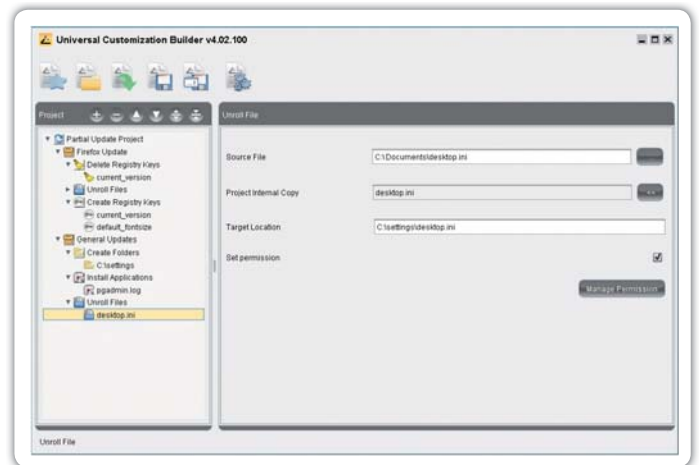
View of the Universal Customization Builder (UCB)

[1] www.ericom.com
[2] www.cisco.com and www.ncp-e.com
[3] www.fabulatech.com
[4] www.devicelock.com
[5] A UCB license (fee applies) is required to use the optional UCB extension for the IGEL Universal Management Suite (UMS). In order to obtain a UCB license, you must successfully take part in a paid IGEL UCB training course (in-house or classroom training).
[6] Point of Sale

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thin clients | development | services | solutions

Many functions. One device.