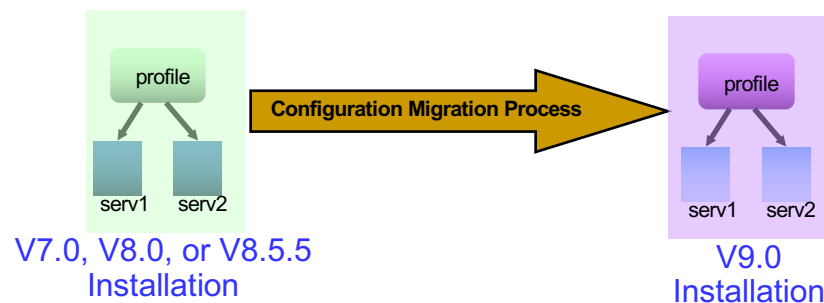


WebSphere V9 Configuration Migration



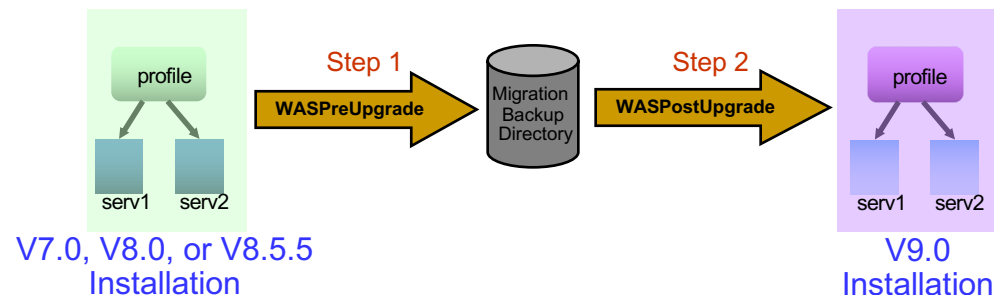
WebSphere Configuration Migration Overview

- Configuration migration process includes tools, procedures, and information to reconstruct or migrate the current WebSphere Application Server configuration from one release to the next.
 - *Configuration* includes topology information, server-specific customizations, and applications with any known associated data.
- Configuration migration allows customers to maintain a stable environment, while providing a path for a future implementation that includes the latest technologies delivered by the new release of WebSphere Application Server.



WebSphere Configuration Migration Overview

- Two step process
 - Configuration data from source profile is captured into a migration backup directory. (WASPreUpgrade)
 - Source data is merged into the new target profile. (WASPostUpgrade)
- Allows customers to keep their old system running until the new environment is ready to be used.
- Various strategies and options are available for running a migration, depending on the topology of the installation(s).
 - Scenarios are outlined in the WebSphere Application Server Knowledge Center and white papers.



WebSphere Configuration Migration Overview

- Configuration migration is not part of the server runtime process.
 - Under certain conditions, it is not necessary to stop the old server in order to migrate.
- Migration handles one profile/node at a time.
 - Profiles in a cell or in a flexible management topology must be migrated in a predefined order.
- Migration merges the old configuration data into the new configuration data, taking into account any release to release changes where the data needs to be replaced, merged or purged.

Goal is to have:

- the newly migrated servers behave similarly to old servers.
- the applications continue to function at the same JEE level.

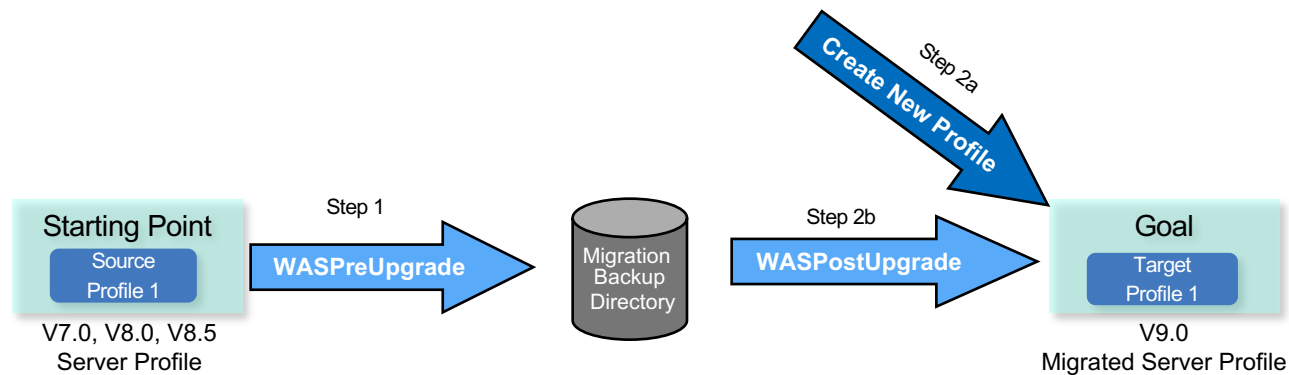
Configuration Migration Tools



WebSphere Configuration Migration Tools

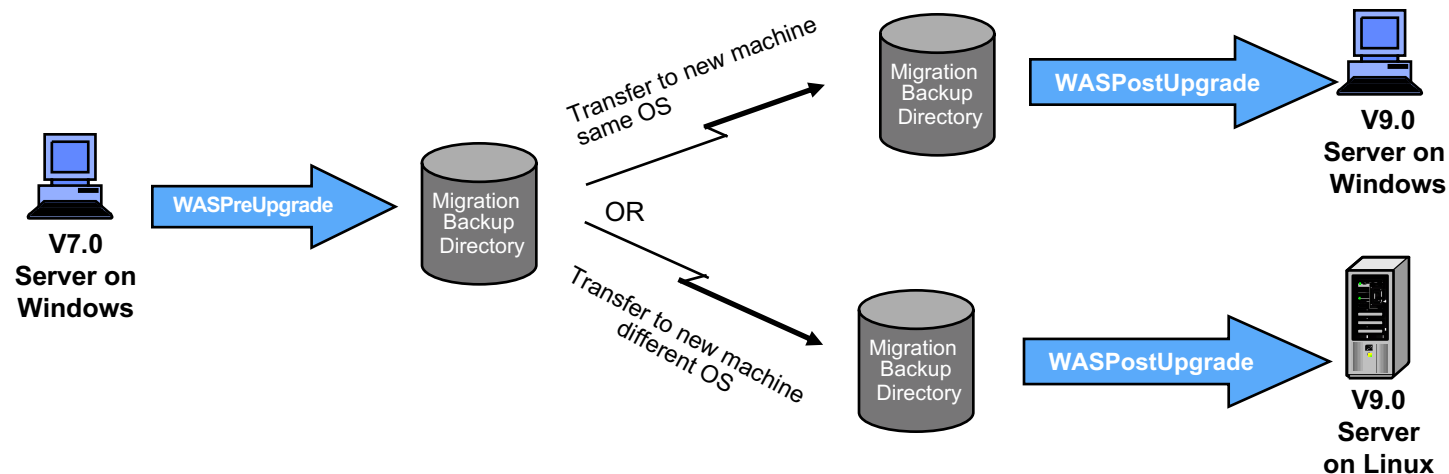
- WebSphere Application Server configuration migration tools
 - Configuration Migration Tool (CMMT) is for distributed
 - Move existing configurations between versions on same machine
- z/OS Migration Management Tool (zMMT) – for z/OS
 - Creates jobs to perform the migration
- Command line tools for configuration migration
 - For distributed and iSeries
 - Local and cross-platform version migration support
- Remote Migration Jar
 - For distributed only, packages WASPreUpgrade Command.

Migration Tooling – Local Migration



- Migrate on the same platform
- Command-line tools or migration wizard

Migration Tooling – Cross Machine Example

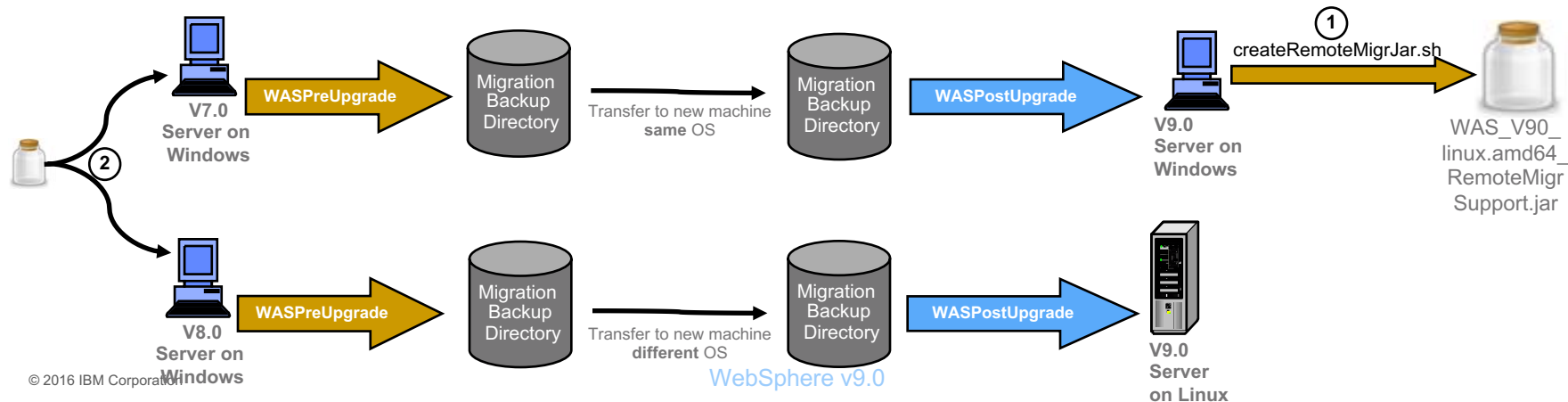


- Migrate to a different distributed platform (Linux x86 to Windows)
- Migrate to new hardware on same OS (Linux x86 to Linux x86)
- WASPreUpgrade's “-machineChange true” option only available for command line
- The example above requires WebSphere V9.0 be installed on the V7.0 machine.

Migration Tooling – Cross Machine Example

- The createRemoteMigrJar tool

- Designed to help with remote migrations to new hardware.
 - No need to install latest WebSphere release on old hardware.
 - The tool packages the latest WASPreUpgrade command. (Note: This package is OS specific!!)
 - Send package to old hardware of same OS.
 - Run WASPreUpgrade to create migration backup directory.
 - Zip up and send migration backup directory to the new machine and finish the migration.
- Also designed to help with mass remote migrations.
 - Create once and use on all source machines matching OS.

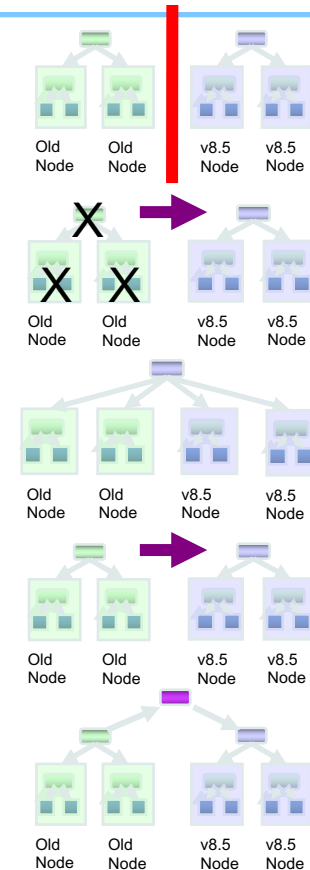


V9 Configuration Migration Strategies

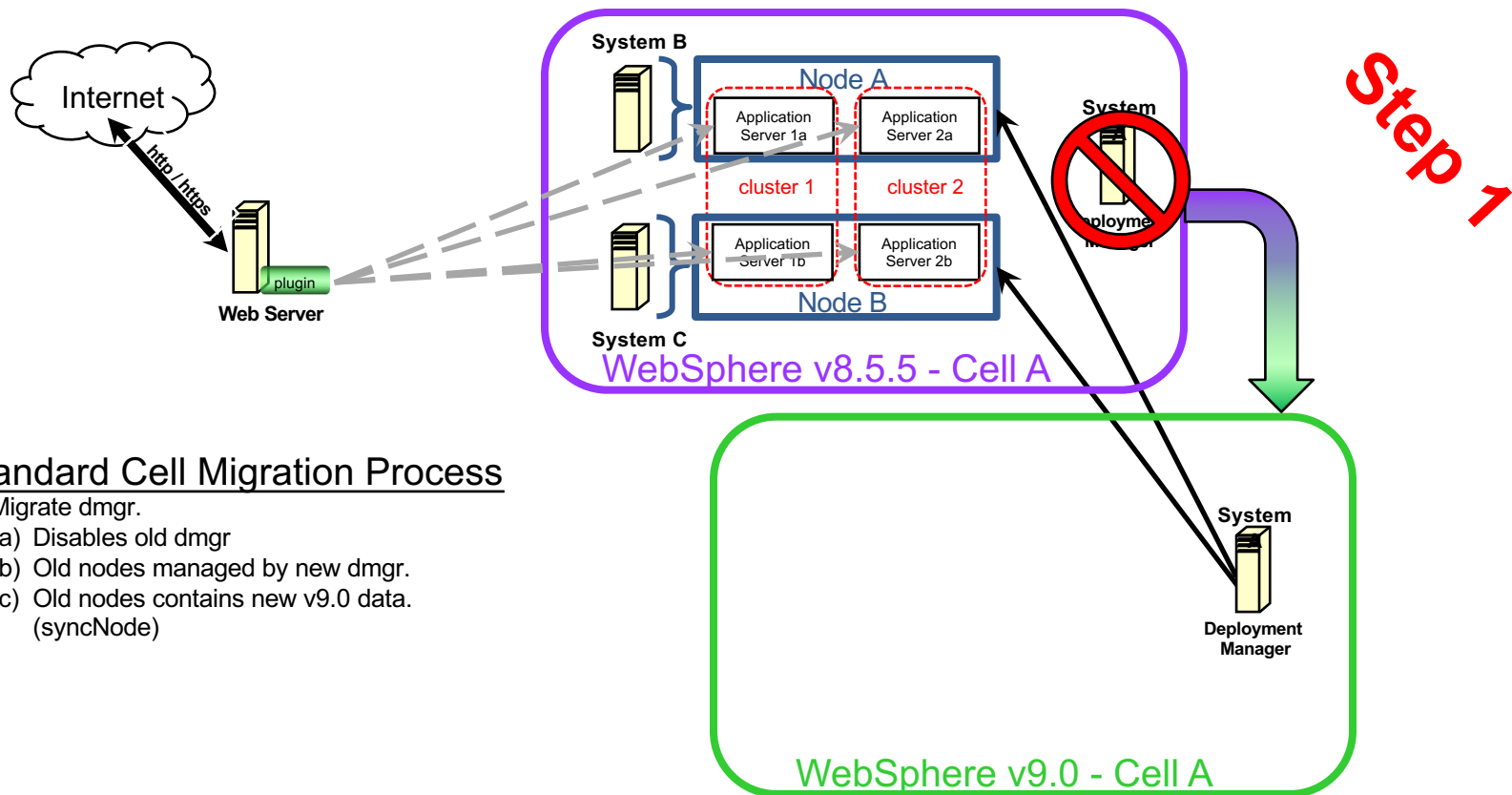


Five Strategies for Migrating Network Deployment

1. Manual Side by Side (Scripted)
 - Create a new cell and populate with tools or manually
 - No runtime migration tools
2. In Place - Copy and replace the cell (Standard)
 - Recreates the ~~exact~~ existing configuration in new cell
 - DMGr and nodes are migrated
3. In Place - Copy and replace the DMGr (Hybrid)
 - Recreates the **exact** existing configuration in new cell
 - Add new nodes and move incrementally
4. In Place - Copy and coexist (Clone – manual process prior to v9)
 - Recreates the **exact** existing configuration in new cell
 - All ports in the new cell will be changes.
5. Side by Side (Fine Grained)
 - Create a new cell and incrementally copy configuration
 - Uses an intermediate profile, runtime migration and wsadmin tools



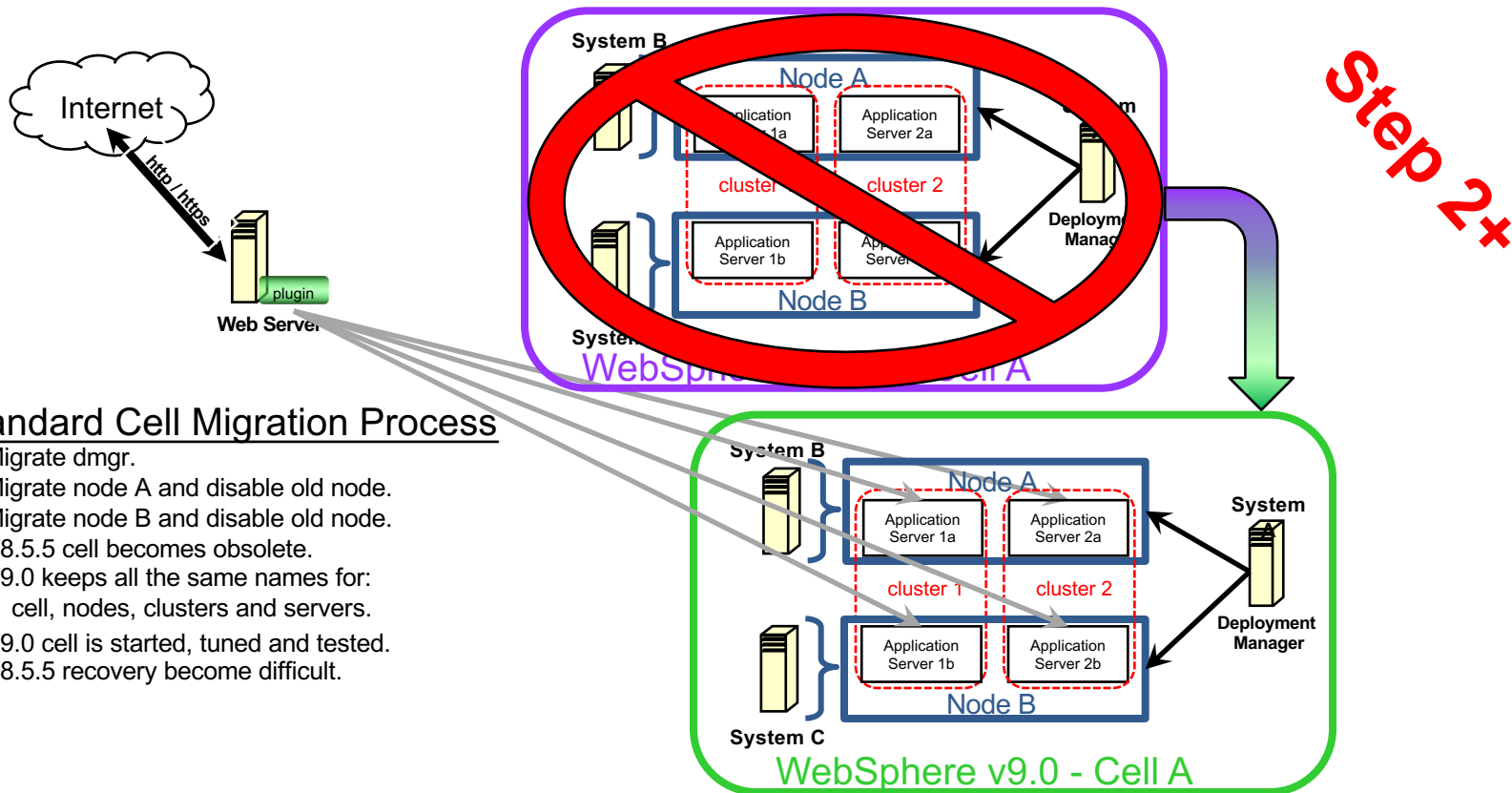
Standard Migration Strategy (In Place - Copy and replace the cell)



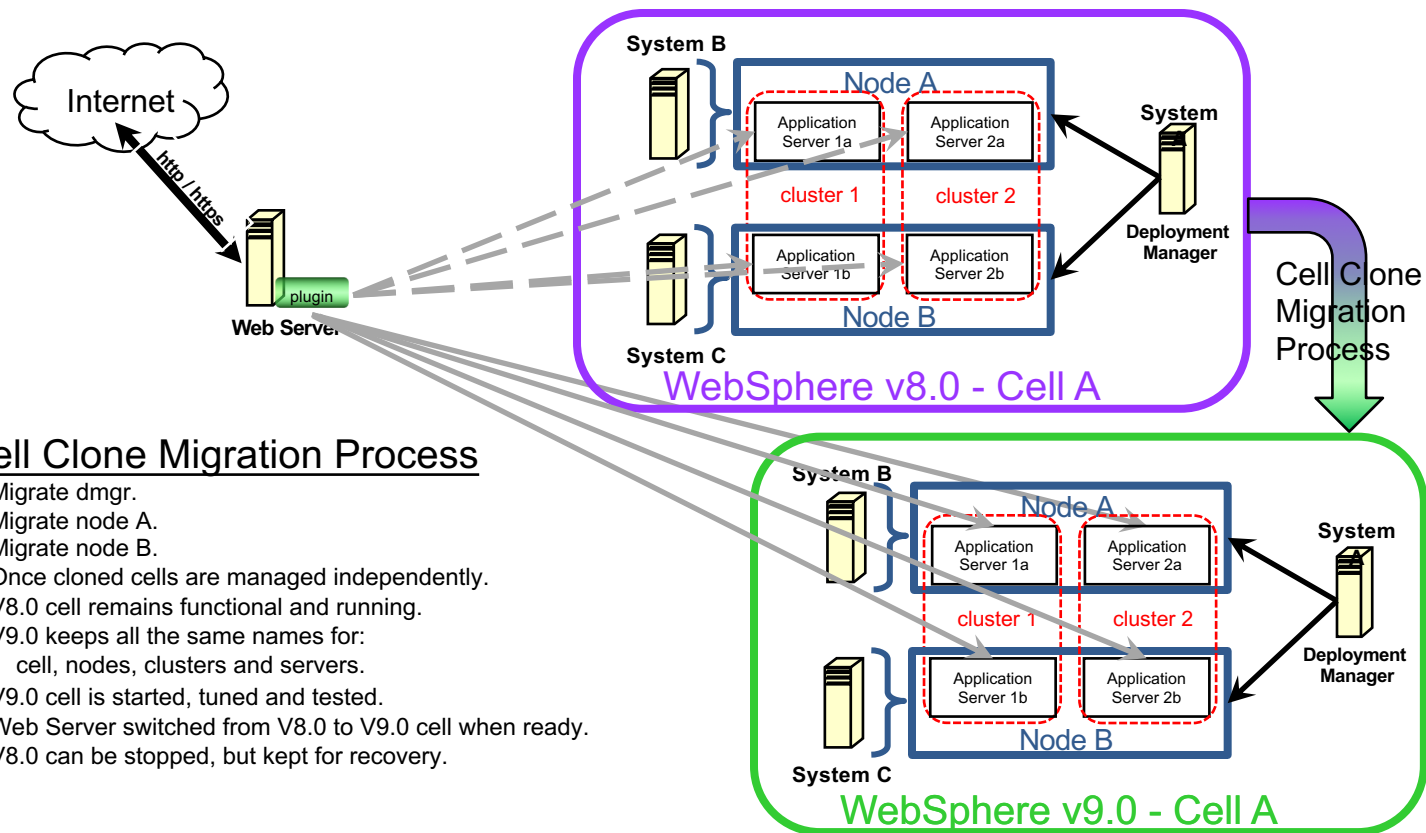
Standard Cell Migration Process

1. Migrate dmgr.
 - a) Disables old dmgr
 - b) Old nodes managed by new dmgr.
 - c) Old nodes contains new v9.0 data. (syncNode)

Standard Migration Strategy (In Place - Copy and replace the cell)



Clone Migration Strategy (In Place - Copy and coexist)



Cell Clone Migration Process

1. Migrate dmgr.
2. Migrate node A.
3. Migrate node B.
4. Once cloned cells are managed independently.
5. V8.0 cell remains functional and running.
6. V9.0 keeps all the same names for:
cell, nodes, clusters and servers.
7. V9.0 cell is started, tuned and tested.
8. Web Server switched from V8.0 to V9.0 cell when ready.
9. V8.0 can be stopped, but kept for recovery.

Advantages of using the Clone Migration Strategy

- Practice and throw away. Flesh out the issues.
- No scheduling of weekend or weeknight outages in order to migrate.
- Zero down time for old release.
- Concurrent functional environments at both the old and new release levels.
- Verify and test newly migrated cell before bringing it online.
- Quick fall back strategy to old release if problems arise with new release.
- Reduce cost in planning and carrying out a migration.

Clone Migrations – other notes

- Currently not supported on iSeries or zOS.
- All endpoint ports in new cell are completely independent of old cell.
- Supports all profile types except:
 Job Manager and Managed App Servers.
- For a federated node migration, the host and SOAP
 or RMI port of the new deployment manager must be provided.
- Does not support a mixed cell environment.
 - If Dmgr is cloned then all nodes in the cell must also be cloned!
 - A node may not be cloned unless its DMgr is cloned!
- Supports the remote migration option. (-machineChange true)
- Requires or will override certain migration options.

Configuration Migration and Applications



Application deploy

- Applications are deployed “as-is” to the new release
- WASPostUpgrade -includeApps
 - true – generate the install scripts and run them
 - false – do not bring any applications forward
 - script – generate the install scripts to be run manually later
 - gives greatest flexibility for moving application forward.
 - see the [WASMigrationAppInstaller](#) chart for more information.

Application Deployment Issues

- “I deployed my application before on my v7 Deployment Manager (dmgr), now my v8.5 dmgr tells me that the v7 nodes won’t support that level of the application! The application did not change -- What happened?”
 - **NEW for V9.0 → automatic retry of application install at the old JEE level, if application fails to deploy at the new JEE 7 level.**
- “Finally, I was able to deploy the application, but now it is behaving differently. Why?”
- Answer, in both situations is usually annotations introduced at the new JEE level.
 - These annotations were not recognized by the old deployment tool nor by the old server runtime environment. They were basically ignored.
 - They may have been introduced by third-party jar files.
- For a more in depth explanation of these issues see the following white paper.
<http://www-01.ibm.com/support/docview.wss?uid=swg27008724&aid=13>

V9 Configuration Migration Misc.



Other V9 Improvements

- WASAppInstaller Tool
 - Concurrent, select which apps, auto retry at older JEE level, ...
- Batch and Intelligent Managment features migration support
 - These were stack products prior to V855.
 - V9 support migrating them as features of stack products.
- Migration Properties File
 - Contains most migration options as properties.
 - Documents usage, makes migrations repeatable.
- Port Assignment Control
 - New options: -setPorts and -resolvePortConflicts
 - zMMT allows for specific assignment of ports.

V9 Configuration Migration Demo

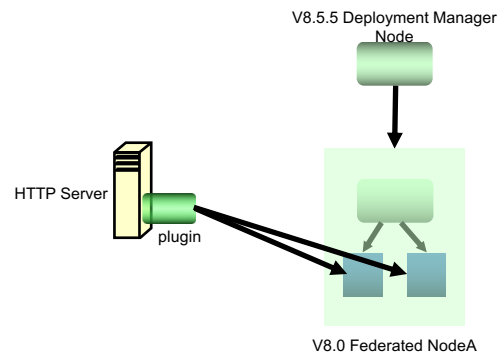


Demo

- Use the Clone Migration Strategy on a simple cell
 - Dmgr
 - 1 Node
 - 1 Server
 - 1 App

Migration Scenario – Cloning a Simple Cell

- Goals for Migrating this Topology:
 - Keep old cell in tact and running during and after migrating all nodes.
 - Clone all profiles in the cell to WebSphere Application Server V9.0.
 - Profiles are migrated to the new release on the same machine.
 - Switch HTTP Server to new cell when complete.



Migration Scenario – Cloning a Simple Cell (cont.)

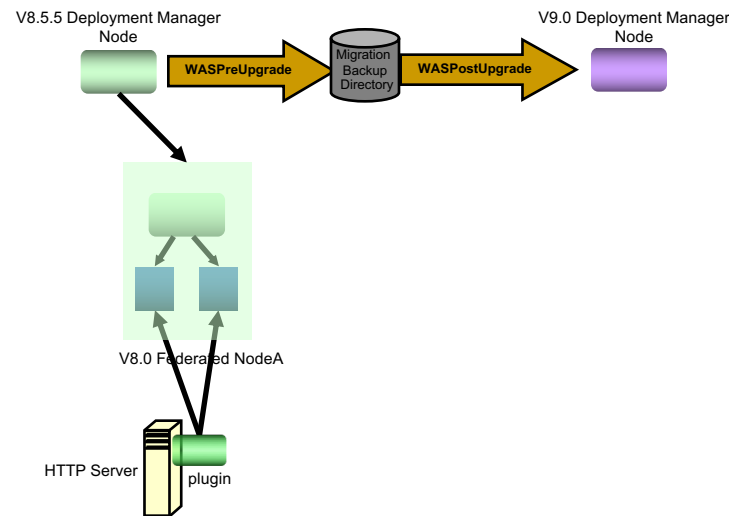
- Step 1

- Migrate the Deployment Manager with -clone true option.

- All new ports will be assigned to new Deployment Manager.
 - The old node will be “hidden” from the new Deployment Manager.

- Start the new Deployment Manager.

- New NodeA appears to be inactive.
 - Do not allow any config changes to old cell until entire cell is cloned. (all nodes are migrated)
 - Old cell continues running.

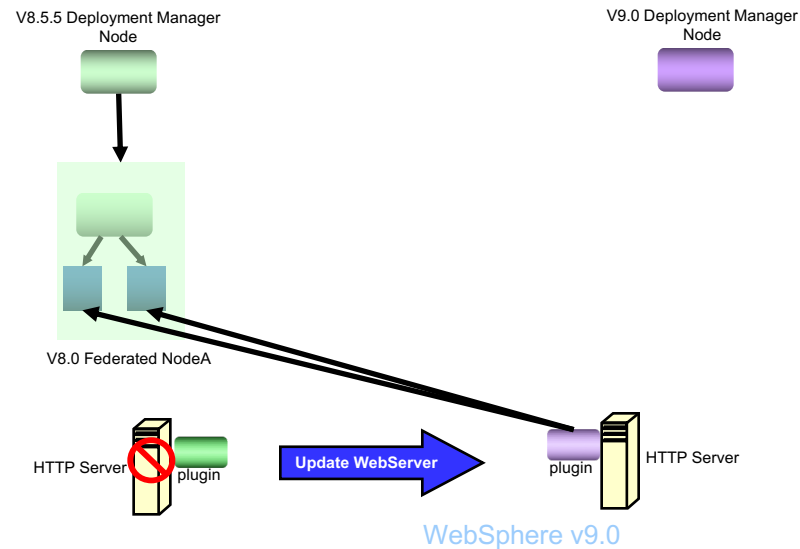


Migration Scenario – Cloning a Simple Cell (cont.)

- Step 2

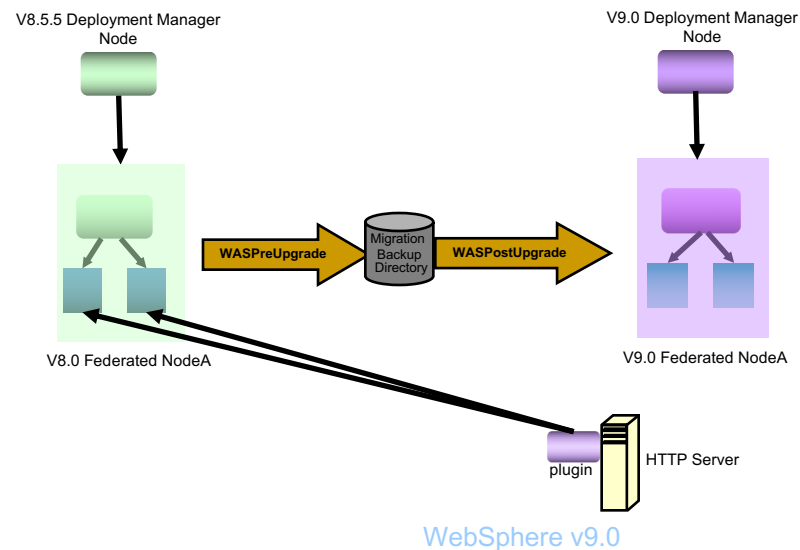
- Migrate the WebServer

1. Update the WebServer and install new plugin
2. Stop the old WebServer
3. On old Deployment Manager regenerate the plugins and copy to WebServer
4. Start the new WebServer



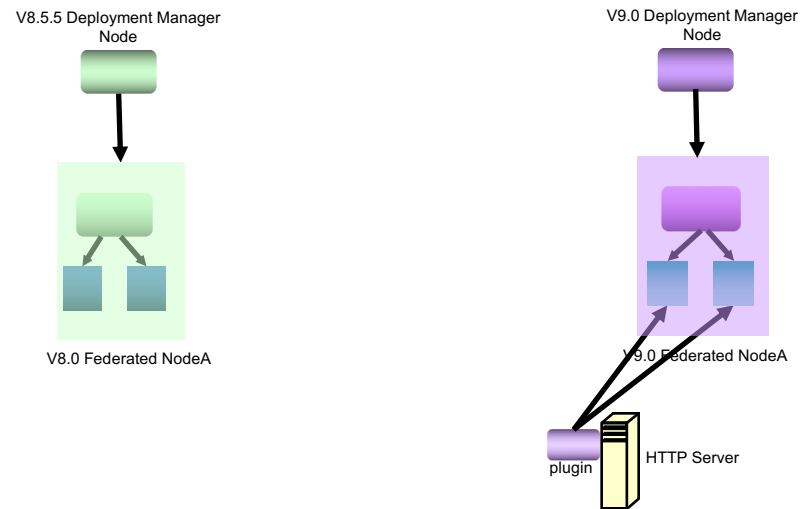
Migration Scenario – Cloning a Simple Cell (cont.)

- Step 3
 - Migrate the Federated NodeA with the -clone true option.
 - Supply the hostname and SOAP or RMI port of the new Deployment Manager.
 - All new ports will be assigned to the nodeagent and servers of the new NodeA.
 - New NodeA will be synced with the new Deployment Manager.
 - Bring up the nodeagent and servers on new NodeA.
 - Old cell continues running.



Migration Scenario – Cloning a Simple Cell (cont.)

- Step 4
 - Switch the WebServer to the new cell.
 1. On new Deployment Manager regenerate the plugins and copy to WebServer
 2. Start the WebServer
 - Dismantle the old cell when new cell is completely working.
 - Or keep for recovery if new cell encounters problems.



Questions?

