CHAPTER 2

Planning, Prototyping, Migrating, and Deploying Exchange Server 2010

IN THIS CHAPTER

Implementing a new messaging environment or upgrading an existing one can be both an exciting time and a stressful time for an administrator. Messaging has changed drastically over the years, steadily growing from an occasionally used way to send short messages to a highly critical collaboration tool that sends hundreds of times more messages each day than the U.S. Post Office. Users depend on Exchange Server to track their tasks, keep their appointments, store important pieces of information, and communicate quickly and easily with co-workers and vendors. As users become more and more dependent on these types of tools, their requirements increase in terms of accessibility and reliability. The ultimate goal of the end users is for email to be much like the telephone. They never want to have to think twice about whether they'll have access to it and whether or not they'll get a dial tone. Proper planning is the key to being able to deliver this level of functionality and reliability. This chapter helps Exchange Server administrators to properly plan out their build or upgrade through standardized processes of planning, prototyping, and migrating or deploying Microsoft Exchange Server 2010.

Email has become a business-critical tool and, as such, the upgrade process should never be taken lightly. Although an upgrade from Exchange Server 2003 or Exchange Server 2007 might at first appear to be a simple process, its success relies on your understanding of current issues with the messaging environment, defining both the objectives of the upgrade and its potential effects on the user community. Adding more features and complexity to the messaging "ecosystem" might not result in ecstatic users, but reducing spam and the resulting impact on Inboxes might more than justify the cost of the upgrade.

Reducing the number of milliseconds it takes to send an email probably won't get noticed, but being able to guarantee access to email anywhere and anytime should. Be aware of who your audience is for the upgrade and make sure you understand their existing pain points and how they use Exchange Server and Outlook. An enthusiastic user community tends to generate support and momentum for projects, which allows you to extend the functionality of the messaging system and increase the productivity of your users. Productive users result in happy management. Happy management results in project approval. It's a very positive circle to create. As such, it's important for an administrator to understand the potential benefits that come with Exchange Server 2010 and to ensure that the correct functions are mapped to the appropriate user need.

Important decisions include whether the entire network operating system (NOS) needs to be upgraded (if Active Directory [AD] is not yet in place) or only a subset of it, and what other infrastructure components need to be changed or replaced. It is also very important to realize that Exchange Server 2010 is a 64-bit application and, therefore, needs a 64-bit operating system and 64-bit capable hardware to run. This means that some of your existing tools or integrated applications might or might not work. Testing cannot be underestimated in this process. Pay special attention to the fact that unlike Exchange Server 2007, there will be no 32-bit code available for Exchange Server 2010. This means that if an administrator is going to run the Exchange Server 2010 management tools from his or her own workstation, that workstation must be running a 64-bit version of Windows.

The examples used in this chapter assume that the environments being migrated are primarily based on Exchange Server 2003 or Exchange Server 2007 and, except where noted, that Active Directory is already in place. Please note that an Exchange Server environment must be in Exchange Server 2000 Native mode or higher. Exchange Server 2010 cannot be introduced into an organization that still has Exchange Server 5.5 servers. This would require migrating into a new forest and is discussed later in this chapter. The same process can be applied to other messaging migration projects, such as GroupWise or Notes. The migration process is covered in detail in Chapters 15, "Migrating from Active Directory 2000/2003 to Active Directory 2008," and 16, "Transitioning from Exchange Server 2003/2007 to Exchange Server 2010."

Initiation, Planning, Testing, and Pilot: The Four Phases to the Upgrade

This chapter presents a structured process for upgrading to Exchange Server 2010 and highlights some best practice recommendations to enhance the success of the project. The standard project management phases of initiation, planning, testing, and implementation can be used for organizations of any size and can be applied to most any information technology (IT) project. Transitioning each phase is a "go/no-go" decision, in which the results of the phase are reviewed, and the decision makers determine whether or not the project should move forward. Any problems that were encountered are assessed to determine whether they require attention before moving forward. This ensures that issues identified are addressed, rather than being overlooked, to inevitably crop up at the worst possible moment. You can also use this go/no-go point to feedback results of the testing

back into your plans. If you determine that something will be an issue when rolled out, take the fix for the issue and work it back into your process. Now retest with the altered procedure to make sure it works as expected. In this way, you will eventually reach a production rollout with no surprises.

Documentation Required During the Phases

A number of documents are produced during each phase to ensure that the phase is well defined and ultimately successful. In the initiation phase, the goals and requirements of the project can be identified and documented in a Statement of Work document. In the planning phase, more time and energy can be applied to detailing the end state of the migration into a Design document, including the majority of the technical decisions. Although this document paints the picture of what the end state will look like, the road map of how to get there is detailed in the Project Schedule and Migration documents. These documents are only drafts during this phase, because they need to be validated in the prototype phase before they can be considered "final."

Consider tracking the options that were discussed during the design process and document the reasons why a particular choice was made. This allows for future members of your team to understand why particular decisions were made.

The prototype phase validates that the new technologies will effectively meet the organization's needs, and determines whether modifications to the project are needed. Any additional documents that would help with the implementation process, such as Server Build documents, Business Continuity or Disaster Recovery documents, and checklists for workstation configurations, are also created during the testing phase. Finally, the appropriate Maintenance documents are created during the prototype phase so that they can be properly tested without impacting production users. The prototype phase is also when the majority of team cross training should occur, as it's an excellent opportunity to demonstrate the creation and modification of Exchange Server-related objects without impacting a production environment.

These phases and the documents to be created are discussed in more detail later in this chapter.

The following list summarizes the standard phases of an Exchange Server 2010 upgrade and the standard documents created in each phase:

- **Initiation phase—**Statement of Work document that reflects the goals and objectives of the key stakeholders of the project.
- **Planning phase—**Design document draft, Migration document draft, and Migration schedule draft (Gantt chart).
- **Prototype phase—**Design document final, Migration document final, Migration schedule final (Gantt chart), Server Build documents, Migration checklists, Maintenance documents, and Training documents for end users and administrators.
- **Implementation phase—**As-built documents for all servers.

For smaller environments, not all of these items are required, but it's important to have each document created before it is needed, to avoid delays during the migration process. For example, having a Statement of Work document that is well constructed and agreed upon in the initiation phase clears the way for the creation of the Design document and Migration document. A detailed Migration Schedule Gantt chart facilitates scheduling of resources for the actual work and clarifies the roles and responsibilities. Remember to have the appropriate groups review the documentation and get their approval to consider the document "done." This avoids potential issues in which a group might change their minds and claim that they never agreed to a design decision or migration process.

Initiation Phase: Defining the Scope and Goals

Upgrading to Exchange Server 2010 can be a simple process for basic messaging environments, or as challenging as a complete network operating system upgrade for more complex organizations. In most environments, Exchange Server is implemented on multiple servers, and an upgrade affects a number of other software applications. In fact, changes to the Exchange Server environment might affect the daily lives of the employees to a much greater extent than moving from Windows NT to Windows Server 2003 (or even more than an upgrade from a non-Microsoft environment) because they will most likely receive a new Outlook client and change the way they access email remotely. With an operating system upgrade, the end users often don't even know that anything has changed.

The upgrade process is also a great opportunity to help the business achieve its business objectives by leveraging the messaging components of the technology infrastructure and to help justify the never-ending IT expenses. Messaging, in essence, enables the sharing of information and access to data and other resources within the company to help the company deliver its products or services. With this critical purpose in mind, it makes sense to engage in a structured and organized process to determine the goals of the project, control the variables and risks involved, and make sure that a clear definition of the end state has been crafted. The Statement of Work is the key deliverable from this phase that paints the overall picture of the upgrade project and gains support from the key decision makers (and allocates an initial budget).

Be sure to take into account any regulatory compliances that you need to maintain. This includes things such as HIPAA, Sarbanes-Oxley, or the Gramm-Leach-Bliley Act. These types of regulatory compliances will likely influence your decisions about how your systems will be deployed and managed. It is much easier to account for these requirements during the planning phase than it is after you've deployed Exchange Server 2010.

The Scope of the Project

Before the entire Statement of Work can be written, time should be allocated to define the scope of the project. The scope of the project simply defines what is included in the project and what is not. For a simpler environment, this might be very easy to define—for example, an environment in which there is only one server used for email and scheduling, with a dedicated backup device and virus-protection software. If this organization has not migrated to Active Directory yet, the scope might expand to include the upgrade of

additional servers or simply upgrade the single server. Depending on the version of Active Directory in place, there would likely be a schema updated in the scope as well. A desktop upgrade might be included in the scope of the project if the features and benefits of Outlook 2007 are desired. In any case, it's important to clarify this level of detail at the beginning of the planning process. "Scope creep" is a lot more manageable if it can be predicted in advance! If the scope starts to grow to be out of hand, consider breaking it up into multiple projects. For example, if you have a large upgrade to Exchange Server 2010, you can split off the upgrading of desktops to Outlook 2007 to be a separate project. This can also help prevent a project from stalling out because of too many dependencies on other groups or projects.

NOTE

An example of a scope of work for a small organization is as follows:

- Upgrade the Exchange Server 2003 Windows 2003 server to Exchange Server 2010 with Windows Server 2008 64-bit.
- Upgrade the tape backup and virus-protection software to Exchange Server 2010–compatible versions.
- Upgrade the Outlook client to Outlook 2007 on all workstations.
- Provide secure Outlook Web App (OWA) access to all remote users.

In a larger company, "what's in" and "what's out" can be significantly more complicated. A company with multiple servers dedicated to Exchange Server functions—such as load-balanced client access servers and clustered mailbox servers, multiple Hub Transport servers, or servers dedicated to faxing or conferencing—requires the scope definition to get that much more detailed. Multiple sites and even different messaging systems complicate the scope, especially if the company has grown via mergers over the last few years. Odds are that larger environments will have a mix of hardware ranging in age from 0 to 3 years old. Changes in the architecture of Exchange Server 2010 mean that companies will likely be looking at changes in their standard hardware specs, as well as their storage requirements for Exchange Server. Always be sure to look at the big picture and account for as much as you can in the scope.

NOTE

An example of a scope of work for a larger organization is as follows:

- Upgrade the four Exchange Server 2007 Windows 2003 mailbox clusters to two Exchange Server 2010 mailbox servers in DAG on Windows Server 2008 64-bit.
- Replace the two Exchange Server 2007 on Windows 2003 client access servers with two Exchange Server 2010 on Windows 2008 client access servers.
- Migrate the mailbox data from the SAN storage to local disks on the new Exchange Server 2010 mailbox servers.
- Provide Outlook Web App (OWA) access to all remote users.

- Upgrade the enterprise tape backup and virus-protection software on all servers to the latest versions that are Windows Server 2008–compatible and Exchange Server 2010–compatible.
- Implement unified messaging on Exchange Server 2010.
- Upgrade the Outlook client to Outlook 2007. Provide OWA access to all remote users.

The scope of work might change as the initiation phase continues and, in the more detailed planning phase, as the Design and Migration documents are created and reviewed. This is especially true for more complex migration projects after the detailed planning phase is completed and the all-important budget is created. At this point, the scope might need to be reduced, so that the budget requested can be reduced.

It is in your best interest to circulate your plans among other groups not only to get their buy-in on the migration, but also to give them a chance to see how it might impact their projects. Often, the group managing the phone systems will look at a project like an Exchange Server 2010 upgrade and take the opportunity to make changes to their systems to further integrate with Exchange Server. Knowing about these integration plans early in your process makes it easier to accept them. Altering a deployed environment after the fact is almost always more expensive and more complicated. Do everything you can to keep your project stable and uneventful.

Identifying the Goals

As a next step in the initiation phase, it helps to spend time clearly identifying the goals of the project before getting too caught up in the technical details. All too often, everyone runs up the whiteboard and starts scribbling and debating technology before agreeing on the goals. Although this conversation is healthy and necessary, it should be part of the planning phase, after the high-level goals for the project and initial scope have been defined. Even if there is a very short timeline for the project, the goals—from high-level business objectives, to departmental goals, to the specific technology goals—should be specified.

It is important to have the correct audience in the goal-setting phase of the initiation phase. This will likely be the meeting with the largest attendance. Try to gather goals and objectives from groups such as the following:

- Information technology
- Help desk
- Upper management
- Business unit representatives
- Telecom
- Enterprise backup

By talking to this diverse group of people, you can capture existing pain points of the users and maintainers of the messaging environment and try to alleviate those issues. You

can also get a much more accurate feel for how your end users actually utilize Exchange Server and ensure that you account for those items.

One of the biggest values you get out of clearly identifying your goals is that it simplifies the technical decisions that will be made later. Anytime there is contention around a given decision, you can always ask yourself "Does this decision support my originally stated goals?" and if not, it is probably not the right decision.

High-Level Business Goals

The vision statement of an organization is an excellent place to start because it tells the world where the company excels and what differentiates that company from its competitors. There will typically be several key objectives behind this vision, which are not so publicly stated, that can be related to the Exchange Server 2010 upgrade. These should be uncovered and clarified, or it will be difficult, if not impossible, to judge whether the project succeeds or fails from a business standpoint.

NOTE

High-level business goals that pertain to an Exchange Server 2010 upgrade can include better leveraging of company knowledge and resources through efficient communications and collaboration, controlling IT costs to lower overhead and enabling products to be more competitively priced, or improving security to meet governmental requirements. An IT group that understands these larger goals and can serve as an enabler for business practices through technology is an amazing asset to any company.

Although this process sounds basic, it might be more difficult if the company hasn't documented or updated its business objectives in some time (or ever). Different divisions of larger companies might even have conflicting business goals, which can make matters more complicated. High-level business goals of a company can also change rapidly, whether in response to changing economic conditions or as affected by a new key stakeholder or leader in the company. So even if a company has a standard vision statement in place, it is worth taking the time to review and ensure that it still accurately reflects the opinions of the key stakeholders.

This process helps clarify how the messaging upgrade fits into the overall company strategy and should help ensure that support will be there to approve the project and keep its momentum going. In this time of economic uncertainty, a project must be strategic and directly influence the delivery of the company's services and products; otherwise, the danger exists of a key stakeholder "pulling the plug" at the first sign of trouble or shifting attention to a more urgent project.

For example, a consulting organization might have a stated vision of providing the latest and greatest processes and information to its clients, and the internal goal could be to make its internal assets (data) available to all employees at all times to best leverage the knowledge gained in other engagements. The Exchange Server environment plays a key role in meeting this goal because employees have become so dependent on Outlook for

communicating and organizing information, and many of the employees rely on portable devices such as BlackBerries or Windows Mobile devices.

A different company, one which specializes in providing low-cost products to the marketplace, might have an internal goal of cost control, which can be met by Exchange Server 2010 through reduction in the total server count, storage technologies, and more cost-effective management to help reduce downtime. For this company, user productivity is measured carefully, and the enhancements in the Outlook 2007 client would contribute positively.

High-Level Messaging Goals

At this point, the business goals that will guide and justify the Exchange Server upgrade should be clearly defined, and the manner in which Exchange Server 2010's enhanced features will be valuable to the company are starting to become clear. The discussion can now turn to learning from key stakeholders what goals they have that are specific to the messaging environment that will be put in place and how Exchange Server 2010 might improve their day-to-day business processes.

The high-level goals tend to come up immediately, and be fairly vague in nature; but they can be clarified to determine the specific requirements. A CEO of the company might simply state "I need access to all of my email and calendar data from anywhere." The CTO of the same company might request "zero downtime of the Exchange servers and easy integration with other automated business systems." The CFO might want to "reduce the costs of the email system and associated technologies." If the managers in different departments are involved in the conversation, a second level of goals might well be expressed. The IT manager might want geographic redundancy, the ability to restore a single user's mailbox, and reduced user complaints about spam and performance. The marketing manager might want better tools to organize the ever-increasing amount of "stuff" in his employees' Inboxes and mail folders.

Time spent gathering this information helps ensure that the project is successful and the technology goals match up with the business goals. It also matters who is spearheading the process and asking the questions because the answers might be very different if asked by the president of the company rather than an outside consultant who has no direct influence over the career of the interviewee. By involving the people whose employees will be most affected by the upgrade and listening to their needs, you can create very powerful allies in getting approval for the technology and hardware necessary to support their goals and objectives.

NOTE

An example of some common high-level messaging goals include a desire to have no downtime of the Exchange servers, access to email and calendars from anywhere, better functionality of the OWA client, and increased virus and spam protection.

A specific trend or theme to look for in the expression of these goals is whether they are focused on fixing and stabilizing or on adding new functionality. When a company is

fixated on simply "making things work properly," it might make sense to hold off on implementing a variety of new functionality (such as videoconferencing or providing Windows-powered mobile devices using the Windows Mobile operating system) at the same time. Make sure you listen to your audience and design an environment that supports their needs and addresses their concerns. Avoid the pitfalls of enabling new functions simply because they seem "cool."

Business Unit or Departmental Messaging Goals

After these higher-level goals have been identified, the conversations can be expanded to include departmental managers and team leads. The results will start to reveal the complexity of the project and the details needed to complete the Statement of Work for the migration project. For an Exchange Server upgrade project to be completely successful, these individuals, as well as the end users, need to benefit in measurable ways.

Based on the business and technology goals identified thus far, the relative importance of different departments will start to become clear. Some organizations are IT-driven, especially if they are dependent on the network infrastructure to deliver the company's products and services. Others can survive quite well if technology isn't available for a day or even longer.

NOTE

Examples of some departmental goals include a desire to ensure encrypted transmission of human resource and personnel emails, an OWA client that has the same functionality as the Outlook client, and support for Smartphone and Windows Mobile devices. The IT department might also like better mailbox recovery tools and Exchange Server-specific management tools that can be used to centralize and simplify the management of Exchange Server.

All departments use email, but the Sales department might also receive voice mails through the Outlook client and updates on product pricing, and, therefore, need the best possible reliability and performance. This includes ensuring that viruses don't make it into employee Inboxes and that spam be reduced as much as possible.

Certain key executives are rarely in the office and might not be happy with the existing OWA client. They might also carry BlackBerry wireless devices or Windows Mobile phones and need to make sure that they remain fully functional during and after the upgrade.

The Marketing department might use the email system for sharing graphics files via public folders, which have grown to an almost unmanageable size, but this enables them to share the data with strategic partners outside of the company. This practice won't change, and the amount of data to be managed will continue to grow over time.

The Finance and Human Resources departments might be concerned about security and want to make sure that all email information and attached files are as safe as possible when traveling within the organization, or being sent to clients over the Internet.

The IT department could have a very aggressive service level agreement (SLA) to meet and be interested in clustering, reducing the number of servers that need to be managed, and improving the management tools in place. In addition, Exchange Server 2010's integration with Active Directory will facilitate the management of users and groups and additions and changes to existing user information.

In the process of clarifying these goals, the features of the Exchange Server messaging system that are most important to the different departments and executives should become apparent.

A user focus group might also be helpful, which can be composed of employee volunteers and select managers, to engage in detailed discussions and brainstorming sessions. In this way, the end users can participate in the initial planning process and help influence the decisions that will affect their day-to-day work experience.

Other outcomes of these discussions should include an understanding of which stakeholders will be involved in the project and the goals that are primary for each person and each department. A sense of excitement should start to build over the possibilities presented by the new technologies that will be introduced to make managers' lives easier and workers' days more productive.

This process also serves an additional benefit of giving people a sense of how big the project really is and where they'll see the benefits that affect them the most. A major change like an Exchange Server upgrade should always be well communicated to the end-user community so that they will know what changes to expect, when to expect them, and how to prepare for them.

Initiation Phase: Creating the Statement of Work

Executives generally require a documented Statement of Work that reflects strategic thinking, an understanding of the goals and objectives of the organization, and a sense of confidence that the project will be successful and beneficial to the company. The document needs to be clear and specific and keep its audience in mind. This generally means not going into too much technical detail in the Statement of Work. This document also needs to give an estimate of the duration of the project, the costs involved, and the resources required. The document should be written such that it can be understood by someone who knows nothing about the technology that is being proposed. This is a classic example of where one needs to understand the point of view of their audience and to tailor the information to what that target audience will want to see.

The initial scope of work might have changed and evolved as discussions with the executives, managers, and stakeholders reveal problems that weren't obvious and requirements that hadn't been foreseen. Although the scope started out as a "simple Exchange Server upgrade," it might have expanded to include an upgrade to Active Directory, the addition of new features for remote access to the messaging environment, the rollout of new 64-bit capable servers or management, and business continuity features.

The following is a standard outline for the Statement of Work document:

1. Scope of Work
2. Goals and Objectives
3. Timeline and Milestones
4. Resources
5. Risks and Assumptions
6. Dependencies
7. Initial Budget

The following sections cover the different components of the Statement of Work. This document is arguably the most important in the entire process because it can convince the executives who hold the purse strings to move forward with the project—or, of course, to stop the project in its tracks.

Summarizing the Scope of Work

At this point in the initiation phase, a number of conversations have occurred that have clarified the basic scope of the project, the high-level business goals as they pertain to the messaging upgrade, and the more specific goals for each department and of key stakeholders. Armed with this wealth of information, the lead consultant on the project should now organize the data to include in the Statement of Work and get sign-off to complete the phase and move to the more detailed planning phase.

The Scope section of the Statement of Work document should answer these essential questions:

- How many Exchange Server and Windows servers need to be upgraded?
- Where do these servers reside?
- What additional applications need to be upgraded (especially backup, virus protection, disaster recovery, and remote access) as part of the project?
- What additional hardware needs to be upgraded or modified to support the new servers and applications (especially tape backup devices, SANs, routers)?
- Will laptop configurations be changed? If so, will you need physical access to them?
- Will the desktop configurations be changed?

The answers to these questions might still be unclear at this point, and require additional attention during the planning phase.

Summarizing the Goals

As discussed earlier, a number of conversations have been held previously on the topic of goals, so there might be a fairly long list of objectives at this point. A structure to organize these goals is suggested in the following list:

- Business continuity/disaster recovery (clustering, storage, backup, and restore)
- Performance (memory allocation improvements, public folders, email)
- Security (server, email)
- Mobility (Outlook Web App, Windows Mobile, and Outlook Anywhere support)
- Collaboration (Public Folders, SharePoint Portal, Office Communications Server integrations)
- Serviceability (administration, management, deployment)
- Development (Collaboration Data Objects, managed application programming interface [API])

By using a framework such as this, any "holes" in the goals and objectives of the project will be more obvious. Some of the less-glamorous objectives, such as a stable network, data-recovery abilities, or protection from the hostile outside world, might not have been identified in the discussions. This is the time to bring up topics that might have been missed, before moving into the more detailed planning phase.

It might also be valuable to categorize portions of the upgrade as "fixes" for existing pain points, as opposed to "new" capabilities that will be added to the environment.

Summarizing the Timeline and Milestones

A bulleted list of tasks is typically all that is needed to help define the time frame for the upgrade, although more complex projects will benefit from a high-level Gantt chart. The time frame should be broken down by phase to clarify how much time is to be allocated for the planning phase and testing phases. The actual implementation of the upgrade also should be estimated. A good rule of thumb at this point is that no task represented on the project plan should have a duration of less then 1 day. If it logically has a shorter duration, it's probably too detailed to call out at this point.

Depending on the complexity of the project, a time frame of 1 to 2 months could be considered a "short" time frame, with 2 to 4 months offering a more comfortable window for projects involving more servers, users, and messaging-related applications. Additional time should be included if an outside consulting firm will assist with part or the entire project. Be sure to account for things such as acquiring hardware, application testing, and shipping of hardware to remote locations. These types of items can often be overlooked, yet they can easily add weeks to the timeline of a project like this.

Because every project is different, it's impossible to provide rules for how much time to allocate to which phase. Experience has shown that allocating additional time for the planning and testing phase helps the upgrade go more smoothly, resulting in a happier user base. If little or no planning is done, the testing phase will most likely miss key requirements for the success of the project. Remember also to allocate time during the process for training of the administrative staff and end users.

Be aware of your own internal processes and try to account for them. If your environment requires, for example, that the security group perform a security audit on any server before it is released into production, be sure to account for this in the timeline. Also be sure to

let that other group know that you will be submitting a potentially large number of servers for them to audit so that they can also prepare their own resources to be ready for you. Careful teamwork and communication around these types of activities can save a lot of time overall.

The key to successfully meeting a short timeline is to understand the added risks involved and define the scope of the project so that the risks are controlled. This might include putting off some of the functionality that is not essential, or contracting outside assistance to speed up the process and leverage the experience of a firm that has performed similar upgrades many times. Hardware and software procurement can also pose delays, so for shorter time frames, they should be procured as soon as possible after the ideal configuration has been defined. Don't be afraid to make certain portions of the original project "out of scope" and spin them into separate projects. Keeping your project realistic makes it easier to complete successfully.

Summarizing the Resources Required

Typical roles that need to be filled for an Exchange Server 2003 upgrade project include the following:

- Project sponsor or champion
- Exchange Server 2010 design consultant
- Exchange Server 2010 technical lead
- Exchange Server 2010 consulting engineer
- Project manager
- Systems engineer(s)
- Technical writer
- Administrative trainer
- End-user trainer

The organization should objectively consider the experience and skills, as well as available time of internal resources, before deciding whether outside help is needed. For the most part, few companies completely outsource the whole project, choosing instead to leverage internal resources for the tasks that make sense and hiring external experts for the planning phase and testing phases. Often, internal resources simply can't devote 100% of their energy to planning and testing the messaging technologies because their daily duties get in the way. Contracted resources, on the other hand, are able to focus just on the messaging project. Most successful projects include a mix of internal and external resources. This allows the internal resources to gain valuable knowledge from the external resources and end up with a strong knowledge of their own environment from their direct involvement with the design and deployment.

The resulting messaging environment needs to be supported after the dust settles, so it makes sense for the administrative staff to receive training in the early phases of the

upgrade (such as planning and testing) rather than after the implementation. Many consultants provide hands-on training during the testing and implementation phases. It is easier to perform most of the training in the prototype phase because you will have a working environment that doesn't have any users on it. This allows the administrative staff to practice moving mailboxes, recovering data and entire servers, and rebuilding servers from scratch without impacting any production users.

For larger projects, a team might be created for the planning phase, a separate team allocated for the testing phase, and a third team for the implementation. Ideally, the individuals who perform the testing participate in the implementation for reasons of continuity. Implementation teams can benefit from less-experienced resources for basic server builds and workstation upgrades. By properly assigning the project tasks to the right resources, you can maximize the chances for overall success. By providing for a bit of overlap between tasks and resources, you can also cross-train your staff so that they can more easily support each other.

Summarizing the Risks and Assumptions

More time is spent discussing the details of the risks that could affect the successful outcome of the project during the planning phase; however, if there are immediately obvious risks, they should be included in the Statement of Work.

Basic risks could include the following:

- Existing Exchange Server problems, such as a corrupt database or lack of maintenance
- Lack of in-house expertise and bandwidth for the project
- Using existing hardware that might not have enough random access memory (RAM), storage capacity, processor speed, or the ability to support a 64-bit operating system
- Wide area network (WAN) or local area network (LAN) connectivity issues, making downtime a possibility
- A production environment that cannot experience any downtime or financial losses will occur
- Customized applications that interface with Exchange Server and that need to be tested and possibly rewritten for Exchange Server 2010
- Short timeline that will require cutting corners in the testing process

Summarizing the Initial Budget

The decision makers will want to start getting a sense for the cost of the project, at least for the planning phase of the project. Some information might already be quite clear, such as how many servers need to be purchased. If the existing servers are more than a few years old and don't support a 64-bit operating system, chances are they need to be replaced, and price quotes can easily be gathered for new machines. Software upgrades and licenses can also easily be gathered, and costs for peripheral devices such as tape drives or SANs or host bus adapters should be included.

If external help is needed for the planning, testing, and implementation, some educated guesses should be made about the order of magnitude of these costs. Some organizations set aside a percentage of the overall budget for the planning phase, assuming outside assistance, and then determine whether they can do the testing and implementation on their own.

As mentioned previously, training should also not be forgotten for both the administrative staff and the end users.

Getting Approval on the Statement of Work

After the initial information has been presented in the Statement of Work format, formally present it and discuss it with the stakeholders. If the process has gone smoothly this far, the Statement of Work should be approved, or, if not, items that are still unclear can be clarified. After this document has been agreed upon, a great foundation is in place to move forward with the planning phase.

Planning Phase: Discovery

The planning phase enables the Exchange Server 2010 design consultant time to paint the detailed picture of what the end state of the upgrade will look like, and also to detail exactly how the network will evolve to this new state. The goals of the project are clear, what's in and what's out are documented, the resources required are defined, the timeline for the planning phase and an initial sketch of the risks are anticipated, and the budget is estimated.

Understanding the Existing Environment

If an organization has multiple Exchange servers in place, third-party add-on applications, multiple sites, complex remote access, or regulatory security requirements, it makes sense to perform a full network audit. If an outside company is spearheading the planning phase, this is its first real look at the configuration of the existing hardware and network, and it is essential to help create an appropriate end state and migration process. Standard questionnaires are helpful to collect data on the different servers that will be affected by the upgrade. Typically, these questionnaires are sent to the groups that manage the Exchange Server-related systems in various locations as they generally have the best information on those systems, including any issues or "quirks" they might have.

The discovery process typically starts with onsite interviews with the IT resources responsible for the different areas of the network and proceeds with a hands-on review of the network configuration. Focus groups or white boarding sessions can also help dredge up concerns or issues that might not have been shared previously. External consultants often generate better results because they have extensive experience with network reviews and analysis and with predicting the problems that can emerge midway through a project. Consider holding at least some of the interview sessions with only specific groups present. Sometimes, some groups don't want to bring up specific issues with other groups present.

Network performance can be assessed at the same time to predict the level of performance the end users will see and whether they are accessing email, public folders, or calendars

from within the company, from home, or from an Internet kiosk in an airport. This is also a great time to get a baseline of system performance and bandwidth consumption. Having this baseline is very important and allows you to accurately rate the new environment. It can be very hard to deal with comments of "the new environment seems slower" if you have no previous performance data to compare it with.

Existing network security policies might be affected by the upgrade, and should be reviewed. If AD is being implemented, group policies—which define user and computer configurations and provide the ability to centralize logon scripts and printer access—can be leveraged.

Anyone using Exchange Server is familiar with the challenges of effectively managing the data that builds up, and in grooming and maintaining these databases. The existing database structure should be reviewed at least briefly so the Exchange Server 2010 design consultant understands where the databases reside, how many there are and their respective sizes, and whether regular maintenance has been performed. Serious issues with the database(s) crashing in the past should be covered. Methods of backing up this data should also be reviewed.

Desktop configurations should be reviewed if the upgrade involves an upgrade to the Outlook client. If there are a variety of different desktop configurations, operating systems, and models, the testing phase might need to expand to include these.

Disaster recovery plans or SLAs can be vital to the IT department's ability to meet the needs of the user community, and should be available for review at this time.

Remote and mobile connections to the messaging system should be reviewed in this phase as OWA is used by most organizations, as well as Terminal Services, or virtual private networks (VPNs). The features in Exchange Server 2010 might enable the organization to simplify this process; VPNs might not be needed if the design allows Outlook to be accessed via Hypertext Transfer Protocol Secure (HTTPS).

Although the amount of time required for this discovery process varies greatly, the goals are to fully understand the messaging infrastructure in place as the foundation on which the upgrade will be built. New information might come to light in this process that will require modifications to the Statement of Work document. Always review the initial documentation at the end of a phase so that any changes can be fed back into the processes, and you can determine if any tests need to be repeated as a result of the changes.

Understanding the Geographic Distribution of Resources

If network diagrams exist, they should be reviewed to make sure they are up to date and contain enough information (such as server names, roles, applications managed, switches, routers, firewalls, IP address information, gateways, and so forth) to fully define the location and function of each device that plays a role in the upgrade. These diagrams can then be modified to show the end state of the project. Also critical to these network diagrams is an understanding of not only the bandwidth rating of the connection, but also the average utilization. Connection latency is also a useful piece of information because improvements in Outlook 2007 and Exchange Server 2010 might allow you to use

configurations that were previously unavailable to you because of high latency on a WAN connection. On the flip side of this, many of the new technologies in Exchange Server 2010 will encourage administrators to replicate more mailbox data than ever before. This can create a noticeable increase in bandwidth requirements for Exchange Server.

Existing utility servers—such as bridgehead servers, front-end servers, domain name system (DNS) naming servers, and Dynamic Host Configuration Protocol (DHCP) or Windows Internet Naming Service (WINS) servers—should be listed in these diagrams as well.

Has connectivity failure been planned for a partial or fully meshed environment? Connections to the outside world and other organizations need to be reviewed and fully understood at the same level, especially with an eye toward the existing security features. If this is an area that can be improved in the new Exchange Server 2010 design, be sure to track this as a goal of the project.

Companies with multiple sites bring added challenges to the table. As much as possible, the same level of information should be gathered on all the sites that will be involved in and affected by the messaging upgrade. Also, a centralized IT environment has different requirements from a distributed management model. It's important to fully understand these aspects of the environment to successfully plan for your upgrade.

If time permits, the number of support personnel in each location should be taken into account, as well as their ability to support the new environment. Some smaller sites might not have dedicated support staff and network monitoring, and management tools, such as System Center Operations Manager or System Center Configuration Manager might be required.

How is directory information replicated between sites, and what domain design is in place? If the company already has Active Directory in place, is a single domain with a simple organizational unit (OU) structure in place, or are there multiple domains with a complex OU structure? Global catalog placement should also be clarified. Did the existing Exchange Server environment span multiple administrative groups? Who managed what functions in each administrative group? Is this administrative model going to change in the new Exchange Server 2010 environment?

The answers to these questions directly shape the design of the solution, the testing phase, and the implementation process. Keep in mind that each decision made in the planning phase needs to support the original goals and objectives of the project. When in doubt, always return to these goals and ask yourself if a particular decision is in line with those goals.

Planning Phase: Creating the Design Document

When the initial discovery work is complete, you can turn your attention to the Design document itself, which paints a detailed picture of the end state of the messaging system upgrade. In essence, this document expands on the Statement of Work document and summarizes the process that was followed and the decisions that were made along the way. When possible, include a little information on what the options were and why a

particular decision was made. This helps other people to understand why decisions were made if they were not directly involved in the design process.

The second key deliverable in the planning phase is the Migration document, which tells the story of how the end state will be reached. Typically, these documents are separate, because the Design document gives the "what" and "why" information, and the Migration document gives the "how" and "when" information. This is a good example of writing documents slightly differently based on who the audience will be.

Collaboration Sessions: Making the Design Decisions

Just as the planning phase kicked off with discovery efforts and review of the networking environment, the design phase will start with more meetings with the stakeholders and the project team for collaborative design discussions. This process covers the new features that Exchange Server 2010 offers and how these could be beneficial to the organization as a whole and to specific departments or key users in support of the already defined goals. Typically, several half-day sessions are required to discuss the new features and whether implementing them makes sense. Try to leave a bit of time between sessions to give participants a chance to let the information sink in and make sure there won't be any unintended side effects of a given decision.

By this point in the process, quite a bit of thought has already gone into what the end state will look like, and that is reflected in the Statement of Work document. This means that everyone attending these sessions should be on the same page in terms of goals and expectations for the project. If they aren't, this is the time to resolve differing opinions, because the Design document is the plan of record for the results of the messaging upgrade.

The collaborative sessions should be led by someone with hands-on experience in designing and implementing Exchange Server 2010 solutions. This might be an in-house expert or it might be an external consultant. Agendas should be provided in advance to keep the sessions on track and enable attendees to prepare for specific questions. A technical writer should be invited to take notes and start to become familiar with the project as a whole because that individual will most likely be active in creating the Design document and additional documents required.

The specifics of the upgrade should be discussed in depth, especially the role that each server will play in the upgrade. A diagram is typically created during this process (or an existing Visio diagram updated) that defines the locations and roles of all Exchange Server 2010 servers and any legacy Exchange servers that need to be kept in place. This includes plans for the number of mailbox servers, the number of client access servers needed to support the remote users, the placement of Edge Transport servers to allow for redundancy, and the placement of Hub Transport servers to ensure that mail can be routed efficiently.

The migration process should be discussed as well because it is likely to have the largest impact on the end users. This is the time to account for overlapping projects that might impact your Exchange Server 2010 rollout. Also pay careful attention to the availability of the resources you defined previously. You don't want any surprises, such as having your Exchange Server 2010 expert on vacation during the critical phases of your migration.

Disaster Recovery Options

Although a full disaster recovery assessment is most likely out of the scope of the messaging upgrade project, the topic should be covered at this phase in the project. Take this opportunity to review your existing disaster recovery plans for your existing environment and think about how it will need to change with the new design.

Most people would agree that the average organization would be severely affected if the messaging environment were to go offline for an extended period of time. Communications between employees would have to be in person or over the phone, document sharing would be more complex, communication with clients would be affected, and productivity of the remote workforce would suffer. Employees in the field rarely carry pagers any more, and some have even discarded their cell phones, so many employees would be hard to reach. This dependence on messaging makes it critical to adequately cover the topic of disaster recovery as it pertains to the Exchange Server messaging environment.

Existing SLAs should be reviewed and input gathered on the "real" level of disaster recovery planning and testing that has been completed. Few companies have spent the necessary time and energy to create plans of action for the different failures that could take place, such as power failures in one or more locations, Exchange Server database corruptions, or server failures. A complete disaster recovery plan should include offsite data and application access as well. For more details on items that should be considered, see Chapter 33, "Recovering from a Disaster in an Exchange Server 2010 Environment."

Design Document Structure

The Design document expands on the content created for the Statement of Work document defined previously, but goes into greater detail and provides historical information on the decisions that were made. This is helpful if questions come up later in the testing or implementation process, such as "Whose idea was that?" or "Why did we make that decision?"

The following is a sample table of contents for the Exchange Server 2010 Design document:

1. Executive Summary
2. Goals and Objectives
    - Business Objectives
    - Departmental Goals
3. Background
    - Overview of Process
    - Summary of Discovery Process
4. Exchange Server Design
    - Exchange Server 2010 Design Diagram
    - Exchange Mailbox Server Placement

- Exchange Mailbox Replication
- Exchange Client Access Server Placement
- Exchange Edge Transport Server Placement
- Exchange Hub Transport Server Placement
- Exchange Unified Messaging Server Placement
- Organization (definition of and number of Exchange Server organizations)
- Mailbox Databases (definition of and number of)
- Mixed Mode Versus Native Mode (choice and decision)
- Global Catalog Placement (definition and placement)
- Recipient Policies (definition and usage)
- Server Specifications (recommendations and decisions, role for each server defined, redundancy, disaster recovery options discussed)
- Virus Protection (selected product with configuration)
- Administrative Model (options defined, and decisions made for level of administration permitted by administrative group)
- System Policies (definition and decisions on which policies will be used)
- Exchange Monitoring (product selection and features described)
- Exchange Backup/Recovery (product selection and features described)

5. Budget Estimate
    - Hardware and Software Estimate

Executive Summary

The Executive Summary should summarize the high-level solution for the reader in under one page by expanding upon the scope created previously. The importance of the testing phase can be explained and the budget summarized. The goal with this document is to really understand your audience. The executives probably don't care that you are implementing Database Availability Groups, but they might be interested to hear that you are designing for "four 9s" of uptime.

Design Goals and Objectives

Goals and objectives have been discussed earlier in this chapter and should be distilled down to the most important and universal goals. They can be broken down by department if needed. The goals and objectives listed can be used as a checklist of sign-off criteria for the project. The project is complete and successful when the goals are all met.

Background

In the background section, the material gathered in the discovery portion of the planning phase should be included in summary form (details can always be attached as appendixes);

also helpful is a brief narrative of the process the project team followed to assemble this document and make the decisions summarized in the design portion of the document.

Agreeing on the Design

When the document is complete, it should be presented to the project stakeholders and reviewed to make sure that it fully meets their requirements and to see whether any additional concerns come up. If there were significant changes since the initiation phase's Statement of Work document, they should be highlighted and reviewed at this point. Again, it is valuable in terms of time and effort to identify any issues at this stage in the project, especially when the Migration document still needs to be created.

Some organizations choose to use the Design document to get competitive proposals from service providers, and having this information levels the playing field and results in proposals that promise the same end results.

Creating the Migration Document

With the Design document completed and agreed to by the decision makers, the Migration document can now be created. There are always different ways to reach the desired Exchange Server 2010 configuration, and the Migration document presents the method best suited to the needs of the organization in terms of timeline, division of labor, and costs. Just like the Design document, the migration plan is based on the goals and objectives defined in the initiation and planning processes. The Migration document makes the project real; it presents specific information on "who does what" in the actual testing and migration process, assigns costs to the resources as applicable, and creates a specific timeline with milestones and due dates. Having accurate information in the migration timeline will make it much easier to ensure that resources, both people and hardware/software, are available in time.

The Migration document should present enough detail about the testing and upgrade process that the resources performing the work have guidance and understand the purpose and goals of each step. The Migration document is not a step-by-step handbook of how to configure the servers, implement the security features, and move mailboxes. The Migration document is still fairly high level, and the resources performing the work need real-world experience and troubleshooting skills.

Additional collaborative meetings might be needed at this point to brainstorm and decide both on the exact steps that will be followed and when the testing and upgrade will be. It is critical to plan the migration as carefully as possible and to always make the decisions that support the goals of the migration process. Remember, the primary goal of the migration isn't just to put a new system into place; your users won't appreciate the new functionality of Exchange Server 2010 if it was a painful process for them to get there.

Part V of this book, "Migrations and Coexistence with Exchange Server 2010," provides additional information about the various strategies and processes for moving from previous versions of Exchange Server to Exchange Server 2010.

The Project Schedule

A project schedule or Gantt chart is a standard component of the Migration document, and it presents tasks organized by the order in which they need to be completed, in essence creating a detailed road map of how the organization will get from the current state, test the solution, and then implement it.

Other important information is included in the project schedule, such as resources assigned to each task, start dates and durations, key checkpoints, and milestones. Milestones by definition have no duration and represent events such as the arrival of hardware items, sign-off approval on a series of tasks, and similar events. Some additional time should be allocated (contingency time) if possible during the testing phase or between phases, in case stumbling blocks are encountered. This reduces the chances of having to shift the entire project back and potentially throw off the availability of resources.

A good rule of thumb is to have each task line represent at least four hours of activities; otherwise, the schedule can become too long and cumbersome. Another good rule is that a task should not be less than 1% of the total project, thus limiting the project to 100 lines. The project schedule is not intended to provide detailed information to the individuals performing the tasks, but to help schedule, budget, and manage the project. Tracking the completion of the project plan items versus time is a great way to quickly spot when you are at risk of falling behind and compromising the timeline.

To create a project schedule, a product such as Microsoft Project is recommended, which facilitates the process of starting with the high-level steps and then filling in the individual tasks. The high-level tasks should be established first and can include testing the server configurations and desktop designs and performing one or more pilot implementations, the upgrade or migration process, and the support phase.

Dependencies can also be created between tasks to clarify that Task 40 needs to be completed before Task 50 can start. A variety of additional tools and reports are built in to see whether resources are overburdened (for example, being expected to work 20 hours in one day), which can be used for resource leveling. A baseline can also be set, which represents the initial schedule, and then the actual events can be tracked and compared to the baseline to see whether the project is ahead or behind schedule.

Microsoft Project is also extremely useful in creating budgetary information and creating what-if scenarios to see how best to allocate the organization's budget for outside assistance, support, or training.

If the timeline is very short, the Gantt chart can be used to see if multiple tasks take place simultaneously or if this will cause conflicts.

Create the Migration Document

With the project schedule completed, the Migration document will come together quite easily because it essentially fills out the "story" told by the Gantt chart. Typically, the Migration document is similar to the structure of the Design document (another reason why many organizations want to combine the two), but the Design document relates the

design decisions made and details the end state of the upgrade, and the Migration document details the process and steps to be taken.

The following is a sample table of contents for the Migration document:

1. Executive Summary
2. Goals and Objectives of the Migration Process
3. Background
4. Summary of Migration-Specific Decisions
5. Risks and Assumptions
6. Roles and Responsibilities
7. Timeline and Milestones
8. Training Plan
9. Migration Process
    - Hardware and Software Procurement Process
    - Prototype Proof of Concept Process
    - Server Configuration and Testing
    - Desktop Configuration and Testing
    - Documentation Required from Prototype
    - Pilot Phase(s) Detailed
    - Migration/Upgrade Detailed
    - Support Phase Detailed
    - Support Documentation Detailed
10. Budget Estimate
    - Labor Costs for Prototype Phase
    - Labor Costs for Pilot Phase
    - Labor Costs for Migration/Upgrade Phase
    - Labor Costs for Support Phase
    - Costs for Training
11. Project Schedule (Gantt Chart)

The following sections delve into the information that should be covered in each section. Part V of this book provides in-depth information on the steps involved in migrating to Exchange Server 2010 from Exchange Server 2003 or Exchange Server 2007.

Executive Summary

As with the Design document, the executive summary section summarizes what the Migration document covers, the scope of the project, and the budget requested. Again,

keep in mind your audience for this summary and what they would be interested in. Avoid being too technical is this summary, focus on the high level of what they are getting from this project and when then can expect to get it.

Goals and Objectives of the Migration Process

The goals and objectives of the migration overlap with those of the overall project, but should focus also on what the goals are for use and development of internal resources and the experience of the user community. A goal of the overall project could be "no interruption of messaging services," and this would certainly be a goal to include in the Migration document. This is one of the reasons that many project management methodologies recommend always having an "end-user advocate" for this type of project.

Sub-phases of the Migration document have their own specific goals that might not have been included in the Design document. For example, a primary goal of the prototype phase, which takes place in a lab environment so it won't interfere with the production network, is to validate the design and to test compatibility with messaging-related applications. Other goals of the prototype phase can include hands-on training for the migration team, creating documents for configuration of the production servers, and creating and validating the functionality of the desktop configurations.

Background

A summary of the migration-specific decisions should be provided to answer questions such as: "Why are we doing it that way?" There is always a variety of ways to implement new messaging technologies, such as using built-in tools as opposed to using third-party tools. Because a number of conversations will have taken place during the planning phase to compare the merits of one method versus another, it is worth summarizing them early in the document for anyone who wasn't involved in those conversations.

Risks and Assumptions

Risks pertaining to the phases of the migration should be detailed, and, typically, are more specific than in the Design document. For example, a risk of the prototype phase might be that the hardware available won't perform adequately and needs to be upgraded. Faxing, virus protection, or backup software might not meet the requirements of the Design document and, therefore, need upgrading. Custom-designed messaging applications or Exchange Server add-ons might turn out not to be Exchange Server 2010 compatible.

Roles and Responsibilities

The Design document focuses on the high-level "who does what"; the Migration document should be much more specific because the budget for labor services is part of this deliverable. Rather than just defining the roles (such as project sponsor, Exchange Server 2010 design specialist, Exchange Server 2010 technical lead, and project manager), the Migration document specifically indicates the level of involvement of each resource throughout the prototype, pilot, and migration phases. The project sponsor should stay involved throughout the process, and regular project status meetings keep the team on the same page. At this point, everyone involved in the project should know exactly what they are and are not responsible for doing.

The project manager is expected to keep the project on time, on budget, and within scope, but generally needs support from the project sponsor and key stakeholders involved in the project. Depending on how the project manager role is defined, this individual might be either a full-time resource, overseeing the activities on a daily basis, or a part-time resource, measuring the progress, ensuring effective communications, and raising flags when needed. A cautionary note: Expecting the project manager to be a technical resource such as the Exchange Server 2010 technical lead can lead to a conflict of interest and generally does not yield the best results. Projects tend to be more successful if even 10% of an experienced project manager's time can be allocated to assist.

Timeline and Milestones

Specific target dates can be listed, and should be available directly from the project schedule already created. This summary can be very helpful to executives and managers, whereas the Gantt chart contains too much information. Constraints that were identified in the discovery process need to be kept in mind here because there might be important dates (such as the end of the fiscal year), seasonal demands on the company that black out certain date ranges, and key company events or holidays. Again, be aware of other large projects going on in your environment that might impact your timeline. There's no point trying to deploy new servers on the same weekend that the data center will be powered off for facility upgrades.

Training Plan

It is useful during the planning of any upgrade to examine the skill sets of the people who will be performing the upgrade and managing the new environment to see if there are any gaps that need to be filled with training. Often, training happens during the prototype testing process in a hands-on fashion for the project team, with the alternate choice being classroom-style training, often provided by an outside company. Ask yourself if the end users require training to use new client-side tools. Also pay attention to how the new environment will integrate into existing systems such as backup or monitoring. Determine if those groups need any training specific to interact with Exchange Server 2010 components.

Migration Process

The project schedule Gantt chart line items should be included and expanded upon so that it is clear to the resources doing the work what is expected of them. The information does not need to be on the level of step-by-step instructions, but it should clarify the process and results expected from each task. For example, the Gantt chart might indicate that an Exchange server needs to be configured, and in the Migration document, information would be added about which service pack is to be used for the NOS and for Exchange Server, how the hard drives are to be configured, and which additional applications (virus protection, tape backup, faxing, network management) need to be installed.

If the Gantt chart lists a task of, for example, "Configure and test Outlook 2007 on sales workstation," the Migration document gives a similar level of detail: Which image should be used to configure the base workstation configuration, which additional applications and version of Office should be loaded, how the workstation is to be locked down, and

what testing process should be followed (is it scripted, or will an end user from the department do the testing?).

Documentation also should be described in more detail. The Gantt chart might simply list "Create as-Built documents," with as-built defined as "document containing key server configuration information and screenshots so that a knowledgeable resource can rebuild the system from scratch."

Sign-off conditions for the prototype phase are important and should be included. Who needs to sign off on the results of the prototype phase to indicate that the goals were all met and that the design agreed upon is ready to be created in the production environment?

Similar levels of information are included for the pilot phase and the all-important migration itself. Typically during the pilot phase, all the upgraded functionality needs to be tested, including remote access to email, voice mail access, BlackBerry and personal information managers, and public folders. Be aware that pilot testing might require external coordination. For example, if you are testing access through OWA in Exchange Server 2010, you might need to acquire an additional external IP address and arrange to have an address record created in DNS to allow your external testers to reach it without having to disturb your existing OWA systems.

The migration plan should also account for support tasks that need to occur after the Exchange Server 2010 infrastructure is fully in place. If you are using an outside consulting firm for assistance in the design and implementation, you should make sure that they will leave staff onsite for a period of time immediately after the upgrade to be available to support user issues or to troubleshoot any technical issues that crop up.

If documentation is specified as part of the support phase, such as Exchange Server maintenance documents, disaster recovery plans, or procedural guides, expectations for these documents should be included to help the technical writers make sure the documents are satisfactory.

Budget Estimate

At this point in the process, the budgetary numbers should be within 10%–20% of the final costs, bearing in mind any risks already identified that could affect the budget. Breaking the budget into prototype, pilot, migration, support, and training sections helps the decision makers understand how the budget will be allocated and make adjustments if needed. No matter how much thought has gone into estimating the resources required and risks that could affect the budget, the later phases of the project might change based on the outcome of the prototype phase or the pilot phase.

The Prototype Phase

Depending on the design that was decided on by the organization, the prototype phase varies greatly in complexity and duration. It is still critical to perform a prototype, even for the simplest environments, to validate the design, test the mailbox migration process, and ensure that there won't be any surprises during the actual upgrade. The prototype lab

should be isolated from the production network via a virtual LAN (VLAN) or physical separation to avoid interfering with the lives of users.

The prototype phase also gives the project team a chance to get acquainted with the new features of Exchange Server 2010 and any new add-on applications that will be used and to configure the hardware in a low-stress environment. If an external company is assisting in this phase, informal or formal knowledge transfer should take place. Ideally, the prototype lab exactly mirrors the final messaging configuration so that training in this environment will be fully applicable to the administration and support skills needed after the upgrade.

Always take advantage of the unique opportunities granted to you in the prototype phase. Because the prototype is built as a replica of the planned production design, you can practice disaster recovery, server deployment, mailbox moves, and application integrations with no concerns about impacting users the way they would be in production.

What Is Needed for the Lab?

At a bare minimum, the lab should include a new Exchange Server 2010 server, one each of the standard desktop and laptop configurations, the tape drive that will be used to back up the public and private Information Stores, and application software as defined in the Design document. Connectivity to the Internet should be available for testing OWA and Windows Mobile access. You will also need at least one domain controller that is configured as a global catalog. The preferred method to deploy this domain controller is to promote a spare domain controller in production and after it has fully replicated, remove it from the network and move it to the lab network. After being isolated, seize the Flexible Single Master Operations (FSMO) roles on the lab domain controller. In production, use NTDSUTIL to perform a metadata cleanup to remove the references to the temporary domain controller. In this way, you have an accurate view of Active Directory for the prototype phase. This can be especially helpful because directory problems that would show up in a production migration will appear in the lab.

Existing data stores should be checked for integrity and then imported to Exchange Server 2010 to ensure that the process goes smoothly. Exchange Server 2010 comes with improved mailbox migration tools, which are more resistant to failure when corrupt mailboxes are encountered and are multithreaded for better performance.

NOTE

The recommended route for customers with Exchange Server 2007 or 2003 servers to get to Exchange Server 2010 is to install an Exchange Server 2010 server into the environment and move mailboxes. If hardware availability is limited, consider upgrading one location at a time and use the “replaced” server as the new Exchange Server 2010 server in the next site. This assumes the hardware is capable of running Exchange Server 2010 and is appropriately sized. This method is often referred to as a “leap frog” upgrade.

If site consolidation or server consolidation are goals of the project, the prototype lab can be used for these purposes. Multiforest connectivity can now be tested, but this requires a

Microsoft Identity Integration Services server in one or more of the forests to enable directory synchronization.

Exchange Server 2010 also comes with a number of new tools to aid in the testing and migration process, which are covered in detail in Chapters 15 and 16. These include a prescriptive guide that walks through the deployment process, preparation tools that scan the topology and provide recommendations, and validation tools.

For more complex environments and larger companies, the lab should be kept in place even after the upgrade is completed. Although this requires the purchase of at least one additional Exchange server and related software, it provides a handy environment for testing patches and upgrades to the production environment, performing offline database maintenance, and in worst-case scenarios, a server to scavenge from in times of dire need.

Depending on the complexity of the Exchange Server environment, this long-term lab might potentially be run in a virtual environment. Deploying the lab via VMware or Microsoft's Hyper-V allows you to mimic the interactions of multiple servers and server roles on a single box. Both VMware and Microsoft's Hyper-V solutions support 64-bit guest operating systems and, therefore, are viable options for an Exchange Server 2010 lab environment.

After the lab is configured to match the end state documented in the Design document, representative users from different departments with different levels of experience and feature requirements should be brought in and given a chance to play with the desktop configurations and test new features and remote access. Input should be solicited to see whether any changes need to be made to the client configurations or features offered, and to help get a sense for the training and support requirements.

Disaster Recovery Testing

Another important testing process that can be performed prior to implementation of the new solution on the live network is business continuity or disaster recovery testing. Ideally, this was covered in the design process, and disaster recovery requirements were included in the design itself. Definitely take advantage of practicing your disaster recovery process in the prototype phase. This is likely your only opportunity to create and destroy servers without regard for impacting end users.

Documentation from the Prototype

During the prototype phase, a number of useful documents can be created that will be useful to the deployment team during the pilot and production upgrade phases, and to the administrators when the upgrade is complete.

As-built documents capture the key configuration information on the Exchange Server 2010 systems so that they can easily be replicated during the upgrade or rebuilt from scratch in case of catastrophic failure. Generally, the as-built documents include actual screenshots of key configuration screens to facilitate data entry. Having carefully prepared as-built documents allows you to go into production with a well-tested build process. Not

unlike a disaster recovery situation, you want to simply follow your own instructions during the deployment; you don't want to have to learn as you go.

Assuming that disaster recovery requirements for the project were defined as suggested previously, this is a perfect time to summarize the testing that was performed in the lab and record the steps a knowledgeable administrator should take in the failure scenarios tested.

One last item of value to take out of the prototype phase is a well-documented list of any surprises that came up during the testing. If you tested the move mailbox process from an Exchange Server 2007 server that was restored from production and you had errors moving mailboxes, you can expect to have these exact same errors in the production move. If you were able to solve the issues in the lab, you should have well-documented notes on how to deal with the same error in production. Being prepared in this manner is the key to a smooth migration.

Final Validation of the Migration Document

When the testing is complete, the migration plan should be reviewed a final time to make sure that the testing process didn't reveal any showstoppers that will require a change in the way the upgrade will take place or in the components of the final messaging solution.

The end users who have had a chance to get their feet wet and play with the new Outlook 2007 client and learn about the new capabilities and enhanced performance of Exchange Server 2010 should be spreading the word by now, and the whole company should be excited about the upgrade!

The Pilot Phase: Deploying Services to a Limited Number of Users

With the testing completed, the Exchange Server 2010 upgrade team has all the tools needed for a successful upgrade, assuming the steps outlined so far in this chapter have been followed. The Design document is updated based on the prototype testing results so that the end state that the executives and decision makers are expecting has been conceptually proven. Unpleasant surprises or frantic midnight emails requesting more budget are nonexistent. The road map of how to get to the end state is created in detail, with the project schedule outlining the sequential steps to be taken and the Migration document providing the details of each step. Documentation on the exact server configurations and desktop configuration are created to assist the systems engineers who will be building and configuring the production hardware.

The project team has gained valuable experience in the safe lab environment, processes have been tested, and the team is brimming with confidence. End users representing the different departments, who tested and approved the proposed desktop configurations, are excited about the new features that will soon be available.

To be on the safe side, a rollback strategy should be clarified, in case unforeseen difficulties are encountered when the new servers are introduced to the network. Disaster recovery

testing can also be done as part of the first pilot, so that the processes are tested with a small amount of data and a limited number of users.

The First Server in the Pilot

The pilot phase officially starts when the schema is extended and the first Exchange Server 2010 server is implemented in the production environment. The same testing and sign-off criteria that were used in the lab environment can be used to verify that the server is functioning properly and coexisting with the present Exchange servers. Surprises might be waiting that will require some troubleshooting because the production environment will add variables that weren't present in the lab, such as large quantities of data-consuming bandwidth, non-Windows servers, network management applications, and applications that have nothing to do with messaging but might interfere with Exchange Server 2010.

The migration of the first group of mailboxes is the next test of the thoroughness of the preparation process. Depending on the complexity of the complete design, it might make sense to limit the functionality offered by the first pilot phase to basic Exchange Server 2010 functionality, and make sure that the foundation is stable before adding on the higher-end features, such as voice mail integration, mobile messaging, and faxing. The first server should have virus-protection software and backup software installed. Remote access via OWA is an important item to test as soon as possible because there can be complexities involved with demilitarized zone (DMZ) configurations and firewalls.

Choosing the Pilot Group

The first group of users, preferably more than 10, represents a sampling of different types of users. If all members of the first pilot group are in the same department, the feedback won't be as thorough and revealing as it could be if different users from different departments with varied needs and expectations are chosen. It's generally a good idea to avoid managers and executives in the first round, no matter how eager they are, because they will be more likely to be the most demanding, be the least tolerant of interruptions to network functionality, and have the most complex needs.

Although a great deal of testing has taken place already, these initial pilot users should understand that there will most likely be some fine-tuning that needs to take place after their workstations are upgraded; they should allocate time from their workdays to test the upgrades carefully with the systems engineer performing the upgrade. This will correctly set the expectation for the pilot users, as well as allow the upgrade team to get the feedback they need before moving into the full migration.

After the initial pilot group is successfully upgraded and functional, the number of users can be increased because the upgrade team will be more efficient and the processes fine-tuned to where they are 99% error free.

For a multisite messaging environment, the pilot process should be carefully constructed to include the additional offices. It might make sense to fully implement Exchange Server 2010 and the related messaging applications in the headquarters before any of the other locations, but issues related to WAN connectivity might crop up later, and then the impact is greater than if a small pilot group is rolled out at HQ and several of the other offices. It

is important to plan where the project team and help desk resources will be, and they ideally should travel to the other offices during those pilots, especially if no one from the other office participated in the lab testing phase. Be sure to have sufficient coverage for issues that might arise if the pilot groups span multiple time zones.

The help desk should be ready to support standard user issues, and the impact can be judged for the first few sub-phases of the pilot. Issues encountered can be collected and tracked in a knowledge base, and the most common issues or questions can be posted on the company intranet or in public folders, or used to create general training for the user community.

Gauging the Success of the Pilot Phase

When the pilot phase is complete, a sampling of the participants should be asked for input on the process and the results. Few companies do this on a formal basis, but the results can be very surprising and educational. Employees should be informed of when the upgrade will take place, that no data will be lost, and that someone will be there to answer questions immediately after the upgrade. Little changes to the workstation environment, such as the loss of favorites or shortcuts, or a change in the network resources they have access to, can be very distressing and result in disgruntled pilot testers. Your goal is for your employees to be happy about the upgrade experience after it's been done. Their opinions will reach the rest of your users and they'll be a lot more cooperative if they aren't expecting to have problems.

A project team meeting should be organized to share learning points and review the final outcome of the project. The company executives must now make the go-no-go decision for the full migration, so they must be updated on the results of the pilot process.

The Production Migration/Upgrade

When the pilot phase is officially completed and any lingering problems have been resolved with the upgrade process, there will typically be 10%–20% of the total user community upgraded. The project team will have all the tools it needs to complete the remainder of the upgrade without serious issues. Small problems with individual workstations or laptops will probably still occur, but the help desk should be familiar with how to handle these issues by this point.

A key event at this point is the migration of large amounts of Exchange Server data. The public and private Information Stores should be analyzed with eseutil and isinteg, and complete backup copies should be made in case of serious problems. The project team should make sure that the entire user community is prepared for the migration and that training has been completed by the time a user's workstation is upgraded.

It is helpful to have a checklist for the tasks that need to be completed on the different types of workstations and laptops so that the same steps are taken for each unit, and any issues encountered can be recorded for follow-up if they aren't critical. Laptops will most likely be the most problematic because of the variation in models, features, and user requirements, and because the mobile employees often have unique needs when compared to workers who remain in the office. If home computers need to be upgraded

with the Outlook 2007 client and if, for instance, the company VPN is being retired, these visits need to be coordinated.

As with the pilot phase, the satisfaction of the user community should be verified. New public folders or SharePoint discussions can be started, and supplemental training can be offered for users who might need some extra or repeat training.

TIP

If at all possible, get your users to clean up their mailboxes and clear their deleted items prior to the migration, as this can result in a very large time savings. Experience has shown that typically 50% of the data moved in an Exchange Server migration is Sent Items and Deleted Items. The time it takes to move a mailbox is more affected by the item count than the overall size of the mailbox in gigabytes.

Decommissioning the Old Exchange Server Environment

As mentioned previously, some upgrades require legacy Exchange servers to be kept online, if they are running applications that aren't ready or can't be upgraded right away to Exchange Server 2010. Even in environments where the Exchange Server 2003 or 2007 servers should be completely removed, this should not necessarily be done right away.

Supporting the New Exchange Server 2010 Environment

After the dust has settled and any lingering issues with users or functionality have been resolved, the project team can be officially disbanded and returned to their normal jobs. If they haven't been created already, Exchange Server Maintenance documents should be created to detail the daily, weekly, monthly, and quarterly steps to ensure that the environment is performing normally and the databases are healthy.

If the prototype lab is still in place, this is an ideal testing ground for these processes and for testing patches and new applications. By following the Exchange Server Maintenance documents and keeping up with regular maintenance tasks, you will be much less likely to have issues with your Exchange Server 2010 environment in the future.

Summary

Someone famous once said, "It's not the destination, it's the journey." In the case of an Exchange Server 2010 upgrade, or any project for that matter, it's both. This chapter has shown that the key to success in a major undertaking such as an Exchange Server 2010 upgrade is to follow a strong methodology that accounts for both the journey and the destination.

The use of a discovery phase allows the people who will be involved in the project to gather as much information as they can about the existing state of the environment, as well as the needs of the environment. This prepares them to make design decisions that

will allow them to support the needs of the business without putting the existing environment at risk.

A design phase allows the group to work interactively to design a new end state that best provides for the needs of the company. A key concept to keep in mind during a design phase is that there is no "one perfect design"—there is only a design that is most appropriate for you and your needs and limitations.

A prototype phase allows you to validate your design and your migration methodologies by testing them in a safe replica environment. This allows you to discover potential problems before they come up in a production migration. Always take advantage of the prototype phase to try out the "what-if" questions that will result in you and your team having a stronger knowledge of how the new environment will work.

The pilot phase allows you to try your migration steps in the real world with reduced exposure to problems through a controlled membership of pilot users. Take this opportunity to get feedback from the pilot users to update or modify your steps to reduce impact on users or administrators. Remember, if you need to make major changes after the pilot, run a second pilot and keep running pilots until you feel your process is sufficient. This shouldn't take too much feedback if you took full advantage of the prototype phase.

The implementation phase allows you to push through the migration full force and get all the users migrated to the new environment.

Utilize a support and retirement phase to make sure you have time to retire old servers and to make sure you have a bit of extra time with the enhanced support and help desk to make sure everyone is happy after the migration (or at least happy about Exchange Server 2010).

By following this standard methodology, you will greatly increase the chances of having a smooth and uneventful migration. This will help build credibility for the IT organization and make it that much easier to get projects approved in the future.

Best Practices

The following are best practices from this chapter:

- An upgrade to Exchange Server 2010 should follow a process that keeps the project on schedule. Set up such a process with a four-phase approach, including initiation, planning, testing, and implementation.
- Documentation is important to keep track of plans, procedures, and schedules. Create some of the documentation that could be expected for an upgrade project, including a Statement of Work document, a Design document, a project schedule, and a Migration document.
- Key to the initiation phase is the definition of the scope of work. Create such a definition, identifying the key goals of the project.

- Make sure that the goals of the project are not just IT goals, but also include goals and objectives of the organization and business units of the organization. This ensures that business needs are tied to the migration initiative, which can later be quantified to determine cost savings or tangible business process improvements.
- Set milestones in a project that can ensure that key steps are being achieved and the project is progressing at an acceptable rate. Review any drastic variation in attaining milestone tasks and timelines to determine whether the project should be modified or changed, or the plans reviewed.
- Allocate skilled or qualified resources that can help the organization to better achieve technical success and keep it on schedule. Failure to include qualified personnel can have a drastic impact on the overall success of the project.
- Identify risks and assumptions in a project to provide the project manager with the ability to assess situations and proactive work and avoid actions that might cause project failures.
- Plan the design around what is best for the organization, and then create the migration process to take into account the existing configuration of the systems within the organization. Although understanding the existing environment is important to the success of the project, an implementation or migration project should not predetermine the actions of the organization based on the existing enterprise configuration.
- Ensure that key stakeholders are involved in the ultimate design of the Exchange Server 2010 implementation. Without stakeholder agreement on the design, the project might not be completed and approved.
- Document decisions made in the collaborative design sessions, as well as in the migration planning process, ensure that key decisions are agreed upon and accepted by the participants of the process. Anyone with questions on the decisions can ask for clarification before the project begins rather than stopping the project midstream.
- Test assumptions and validate procedures in the prototype phase. Rather than learning for the first time in a production environment that a migration will fail because an Exchange Server database is corrupt or has inconsistencies, the entire process can be tested in a lab environment without impacting users.
- Test the process in a live production environment with a limited number of users in the prototype phase. Although key executives (such as the CIO or IT director) may want to be part of the initial pilot phase, it is usually not recommended to take such high-visibility users in the first phase. The pilot phase should be with users who will accept an incident of lost email or inability to send or receive messages for a couple of days while problems are worked out. In many cases, a prepilot phase could include the more tolerant users, with a formal pilot phase including insistent executives of the organization.
- Migrate, implement, or upgrade after all testing has been validated. The production process should be exactly that: a process that methodically follows procedures to implement or migrate mailboxes into the Exchange Server 2010 environment.