A Granular Infrastructure Improves Reliability

If your firm is dependent upon a particular expertise, you try to make sure more than one person in the firm holds that knowledge. This type of redundancy increases the flexibility and survivability of the firm.

So then why do so many firms rely on a single large computer to handle everything? I often see a single machine providing network services, disk storage, Internet access, e-mail management, backups, printer management, firewalls and web services? Do you find that if the e-mail software needs restarting or upgrading, you lose access to everything else?

A computer network is more like a fragile ecosystem than it is like a simple machine. Each change to one software component could well affect another component in strange and mysterious ways. This is most true when you have lots of different pieces of software working together in a single machine sharing the same processor and memory. A minor upgrade to one piece of software could shatter the performance of another piece of software, or even kill it. Why not isolate the troublemakers?

Configure your printers so that they are not dependent on your file server. Most office printers can be purchased with a network connection. For those that do not, you can purchase a separate box that serves the same purpose.

If you have a web server in house, get it off your primary network server. Combining the two increases vulnerability to outside attack and complicates administration. You can purchase a preconfigured web server box specially tuned and configured as a web server. These web devices require little administration and are a snap to set up.

E-mail servers can be simple or complex. The complex ones such as Microsoft Exchange or GroupWise will warrant their own machine to run on - with their own dedicated disk storage to handle the huge e-mail attachments common in our industry. The simple mail servers can be combined with related Internet connectivity services (or perhaps even with your web server).

Each of these machines can be cheaper and less muscle-bound than a single server big enough to do everything, and each of them are likely to be easier to manage and configure (usually using a web browser interface) - reducing the dollars and hours required to keep everything running.

> Much of the cost of a server - or any computer - is the cost of the Operating System and the cost of the monitor. Most of the network devices mentioned use smaller, faster, more reliable and less expensive operating systems than Windows Server - and many do not need monitors.
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> By purchasing network devices tuned to a certain task, you can increase the reliability of your infrastructure and reduce management costs - without investment in additional software.

These devices each have different requirements, and quite possibly different operating systems. Many will be using a customized operating system for reliability, and many will be using a Linux variant. Some will not require a monitor at all, and others can share a single screen by using a KVM (an acronym for Keyboard, Video, Mouse) switch to keep costs low. Standard Internet protocols like TCP/IP have made the internal operating system of each device immaterial - they can communicate using those common languages.

Of course, you will still be managing user access to all these devices using a traditional server through the use of login scripts and other central desktop management tools. That server will now need much less horsepower since much of it's work is now handled by other more modest devices.

Once you've created this compartmentalization, it will not matter if you need to upgrade the mail server software, or shut it down to upgrade your virus protection. Everyone is still able to access and print files. If a print server fails, you still have e-mail, fax and other printers.

I have ranted before about separating your disk storage from your network server. Since your disk drives contain the lifeblood of your business - information - it is the most critical component to keep available. Make sure your disks are protected by RAID, reliable and regularly tested backups, and redundant power supplies. You can purchase network storage in preconfigured units that take minutes to set up and require minimal administration.

As you need more disk space, simply buy another module and plug it into your network. It's easy to add storage this way, but administration of storage devices from different manufacturers is still fragmented. Backup solution providers have begun to create software solutions which allow you to manage all your storage devices in a more contiguous fashion - expanding and contracting storage volumes on the fly and moving data from device to device in a manner transparent to the end-users, but it's still too early in the game for this type of software. Such software is bound to improve in the coming months. In the meantime, it's worth a little extra management effort to have the storage you need on your network.

Today's computer network is like an ecosystem. Give each creature it's own territory to keep the system healthy. Assemble it using the proper components for each job to increase reliability and reduce management costs. Forcing all those creatures into the same cage - no matter how big the cage - is risky and inefficient.

Michael Hogan, AIA - head chiphead at Ideate, provides custom web solutions and provides consulting services to the AEC industry in Chicago. He welcomes comments by e-mail at mhogan@id-8.com