Windows 7 Migration Clinic

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Course Agenda

- Why Windows 7?
- Migrating User Data using the User State Migration Tool (USMT) 4.0
- Introduction to deploying Windows 7 using the Windows Automated Installation Kit
- Deploying Windows 7 with the Microsoft Deployment Toolkit (MDT)
- Using ACT 5.5 to prepare migration from Windows XP to Windows 7
- Mitigating Application Issues Using Shims
- Windows 7 Deployment with System Center Configuration Manager

Logistics

- Restrooms –
- Internet Connectivity –
- Location to make phone calls –

Top 10 Reasons to Upgrade to Windows 7

- A Better Desktop
- Smarter Search
- Easy Sharing with HomeGroup
- Built for Speed
- Better Wireless Networking

Top 10 Reasons to Upgrade to Windows 7 cont.

- Windows Touch
- Plays well with Devices
- Media Streaming
- TV and Movies on your PC
- Nag-Free Notifications

Session 1

Migrating User Data Using the User State Migration Tool (USMT 4.0) and Windows Easy Transfer

Agenda

- User State Migration Options
- Overview of USMT
- USMT Scenarios
- New Features of USMT 4.0
- Demo – USMT 4.0

User State Migration Options

- Windows Easy Transfer
  - Simple, manual option for transferring user data between two computers
  - Can transfer user data to a file or directly using an Easy Transfer Cable
- User State Migration Tool
  - Automated migration tool for transferring user data between two computers
  - Can be customized to include/exclude types of user data
  - Can migrate user data in both online and offline scenarios

Overview of USMT

- USMT is available as part of the Windows AIK
- Components
  - Scanstate.exe – backs up the user data
  - Loadstate.exe – restores the user data
  - XML Files– Determine which files and settings are backed up and restored
  - USMTUtils.exe – removes a local migration store

What can USMT migrate?

- Users
- Application Settings
  - Microsoft Office Applications
  - Many others including Firefox, Opera, Skype
- Operating System Settings
  - Desktop Wallpaper, IE Settings, Network Drive Mappings, Network Printer Mappings, etc.
- Files and Folders
  - Migrates from all User Profiles
  - Can include Access Control Lists (permissions)

USMT 4.0 Supported Operating Systems

Source Operating System

- Windows XP
- Windows Vista
- Windows 7

Destination Operating System

- Windows Vista
- Windows 7

What's New in USMT 4.0?

- Hard Link Migration Store
- Improved Space Estimation
- Ability to gather from an offline Windows operating system using Scanstate
- Document Finder
- Configurable file errors
- Volume Shadow Copy support
- Local Group Migration
- List Files being migrated

Hard-link migration store

- PC refresh
  - Deploy an OS to existing hardware
  - Retain user state on the machine
- Hard-link migration store
  - New migration store format utilizing hard links
- Benefits
  - Incredible performance increases
  - Significantly reduces hard disk utilization

Offline user state capture

- Gathering user state from an offline OS
- Scanstate enabled to:
  - Run within the Windows PE environment
  - Gather user state from Windows.old
- Benefits:
  - Improved performance on older hardware
  - Recover state from damaged machine
  - Streamline deployment with Windows.old
  - Reduced data loss risk with Windows.old

Document finder

- Applies to all USMT scenarios
- Algorithm to dynamically find documents
  - MigXML helper function
  - Generate MigXML describing files on specific system or use MigDocs.xml
- Benefits:
  - Dynamically and quickly finds user data
  - Reduces the data loss risk

Volume shadow copy support

- Applies to all online scenarios
- Utilize the volume shadow copy service
  - If the service is available
  - Used when a file is locked
- Benefits:
  - Eliminates most file access issues
  - Reduces the need for applications to be closed

Demonstration Details

- Goals and Objectives
  - Use the Windows Easy Transfer Wizard to perform a migration
  - Create a migration script using XML for use with USMT 4.0
  - Edit a USMT migration script to specify settings to be captured during migration
  - Perform a save state before performing a migration
  - Perform a load state after performing a migration

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Session 2

Deploying Windows 7 Using the Windows Automated Installation Kit

Agenda

- Overview of the Windows AIK
- Windows AIK Scenarios
- Understanding Windows SIM
- Demo – Deploying Windows 7 with the Windows AIK

Overview of the Windows AIK

- Collection of tools and documentation to enable deployment of Windows Operating Systems
- Supported Operating Systems
  - Windows 7
  - Windows Server 2008 R2
  - Windows Vista Service Pack 1
  - Windows Server 2008

Tools included with Windows AIK

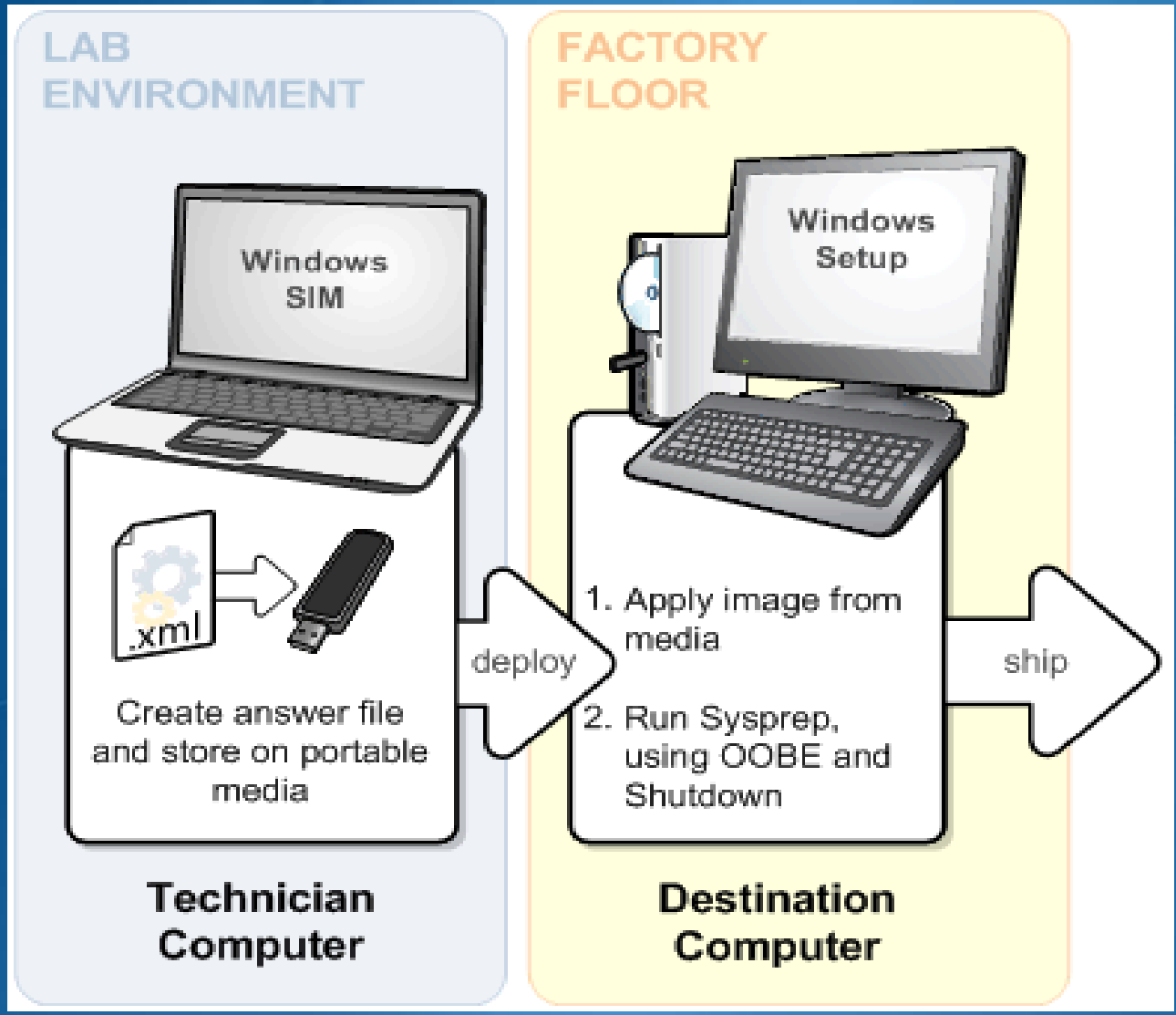
- Windows System Image Manager (Windows SIM)
- ImageX
- Deployment Image Servicing and Management (DISM)
- Windows Preinstallation Environment (Windows PE)
- User State Migration Tool (USMT)

Windows AIK Scenarios

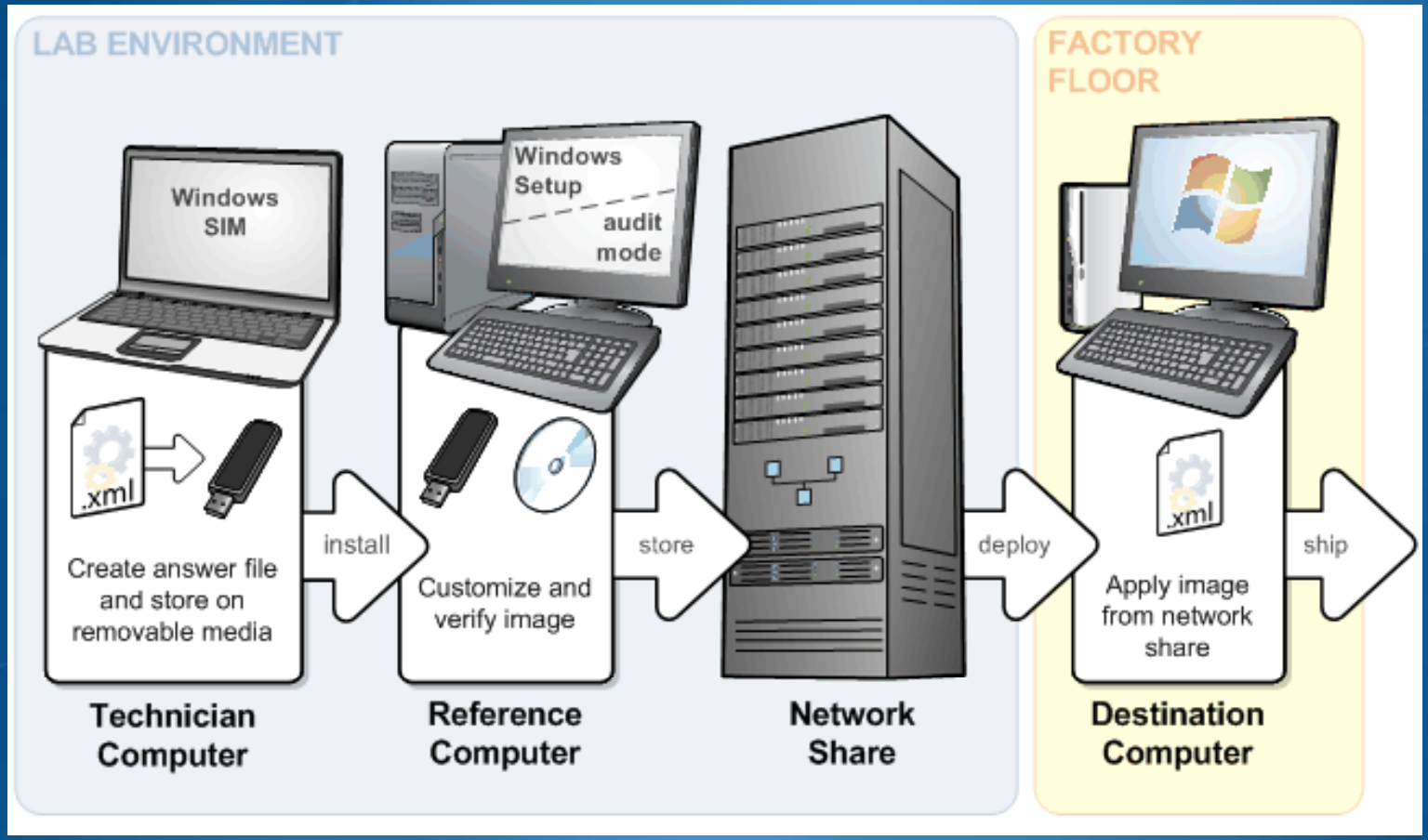
- Deploy from Media
- Deploy from a Network
- Deploy from a Server
- Service an Offline Image
- Service an Online Image
- Service an Image Using Windows Setup

- All of these scenarios require an answer file

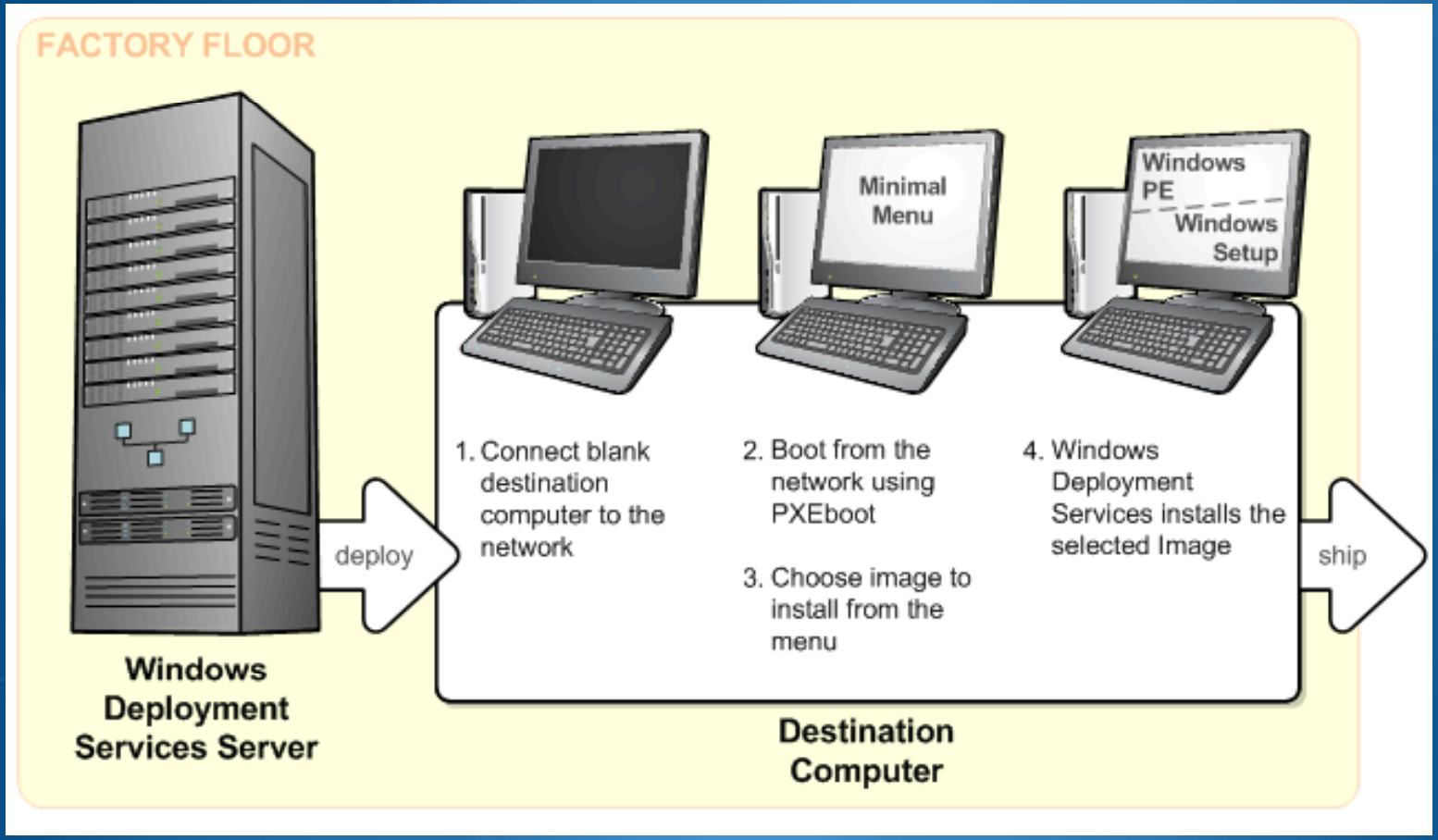
Scenario: Deploy from Media



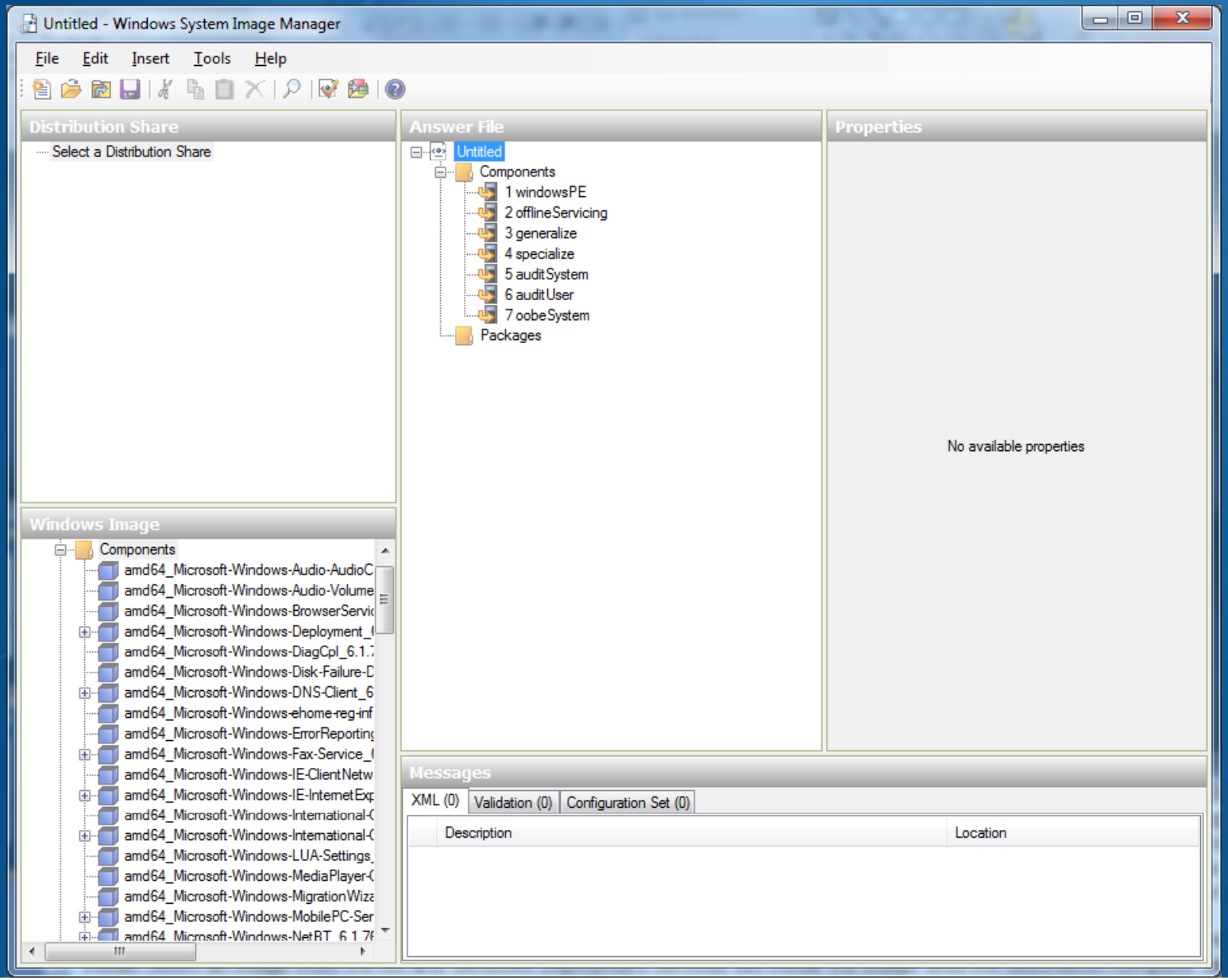
Scenario: Deploy from a Network



Scenario: Deploy from a Server



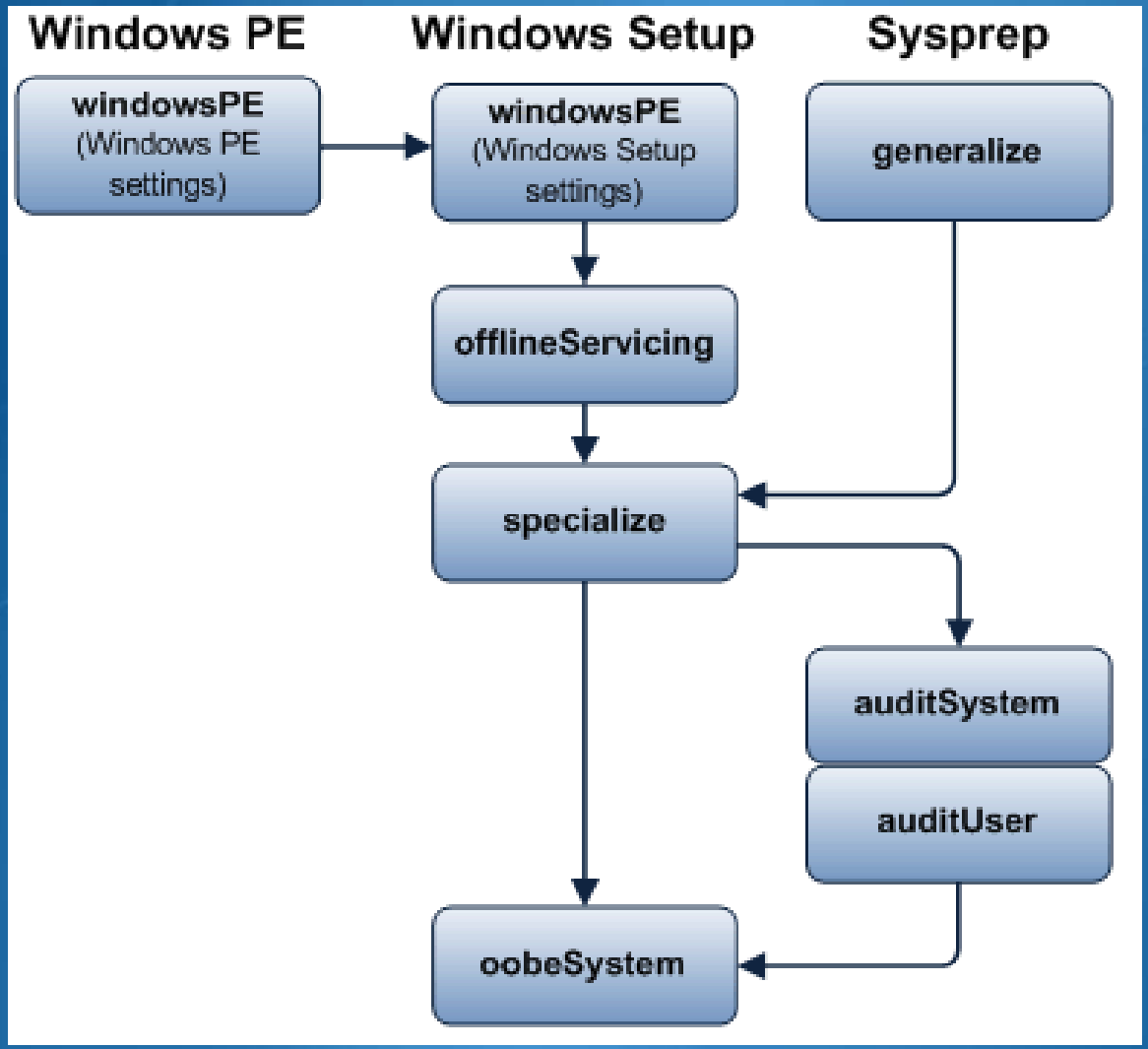
Understanding Windows SIM



Windows SIM Scenarios

- Create a New Answer File for a Windows Image
- Edit an Existing Answer File
- Add Additional Device Drivers to an answer file
- Add Applications to an Answer File
- Add Updates to a Windows Image Offline
- Create a Configuration Set
- Import Packages to a Distribution Share

Windows 7 Setup Configuration Passes



Demonstration – Deploying Windows 7 with the Windows AIK

- Use Windows SIM to do the following
  - Create an answer file
  - Create a Distribution Share
  - Configure the answer file
  - Add a Language Pack
  - Add device drivers
  - Add an application
  - Create a Configuration Set

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Windows 7 Deployment with the Microsoft Deployment Toolkit

Agenda

- MDT 2010 Overview
- Using the Deployment Workbench
- MDT 2010 Deployment Process
- Demo- Navigating the MDT

Microsoft Deployment Toolkit 2010

Microsoft Deployment Toolkit 2010

Lite Touch

- Aligns with ConfigMgr
- Evolutionary refinements
- Adds server support
- Upgrade from BDD 2007 and MDT 2008

Zero Touch
with Configuration Manager 2007

- Fully integrated experience
- Single console
- Adds server support
- Extends and enhances ConfigMgr 2007

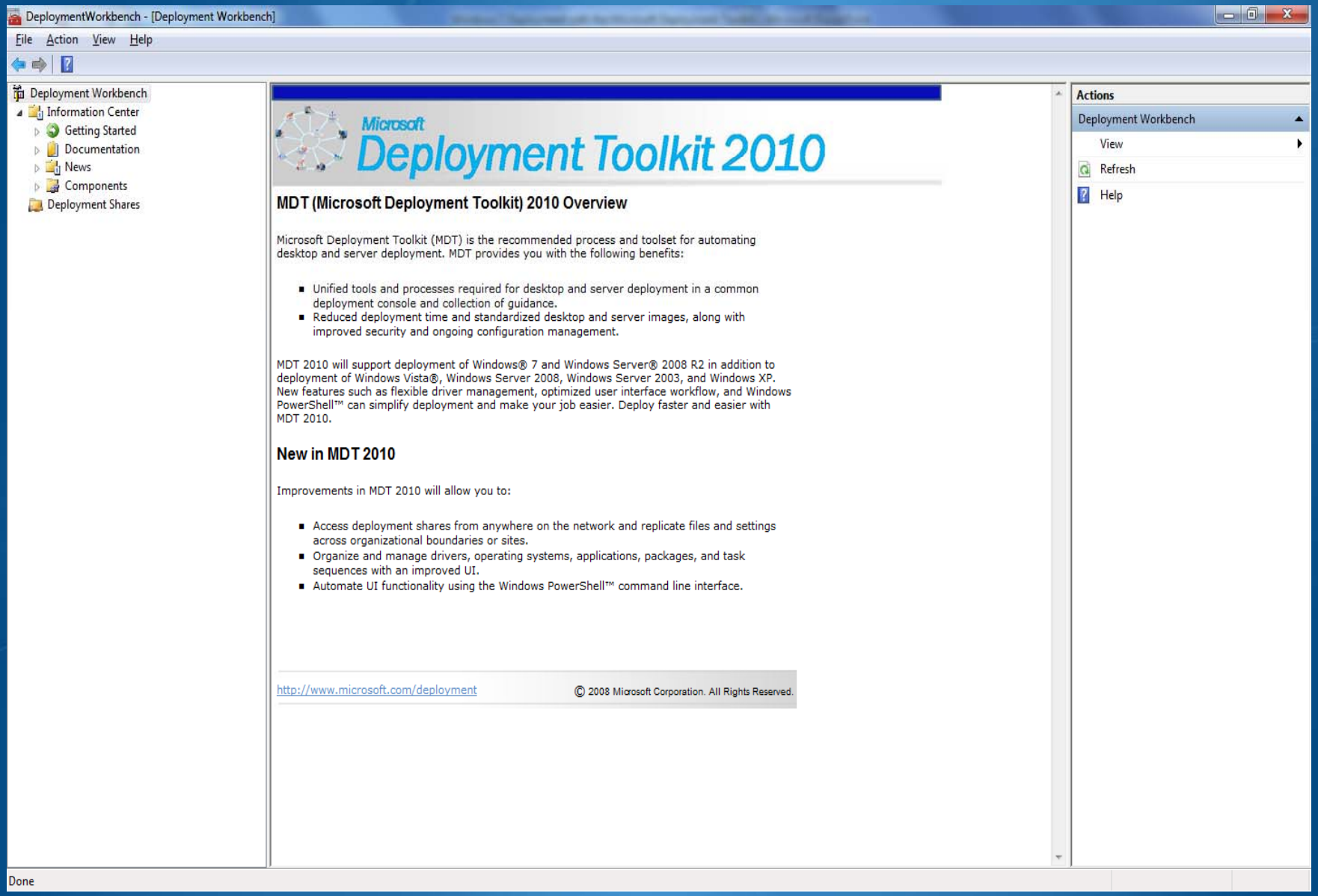
Leverages core deployment tools

Provides process and tool guidance

Introducing MDT 2010

- MDT 2010 is a significant upgrade from MDT 2008
- MDT 2010 adds full support for Windows 7 and Windows Server 2008 R2 and latest deployment tools:
  - Windows Automated Installation Kit 2.0
  - Windows PE 3.0
    - New way to construct an image
  - USMT 4.0
    - New hard-link capabilities
  - Deployment Image Servicing and Management tool (DISM)
    - Replaces several previous tools, adds new enumeration capabilities
- MDT 2010 makes these changes transparent

MDT 2010 Deployment Workbench

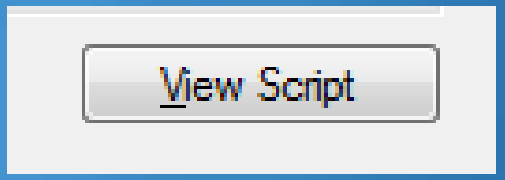


Navigating the Deployment Workbench

- Information Center
  - Getting Started – Shows the high level steps for setting up MDT
  - Documentation – Links to all of the MDT documentation
  - News – Articles related to Deployment
  - Components – Provides links to download and install the tools needed by MDT
- Deployment Share
  - Collection of Operating Systems, Packages, Applications, Drivers, and Task Sequences

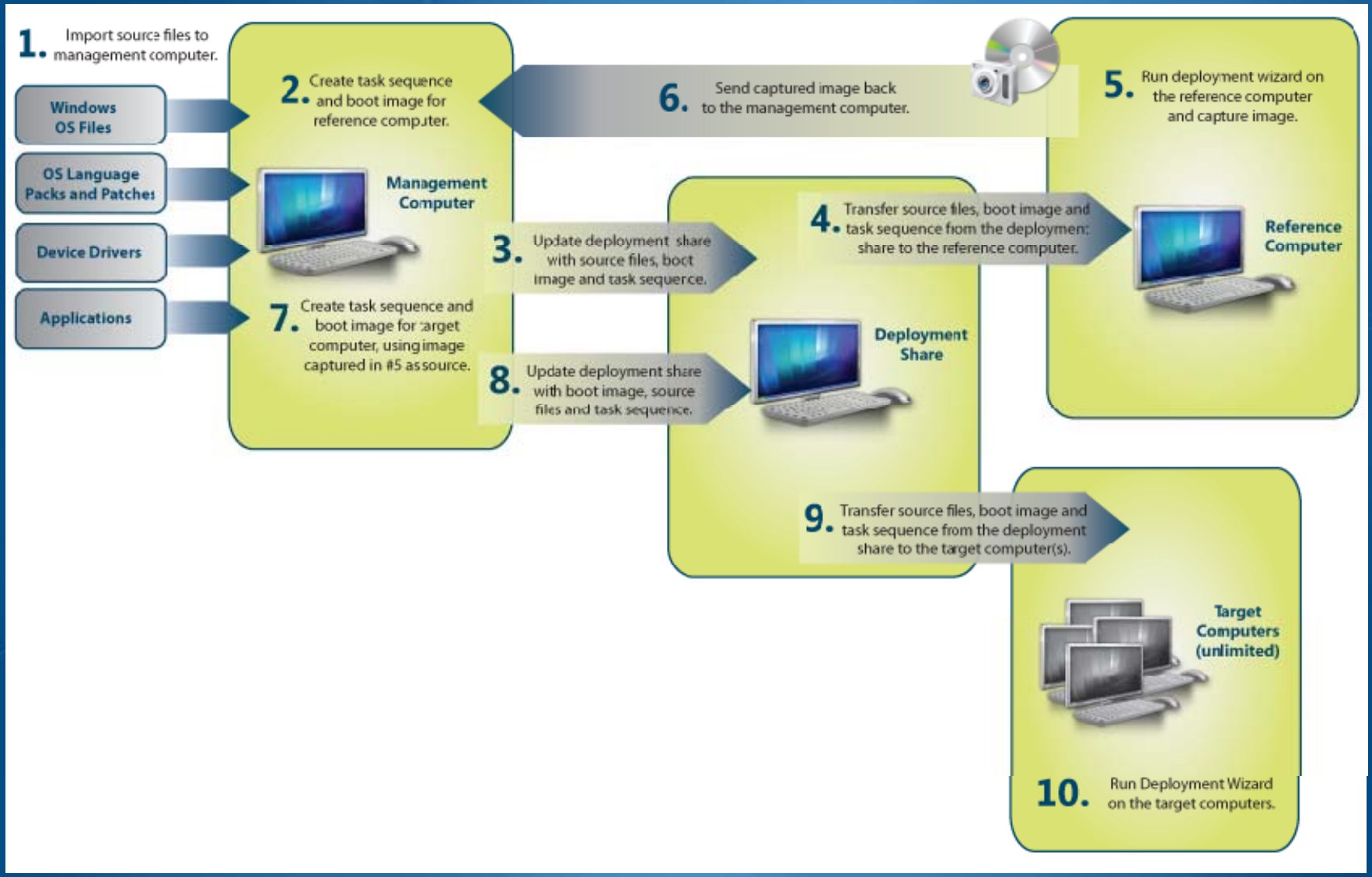
Powershell Support

- The Deployment Workbench is built on top of powershell
- Every MDT wizard includes a View Script button
- The scripts can be used to build the MDT environment without the Workbench




```
Add-PSSnapIn Microsoft.BDD.PSSnapIn
new-PSDrive -Name "DS001" -PSProvider "MDTProvider" -Root "C:\DeploymentShare" -Description "MDT Deployment Share" -NetworkPath
"\\Server\DeploymentShare$" -Verbose | add-MDTPersistentDrive -Verbose
```

MDT Deployment Process



Demonstration – Getting Started with MDT 2010

- Goals and Objectives
  - Investigate Deployment Workbench
  - Configure the deployment environment
  - Add operating systems, applications, drivers, and language packs to Deployment Workbench
  - Create a task sequence to define operating system deployment
  - Create a deployment point
  - Configure the LTI deployment environment
  - Configure a DVD installation deployment point

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Using ACT 5.5 to prepare for migration from Windows XP to Windows 7

Name
Title
Microsoft Corporation

Agenda

- Application Compatibility Planning
- Overview of the Application Compatibility Toolkit (ACT) 5.5
- Common Compatibility Issues
- Demo-The ACT 5.5

Common Compatibility Issues

- Operating system version number
- Hard-coding paths to special folders
  - Temp
  - Profiles
  - Documents and Settings
  - My Documents
- Running under non-Administrator accounts
- Installation failures
- Registry changes
- Applications with platform-specific drivers
  - Common in antivirus, backup, and partitioning software
  - Low-level drivers, Windows 9x drivers, file system filters, etc.

Common Compatibility Fixes

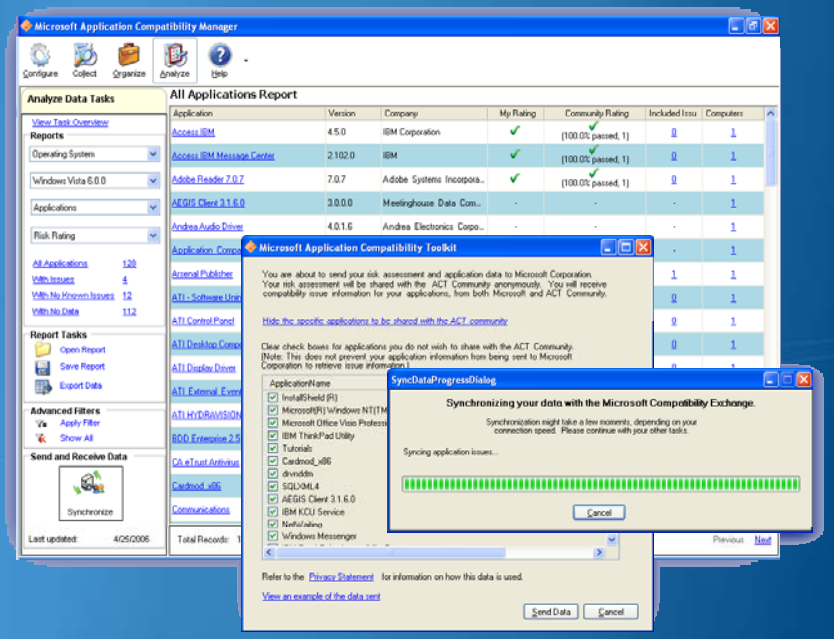
- Windows 7 is built for application compatibility
  - Issue: Many applications require Administrator privileges
    - The fix: Windows 7 file and registry virtualization
  - Issue: Legacy applications write to administrator locations
    - The fix: Windows 7 data redirection
  - Issue: Applications hard code locations of special folders
    - The fix: Hook bad system calls by application and redirect them
  - Issue: Windows 9x allowed applications to access freed memory
    - The fix: Heap fix queues calls to free memory so faults don't occur
  - Issue: Older applications might require specific Windows version
    - The fix: Version fix returns credentials for any older Windows version

Windows 7 Compatibility Issues

- User Account Control
- Windows Resource Protection
- Application updates
- 64-bit Windows 7
- Services isolation
- Internet Explorer 8
- Networking
- Microsoft GINA
- Graphics and display changes

ACT 5.5

- Analyze your application portfolio
- Evaluate impact of deployments and upgrades
- Centrally manage evaluations and settings
- Rationalize and organize information
- Prioritize compatibility efforts
- Manage issues and solutions
- Exchange compatibility information with others



ACT 5.5

Data Collectors on Participating Desktops

Agent Framework/Compatibility Evaluators

ACT also includes:

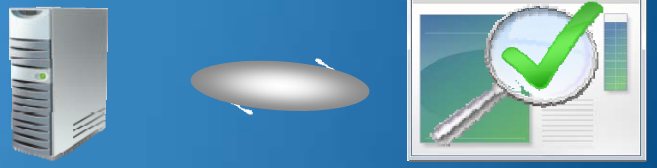
- Welcome video
- Documentation

Log Processing Service

Online Compatibility Exchange

Internet

ACT Client Workstation



Local ACT database

Application Compatibility Manager

Compatibility Evaluators

- Inventory Collector
  - Identifies all of the installed applications and system information within an organization
- User Account Control
  - Identifies potential compatibility issues due to permission restrictions enforced by User Account Control (UAC)
- Internet Explorer
  - Identifies potential Web application and Web-site issues due to the release of a new operating system
- Windows 7 Compatibility
  - Detects and reports applications that might experience issues running on Windows 7:
    - GINA
    - Use of deprecated APIs
    - Session 0 isolation
- Update Impact Analyzer
  - Identifies potential application compatibility issues due to a new Windows Update deployment

ACT 5.5 Reporting

- Operating System Reports
  - Application Report
  - Application Installation Packages Report
  - Computer Report
  - Device Report
- Internet Explorer
  - Web Site Report
- Update Impact
  - Applications
  - Updates

User Account Control

- Applications run without Administrator privileges
- Reduces potential for introduction of vulnerabilities
- Issues
  - Some application installers may not be detected
  - Some applications are administrator ‘by design’
  - Some applications check for Administrator credentials
  - Symptoms (silent failure, prompts, modal message)
- Modify the application to work with User Account Control
  - Run as Standard User
  - Administrator activities through Component Object Model (COM), another EXE
  - Manifest applications for User Account Control privilege level
  - No redirection should be needed
- Runtime mitigations
  - Run application with elevated privilege
  - Release access control lists (ACLs) on files/folders

Windows Resource Protection

- Protects the system: files, folders, registry keys
- Only the operating system can update protected resources
- Risks
  - Application tries to write to protected files and registry keys
- Issues
  - Install, uninstall, and runtime failures
- Mitigations
  - Files and registry keys are redirected
  - Never replace Windows system files and registry keys
  - Never repackage Microsoft redistributables

64-Bit Windows 7

- No support for 32-bit drivers
- Signed kernel mode drivers required
- No support for 16-bit:
  - Installers
  - Components
  - Applications
- No redirection for x64 native applications

Services Isolation

- Services run in their own private session.
- Users no longer share the session with services.
- Issues
  - Services cannot directly interact with user desktop or applications
  - Services with user interaction could hang because the user interface (UI) will not be visible
  - Creating session, global namespace objects
- Mitigations
  - Notification sent to current user when there is UI in session 0
  - Windows XP compatibility mode
  - Update existing applications

Internet Explorer 8 Protected Mode

- Internet Explorer runs with very low permissions
  - Internet Explorer cannot modify user files or registry keys!
  - File/registry writes are redirected, visible from Internet Explorer only
  - Windows Messaging blocked
- Issues
  - Controls that share data with external processes fail
  - New prompts request user permission
- Mitigations
  - Manifest .ocx installers
  - Use COM to communicate with external processes
  - Add the site to the trusted sites list
  - Run out of process and as low Mandatory Integrity Control (MIC)

Networking

- Networking changes
  - TCP/IP stack has been rewritten
  - Addition of Kernel mode IP helper APIs
  - IPv6 enabled by default
  - Ability to turn off Windows Firewall
- Mitigations
  - Update applications to use new networking APIs and filtering platform
  - Update applications that rely on IPv4 addresses to handle IPv6
  - Reauthor applications that interact with Windows Firewall
  - Microsoft is engaged with networking, firewall, and antivirus vendors to adopt new platform and support for Windows 7

Version Checking

- Application checks for specific operating system versions
  - Dependency verification
  - Product marketing restrictions
- Symptoms vary by application
  - Silently fails to install or launch
  - Display “unsupported operating system” message
- Mitigations and remedies
  - Application should choose the minimal supported operating system
  - Applications should not check for version unless absolutely necessary

Graphics and Display

- New display driver model and Desktop Window Manager
- New areas to test
  - Thumbnails
  - Flip 3D
  - Drag and drop
  - Application pop-up windows
  - High dots per inch (DPI)
  - Screen rotation
  - Multi-monitor support
  - New UI themes

Components Removed from Windows 7

- These features will not be available:
  - FrontPage server extensions
  - Point-of-presence (POP3) server
  - Services for Macintosh, services for NetWare networks
  - Kernel-mode printer drivers
  - WinHelp as out-of-band only (HTML Help and .chm files are supported)
  - Video overlays removed
  - Netmeeting
  - Windows Mail (Outlook Express)

Demonstration- Microsoft ACT 5.5

- Goals and Objectives
  - Understand the methodology for the Application Compatibility Toolkit (ACT) 5.5
  - Inventory and analyze your application portfolio
  - Rationalize applications that should be prioritized
  - Prioritize applications to ensure appropriate focus with compatibility efforts
  - Test and Mitigate applications using the developer and tester tools included in ACT 5.5

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Mitigating Application Issues Using Shims

Agenda

- Application Migration Strategies
- How SHIMs Work
- Standard User Analyzer
- Common Application SHIMs
- Demo

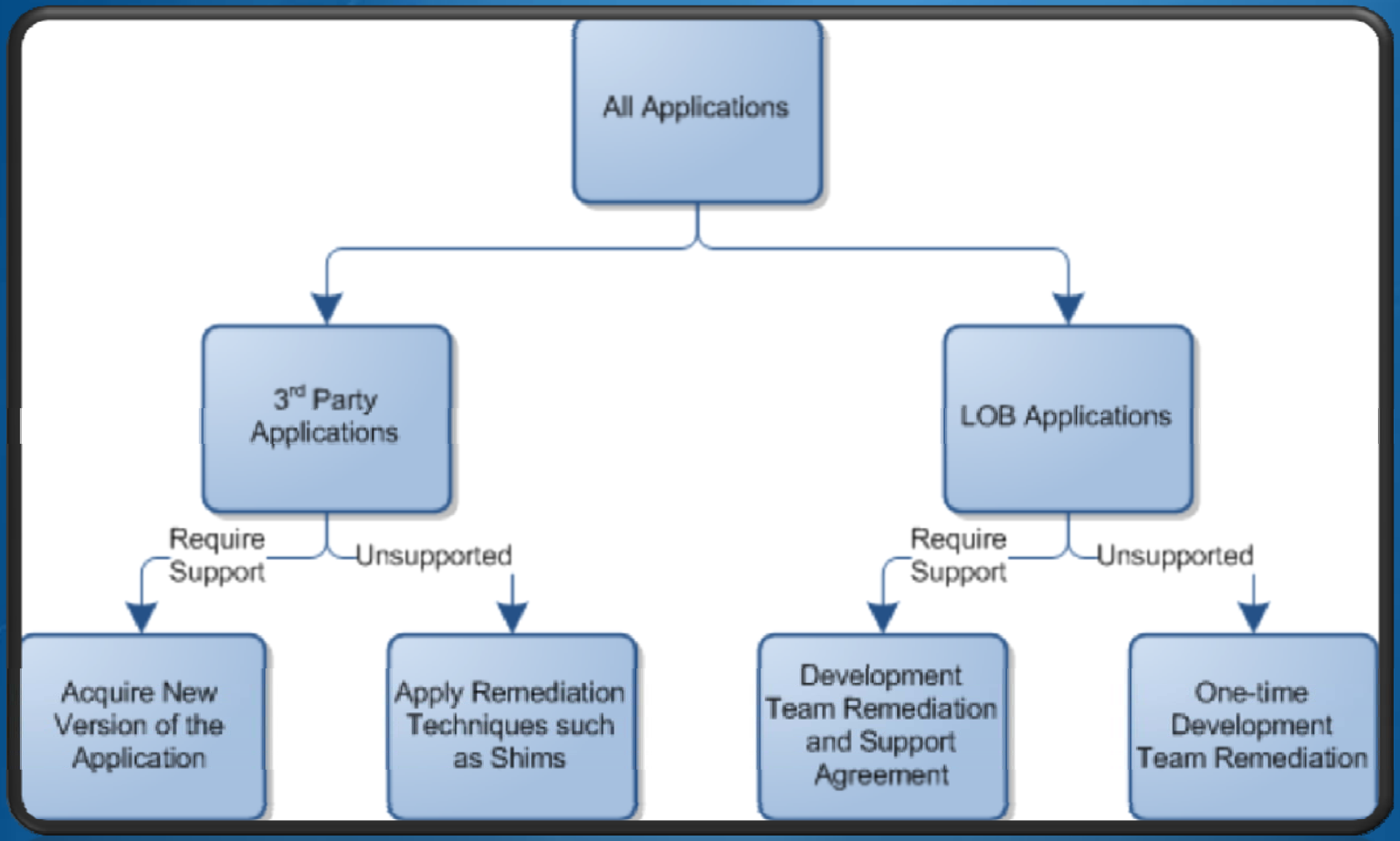
Understand the Operating Environment

- Are your users running as Standard Users?
  - Organizations running as standard users today have significantly fewer issues migrating to Windows Vista or Windows 7
- Do you have many mobile users?
  - Remediation can vary for frequently disconnected users
- Do you have an application deployment infrastructure?
  - Some remediation technologies depend on this
- What is your desired configuration?
  - Settings and configuration you'd like to update

Overview and Customer Needs

- There are several techniques to remediate applications
  - Updating the source code when available
  - Utilizing “Shimming” infrastructure in Windows
  - Modifying policy or settings
  - Employing virtualization technologies
- Applications should be rationalized before the remediation phase
  - **It is cheaper to fix fewer applications**

Choosing Remediation Techniques

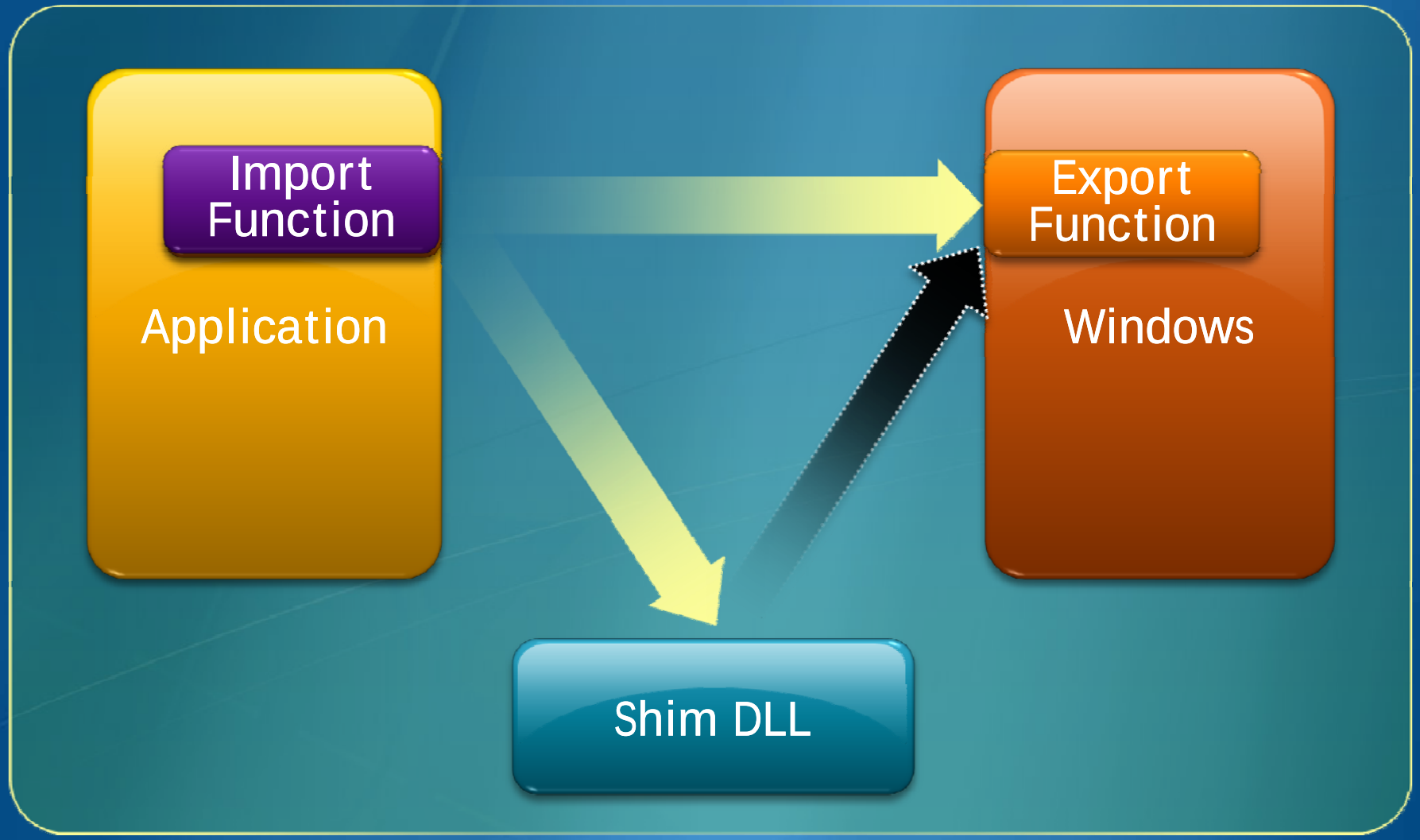


When to Use Shims

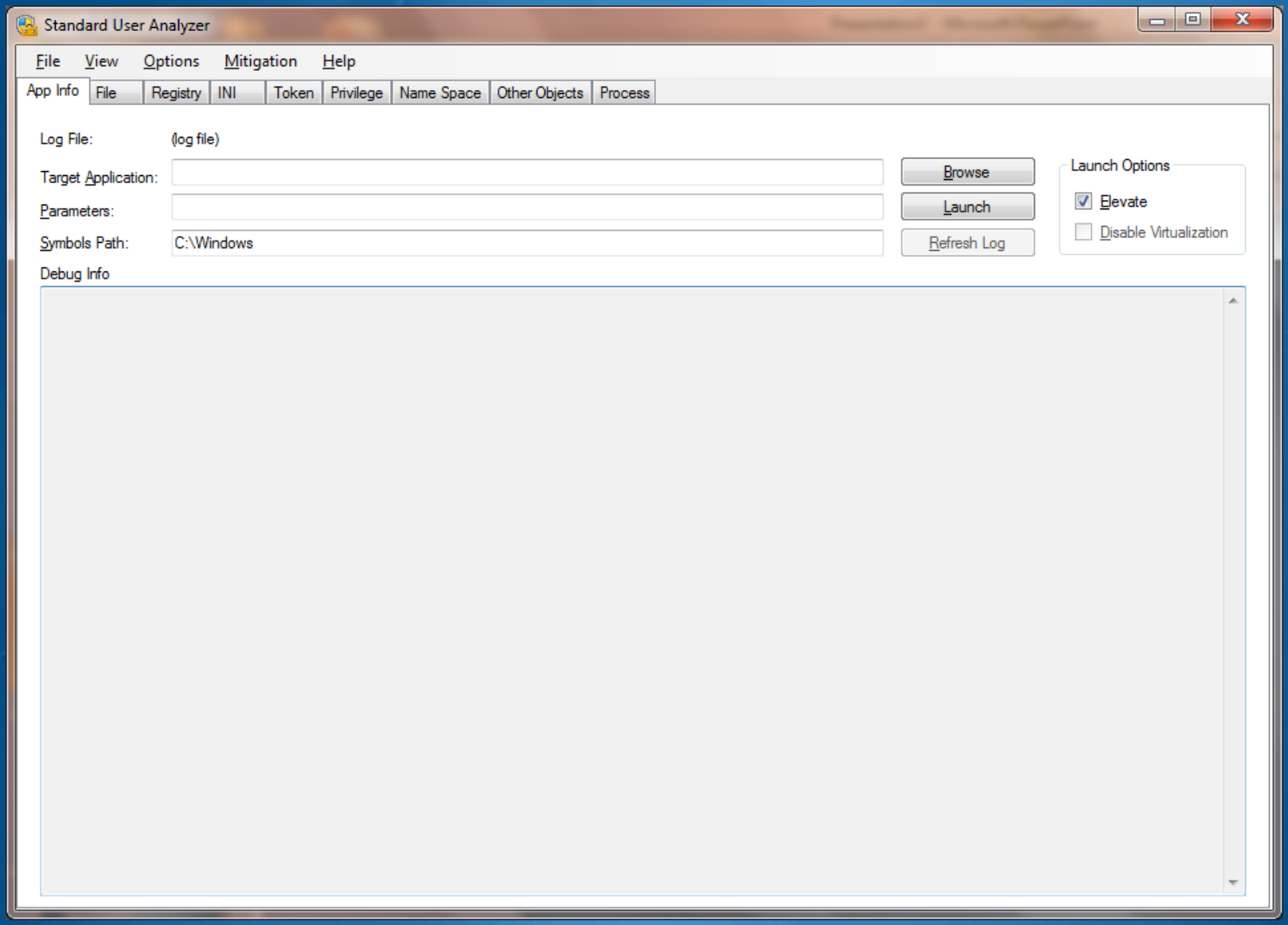
- Define standards for when to use this technique:
  - Vendor no longer in business
  - Internal applications
  - Support negotiable

- Shimming applications can be outsourced

How Shims Work



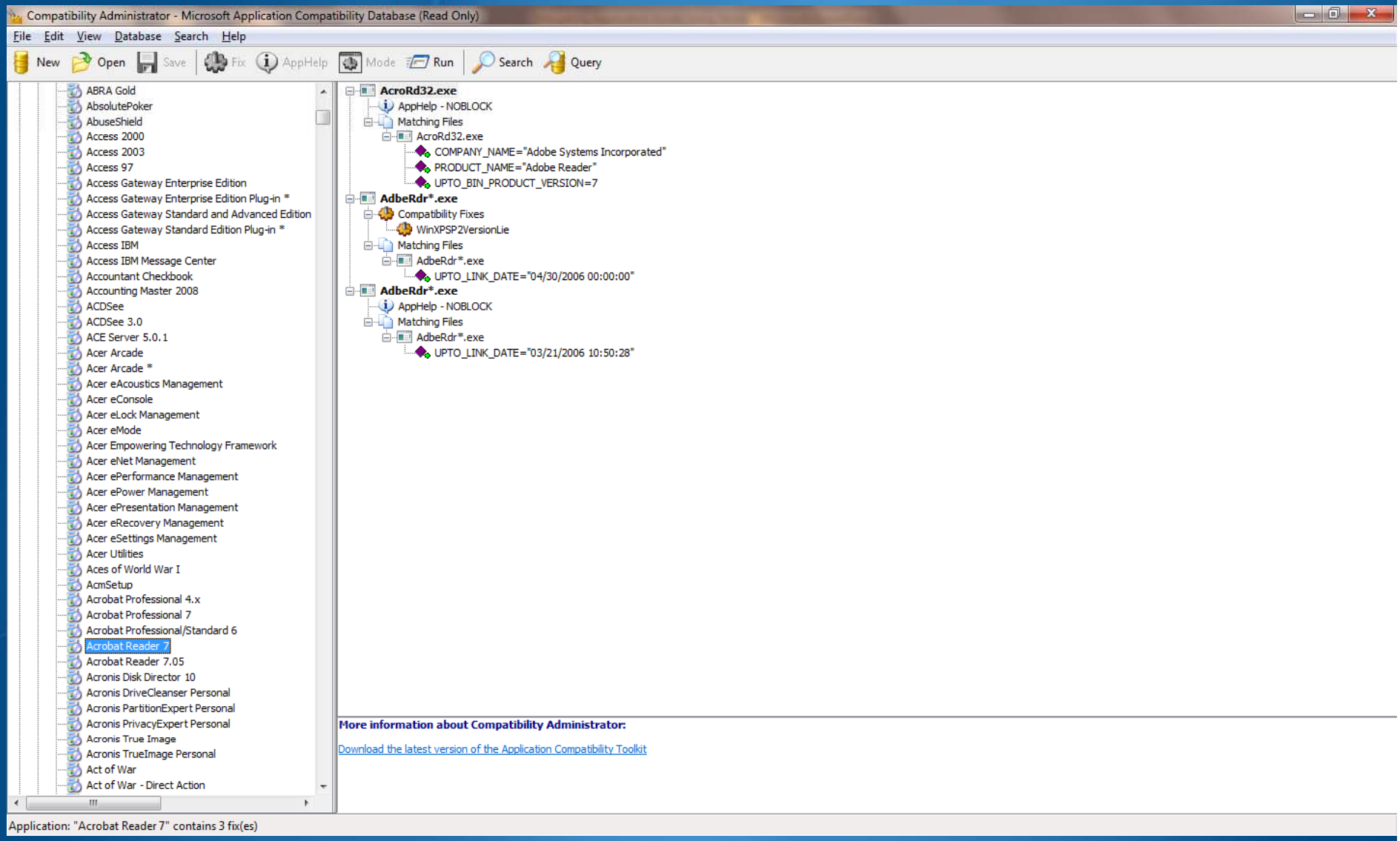
Standard User Analyzer



SUA Mitigations

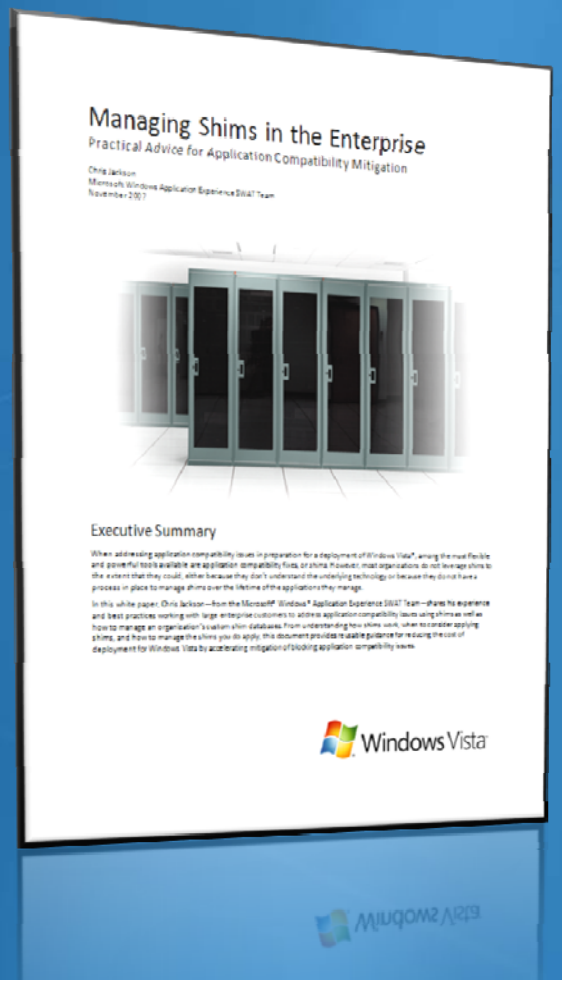
- SUA can recommend:
  - ElevateCreateProcess
  - ForceAdminAccess
  - LocalMappedObject
  - VirtualizeDeleteFile
  - VirtualizeHKCRLite
  - CorrectFilePaths
  - VirtualRegistry

Compatibility Administrator



Managing Shims in the Enterprise

- http://go.microsoft.com/fwlink/?LinkId=107072



Demonstration – Using SHIMs

- Goals and Objectives
  - Analyze legacy applications to identify compatibility issues.
  - Apply custom shim databases with application fixes using the compatibility administrator.
  - Deploy custom shim databases across an organization.

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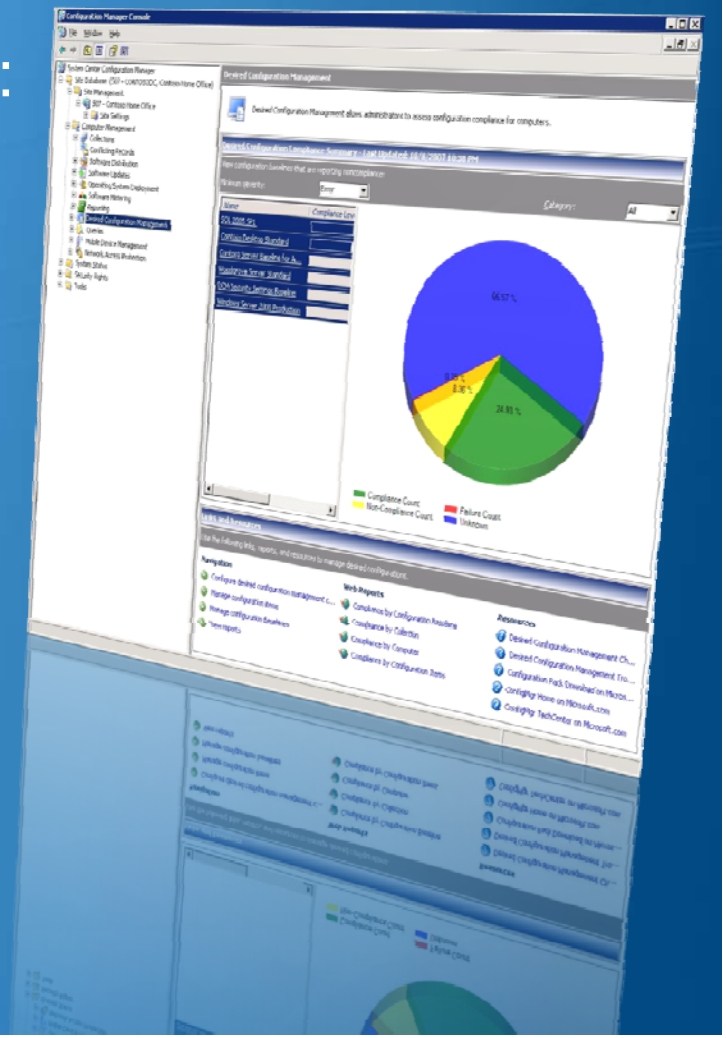
Deploying Windows 7 with System Center Configuration Manager

Agenda

- Overview of Configuration Manager
- OS Deployment in Configuration Manager
- MDT Extensions for Configuration Manager OSD
- Demo-OSD

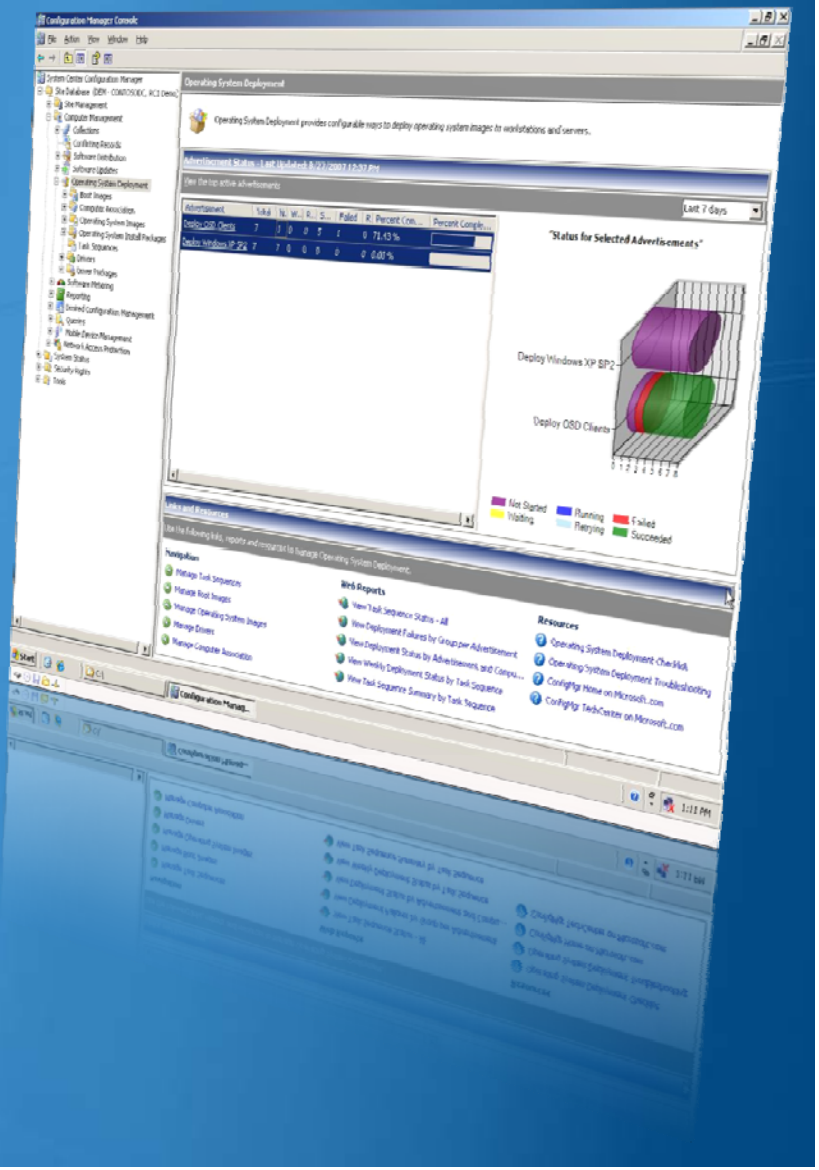
System Center Configuration Manager

- Automated solution for assessing, migrating and deploying windows server and client operating systems
  - Broad support for advanced delivery:
    - Operating systems
    - Applications
    - Software and hardware updates
- Support for both physical and virtual environments
- Increased scenario support:
  - Corporate Network
  - Branch locations
  - Mobile Workforce
  - Home workers (Internet based)



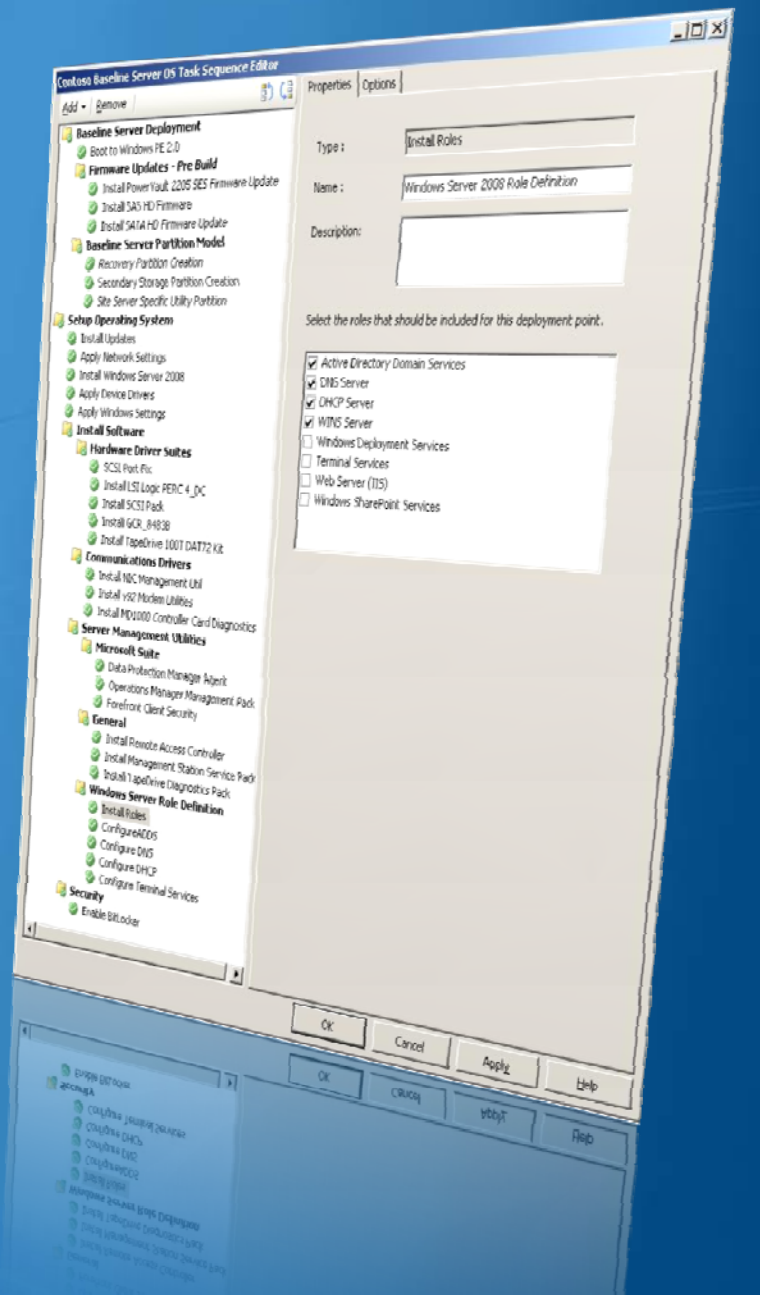
Operating System Deployment

- Highly automated solution for assessing, migrating and deploying windows server and client operating systems
  - Common toolset and process
  - End-to-end deployment automation support
- Assess migration readiness for Windows Server 2008, Vista and Office 2007
  - Built in reports for minimum and recommended settings
- Enable dynamic deployment of drivers at runtime
  - Organize, replicate and deploy packages
  - Utilize Windows PnP detect



The Task Sequencer

- Core OS deployment mechanism
- Delivered to clients as policy via MP
- Sequence of steps to execute
  - Steps prior to deploying new OS
  - Steps in Windows PE to deploy new OS
  - Steps after the new OS is deployed
- Completely hands-off for full automation of the process
- Two kinds of actions
  - **Built-in** actions provided within product
  - **Custom** actions command line driven, Vbscript, Batch etc.
- Task Sequence can do other actions:
  - Capture images
  - Deploy Application chains
  - Administer complex activities
  - More (unlimited)



Task Sequence Actions

The built-in list of building blocks

- Run Command Line
- Install Software
- Install Software Updates
- Join Domain or Workgroup
- Connect to Network Folder
- Reboot Computer to Windows PE or hard disk
- Set Task Sequence Variable
- Format and Partition Disk
- Convert Disk to Dynamic
- Enable BitLocker
- Disable BitLocker
- Request State Store
- Capture User State
- Restore User State
- Release State Store
- Apply Operating System
- Apply Data Image
- Setup Windows and ConfigMgr
- Install Deployment Tools
- Prepare ConfigMgr Client for Capture
- Prepare Windows for Capture
- Capture Operating System Images
- Auto Apply Drivers
- Apply Driver Package
- Capture Network Settings
- Capture Windows Settings
- Apply Network Settings
- Apply Windows Settings

Controlling Task Sequence Steps

Condition

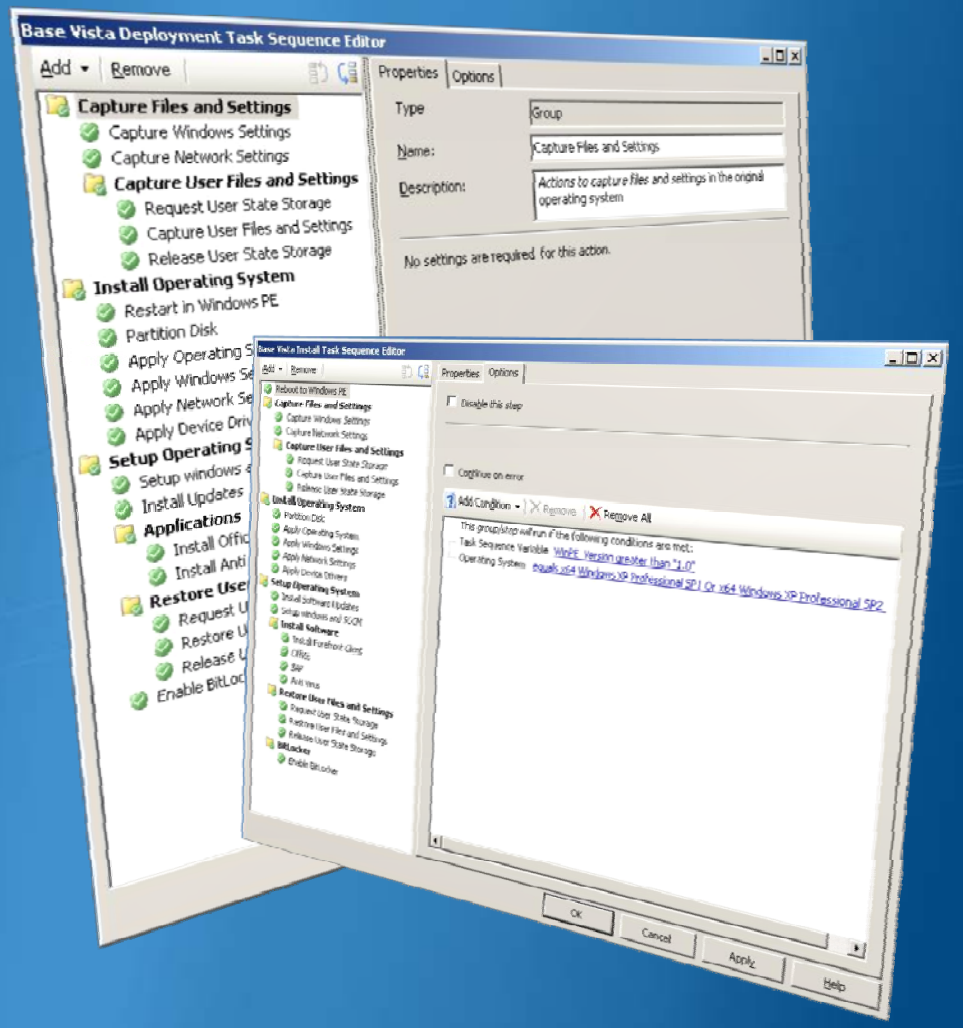
An optional test. If the test returns true, the action is executed. If the test returns false, the action is skipped

Action

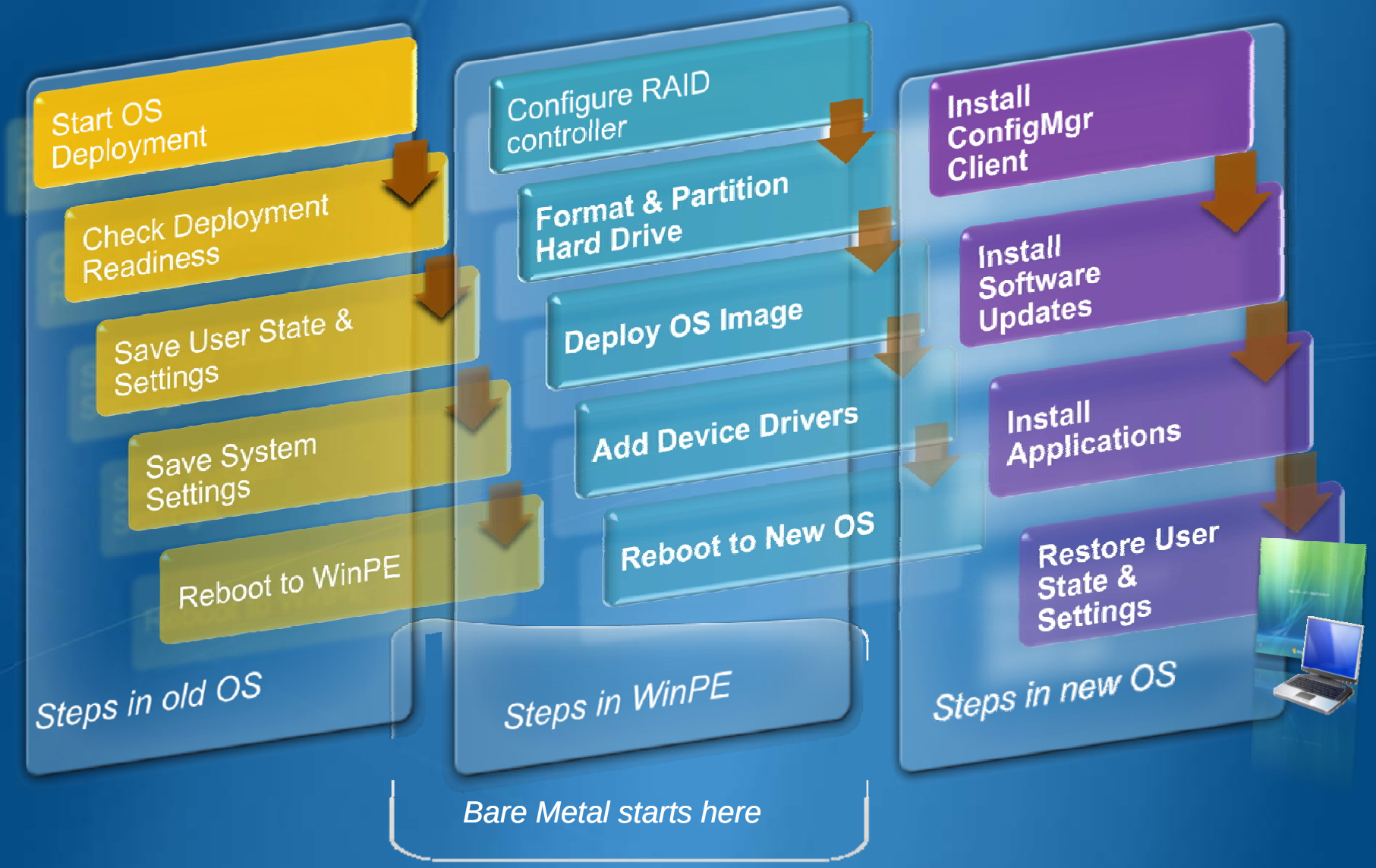
The actual work to perform. Typically a command line action – map a network drive, reboot, run a script, etc.

Continue-on-Error flag

Governs behavior if the action completes with an error



How Windows Deployment works



MDT Extensions

Microsoft Deployment Toolkit 2010

Feature categories

- Wizards
  - Help with the setup and configuration, instead of manual step-by-step processes
- Capabilities added to a task sequence
  - Built into our task sequence templates
  - Leverages scripts
- Additional task sequence actions
  - Extensions to the task sequence editor
  - Scripts to perform the task
- Making deployments more dynamic
  - Web services, databases, computer variables, collection variables, conditions, etc.

Demonstration

- Goals and Objectives
  - Configure the deployment environment
  - Configure offline installation of 7 Language Packs and Updates
  - Configure a New Computer Pre-Boot Execution Environment (PXE) installation of Windows 7
  - Configure a Refresh Computer installation of Windows 7

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