Finally, Console Solutions for Midrange Environments

These days, many midrange shops are grappling with the challenges of managing the many consoles required for the increasing number of servers and their LPARs.   Business and economic drivers demand the data center grow with the business(s), while at the same time, reduce the equipment and manning required to run the shop.

Scalability

Data center consolidations, mergers and acquisitions, and outsourcing are all forces fueling the trend towards increasingly large data centers. As these events occur, companies are adding more and more of the smaller midrange processors, or they exploit the architecture to add logical system images or partitions (LPARs).   This provides the dynamic scalability that is required to add more capability, storage, and applications while providing uninterrupted service to the current users.

Better Disaster Recovery

Along with the demand to consolidate, there is an increasing demand to either split up data centers into mirrored sites, or to totally replicate the data center, in case of a local disaster.   Since 9/11, disaster recovery plans are no longer optional – they are mandatory – along with the written procedures and periodic DR drills. The need is for better remote management and faster service recovery, while at the same time doing it with the same level of staffing, or less!

Strengthened Security

The epidemic of hacking and destructive viruses is forcing companies to authenticate users and encrypt access to all mission critical systems. The Microsoft desktops and servers of corporate America are the playgrounds of hackers and intruders who apparently have nothing else to do but wait for the next announced security flaw that can be exploited. While the midrange world is not without its security concerns, it is not the target that Microsoft is.

While the IT world is moving more and more transactions across the TCP/IP network, the balance must be maintained between security and ease-of-use. Although computer viruses typically are not directly attacking the midrange's processor, the amount of LAN traffic that today's viruses create can bring business to a standstill. Isolating the data center from attacks while providing open access to the intended users calls for careful planning and structuring. This is particularly true of the consoles that control the heart of the data center.

Reduced Staff and Cost

Companies continue to seek ways to do more with less in their data center operations. This means reducing raised floor space and moving towards more lights-out and remote operation staffing plans, particularly at Disaster Recovery sites.

With more and more processors and LPARs within the data center (and more and more data centers), the number of system consoles is increasing along with the number of people who need to use them. There is often just not enough room in the data center for everything. Consoles need to be reached both locally with legacy reliability, and remotely with solid security. Network problems cannot be allowed to stop operations. At the same time more consoles need to be added and seen by more operators, and must be done with less equipment.

The midrange architecture with its multiple LPARs and its increased ability to serve LAN based clients, is one of the major reasons that the midrange data center continues to strengthen and reinvent its role in corporate America. However, console management is an aspect of this evolution that has IT management seeking better solutions. Nothing is more reliable than the old twinax green screen – but it can't be accessed remotely. LAN based consoles get the data where it is needed, but are susceptible to network outages and has reduced capabilities.

Vendors are responding to this customer need. There is no shortage of alternatives to choose from when deciding how best to address the console management challenge. In fact, the number of options available and the implications of the broad business scope of the solution add complexity to the evaluation and decision processes.

This paper examines the issues, the alternatives, and the pros and cons of each. In the end, you will be armed with the knowledge you need to make the correct choice for your console management requirements in today's midrange environment.

Mission Critical

Although the PC is the place where every employee will browse the Web and read their mail, thousands of companies continue to conclude that the midrange server is still the best choice for both the legacy and new strategic and mission critical applications.

The Console Challenge

There are several console options currently available:

- Directly attached twinax displays. These are the old reliable "dumb green screens."
- PCs with twinax emulation cards. These are PCs acting like "dumb green screens."
- Operations Console (serial). This is a Windows PC running the Operations Console software, directly attached by a serial cable.
- Operations Console (LAN). This is a Windows PC running the Operations Console software, LAN attached.
- Hardware Management Console (HMC). This is a PC pre-loaded with management software, LAN attached.

There are several functions that need to be accomplished and features that are desirable:

- Reliable console operation – always available to the data center staff.

- Secure remote console operation – available on demand from home, office, or DR site.
- The ability to manage several LPARs or processors from one desktop.
- Scalability – the solution can grow with the data center.
- Concentration – many consoles must fit into a fixed area and remain usable.
- Simplicity – the solution must be easy to install, configure, use and maintain.
- Resilient – the solution must be
  - resistant to viruses.
  - available locally even when remote access is not.
  - low maintenance software.
  - low maintenance hardware.

So with these criteria in mind, let's take a closer look at the choices.

Directly attached twinax displays:

Advantages

The good old dumb green screen is extremely reliable, available, and simple. You plug it in and it works. It will work regardless of the network or LAN conditions, because it's not attached to the network. It is secure because of its physical location in the data center, and because there is little chance of unauthorized monitoring of the communications media. It has no susceptibility to viruses because it has no OS to attack, and no network path to use. It works on all models of midrange processors, from the early System36 to the current iSeries. It has no moving parts, so the hardware is reliable, and no OS, so the software requires little to

no maintenance. Multiple consoles can go to a single desktop by using a KVM switch.

Disadvantages

The old twinax display does not provide several of our requirements. It cannot be accessed remotely. It cannot act as console for more than one LPAR or processor. It has a rather large footprint, requiring bench or shelf space, and is typically not rack mountable, because an operator has to reach the attached keyboard. This often makes scalability a problem, the many LPARs (20 to 30 is not uncommon) require many consoles in a relatively small area. The only way to have multiple consoles on a single desktop is by using a KVM switch. But this has several problems – high density KVM switches are expensive; only one operator can use any of the consoles at once; once the maximum number is reached, adding more may be impossible.

PCs with Twinax emulation cards:

Advantages

PCs with emulation cards have most of the advantages of the dumb terminals they impersonate. If isolated from the network, they are not prone to viruses. The software may not need maintenance if the unit is not used for any other PC functions. It is physically secure, and works on all midrange processors. If network attached, then the capability of remote access is possible through the use of PC remote control software like PC Anywhere, VNC, or web based applications like GoToMyPC. If LAN attached to an isolated network, then these remote control software packages can achieve

the requirement of many consoles on one desktop.

Disadvantages

Adding Microsoft Windows into the equation adds capability, but it adds risks. The OS is the target of 98% of all viruses and Denial of Service attacks. Microsoft is constantly releasing new critical security updates, which frequently have not had the benefit of thorough testing. An even greater risk is that a software update will interfere with or disable the twinax emulation. PCs are usually larger than twinax displays, requiring more bench space and consuming more power and air conditioning. The spinning media and fans in a PC are usually the least reliable components. The remote control software packages require considerable bandwidth to maintain a tolerable refresh rate of the video, and have the limitation that only one "remote" PC can gain control of the console session at a time. Plus the TCP ports used by these software packages are well known by hackers and intruders, which will target these software packages if given access.

Operations Console (LAN or serially attached)

Operations Console is part of an IBM software package called Client Access Express for Windows. It has considerable capabilities, but is complex in how it accomplishes what it can do. It cannot provide all of its capabilities in all of its configurations, and is not what many would consider to be a "robust" software entity when using it with versions of OS/400 prior to V5R2.

Operations Console can be either LAN attached or directly attached to the

processor with a serial cable (or through dialup, with the modem attached to the same serial port). On some processors, Ops Console can provide a graphical view of the hardware control panel, by using an additional parallel cable or with the LAN connection. It supports dial-in connections from remote PCs, and can then provide a console session remotely. The console session can either be local or remote, but not both. The remote access cannot be done over the LAN, so most people resort to VNC or PC AnyWhere to accomplish this.

It is also recommended that the LAN between Operations Console and the midrange processor be isolated from the rest of the corporate LAN. This prevents excessive LAN traffic from interfering with your console operation. But this requires two LAN adapters in your PC, and it also may require you to add static routes in your Windows TCP/IP setup – a task few people are familiar with.

If you successfully cable and install Operations Console, it will provide most of the requirements on our list. It is likely that you will dedicate a PC to Ops Console for each LPAR or processor, plus a second one for redundancy. This solution is scalable as long as you have the space for two additional PCs each time you need another console session.

However, if you have very many LPARs, maintaining your "farm" of Ops Consoles may require a dedicated technician, just to maintain the PCs themselves and perform the Microsoft updates on them. Most savvy Ops Console managers will install Microsoft updates on one unit and let it run for a while to make sure that the update does not interfere with Ops Console, before installing it in all the PCs.

Advantages

Operations Console can provide most of the requirements on our list, provided you have the bench space for the PCs, and the staff to support them.

Disadvantages

Ops Console is complex to install and configure. It does not provide the same capabilities to all versions of midrange processors. It runs on Microsoft Windows, and relies on some of the more complex aspects of Windows to provide remote access to the console sessions. If on the corporate network, it is vulnerable to the numerous viruses targeting Microsoft.

Hardware Management Console

The HMC is an IBM PC pre-loaded with the software to support only the eServer and iServer series. It is required to partition the processor into LPARs. It is not intended to be a general purpose workstation, and additional application software cannot be installed.

The HMC can provide many of the requirements on our list, including providing multiple consoles from one desktop, and providing secure remote access. It can even "share" a console session – providing several operators remote access to a single console session. The HMC relies completely on its LAN attachment to the processor, so that LAN should be isolated from the rest of the network.

Advantages

It provides nearly all the requirements on our list. It is not Microsoft Windows, so it does not have those vulnerabilities.

Disadvantages

It only provides its capabilities to the newer eServer and iServer platforms.

The Visara ICON solution

Returning to its legacy roots, Visara (formerly Memory Telex) has a solution that meets all of our requirements. Using the simple, reliable, and inexpensive Twinax display as its foundation, ICON adds the capabilities of multiple sessions from a single desktop as well as secure remote access. Like the HMC, it also provides session sharing, allowing multiple operators access to a single console session. With the ICON-XT, it also provides concentration, serving access to multiple LPARs from a single unit. Unlike the HMC, ICON provides this service to all models of midrange processors and all software revisions, because it uses the common simplicity of the old reliable Twinax.

The ICON solution uses a twinax console and serves the session to both the local display and keyboard, and to remote desktops using our proprietary VT1490 twinax emulation software, which is included with ICON and has no licensing restrictions. You can install it on as many Windows or Linux desktops as you need – even at home.

ICON comes in two models, each with a distinct role to play in the data center. The single station ICON-1T display is a direct replacement for a twinax display, and the rack mountable ICON-XT server can replace up to 20 twinax displays in one unit.

The ICON-1T

The single station ICON-1T is a direct replacement for a twinax display. It is complete with a 122 key 5250 keyboard, ready to plug in and go. But it is far from a "dumb" terminal. It also has a 10/100 ethernet adapter to serve its session to others. This makes the session always available to the data center staff, while allowing simultaneous access to other operators – across the building or across the world. This is a quick and simple answer to Disaster Recovery remote access.

Unlike TN5250 sharing schemes where each operator keys a command unseen by the others, ICON shows all users all keystrokes, so there will be no surprises or duplicate commands entered. (Configurable keyboard arbitration prevents users from accidentally interfering with each other.) Not only can the ICON control its own twinax session, it can also access the sessions of any other ICON, giving you complete access to all processors and all LPARs from any desktop. Of course, the remote access to the sessions is secured with 168-bit 3DES SSL encryption.

A simple graphical configuration utility allows you to configure the network parameters and all aspects of remote access, including who has access and what they can do. The Users Manual is rarely needed. Other than the power switch, the ICON-1T has no moving parts, so the typical concerns of hard drives and fans are gone, giving you the reliability of the good old twinax display. Based on a hardened Linux OS, there are no concerns about Microsoft viruses or frequent software updates.

The ICON-XT

The rack mountable ICON-XT is a 3U enterprise class appliance. It has triple redundant hot-swappable power supplies. With its five 4-port Twinax adapters, this unit can replace 20 twinax displays. It can have an attached monitor and keyboard, or it can be placed in a 19" rack and all of its configuration, management, and sessions handled remotely. Configuration and management is done through a simple and secure web browser interface. Display sessions are handled with VT1490, whether locally or remotely. Loaded with the same hardened Linux OS as the single station ICON-1T, the maintenance of this platform is minimal.

Let's review our list and see how ICON scores.

Reliable console operation. Twinax is not susceptible to LAN traffic, so even if the network is down, data center staff can have a direct connection to the processor. Viruses or broadcast storms may disable remote users, but the local machine is always capable.

Secure remote console operation. Remote access is encrypted by SSL and authenticated by usernames and passwords, from both the Windows based VT1490 and from ICON to ICON.

The ability to manage several LPARs or processors from one desktop. Whether from ICON to ICON or from VT1490, a single desktop can access all ICON sessions, simultaneously sharing the session with other operators. You can leave the session up in the data center, have a session active from your office, and bring up a session when you get

home, with no operator intervention required. The utility of this scheme in Disaster Recovery planning is obvious, especially with a "lights out" DR site.

Scalability – the solution can grow with the data center. Whether replacing each Twinax display with an ICON-1T or concentrating Twinax connections with the ICON-XT, the system can grow with you.

Simplicity – the solution must be easy to install, configure, use and maintain. From the processor side, Twinax is the simplest interface to install, configure and maintain. Adding IOPs and IOAs to a midrange processor for LAN connectivity is often far from simple. From the desktop, Twinax has very simple installation, cabling, and

configuration. Configuring and using Operations Console and the HMC can range from challenging to exasperating, especially when Windows networking parameters have to be manually changed.

Resilient. With no Windows software in either ICON model, they are not prone to attack from viruses or hackers, and require very little software maintenance. With Twinax connectivity, the console session is available even when the rest of the corporate network is down. With no moving parts in the ICON, and the robust enterprise class hardware in the ICON-XT, hardware maintenance should be minimal.

ICON-1T in the Midrange Environment

ICON-XT in the Midrange Environment
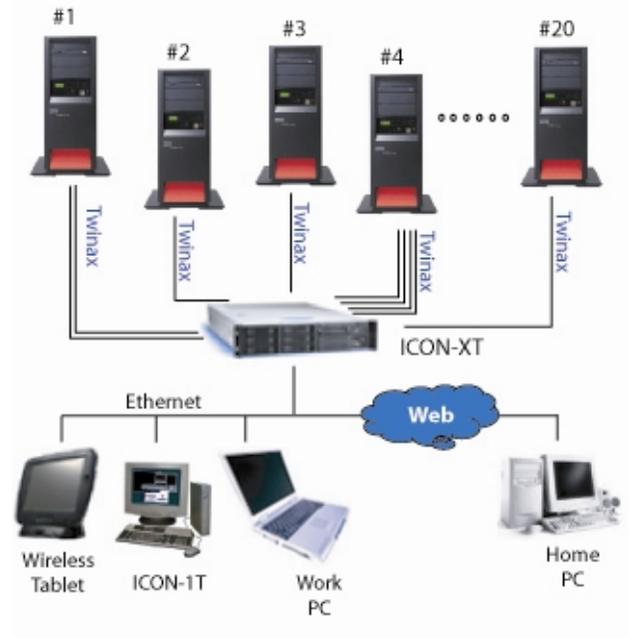
Recommendation

There is no shortage of alternatives when looking at midrange console management solutions. However many of these options have shortcomings. They also have benefits and if they meet all of your needs, they are viable choices. However, no solution offers the total package found in the Visara ICON line of products. Console consolidation, secure remote management, small foot print, secure environment and substantial cost savings, whether replacing a single Twinax terminal, dozens of them attached to a large KVM or a PC farm running Ops Console, the Visara ICON offers the total solution.

Visara International

Visara International was founded on experience of the past and visions of the future. For over 35 years, the engineering and technology of Visara has been creating data center solutions for over half of the Fortune 1000. Previously known as Memorex Telex, Visara prides itself on providing affordable, technically stable answers for the most recognizable companies in the world. Our vision is clear, our solutions are leading-edge and our commitment is to our customers. With over 2.5 million networked desktops currently using our products, we are the leading designer and manufacturer of information solutions for your business.

Contact Us for More Information:

Visara International
6833 Mount Herman Road
Morrisville, NC 27560
919-882-0200
888-334-4380

info@visara.com
www.visara.com