

July 26, 2007
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Maximizing SharePoint: Understanding Replication Options

One of the most significant investments a decentralized organization will make is to implement an enterprise application, such as Microsoft's SharePoint, for managing structured and unstructured corporate content across the entire organization. The promise of greater collaboration, increased employee productivity and greater ROI, however, can soon be overshadowed by deployment and infrastructure challenges.

Creating a knowledge network

Knowledge is of two kinds. We know a subject ourselves, or we know where we can find information upon it.

Samuel Johnson

Johnson's eighteenth century claim is especially relevant for today's globally distributed organizations, which focus on profitability, productivity and efficiency through knowledge-based return on investment (ROI). This focus drives organizations to develop both kinds of knowledge identified by Johnson:

1. by acquiring *experts* — employees who “know a subject” themselves and can generate knowledge; and,
2. by delivering a place to find the information employees need to be successful at their jobs — providing a technology-based means of disseminating expert knowledge to their colleagues around the world

This distributed knowledge network is the complex business of securing, accessing and managing vast amounts of information.

Centralized model — decentralized organization

A typical implementation methodology of an enterprise application like SharePoint assumes the wide area network (WAN) is based upon a centralized model.



Imagine a hub-and-spoke where the hub represents corporate headquarters — typically, the data storage centre and the site at which the enterprise application is implemented. In this scenario, the spokes represent the local branch office connections to the system using valuable — and expensive — bandwidth.

Using bandwidth to ensure that enterprise applications are accessible and available at all local levels of an organization sets significant new barriers for innovative management teams to overcome and creates unique challenges for even the most sophisticated IT departments, relating to:

1. High infrastructure costs
2. Network performance
3. Employee productivity
4. Security considerations

High infrastructure costs

As corporations grow, they open new offices with new IT requirements and continually extend their global reach. This type of expansion requires more and more bandwidth to connect each new office to the data it needs at corporate head office.

Essentially, new spokes are continually being added to the hub to accommodate the needs of remote employees and distant offices. Maintaining a WAN, particularly when using leased lines, can become quite expensive. As well, the costs often rise in relation to the distances between the offices. The greater the global distribution of an organization's branch offices, the higher the costs of maintaining a WAN.

These increasingly expensive infrastructure costs can be a prohibitive factor for an organization's ability to support the level of bandwidth required to deliver SharePoint tools, content and collaborative capabilities to its branch offices.

Network performance

Cost considerations aside, corporations also face the challenge of enabling reliable connectivity — ensuring that SharePoint is available when and where remote offices require it without sacrificing security or increasing the risk of data leakage.

With increased use of existing corporate Internet connections comes the prospect of bandwidth saturation. As the number of users requiring access to SharePoint increases, bandwidth saturation and slow network servers can limit and even prevent employees from accessing the information and tools they need to accomplish their goals.

The prospect of bandwidth saturation and natural occurrences like power outages can also make network connections unavailable, resulting in unproductive working environments at best or affecting business-critical projects and deadlines at worst.

Employee productivity

As we've shown, network performance issues can seriously impact the effectiveness of employees at branch offices. In fact, all productivity can come to a complete stop if critical information is unavailable because of connectivity or bandwidth problems.

Employees are so focused on efficiency that when technology doesn't facilitate productivity — when a system is slow or difficult to use for any reason — employees will circumvent the system in order to get their job done. Technologies like SharePoint are only effective if they become ingrained in the corporate culture as a way to accomplish goals. The danger is that through the act of bypassing the system, employees can cost the corporation vast amounts of money by unintentionally sabotage adoption and the effectiveness of the knowledge network put in place to help them.

All employees, regardless of their location, need to get their work done as quickly and efficiently as possible and productivity can be impaired if the information required to complete their work is not provided to them quickly. Unfortunately, many organizations do not think of their branch offices as separate locations with unique IT needs — thinking that often results in performance inequalities which are built into an organization's culture. The fact is that employees who reside at "corporate headquarters" often reap the benefits of large technology systems and substantial IT teams that are based where they are.

Creating an even bigger challenge for local office employees is the fact that branch offices are commonly asked to operate at reduced support levels when they, in fact, require more support — not less than their head office counterparts. Extra resources and management are critical for branch offices to achieve network and application performance equivalent to a headquarters' facilities. Branch employees simply want the same access to SharePoint data, knowledge and functionality as their head office colleagues.

Security considerations

International organizations not only have separate offices, but national headquarters that have their own requirements when it comes to collaborative applications. Privacy issues and other requirements constrain the use of data across these environments.

As an organization becomes more distributed, this continual growth brings with it increased demands for SharePoint access by branch office employees and remote workers. Security

concerns need to account for the increasing numbers of employees and data. Not only are there more employees requiring access to SharePoint, but there is also an increase in the amount of SharePoint data stored centrally at corporate headquarters.

When planning a SharePoint architecture, security for a centralized data storage methodology and strong disaster recovery plans should also be given good consideration as it relates to network performance and branch connectivity.

Increase productivity, SharePoint connectivity and reduce costs

Web based applications such as SharePoint have traditionally been implemented at corporate headquarters. As we've indicated, applying this hub and spoke model can create several challenges for management and IT staff, including: high infrastructure costs; poor network performance; and, reduced employee productivity.

So, is it possible to improve branch office connectivity and employee performance while decreasing overhead? Which options can help reduce the cost and administrative overhead involved in maintaining branch office connections?

The complex business of securing, accessing and managing vast amounts of information in a global network has various options for implementation. The solutions available for these disconnected offices have been evolving with technology such as the distributed file system (DFS) and wide area storage network (WAN).

Toward a new alternative

Since SharePoint's distributed architecture does not provide local performance for each and every office, its collaborative capabilities across separate instances are limited. Fortunately, new technologies are now making it possible to maximize SharePoint's capabilities by bringing it locally to each branch office:

1. Caching Technology
2. Distributed SharePoint Architecture
3. Desktop Replication
4. SharePoint Application Replication

Caching technology

Branch office employees require access to large amounts of information that are typically stored on corporate servers. Access to this information is critical and, if the server becomes unavailable, work can come to a halt. Branch offices are at an even higher risk of being unable

to access information, if relying on unstable dedicated WAN links or saturated site-to-site virtual private network (VPN) connections.

A caching solution will provide a chunk of memory for storing a temporary local copy of data for branch offices. The idea is to provide a temporary storage area where data the local branch offices will require frequently can be stored for quick retrieval. The idea being, that the copy is accessed, rather than the original document, thereby freeing up valuable bandwidth and speeding document access.

For SharePoint, caching solutions can cause challenges regarding version control. Even more critical, caching may help employees get the information they need at branch offices, but it does not address high overhead, connectivity issues and employee productivity by supporting all of SharePoint's functionality — only select data retrieval.

Distributed SharePoint architecture

Though this solution doesn't provide local copies of remote data, a distributed SharePoint architecture takes the caching idea many steps further by delivering local content databases and indices. With this solution, each branch office is able to index another site's local content and create an integrated environment between the two. Limited capabilities of the distributed architecture are that it only optimizes one location.

While this solution does deliver local access to SharePoint's out-of-the-box capabilities, it does not effectively reflect how employees actually work. Since users will tend to duplicate data locally regardless of any unified configuration, bandwidth and performance issues are still major concerns with this technology.

Desktop replication

The challenge many organizations face today in supporting localized teams and empowering end-users is ensuring that current information is available locally to those who require it, when they require it. One-way desktop replication solutions take on this challenge directly by providing the ability to take SharePoint and all corporate information offline.

Desktop replication makes it possible for teams to collaborate within and across organizational boundaries, online or offline, without sacrificing central IT management and control.

While bandwidth challenges are addressed, one-way desktop replication technology is not transparent. Its new architecture, unfamiliar to end-users, requires additional training. And, while additional training can obviously be costly at a line-item level, an organization's bottom line is often most strongly impacted by productivity costs as a result of general user resistance.

SharePoint application replication

Unlike desktop replication, replication at the enterprise application level does not require new client software to be installed, learned and adopted by branch office employees.

Application replication decentralizes the traditional centralized implementation model for SharePoint by providing each branch office of an organization with its own SharePoint installation, complete with its own topology and content. This allows each branch to decide which data is available to the other corporate entities.

Essentially, application replication technology consists of two servers which are able to talk to each other. Organizations can push modifications to any replicated object or document back to every other SharePoint site, improving employee productivity by putting the most up-to-date information available into the hands of the people who need it, when they need it, and in the SharePoint environment that is familiar to them.

Groups within organizations have different needs for content and bi-directional replication technology reflects the way people in disparate organizations actually work by storing documents and metadata locally for those who need them and pushing scheduled or instant replication synchronization between SharePoint sites.

Replication technologies, both desktop and application-level, safeguard against poor network performance issues, such as unavailable or slow bandwidth connections.

Enterprise application replication further protects an organization's most important knowledge assets as it relates to disaster recovery scenarios.

Centralized data repositories create a fear of putting all ones "knowledge eggs" into "one centralized basket", so to speak. Decentralizing the implementation ensures that there will always be multiple "backup" copies of the most recent versions of documents available at all times.

Decentralized model for a decentralized organization

In today's global network, bandwidth requirements, costs and outages pose significant challenges for many of the world's distributed organizations. To be truly effective, the technology infrastructure that supports the acquisition, generation and distribution of corporate knowledge should reflect the way those expert knowledge workers actually work.

With the move toward bi-directional servers, information can be simultaneously more secure and yet more accessible to branch offices — reducing network bandwidth requirements and lowering infrastructure costs. Replication technology enhances the ability of the SharePoint platform to boost organizational effectiveness and optimize how people, content, processes, and business applications interact.

The end result is local performance with global reach.

Software

Application Replication – Syntergy’s Replicator for SharePoint provides the leading software for replication between SharePoint Servers

Desktop Replication – Colligo Network provides a desktop install for taking SharePoint offline for the individual.