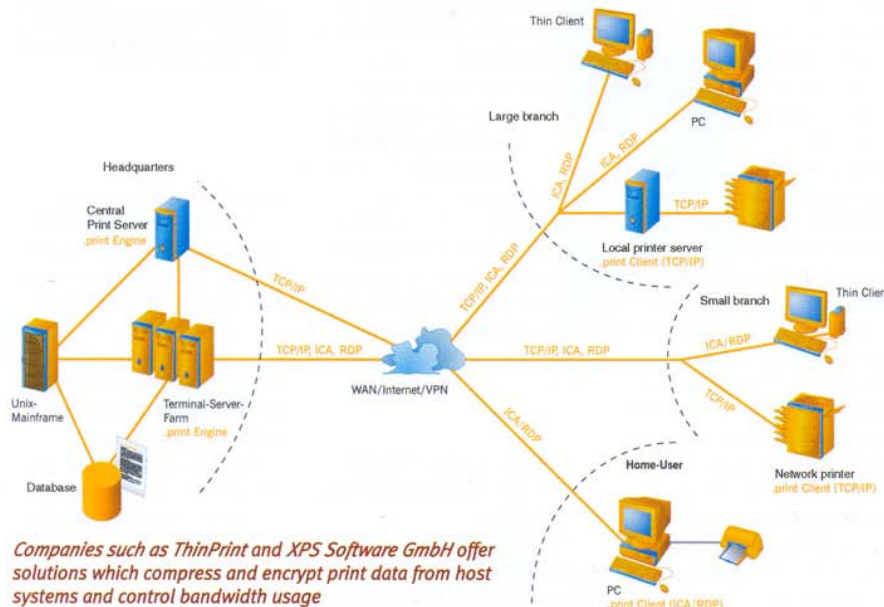


Praxis profiline 2006/03

## Affordable printing

### The Achilles heel of TC computing

Thin-client computing can help companies significantly reduce IT expenditure. However, bad planning can negate the cost-saving potential of server-based computing.



Companies such as ThinPrint and XPS Software GmbH offer solutions which compress and encrypt print data from host systems and control bandwidth usage

run on a server at the same. Each user should have access only to the printer(s) which has (have) been allocated to that particular user.

- ▶ The system must be able to handle a number of print jobs simultaneously, and this places a heavy load on terminal server resources.
- ▶ The amount of administrative work by users, at remote locations and in customer networks should be minimized.
- ▶ The solution should support a variety of networks or local printers ranging from label printers to high-speed plotters and various types of ports including USB and Bluetooth.
- ▶ The server backend, which is often heterogeneous, has to be integrated into the solution.

#### Remote printing

Companies often install terminal servers to centralize the administration function and eliminate servers at remote locations. Thin clients offer a good way of doing this at minimal cost, because users cannot install any software or disturb any settings.

Network printers tend to be the solution of choice in this scenario. But where does print queue administration take place, how do the print jobs get into the queue and what effects does this have on network performance?

Microsoft and Citrix can only compress data which is sent through their *virtual channels* using their protocols (ICA for Citrix and RDP for Microsoft). The data cannot be sent directly to the network printer. The thin clients could receive the print data and then send it to the printers, but very few thin clients support LPR, which enables them to send data to the network printers.

TCP/IP is an alternative solution. However, since neither Citrix nor Microsoft compress data for TCP/IP

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Printing is an Achilles heel in SBC environments. If insufficient consideration is given to this impor-



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tant office activity during the planning phase, the potential cost savings can be put at risk, or the attempt to reduce cost can turn into a farce. Enormous volumes of data are generated during the printing process. The data is processed centrally on the server and then distributed to the workstations, remote home offices or company subsidiaries. This can easily lead to high connection charges and bandwidth bottlenecks in distributed network,

and work efficiency can suffer if narrow-band connections are used. However, that is not all. Printer drivers which are installed on the terminal servers often cause conflicts and loss of service, and productivity suffers when this happens.

The following factors must also be considered:

- ▶ The right print driver must be used to process the data for a given client.
- ▶ A large number of user sessions

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printing, connection charges can be substantial, and overall performance is likely to suffer. There are also security considerations, because an additional port must be opened in the firewall, and fixed addresses may have to be assigned in the NAT router.

ThinPrint is currently the only company which offers a comprehensive compression solution. 30 OEMs have embedded the *print Client* into 200 different devices including terminals, printer servers and printer network cards. All of these devices receive and decompress print data. Lexmark is the first printer manufacturer which has embedded this technology into its firmware.

Another aspect to consider when you are planning a remote link is that you cannot use either the Citrix universal printer drivers or ThinPrint's *Driver Free Printing*, because both require rendering by the printer driver at the client end. Neither thin clients (except for clients with embedded XP) nor network printers have sufficient resources to do this. As a result, rendering has to be performed on the server side, and this significantly increases the load on the terminal servers. The best solution in this case is to use dedicated print servers. Bandwidth management is also needed to guarantee adequate service to remote sites. It prevents print data from completely blocking the line and inhibiting data transfer by other applications. Citrix allows administrators to set a bandwidth limit for each user. This solution has the disadvantage that bandwidths begin to add up. Bandwidth usage goes up as the number of users increases. ThinPrint takes a connection-based approach to bandwidth management. Depending on the type of connection that is available, administrators can define the bandwidth which is available for print data. This provides effective protection against bottlenecks.

### Integrating print servers

Home or field offices are often not under the administrative control of the IT center, and satellite links

are also commonly used in the enterprise sector. Remote sites can be located anywhere in the world. A number of terminal servers can be grouped into clusters or farms and integrated into a heterogeneous landscape which includes Unix hosts and mainframes. Administration and processing of print jobs takes place on dedicated print clusters. Microsoft does not currently offer special software to handle printing in these complex SBC architectures. In its latest release, Citrix has included features that take some of the pain out of printer administration, which would otherwise be virtually unmanageable. Printer drivers can be mapped to the servers at the click of a button, and *policies* are available to control printer *mapping*. Even queues which are located on a dedicated server can easily be included in the mapping. User settings for network printers can be copied and saved. Print data can be routed to the client via ICA, or it can be sent directly to a printer using TCP/IP.

However, actual transmission of the print data remains a problem. TCP/IP is the only option when printer data is sent from a print server. Neither Microsoft nor Citrix offers a special solution in this scenario. Without a third-party product

### Compression



With connection-based bandwidth management it is possible to limit the bandwidth for print data transmission to single links, user groups or workstations

such as ThinPrint, there is no way to compress and encrypt the data or send it back through the virtual channel. A solution which addresses the entire printing process without any dependency on an operating system or supplier offers the only way out of this situation.

### Printing from host systems

Many companies which use *Citrix Presentation Server* or *Microsoft Terminal Services* in their thin client environment want to print from their ERP, PPC or CRM systems. However, if the print data is not generated in the session, the ICA or RDP protocol cannot be used to deliver the data to the client, and of course there is no way to compress or optimize the data. This prevents users from enjoying the advantages of RDP or ICA data transmission. It is either impossible or very time consuming for home office users, employees who are in the field or at remote offices or even users at headquarters to print locally. If the printer and the host are connected via a WAN link, then data volumes and security also become important considerations, as is the case when printing is done directly on network printers.

Companies such as ThinPrint and XPS Software GmbH offer solutions which compress and encrypt print data from host systems and control bandwidth usage. It is even possible to print data locally on a thin client when the data is coming from a Unix, AS400 or mainframe system or to direct the data to a network printer. Print jobs can be started automatically, and the compressed data can be sent to remote locations for printing during the night.

### Network printing

ThinPrint products make life easier for users in a number of other ways. A gateway allows users to print in masked networks. The queue manager handles unstable connections and line interruptions. The Remote Desktop Printing Engine was developed to assist companies which use *Microsoft Windows 2003 Terminal Services* and *Windows 32*. This product compresses print data and gives users all of the benefits of driver free printing. The Remote Desktop Suite Standard gives small and medium size companies a simple way of deploying a secure server-based computing environment with a Windows 2003 server. The package includes the complete secure printing solution.