Getting The Windows 7 Migration Right: The Role of Testing

How to Verify and Validate Each Step of the Move to Microsoft's Latest Client OS

Introduction

Windows 7 is a welcome update to Microsoft's client operating system, with research showing that 60 percent of businesses expect to migrate to it in one of the largest upgrades in recent memory. But economic conditions are forcing companies to perform this upgrade as quickly and efficiently as possible. That means not only executing the technical upgrade with the least effort, but ensuring applications work properly so user productivity isn't disrupted.

Doing the Windows 7 upgrade quickly and right requires doing migration testing right. The verification and validation provided by testing must be done at each step in the process: Assessing the current environment and user requirements; remediating incompatibilities, designing and building the "gold" images for the upgrade and the rollout itself.

In this white paper, we'll describe the critical role testing plays in each phase of the upgrade. We will also discuss best practices in deployment and a suggested migration framework, all based on Cognizant's experience with customers worldwide in industries ranging from financial services to health care and media.

Assessment

This vital first phase assesses the current compatibility of an organization's applications, PC hardware and infrastructure (such as printers and other input and output devices) that connect to user's PCs with Windows 7. To assure that the assessment focuses on the most critical elements, it should be based on business factors that drive the migration schedule and scope of testing. These include:

- How quickly and when the migration must be completed;
- How critical are issues such as performance to the success of the migration, and
- Whether the timing or scope of the upgrade is linked to other changes such as the move to a new ERP system

Cognizant recommends that applications be assessed first, and then the hardware and infrastructure, since it is the compatibility and performance of applications that should drive the migration effort and the associated testing. The Application Compatibility Toolkit Version 5.5 (ACT) from Microsoft discovers and describes the applications and the browser installed on each user's machine. It also evaluates the compatibility of those applications with Windows 7, and with the Internet Explorer 8 browser which installs as part of Windows 7, to identify all possible impacts of the update on each computer. Using this tool, the migration staff can customize the assessments to take account of different brands or configurations of PCs that might pose different compatibility challenges, as well as applications or hardware types specific to various business units or geographies.

The first step in the application assessment should be rationalization (eliminating duplicate or unneeded applications, and consolidating applications with overlapping functionality.) This reduces the costs of migration and testing in the short run, and of software licensing and maintenance costs in the long run. Another important best practice is assuring the traceability of various required functions throughout the migration to assure these functions can be performed and have not been jeopardized by the move to Windows 7.

While the application assessment should be performed by the infrastructure team, it is important to share the results with the quality assurance team so it understands which applications are most affected by the upgrade, and builds the test suite accordingly. Applications that ACT shows to be Windows 7 compatible should be installed in a Windows 7 test lab to verify and validate they are indeed compatible, and those that are believed to be incompatible scheduled for remediation, and then verification and validation.

To conduct the hardware assessment, Cognizant recommends using the Microsoft Assessment & Planning Toolkit (Version 4.0) that collects detailed configuration data from each computer and on the compatibility of devices installed on it or connected to it. With the results of this assessment, the upgrade team can determine what, if any, hardware upgrades or replacements are required.

Remediation

In this phase the upgrade team resolves all compatibility issues for applications deemed critical to users. For commercial applications still supported by their vendors, this requires applying a fix provided by Microsoft or the vendor. In the case of custom applications or those no longer supported by vendors, the team may apply a temporary "shim" or "wrapper" that makes the application appear Windows 7 compatible until a more permanent fix can be provided.

Best practices for this step include the creation of a centralized repository for application fixes, as well as a repository for test scenarios to make it easy to track, access and apply both the fixes and the scenarios. The scenario repository is also a valuable aid in maintaining the traceability of key functions to assure their needs are addressed throughout the migration.

Verification and validation in this phase includes compatibility testing at the application and browser level, as well as both usability and non-functional testing to verify that the application meets security and performance requirements.

Design

The objective of this phase is to create the gold images, (made up of the new operating system as well as all required applications and drivers) that will be deployed on users' machines. This phase also includes planning for the actual deployment and training of users, including assuring the appropriate amount of support and training for them. Multiple gold images will be required to provide the specific drivers needed for PCs from various vendors, to account for varying levels of processing power, RAM and disk space in different PCs as well as the specific combinations of applications required by each class of users.

This phase requires testing to assure the images can be successful installed as well as functional testing to assure the users' critical application requirements are met. This testing should verify and validate all steps from the installation of the operating system and applications to the compatibility of all required hardware drivers, as well as the implementation of group policies, security/authentication rules as well as application and profile management through to the creation of the gold images.

As the gold images are tweaked over time, regression testing is required to assure that no new defects have been introduced in the remediation process or as remediation requirements have changed. As in other phases, it is important to conduct all testing in a separate lab which exactly replicates the production environment, in order to assure the highest levels of test reliability.

Build

This is the step in which the gold images are actually deployed to the users. In order to find and remediate any issues as early in the deployment as possible, Cognizant recommends a phased rollout including a formal pilot. Steps in this phased rollout include capturing the end-user profiles that determine the "look and feel" of users' systems, creating support scripts to automate the installation of required patches or to resolve problems, deploying the

actual images and incorporating feedback from users to improve the deployment process. Rollout schedules should also be flexible so they don't interfere with critical business processes or other technical upgrades.

To help meet the expected demand for mass migrations to Windows 7, Microsoft has developed several standardized deployment strategies for customers of various sizes. These include:

- The Lite-Touch, high-volume strategy for medium-sized organizations with 200–500 client computers, at least one location with more than 25 users and (usually) managed networks in multiple locations running Windows Server. Tools to support such installations include the Windows Automated Installation Kit (Windows AIK) and the Microsoft Deployment Toolkit (MDT) 2010.
- Larger organizations with more than 500 client computers should consider the Zero-Touch, High-Volume Deployment strategy using Microsoft Configuration Manager 2007 R2 and the Microsoft Deployment Toolkit (MDT) 2010.

Best practices in this phase include a multi-tiered deployment to assure the images and the deployment processes meet user and corporate requirements before committing to a wider rollout. The QA team must of course be informed of any problems found so those issues can be included in future testing. Verification and validation is provided through ongoing regression testing focused on the most critical business scenarios.

Migration Framework/Best Practices

As with other testing challenges, Windows 7 migration testing can best be done with the help of a framework – a combination of people, processes, technology and infrastructure shown through experience to deliver a quality, cost-effective result.

Best Practices

Create a joint team including experts on the test infrastructure, Microsoft technologies and in testing processes and tools to assure an efficient, high-quality migration.

- Involve test experts early in the assessment phase so they can use its results to design their tests.
- Adopt a factory migration model with predictable, per-machine pricing.
- Build a separate test lab that replicates the production environment, with profiles of representative user devices for accurate testing.
- Store test scenarios in a common repository to encourage reuse.
- Perform exploratory testing using checklists and guidelines.
- Verify and validate at every stage.

Case Study: A Factory Model for Win 7 Migration

For a US-based insurance company with more than 40,000 users, Cognizant helped implement a predictable, repeatable "factory model" to avoid peaks and valleys in staffing while migrating to Windows 7. Cognizant provided a combination of onshore and offshore staff to handle a variety of test functions ranging from functional to user and customer acceptance testing. This process included application compatibility testing and packaging of 1,000 applications, and resulted in a 30 percent cost reduction as well as eliminating any risks of delays because cost-effective expertise was available even for labor-intensive bursts of activity.

The key elements of the framework developed by Cognizant are:

- A common program management office to serve as a single point of advice, guidance and accountability for business users.
- The right mix of staff skilled in infrastructure, testing and Microsoft technology.
- A "factory" model for migrations that provides reliable, predictable results and pricing that helps the business budget for and prioritize upgrades.
- "Dashboards" that provide both technical and business users with a single, easily understandable view of migration progress and costs, and the ability to drill down into status reports for more detail, and
- Infrastructure, in the form of a separate test lab that replicates the production environment.

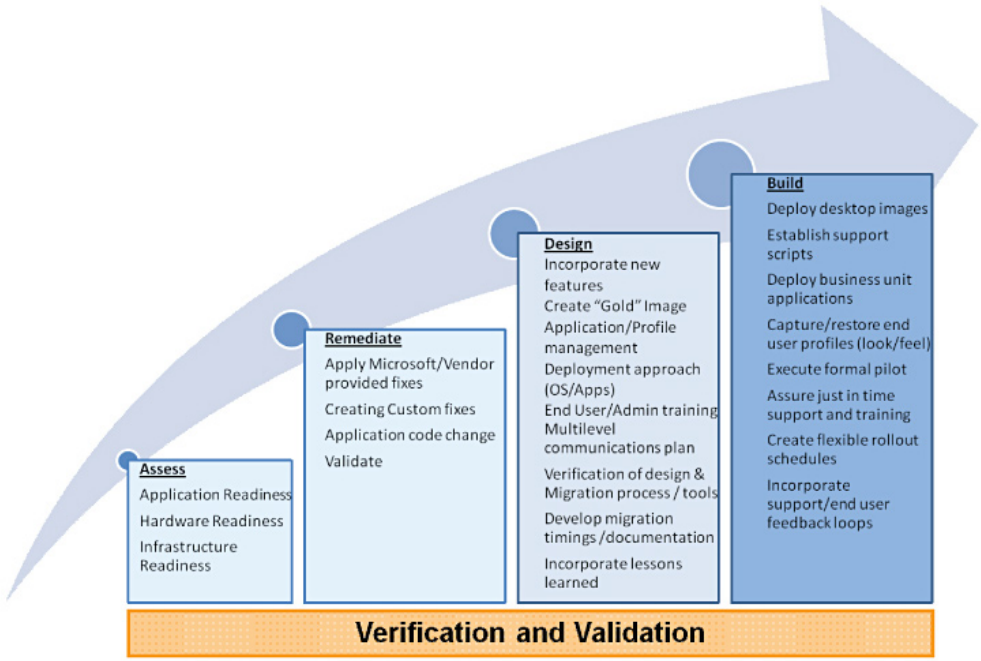
How Cognizant Can Help

In addition to significant experience in enterprise-level software testing, Cognizant offers Windows7 lifecycle services that range from point solutions such as assessment, compatibility testing, remediation or deployment to full plan/design/build/manage migration and testing. Cognizant also offers managed Windows 7 management administration and monitoring services, as well as custom portals that allow users and business managers to monitor the progress of the migration.

Case Study: A Self-Service Model for Win7 Migration

For a global entertainment company with about 12,000 users, Cognizant created a self-service Web portal that reduced by 30 percent the cost and time required for the Windows 7migration. This work included assessing the organization's hardware and software for Windows 7 compatibility, creating a snapshot of all current applications and hardware and developing a golden Windows 7 image with customized themes to assure a consistent look and feel for both the portal and the new Windows 7 systems. Cognizant also developed the end-to-end deployment process and support scripts to automate various parts of the update process and provided user support after the migration process.

Timeline showing a typical Windows 7 migration



Summary

The move to Windows 7 is a long-overdue modernization of the client operating system for many companies, but it comes at a time of intense pressure to reduce costs and maintain employee productivity. Using a structured test methodology and field-proven deployment tools, IT departments can bring the benefits of Windows 7 to their users without excessive migration costs, and without interrupting productive work to resolve post-migration incompatibilities.

About Cognizant

Cognizant (Nasdaq: CTSH) is a leading provider of information technology, consulting, and business process outsourcing services. Cognizant's single-minded passion is to dedicate our global technology and innovation know-how, our industry expertise and worldwide resources to working together with clients to make their businesses stronger. With over 50 global delivery centers and more than 85,500 employees as of March 31, 2010, we combine a unique onsite/offshore delivery model infused with a distinct culture of customer satisfaction. A member of the NASDAQ-100 Index and S&P 500 Index, Cognizant is a Forbes Global 2000 company and a member of the Fortune 1000 and is ranked among the top information technology companies in BusinessWeek's Hot Growth and Top 50 Performers listings.Visit us online at www.cognizant.com

Cognizant | Testing Services
Passion for building stronger businesses

World Headquarters
500 Frank W. Burr Blvd.
Teaneck, NJ 07666 USA
Phone: +1 201 801 0233
Fax: +1 201 801 0243
Toll Free: +1 888 937 3277
Email: inquiry@cognizant.com

European Headquarters
Haymarket House
28-29 Haymarket
London SW1Y 4SP UK
Phone: +44 (0) 20 7321 4888
Fax: +44 (0) 20 7321 4890
Email: infouk@cognizant.com

India Operations Headquarters
#5/535, Old Mahabalipuram Road
Okkiyam Pettai, Thoraipakkam
Chennai, 600 096 India
Phone: +91 (0) 44 4209 6000
Fax: +91 (0) 44 4209 6060
Email: inquiryindia@cognizant.com