

Expanding the Value of the Windows Terminal Server Investment

HOBLink JWT – HOB Enhanced Terminal Services



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HOBLink® JWT – HOB Enhanced Terminal Services

Server-based Computing with Microsoft® Windows® Terminal Services

In IBM's mainframe world, server-based computing was and still is a fundamental assumption. Quite a while ago Microsoft also discovered the advantages of delivering applications from centralized servers: It developed its own 100 % server-based computing technology - founded on its "Terminal Services".

In the meantime, the Windows Terminal Server technology has become very successful as a platform for central data and applications servers. However, a lot of customers want to expand the value of the Microsoft Windows Terminal Server, e.g. with "real" Load Balancing, Application Publishing and support for non-Windows client platforms such as Linux, Unix, MacOS as well as for Network Computers. At the same time there is also a demand for less administrative overhead for the Terminal Server and the connected clients.

A major day-to-day problem for system/network administrators was and still is software management and software distribution, and there is always a need to deploy new versions/applications as quickly as possible., in the era of thin-client computing companies are looking for investment protection, especially for hardware (in this case for PCs). Furthermore, enterprises today must deal with the ongoing process of obtaining software updates/add-ons/service packs for licensed applications which are already installed and deployed in the company. There is always a huge expenditure for administration necessary to distribute new applications or existing versions. And finally, the continuous evolutionary development of Windows operating systems is a cost factor, also. These might have been the primary reasons for Microsoft to deploy their Terminal Services.

Terminal Services technology is available for the two established Windows server platforms: Windows NT® Server 4.0 and Windows 2000® Server. Windows 2000 Terminal Services are an integral part of Windows 2000 Server technology that

delivers the Windows graphical user interface through a server-based computing model.

Windows 2000 Terminal Services is a leading, strategic technology that can lower total cost of ownership and provide access to Windows-based applications to desktops that cannot run the Windows 2000 operating system. With the integration of Windows 2000 Terminal Services into the core server operating system, customers are able to deploy the latest Windows-based applications in a fully server-centric mode, where applications run entirely on the server. When Terminal Services is enabled on Windows 2000 Server, administrators do not have to install Windows-based 32-bit applications on each desktop computer. Instead, the application is installed once on the server, and the clients automatically have access to the new or upgraded software package through a terminal emulation. This technology has a very positive impact on the total cost of ownership (TCO) in general and gives more flexibility to system administrators.

Windows Terminal Server – Technology and Limitations

The client access to a Windows Terminal Server requires the installation of a thin, physical software client or can be realized over an ActiveX plug-in as a Web-based alternative. The communication between the client and the Windows Terminal Server is based on TCP/IP and Microsoft's Remote Desktop Protocol (RDP). Microsoft Windows NT Server v. 4.0 – Terminal Server Edition supports RDP 4, Microsoft Windows 2000 Server, Advanced Server and DataCenter Server supports RDP 5.

Basically Microsoft offers the Windows Terminal Server solution only to Windows 32-bit client operating systems. Clients with non-Windows platforms such as UNIX/Linux, MacOS, OS/2 etc. which need to access Windows applications cannot use the native Terminal Server connectivity from Microsoft. They have to depend on third-party add-ons.

Heterogeneous Client Platforms

On-demand, multi-user access to Windows applications

One interesting third-party add-on solution for multi-platform access to Windows applications is provided by HOB: HOBLink JWT is a flexible, powerful and 100% Web-based solution. This means it is platform-independent and gives clients running under 32-bit Windows as well as non-Windows clients access to Windows applications on Windows Terminal Servers. There is no local installation necessary (but it is possible). HOBLink JWT is installed as applet on a Web server and configured centrally. On the client side only a Web browser with Java Virtual Machine (JVM) is required. For the communication between client (HOBLink JWT) and Windows Terminal Server no additional server component is necessary.

There are other third-party products besides HOBLink JWT: CITRIX® MetaFrame® and Tarantella®. For more information please see “Other Third-Party Approaches” below.

As already mentioned, Windows Terminal Services are based on Windows NT 4 Server or Windows 2000 Server. These servers support certain standard features which can also be used with the Terminal Services. One of these features is related to classical “Load Balancing” which is called “DNS Round Robin”. DNS Round Robin distributes the client connections in rotation to the servers independent of the (processor) load, a method which could lead to unbalanced distribution and ultimately to performance problems for clients. Another common option is to use the Network Load Balancing Services to handle load balancing on the Windows Terminal Server. This feature primary handles the load of Web servers and was not specifically designed to manage load balancing for Windows Terminal Server connectivity. A master-browser is responsible for the distribution of the connection within a Windows Terminal Server farm.

HOB Enhanced Terminal Services

Flexible Load Balancing and easy-to-use Application Publishing

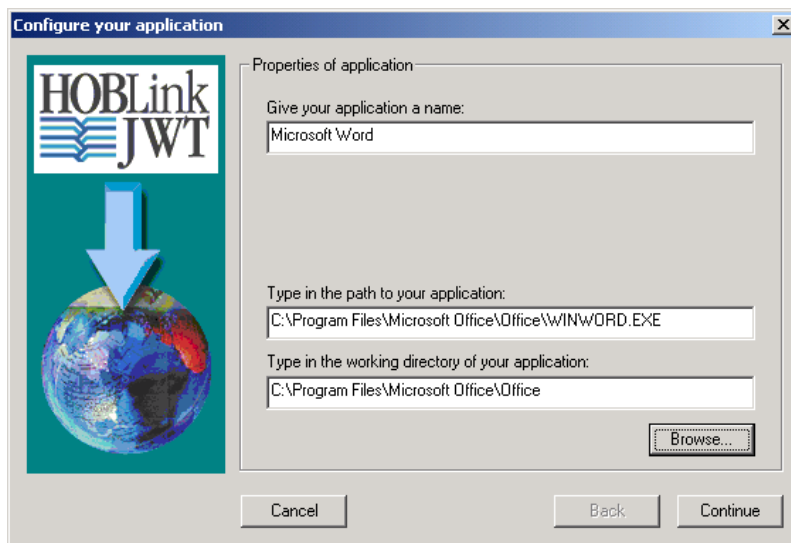
Enhanced Terminal Services from HOB® includes – among other components – processor-based load balancing. The HOB Load Balancing is a small and flexible Windows 32-bit server component which is installed on every Windows Terminal Server in the server farm. It measures the processor load on each Windows Terminal Server and, depending on the load balancing configuration (“Broadcast” or “Use server list”), the clients are connected to

- ˘ the server with the least load or
- ˘ the first responding server or
- ˘ a server chosen by the user from a list of all responding servers.

With the “Server list” configuration an administrator is able to group Windows Terminal Servers and assign them to different user groups or individual users with the same configuration options as mentioned above. HOB Load Balancing focuses on the real processor load on the Windows Terminal Server, not on network traffic.

There is also a great need to streamline the distribution of applications independent of servers and server farms. So-called “application publishing” (not “application serving”) is a feature which is used as a matter of course in server-based computing architectures. However, the Windows Terminal Server does not support this feature without a third-party add-on.

The HOB Enhanced Terminal Services provides application publishing as an optional feature. It functions in combination with the HOB Load Balancing component and allows for publishing applications in a Windows Terminal Server farm.

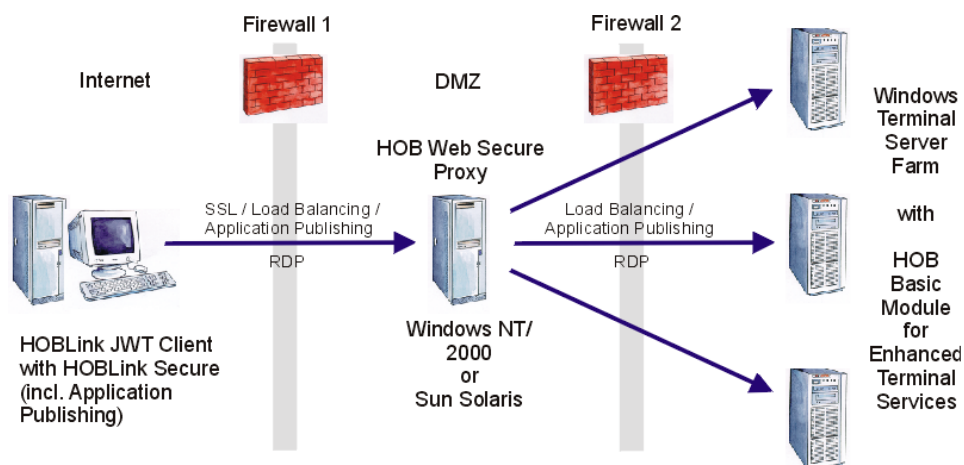


The HOB Application Publishing Manager enables the definition of the server farm and the published applications.

HOB Application Publishing gives more flexibility to streamline the distribution of Windows applications to network clients. It is not necessary to have the same applications installed on all Windows Terminal Servers.

Enhanced Security

The need for security is constantly increasing, especially in connection with Windows Terminal Server connectivity. The optimum solution is a scenario which combines the Terminal Server session, application publishing, SSL security and load balancing over only one firewall port. This solution is possible with HOBLink JWT and the “Web Secure Proxy”, which prevents unauthorized Web access to Windows Terminal Servers. Please see illustration below.



Web Secure Solution from HOB

To use this feature, the following products/components are necessary:

- ∨ HOBLink JWT (including Load Balancing)
- ∨ HOBLink Secure (including Web Secure Proxy)

Universal Printer Support

Generally there are numerous printers in use in a company's network. Using the native Windows Terminal Server connectivity, "only" local (available) printers under Windows are supported and all printer drivers have to be installed on the Windows Terminal Servers. The Universal Printer Support from HOB offers various printing possibilities, for example, standard local printing over printer port LPT1 to local printers and also standard local printing over LAN to network printers. Moreover, HOBLink JWT includes a Line Printer Requester (LPR) and is consequently able to print to Line Printer Daemon (LPD) printers. IP Print is also supported.

One of the strongest printing features is "Easy Print". With this feature, it is no longer necessary to install all the printer drivers on the WTS for printers which are used locally or in the network. Only two printer drivers, delivered with Windows 2000 Server, are required on the Windows Terminal Server. Printing is then possible to network printers and local printers. Advantage: less configuration work for administrators. Additionally, it eliminates printing problems and server crashes caused by defective or inappropriate printer drivers.

On Windows platforms an Automatic Printer Configuration is also supported. If the user wants to print to a printer whose printer driver is not configured on the Windows Terminal Server, HOBLink JWT will automatically configure the printer driver on the Windows Terminal Server. For remote connections, HOB also offers an option for bandwidth restriction with printing which limits the maximum bandwidth to be used for printing. This feature is interesting especially if printing is to be done over small bandwidth lines like ISDN or dial-up connections.

Other Third-Party-Approaches

There are two further Terminal Server connectivity approaches on the market: CITRIX MetaFrame and Tarantella.

Citrix MetaFrame

The most recent product in the Citrix MetaFrame family, Citrix MetaFrame XP™ for Windows, offers three customized solutions that provide a platform for application delivery and management for the Internet and Microsoft Windows 2000 – allowing enterprises to extend the reach of Windows-based applications via the Internet: MetaFrame XPs, XPa and XPe.

Citrix MetaFrame runs on top of Windows NT Server or Windows 2000 Server. In contrast to the native Windows Terminal Server solution from Microsoft, CITRIX uses the ICA® protocol for the communication between the client and the CITRIX MetaFrame Server.

MetaFrame, the additional server component for the Windows Terminal Server from Citrix, requires additional training expenses for system and network administrators to handle the product. The ICA clients can be installed locally, or alternatively, there is a Java and AcitveX client. However, these always require the Citrix MetaFrame server component.

With HOBLink JWT there is no additional server component necessary for the native communication. HOBLink JWT supports the RDP protocol and enables direct access to Windows Terminal Server applications. HOBLink JWT is installed on a Web server and can be downloaded as Java applet. On the client side, only a Web browser is necessary. An alternative is to install it locally; this requires a local Java Virtual Machine (JVM). Load balancing is integrated in the product at no extra cost.

The pricing of Citrix MetaFrame is based on the server and the number of connections. The minimum is a Citrix MetaFrame “Starter Pack” including 20 users. HOBLink JWT licensing focuses on the number of users/connections only.

Tarantella

Tarantella is a classical 3-Tier Windows Terminal Server approach. Tarantella runs on a dedicated Unix server and delivers applications from Windows, Linux/Unix, X Windows system, mainframe, AS/400. It is installed between the client and the Windows Terminal server. The client connection to the Tarantella server is based on AIP; the communication between Tarantella and Windows Terminal Server is RDP. The administrative workload is considerable and the configuration is extremely complex. Additional hardware (servers) is necessary to install Tarantella.

Summary: Other Third-Party Approaches

Third-party tools from Tarantella and Citrix are viable solutions to enhance the value of the Terminal Server investment, but they are either very expensive, complex to administrate or require additional server components associated with substantial extra costs.

A Look at the Market

- ˘ Approximately 27,000,000 users are currently working with CITRIX, which is around 85 % of the market.
- ˘ 15 % are using the native Terminal Server solution, which amounts to approximately 4,700,000 users.
- ˘ The entire market encompasses around 32,000,000 users worldwide.
- ˘ Microsoft is licensing around 500 Terminal Servers a day; the average number of users per server is 45.

HOBLink JWT: A Brief Overview

HOBLink JWT is written in 100 % pure Java and is consequently a platform-independent client for browser-based access to Windows applications running on

- ˘ Microsoft Windows NT 4 Server – Terminal Server Edition
and
- ˘ Microsoft Windows 2000 Server Family
 - ˘ Windows 2000 Server (Terminal Services)
 - ˘ Windows 2000 Advanced Server (Terminal Services)
 - ˘ Windows 2000 Data Center Server (Terminal Services)

It enables clients with Windows and non-Windows operating systems such as Apple MacOS, Unix, Linux, OS/2, EPOC as well as Network Computers and handheld devices to use centrally installed Windows applications in a browser. Local installation is not required for either the Windows application or HOBLink JWT.

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