White Paper

Thin and zero clients in finance. A valuable asset

VDI and cloud computing are transforming the IT landscape in the financial sector. In an effort to create the most flexible, cost-effective workplaces possible, CIOs are increasingly relying on thin, zero and software thin clients.

Contents:

- What fundamental improvements do VDI, server-based and cloud computing bring?
- Typical usage scenarios for thin clients, zero clients and software thin clients?
- Quantifying the economic benefits.
- What should a thin client solution be capable of?
- The role of remote management.
- Protecting investments.
- Packages: What does Client as a Service (ClaaS) offer?

IGEL® TECHNOLOGY

The role of today's IT managers is clear: make IT more efficient, reduce costs and encourage digitalization. According to the results of a survey of 154 IT managers at large organisations in Germany, Austria and Switzerland[1]. The financial sector is no exception here. With the help of basic technologies such as server-based computing (SBC), virtual desktop infrastructure (VDI) and cloud computing, companies raise IT provision to a new level of efficiency and make computer work more secure, reliable and flexible.

Lean and flexible workplaces

If all data, applications and desktops are bundled together in a company's own computer center or a particularly secure external one (private cloud), this increases not only the availability of the IT environment and thus operational continuity but also data security. After all, the data is no longer distributed to individual workstation computers. Instead, it is saved centrally and can also be provided for mobile users. In order to access their personalized workplace, employees no longer need a PC which requires time-consuming local maintenance, patching and support. Depending on the scenario, they can use a thin or zero client instead. On this basis, a completely standardized client environment with standardized remote management can be created, from the back office at the head office and the front office including cash desks in branches to home workstations and even mobile scenarios. Old devices or notebooks can be integrated as software thin clients, e.g. with the help of the IGEL Universal Desktop Converter 2 (UDC2) solution.

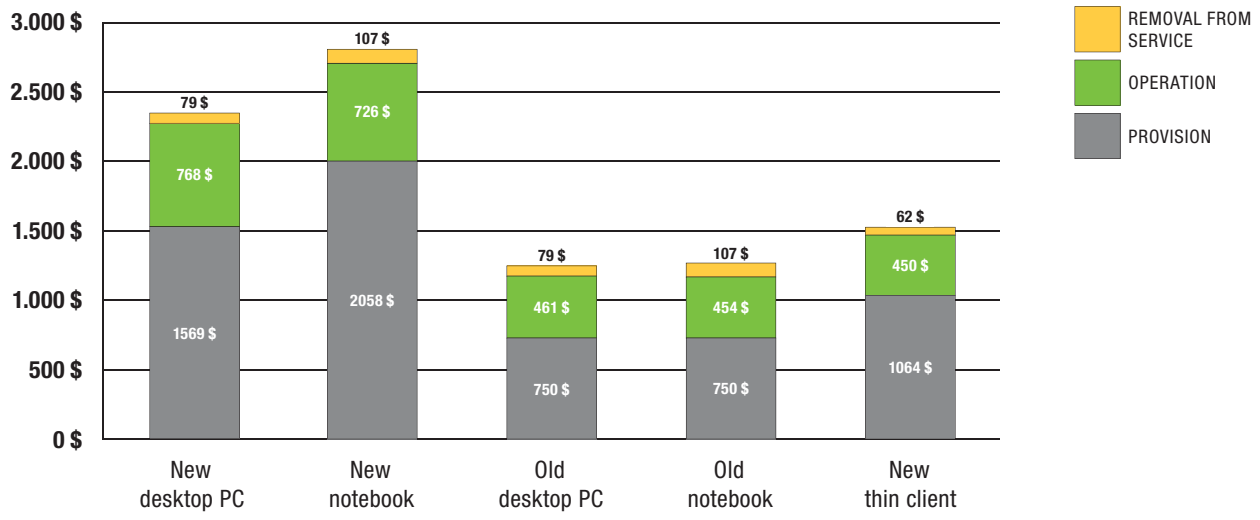
WHAT TYPES OF THIN CLIENT EXIST?

- **Zero Client:** a thin client optimized for a specific virtual desktop infrastructure (VDI) with a small footprint; e.g. for Citrix XenApp/ XenDesktop, VMware Horizon or Microsoft RDS / RemoteApp
- **Multiprotocol thin client:** a future-proof thin client which is suitable for accessing various centralized and cloud-hosted IT environments including IBM System i (AS/400)
- **All-in-one thin client:** a particularly space-saving multiprotocol thin client which is integrated into a display
- **Software thin client:** a thin client that runs as software on any x86 hardware, e.g. a PC, making it remote management-capable
- **Mobiler thin client:** a software thin client that runs on conventional notebook hardware (x86)

Ergonomic, environmentally friendly and economical

With their robust, minimal hardware, thin and zero clients require less space, use less electricity and emit less heat and noise. This helps to improve not only a company's ergonomics but also its environmental impact. At the same time, computer work becomes more flexible. Unlike a PC, the desktop is no longer coupled to the end device. Meaning that users can log on at any thin or zero client in order to access their own personal working environment and can carry on from where they left off during their last session.

FIG. 1: TOTAL COSTS PER CLIENT WITH 100 WORKSTATIONS TO BE SUPPORTED



Source: Fraunhofer Institute UMSICHT

The economic benefits of a thin client infrastructure can be assessed on the basis of the overall costs (TCO) including the computer center share incurred through SBC, VDI or cloud hosting. The TCO depends not only on the planned device lifespan (typically between three and six years) but also the following factors:

1. **Procurement (server, software, network, desktop and mobile devices)**
2. **Operation (energy, licenses, management)**
3. **Removal from service / disposal**

Up to a 55 % reduction in TCO

The Fraunhofer Institute for Environmental, Safety and Energy Technology UMSICHT has carried out an in-depth analysis of these three areas as part of a detailed economic viability study[2] for a scenario with 100 clients. It discovered that a thin client is 35 % cheaper than a new Windows PC (fat client) offering similar functions over a relatively short operating period of three years. In the case of a software thin client, savings of 47 % are possible. In an ideal scenario, a company with 15,000 clients could thus reduce its work-related overall costs by $10,3 m. If a new Windows notebook is compared to a mobile software thin client, the difference is as much as 55 %. In reality, usage periods are longer and the potential savings are therefore higher. In certain cases, hardware thin clients can be in use for eight years or more.

THIN CLIENTS BECOMING STANDARD

► A number of organizations including the Borderstep Institute for Germany have found out that thin and zero clients are increasingly becoming the standard when accessing centralized or hosted applications and desktops[3]; while the number of company PCs in Germany fell slightly in 2014, the number of thin and zero clients rose by more than 25% to reach 2.9 million devices. In addition, 300,000 or so mainly older PCs were in use as software thin clients. According to IDC, around 481,000 new thin clients were procured in Germany, the most important sales region in Europe, in 2014 (+22%). Globally, approximately 5.5 million new thin and zero clients were sold.

Security, collaboration, high performance: what should a thin client solution be capable of?

Thanks to mature virtualization technologies, virtually any usage scenario can be reproduced in an economical and efficient manner using a thin, zero or software thin client. In the financial sector, branch workstations are of particular importance. They need to support various peripherals including older printers and devices which cannot be connected via USB. As far as security is concerned, not only seamless USB control to protect against viruses and other malware but also authentication and smartcard solutions play an important role and should likewise be supported by thin and zero clients. Given the trend towards multimedia, video streaming, HD playback and digital dictation, unified communication platforms such as Skype4Business (previously Microsoft Lync) or Cisco VXME are on the advance.

There is also a trend towards flexible workstations as a way of encouraging collaboration. These are possible within the company thanks to session roaming and outside the company with mobile thin clients featuring a WLAN connection. High-performance workstations, e.g. for marketing or stock trading, can be put in place with the help of graphics virtualization and particularly powerful thin clients such as the IGEL UD5 or UD6.

Investment protection: software, service, support

With the exception of high-performance computing, hardware has less of an influence over the choice of provider than software, service and support do. Technological dead ends as a result of using proprietary zero client concepts pose a particular risk to investment protection and long-term cost reductions. There is no such risk with the remote managed multiprotocol thin clients and upgradable zero clients from IGEL which can work with various platforms such as Citrix XenApp / XenDesktop, VMware Horizon or Microsoft RDS / RemoteApp. What is more, the standard hardware warranty which can be extended free of charge is five years for all stand-alone models in the IGEL Universal Desktop series. Software updates and technical support are available for up to three years after a product is discontinued.

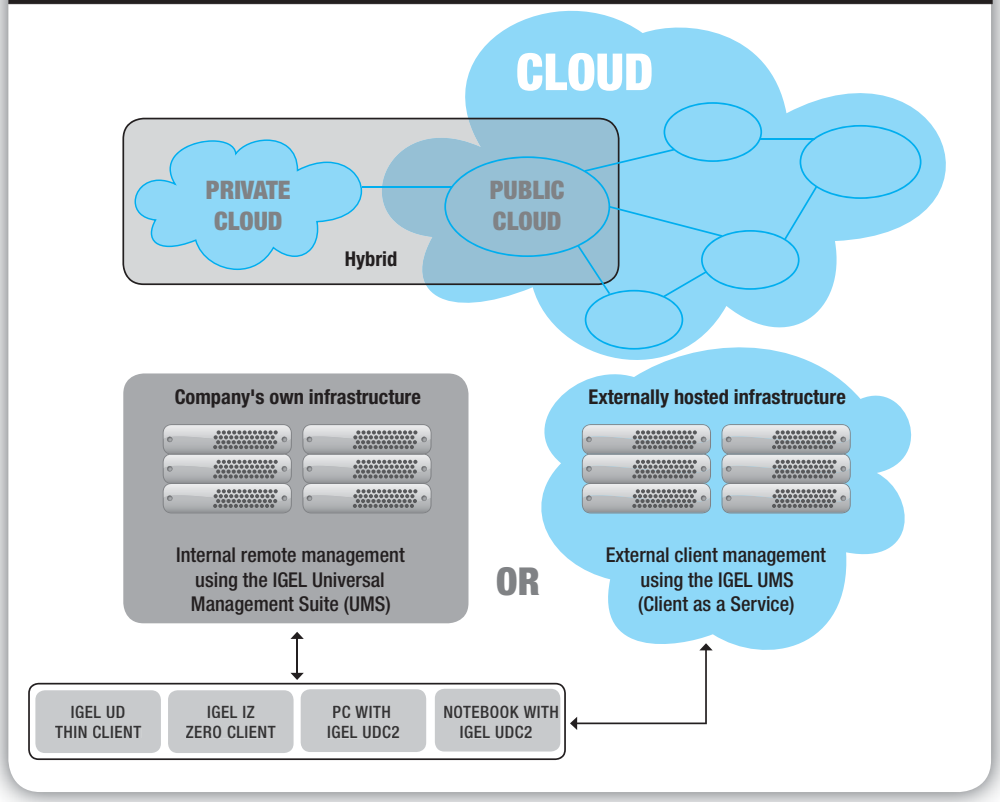
The big difference: unified management

The remote management solution decides the extent to which the costs of a thin client environment can be reduced and whether or not this reduction is permanent. Key factors here include the depth of administration and the degree of automation, from the rollout of devices within the branch network to the commissioning of a replacement device should a device fail. Solutions such as the IGEL Universal Management Suite (UMS) that are compatible with a range of models and operating systems offer the biggest potential for savings. Via the graphical user interface of the UMS which always comes supplied, the device and group profiles can be set up before the rollout and then passed on automatically using the MAC or IP address. In the event that a device is replaced, the newly connected thin or zero client contacts the UMS server and configures itself within minutes using this profile. IGEL allows further savings with practical tools such as the integrated rights management system for administrators or asset management which records details of all hardware, licensed features and installed hot fixes.

Compliance: highly-available multi-user workstations

In the financial sector, specific compliance regulations which stipulate the redundancy of IT systems and data [Basel II/III] often apply. IGEL takes into account these requirements with the optional UMS-HA extension. It makes the IGEL UMS highly available and redundant, while allowing any degree of scaling. With HA, even very large thin client environments (500 or more end devices) can be reconfigured simultaneously[4]. The UMS-HA also provides a basis for multi-user workstations which require a user-dependent thin client configuration. All that is necessary in order to be able to set the keyboard layout, mouse or server paths individually and automatically is to enable the optionally licensable Shared WorkPlace feature.

ABB. 2: CLOUD COMPUTING WITH THIN, ZERO AND SOFTWARE THIN CLIENTS AND UNIFIED MANAGEMENT



BEST PRACTICE: IKB DATA

- Under the slogan „Safe in Germany“, IKB Data GmbH provides high-security infrastructure services and specific business applications for the financial sector via its two German computer centers. The service provider also provides its customers IKB Deutsche Industriebank and IKB Leasing with a complete range of desktop and thin client management services on the basis of a ClaaS model. The robust, high-performance hardware as well as excellent multimedia performance and standardized remote management with the high availability option (UMS-HA) and multi-user capability (Shared WorkPlace) were key factors in the decision to procure 1,500 IGEL UD5 thin clients. The intention is to use the IGEL thin clients for a period of five years.

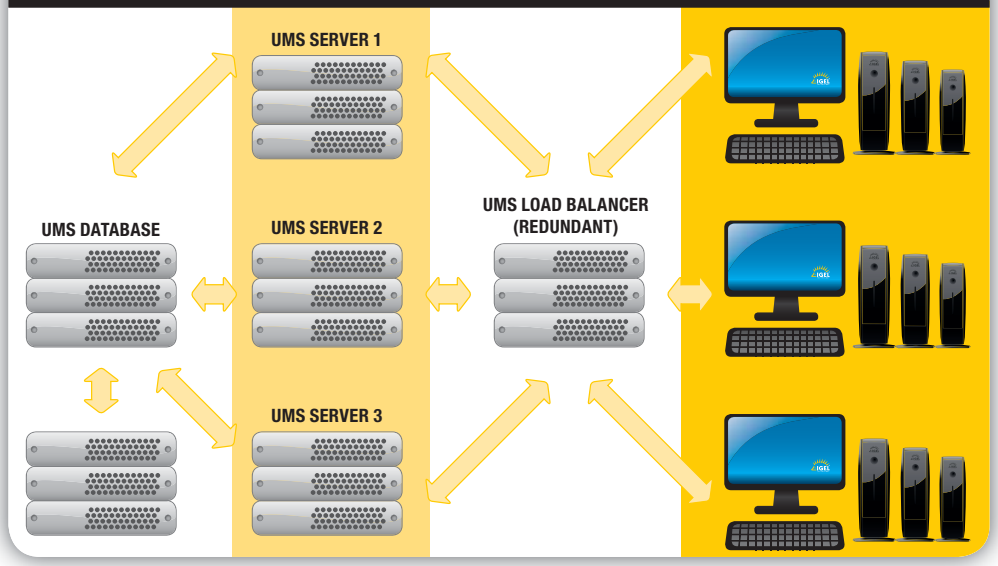
Computing packages: Client as a Service (ClaaS)

On the basis of such a comprehensive and seamless remote management system, the client can even be fully outsourced as a service. Like other cloud models such as SaaS[5] or DaaS[6], this popular alternative to the classic outsourcing model is referred to as Client as a Service (ClaaS). Compared to internal client operation, ClaaS offers a significant level of cost transparency. Procurement costs which are to be included in the balance sheet are converted into monthly costs, thus reducing the balance sheet overall. ClaaS reduces not only IT complexity but also the costs of hardware, operating systems, licenses, antivirus software, updates, patches etc. The fact that data are stored and backed up more efficiently by the provider also results in further economic benefits. Because applications and desktops run in a highly-available data center and can be retrieved irrespective of the end device, ClaaS also paves the way towards mobile computing.

Conclusion: lean, future-proof workstations

It is mainly the software which decides the efficiency of a thin client infrastructure. Manufacturers such as IGEL who make standardized and efficient remote management a key issue and whose firmware offers a high level of security including driver support and updates provide the best basis on which to permanently reduce banks‘ and financial service providers‘ client-related IT costs in accordance with compliance requirements and without investment risk. In terms of added value, companies and their users benefit from flexible, scalable and secure workplaces – an ideal platform for the ongoing digital transformation.

ABB. 3: COMPLIANCE THANKS TO HIGHLY-AVAILABLE REMOTE MANAGEMENT WITH REDUNDANT UMS ARCHITECTURE



EXAMPLE CALCULATION: TCO FOR 100 CLIENTS OVER THREE YEARS

CLIENT/SERVER NETWORK WITH 100 PCS	USD $	CENTRALIZED IT ENVIRONMENT WITH 100 THIN CLIENTS	USD $
Server hardware for software distribution (e.g. Lenovo ThinkServer TD 340 Tower Server with sufficient hard disk storage capacity)	4,243	Server hardware for thin client computing (e.g. Lenovo ThinkServer RD 440 2U Rack Server with 2 processors, 108 GB RAM and 4 TB SSD)	6,879
Microsoft Windows Server 2012 R2 licensing costs	651	Server-side licenses (Microsoft Windows Server 2012 Datacenter Edition, virtualized on Hyper-V, Citrix XenServer or VMware ESX)	6,990
100 business PCs (branded manufacturer, e.g. Lenovo) with processor: Intel Core i5-4570 CPU (3.20 GHz), 8 GB RAM, 250 GB SSD and DVD-RW (price: $837each)	83,749	100 thin clients (IGEL UD3 LX) (price: $37408each)	37,408
Software licenses (operating system, client access license (CAL), software distribution, applications, updates etc.)	23,450	User-related software licenses (CALs, RDS-CALs, Citrix XenApp, applications, updates etc.)	34,058
Electricity costs with an average power consumption of 66.95 kWh / year	22,428	Electricity costs (average power consumption – server: 3,282.77 kWh, thin client: 35.65 kWh)	22,939
Personnel costs: Procurement, installation, administration, disposal etc.	107,234	Personnel costs: Procurement, installation, administration, disposal etc.	49,509
TOTAL COSTS OF PC NETWORK	**241,755**	**TOTAL COSTS OF THIN CLIENT ENVIRONMENT**	**157,783**

Source: IGEL Technology; further details: „Ecological and economic aspects of software thin clients“, short title: Thin Clients 2015; Fraunhofer Institute for Environmental, Safety and Energy Technology UMSICHT, 2015

ARGUMENTS IN FAVOR OF IGEL THIN AND ZERO CLIENTS IN FINANCE

AVAILABILITY, SECURITY	TCO, SERVICE AND SUPPORT	ERGONOMICS, ECOLOGY, FLEXIBILITY
Centralized data storage and backup: no security risk owing to hardware theft	Reduction in TCO of between 35 and 54% (over a usage period of just 3 years)	Minimal space requirements, heat and noise emissions
IT hygiene: Users cannot install programs; USB management prevents infections with malware	Unified management: Centralized management of all thin, zero and software thin clients including firmware updates and asset management	Environmental impact: at least 50% lower power consumption, less electronic waste, recyclable packaging
Reliable branch operations: virtually 100% availability thanks to quick device replacement	Management GUI: Drag and drop assignment of device and group profiles, rights management for administrators	Flexible connection options for card readers, receipt printers, scanners, automatic till safes or savings book printers etc.; WLAN
Two-factor authentication with smartcard and other ID solutions	Standard hardware guarantee of up to 5 years	Workstation roaming: Convenient logging on and off via smartcard; work can continue immediately with all applications used previously
Encrypted data streams; support for Virtual Private Networks (VPN)	Free software updates and technical support for up to 3 years after hardware is discontinued	Mobile working in a WLAN with software thin clients based on standard notebook hardware

[1] IT Trends Study, Capgemini Deutschland, 2015
[2] „Ecological and economic aspects of software thin clients“, short title: Thin Clients 2015; Fraunhofer Institute for Environmental, Safety and Energy Technology UMSICHT, 2015
[3] Development of computer use in households, companies and government agencies in 2014, Dr. Ralph Hintemann, 2015
[4] The UMS-HA software extension is available at extra cost and is compatible with all hardware and software thin clients in the IGEL Universal Desktop range.
[5] Software as a Service
[6] Desktop as a Service
Euro to Dollar currency conversion as of 2/16/2016

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