



Typically, the customer and Fastek meet on several occasions to define information technology issues and options. The following information technology system issues are typical issues described to Fastek as part of fact-finding and discussions:

- Current document and data storage is inadequate to meet business requirements
- Desktop PC's are old and obsolete
- Backup and restore is unreliable
- Significant business interruption is likely as a result of a server failure
- The current infrastructure does not support e-mail compliance

Fastek recommends the following information technology infrastructure investments to meet current business requirements, provide for disaster recovery and enable future system expansion. These recommendations may be implemented in phases or individually to accommodate budget constraints and business requirements.

Recommendation 1: Implement a Storage Area Network (SAN) from EMC including NAS and iSCSI connectivity.

This EMC Celerra NX4 consists of XX Terabytes of space for the entire firm's data. Since more and more data is being added yearly, we are recommending this storage for document storage, backup, virtualization and future growth requirements.

Recommendation 2: Server virtualization and consolidation leveraging the new SAN is recommended for increased reliability, scalability and redundancy.

By taking the physical structure out of the server operating system environment, logical servers can now be placed alongside each other on the same physical server, thus reducing the number of servers required. While this increases efficiency, it also allows for logical servers to be moved from one physical server to another without clients' downtime or awareness. Logical servers may be moved across physical servers whenever predefined metrics are met, such as physical or logical server overload or even physical server failure. This now makes your server infrastructure available 24/7 at the local office. If another similar environment is added to an additional location (Recommendation 5), uptime is achieved 24/7 with failover to another site taking place automatically within 15 minutes of a failure or disaster at either location.

Recommendation 3: Implement a VMware hosted workspace environment to simplify PC administration and reduce maintenance and equipment cost.

The VMware hosted workspace allows for single instance upgrades of the hosted desktops. For example, when a patch comes out from Microsoft for a critical exploit, Windows updates to a single PC image resulting in an update for every image or desktop. Update once and all machines are patched.

The VMware hosted workspace also provides user customizable desktops. This means that software and environments are based on the user's requirements and not the server. This is the best choice for users as they have software applications required to perform their duties that may not be required by other users. Other hosted workspace environments require every user have access to all software, when adding another software application to the server may not be required for the entire organization. A simple example of this is a web browser. Most users might prefer Internet Explorer, but some users would like to have Mozilla Firefox or Apple Safari. With other hosted environments, the company is required to make all three available for all users if someone wanted to use a different browser. VMware software

removes that problem by making it possible to add applications to only the users that require the application to perform their duties.

VMware's hosted workspace resolves most compatibility issues with older or problematic software environments. An example of this may be the company's legacy time keeping software. VMware's hosted workspace will allow users to access this legacy software from their hosted workspace where other hosted environments will not run these older software applications.

Recommendation 4: Standardization on a dedicated hardware thin client allows for more features, reliability and significant savings over desktop PC's.

Fastek recommends replacing aging desktops with new thin client hardware: Wyse V90 terminals. This hardware platform uses no moving parts, may be upgraded for future technology and allows for extended functionality of your virtual desktop environment. Significant cost savings are realized due to a significantly lower purchase price and maintenance support versus traditional desktop PC's. The extended functionality includes the ability to use USB devices from your desk to your virtual desktop and provides for smooth video and audio from your virtual desktop to your thin client. The most frequent complaints from users on virtual workspace environments is the lack of support for plugging in USB drives for rapid transfer of data and the inability to watch or listen to video or audio files. This ranges from video conferencing, web based seminars to internet radio. The Wyse thin client eliminates these issues and provides USB extensions and multimedia extensions to your thin client experience.

Recommendation 5: Implement failover and redundancy utilizing an alternative location.

If our primary location's network environment were to fail due to extended power outages, fire or flooding, the environment including all data and software applications will be survived by your second location. Since VMware virtualization technology allows for automated recovery to another site, the second location will bring up your primary location's network as it was 15 minutes prior to failure. This ensures data availability and workspace availability even when disaster brings down the primary location's site. In the event of a failure, all stored documents are transferred to second location and the entire information technology infrastructure is maintained without user intervention and downtime.