ITD Deployment Center Rev. 4

NASCIO 2013 State IT Recognition Awards

State of Idaho

Category Enterprise IT Management Initiatives

Contact Shannon Barnes, IT Administrator
Idaho Transportation Department
Boise, ID 83707
(208) 334-8771
Shannon.Barnes@itd.idaho.gov

Initiation December 2010
Completion October 2012

Executive Summary

The Idaho Transportation Department (ITD) manages approximately 1,900 workstations spread throughout six transportation districts, in addition to workstations used for Division of Motor Vehicle purposes in county sheriff and assessor offices across the state. As these workstations are replaced, the process of "imaging" a new workstation, backing up files, and deploying a new workstation normally took several days to complete. The process was time consuming and the results were inconsistent from workstation to workstation.

In December 2010, ITD's System Administration Unit began customizing the Microsoft Deployment Toolkit (MDT) to improve the efficiency and consistency of workstation software deployments. In late October 2012, the unit unveiled the latest version of the ITD Deployment Center, which provides significant improvements and cost savings.

This version cut the multi-day replacement process down to approximately one hour—a nearly eight-fold reduction. All guesswork from support technicians is gone. Revision 4 uses a "cafeteria-menu-style" imaging catalog to select the modules to be applied to new workstations, allowing more variability during the installation of applications.

- All workstations are imaged from the exact same source, resulting in standardized installations enterprise wide.
- A single source at ITD headquarters manages multiple distribution portals statewide. This limits bandwidth requirements and uses the shortest distance from the workstations being imaged.
- Domain devices are more stable because of the structured approach to revision, patch, and security management at the enterprise level.

ITD developed the unique, cost-saving enhancements to the Microsoft Deployment Toolkit completely in-house (MDT is freeware). The improvements ITD made are significant and important—saving at least 10 hours of effort per workstation, providing a standardized support landscape, and ensuring greater security with thorough inclusion of security updates and patches.

Mark Wernet, State and Local Government Account Manager at Microsoft Corporation, stated *"I do not know any of my Microsoft customers doing anything like this or even similar. You have taken the MDT to a new level with your customization, software module creation and technician interface."*

ITD can now manage the core "source" of operating systems, applications, and configuration settings in one place, and deploy them to remote portals automatically. The time and cost savings are significant, and the benefits are being realized in ITD offices across the state. The deployment center developed by ITD is one of the best deployment and application-management solutions available, and would be a valuable, money-saving model for other government agencies—the larger the agency, the greater the savings.

Business Problem and Solution:
The Idaho Transportation Department's previous method of deploying operating systems and software applications was extremely inconsistent and time consuming. The process required a high level of management overhead because of the multiple images that needed to be maintained and updated on a constant basis.

ITD was using Symantec™ Ghost Solution to create images for operating system and application software deployment for the Division of Highways, the Division of Motor Vehicles, the Division of Aeronautics, the Office of Highway Safety, all areas of headquarters, and all county sheriff and assessor offices statewide.

Each Ghost image was an exact replica of a single computer model. Because the Ghost process required a separate image for each model of computer, the department had to maintain more than a dozen images. If the hardware changed it could damage the image or cause intermittent, unexplained issues for the users.

Each Ghost image included several standard applications such as Microsoft Office, Adobe products, and McAfee. This often caused version conflicts because the images could contain applications that were several versions out of date. The applications would sometimes error out after deployment because they were out of date.

The extensive time and effort required to manage multiple images that were in a constant need of updating made it almost impossible to keep them current and usable. This caused technicians to abandon the images and revert back to hand loading the computers, which was more time consuming but resulted in a more stable environment for the users.

ITD's Service Center manager began searching for a more stable solution that would decrease management overhead and reduce deployment times. He selected the Microsoft Deployment Toolkit (MDT), a freeware product that provided a basic, superior solution to the Ghost imaging process.

In December 2010, the department's System Administration Unit began customizing the Microsoft Deployment Toolkit (MDT) to improve the efficiency and consistency of workstation software deployments. MDT allowed many of the standard applications to be included in the images in addition to some standard operating system settings that increased stability.

Early versions of ITD's modifications included several application modules that could be selected depending on the needs. This made the system more flexible than the imaging solutions the department used in the past.

The department has continued to refine and improve the toolkit. The current version, "ITD Deployment Center, Rev. 4," has evolved into an automated operating system, application, and configuration deployment solution that also backs up and restores user data. "Rev. 4" was completed on October 31, 2012.

By extensively customizing the Microsoft Deployment Toolkit, The department has refined the imaging process into an enterprise-wide, standardized, single-image process that requires a minimal amount of management overhead. Some of the department's primary customizations include:

- Automatic operating system activation during deployment.

- A customized script that detects computer models and loads the specific drivers for each model. This allows deployment for all desktop and laptop models from a single image, which reduces management overhead and technician time.

- A standardized method of distributing and updating deployment servers in each of the department's six districts. This provides the same deployment base for all computers across the state—regardless of the deployment location.

- An automated process that detects the target computer's location and adds it to the correct organization unit in active directory.

- A process that turns on the system restore, sets it to 10 percent of the hard drive space, and creates the initial restore point for the computer.

- A process that detects and sets the optimal resolution for the display.

- A process that automatically configures laptop computers to connect to the wireless network.

- Automatic installation of all standardized configuration settings and product codes. This results in a stable, standardized, enterprise-wide deployment base. This customization reduced the number of incident tickets and customer downtime, significantly improving customer service and technician efficiency.

- Customized application modules for each application, allowing the creation of unique deployments for each customer. Technicians simply select the individual applications to be installed during the deployment process. The application modules can be deployed in desk-side installations and remotely. This allows all users to receive the exact same installation or updates regardless of location, and assures that users receive the latest approved versions of their software. This has reduced the issues created by having numerous versions of applications in the environment, and allows technicians to proactively fix issues experienced by the users.

- Management of Microsoft updates (Windows, Office, etc.) that includes testing and inserting them on a monthly basis. This results in images that are both secure and stable.

- Automatic detection of the target computer's physical location that installs or updates applications from the closest deployment server, no matter which deployment method is being used. This reduces WAN traffic and improves installation performance for users in remote locations.

- Customized application bundles that allow technicians to select an entire group of applications based on the business-area needs during operating system deployments. These groupings simplify the process, reduce technician time, and increase standardization for business areas.

- A pre-execution environment (PXE) boot that allows technicians to boot directly to the network. This reduces office expenses and technician time by eliminating the need to create DVDs each month.

- An integrated SharePoint search connector for Windows 7. This allows customers to search for agency SharePoint information from their search engine.

- An automated process that backs up user data and settings from their existing computer and restores it back onto their computer or places it on a new computer during the deployment process. This includes an automated process that creates an image file of the entire computer to be used as a fail-safe measure if a hard drive fails or when additional information needs to be retrieved from a hard drive.

- A customized modular design that allows nearly all configuration settings, applications, passwords, updates, and drivers to be added, changed, or removed without the need to create a new image. This greatly reduces overhead by allowing management of individual components instead of entire images.

What began as a simple OS deployment tool for users at the department's headquarters has now been developed into an enterprise-wide OS and application deployment solution, providing a solid foundation for version control in all offices across the state. Mark Wernet, State and Local Government Account Manager at Microsoft Corp. stated *"I do not know any of my Microsoft customers doing anything like this or even similar. You have taken the MDT to a new level with your customization, software module creation and technician interface."*

The department's Information Technology Manager set specific outcomes and milestones to track the progress of the initiative. He re-deployed team resources as necessary to assure success of the project. All milestones were met and all deliverables were provided on time and at a level that met or exceeded the project's scope. The IT Manager solicited feedback from stakeholders and used it to insure that the finished product was robust and met the department's needs.

The distributed deployment method uses mirroring servers in each district across the state and efficiently utilizes network infrastructure resources. The deployment center

provides a consistent, serviceable, and easily managed deployment and software-installation process.

Each of ITD's six Districts, as well as ITD Headquarters, has its own deployment server with scheduled automatic updates. This assures a consistent platform across the agency. The Deployment Center was designed to allow new modules, applications, and software packages to be easily added, while at the same time testing and assuring the interoperability of each application and operating system.

Project Significance:
Development of the deployment center meets Idaho Governor C.L. "Butch" Otter's call for state agencies to reduce costs and increase efficiency. ITD's deployment center significantly increased the efficiency of software deployment and standardized the enterprise-wide management of operating systems and applications.

ITD's deployment center is one of the best deployment and application management solutions available, and would be a valuable, money-saving solution for other government agencies. The larger the agency, the greater the savings will be.

ITD's deployment center provides software standardization across the entire enterprise. It is versatile and robust enough to meet all of ITD's current and future deployment needs. The deployment center:

- Reduces OS and application-management time, allowing technicians to put their efforts into more productive tasks.

- Centralizes the development and management of an enterprise-wide solution, eliminating duplication of effort across the state.

- Saves ITD technicians almost 6,000 hours per year in new computer deployments alone. This does not include significant time-saving reductions in support calls and for individual application installations and updates.

- Improves the overall customer experience.

- Provides a more productive work environment, allowing employees on the front line of customer service to provide more efficient service to the citizens of the state of Idaho.

Project Benefits
ITD's deployment center standardized software deployments enterprise wide, decreased the number of support calls, and resulted in a 60 percent reduction in incident tickets. The increased efficiency of the software-deployment process is saving ITD more than $225,000 per year by reducing the time required for technicians to deploy software on new workstations. This does not include the significant time and cost savings for technicians deploying software on current computers.

Using the previous system, deploying software for a typical CADD workstation took 17.5 hours to complete, 13.5 hours of which was technician time. ITD's new deployment center reduced the overall time for a CADD workstation to 2.5 hours—and reduced the required technician time to 34 minutes—a 95.8 percent decrease. The deployment center streamlined and automated the installation process for 49 of the department's primary applications, creating even more efficiencies and further reducing support costs.

For example, in the past, installing Microsoft's Dynamic Point of Sale software required the vendor to install and configure the software on each computer separately, which took approximately three hours per computer to complete. The ITD Deployment Center reduced the installation time to 20 minutes, saving the department nearly $400 in vendor costs per installation.

The Idaho Transportation Department developed the unique, cost-saving enhancements to the Microsoft Deployment Toolkit completely in-house. The process improvements are dramatic and important—saving at least 10 hours of effort per workstation, providing a standardized support landscape, and ensuring greater security with thorough inclusion of security updates and patches. ITD can now manage the core "source" of operating systems, applications, and configuration settings in one place, and deploy them to remote portals automatically. The time and cost savings are significant, and the benefits are being realized in offices across the state.

The key beneficiaries are the Idaho Transportation Department, its employees, county sheriff and assessor offices, and the citizens of Idaho who benefit from efficiency improvements and cost savings. Whether they are applying for a driver's license, renewing a vehicle registration, or providing input on the safety of a proposed road or bridge project, Idahoans are seeing the results of the ITD Deployment Center. It provides a stable, efficient, well-managed enterprise environment that reduces costs and improves customer service. It also meets the department's strategic goal of *"Becoming the best organization by continually developing employees and implementing innovative business practices."*