

# Best Practices for Upgrading to Open Enterprise Server

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# Agenda

- Before starting the migration
- OES Implementation guidelines
- Migration processes
- The OES 2 Migration Toolkit



# Before Starting The Migration

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# Reasons for migrating

- End of General Support for NetWare 6.5 on March 7, 2010
  - Hardware, 3<sup>rd</sup> Party
- New features / functionality
  - DST
  - DSfW
  - Enhanced Scalability (64 Bit)
  - Virtualization
- Linux / Open Source
- New possibilities



# Analyse and know your existing Environment - before you start

- Know your existing environment
  - Do an analysis (use support advisor)
  - Verify and document your source environment
- Review, fix and stabilize your source environment
  - Apply latest patches
- If your source is not healthy - the migration will fail
- Analyze the services and requirements
  - File, Print, DNS, DHCP, Access-Protocols
  - Make sure that OES 2 fulfills all your requirements

# Plan the new environment

- Create a written concept
- Design your target platform
  - OES 2 SP1 32 or 64 bit
    - > (32 bit only when really required)
  - RAM can only be replaced by more RAM
- Other applications
  - Antivirus
  - Backup
  - GroupWise
  - ZENworks Desktop Management
  - Identity Manager

# Prepare your existing environment (1)

- Implement AutoYaST + ZLM Server
  - common source for installation and update (use HTTP)
  - allows easy post-installation
  - much faster than CD/DVD
  - frozen patch level
  - based on templates
- Typical server classes
  - eDirectory server
  - cluster node
  - remote location server / special purpose server

# Prepare your existing environment (2)

- Name Resolution
  - Add old, new and temporary servers in the tree in DNS, SLP, HOSTS
- Timesync
  - Migrate from timesync to NTP
- eDirectory
  - verify SDI + PKI (can the CA private key be exported?)  
SDIDIAG and iManager PKI Plugin is your friend
  - review Structure (sufficient for LDAP and new product features?)
  - Partitioning and Replication

# Prepare your existing environment (3)

- eDirectory
  - Versions / Patchlevel (Update to 8.8?)
  - Prepare Schema (add OES 2)
  - Unique Naming, uniqueID, posix Attributes

# OES Things To Think About

The slide features a solid blue background. In the center, the text "OES Things To Think About" is written in a white, sans-serif font. At the bottom of the slide, there are several horizontal lines of varying shades of blue and white, creating a decorative border.

# OES Things To Think About (1)

- Define and follow your standards
- Naming – Linux is case-sensitive
- Filesystem Layout
- Packet / Pattern selection
- LAN connectivity
  - use bonding for LAN connectivity fault-tolerance
- SAN connectivity / Storage
  - use DM-MPIO where possible and keep in mind cluster vs stand-alone!
  - Verify certification of storage infrastructure for SLES

# OES Things To Think About (2)

- Name resolution
  - DNS (same as on NetWare)
  - changes in SLP (move to OpenSLP)
  - HOSTS
- Timesync
  - move from Timesync to NTPD
- eDirectory
  - NMAS + universal password + password policies  
(chance to implement UP, required for CIFS and AFP)

# OES Things To Think About (3)

- Linux User Management
  - Why do we need LUM ?
  - Convert lower, persistent search, cache only, alternate servers
- LDAP Proxy Users
  - Where to put them in eDirectory?
  - Install User vs. LDAP Proxy Users
  - One proxy user per service per location / server
  - Security
- DHCP
  - LDAP integrated “Linux”-DHCP

# OES Things To Think About (4)

- DNS
  - Same as on NetWare
- File-Services
  - Novell Storage Services
  - Distributed Filesystem
  - Dynamic Storage Technology
- File Access Protocols
  - NCP/CIFS/AFP/NFS
  - CPFL and DFS / DST support
  - PURE-FTP + Gateway
  - NetStorage

# OES Things To Think About (5)

- iPrint
  - One driver store only
  - use DNS for Printmanager name resolution
  - use DSServer2/DSServer3 for LDAP fault tolerance
- iManager
  - Install only where required
  - Keep Plugins current
- Cluster Services
  - See other session

# Migration Step by Step

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# Migration Step by Step eDirectory Server

- Install new server
- Add replicas (bottom up)
- Change Replica Type (Master/RW)
- Move CA and verify SDI
- Move IDM Driversets
- Change login process
- Verify and monitor
- Uninstall old server

Rollback – always possible – just reverse the process

# Migration Step by Step Cluster (build a new Cluster) (1)

- Build new cluster and move data over the wire or use SAN/Storage replication technologies
  - use migration toolkit to migrate data and services
  - change Loginscript / DNS entries

# Migration Step by Step Cluster (build a new Cluster) (2)

- Advantages

- no mix up of different fault tolerance technologies (NIC teaming vs. bonding, MM multipathing vs. DM-MPIO)
- chance for re-design and consolidation
- lowest risk
- allows to test the new cluster implementation (especially the infrastructure)

- Disadvantages

- requires new hardware and additional capacity in the storage
- often more effort

# Migration Step by Step Cluster (rolling upgrade) (1)

- Rolling upgrade
  - Remove NW node and re-add as Linux node
  - Migrate resources from NetWare to Linux node
  - Once all nodes are Linux - do final conversion

# Migration Step by Step Cluster (rolling upgrade) (2)

- Advantages
  - no new hardware required
  - less effort
- Disadvantages
  - high risk
  - operation on the open heart
  - no storage operations while in mixed state
  - no chance for re-design

# Migration Step by Step

## Remote Server / Special Purpose (1)

- Install new server
- Move / Migrate service by service
  - DNS
    - Just assign the zones to the new DNS server
    - Reconfigure clients and servers
  - DHCP
    - Use migration toolkit
    - Clean up before migrating
  - File
    - Use migration toolkit
    - Disable login and clear connections for final delta-sync
    - Modify loginscript

# Migration Step by Step

## Remote Server / Special Purpose (2)

- Move / Migrate service by service
  - iPrint
    - Use migration toolkit
    - Copy / consolidate
    - Get rid of queues and old gateways
- Move user per user / department based
- Find and get rid of existing dependencies
  - use DNS (CNAME) where possible
  - use loginscript
- Uninstall old server

# Migration ID Swap

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# Migration “ID-Swap” eDirectory Server

- Install new (pre-migration) server
  - Same context
- Use migration tool to transfer eDirectory and identity
- Verify log files
- Do post-configuration and cleanup

# Migration “ID-Swap” Cluster Node

Don't do it!



# Migration “ID-Swap” Remote Server / Special Purpose

- Install new server
- Use migration tool to transfer eDirectory, Services, Data and identity
  - File
  - Print
  - DNS
  - DHCP
- Verify log files
- Do post-configuration and cleanup

# ID Swap vs. Step by Step (1)

## ID Swap

- Advantages
  - no new name or new IP address required
  - no change in login scripts required
  - no change in eDirectory attributes required
  - fast
- Disadvantages
  - high risk
  - no easy rollback
  - no chance to test
  - no chance to increase the load slowly
  - no chance to re-design / re-structure

# ID Swap vs. Step by Step (2)

## Step by Step

- Advantages
  - low risk
  - easy rollback
  - chance to re-design / re-structure
  - chance to test
  - chance to increase the load slowly
- Disadvantages
  - new name and new IP address required
  - change in eDirectory attributes required
  - change in login scripts required
  - more effort

# ID Swap vs. Step by Step (3)

## Recommendation and Best Practice

- Migrate Step by Step and try to avoid ID Swap
- Find and get rid of your dependencies
- Get rid of forgotten “old, inherited stuff”
- Split Services logical from Servernames
- Review your design and re-design
- Use DNS Name resolution where possible
- Use secondary IP-Addresses



Swap-ID can not take care about other applications.

# The OES 2 Migration Toolkit

# OES2 SP1 : Migration Tools Features

- Supports migrating different Novell services in a single Tool
  - AFP, CIFS, DHCP, File System, FTP, iFolder, iPrint, NTP and Archive & Versioning Server
- Server Identity Migration (Transfer ID)
- Scheduling
- eMail notification
- Non-destructive migration
- Uses different CLIs to perform the migration



# OES2 SP2 : Migration Tools Features

- Auto completion for migration parameters
  - Remembers the values of different fields used in previous projects and allows user to select the values used in earlier project runs
- Hot keys and tool tips
- Better error handling, logging and health checks
  - Improved error handling and logging for better trouble shooting
- Non English character support
  - Service migrations supports non English characters in names
- Improved Transfer ID
  - added more health checks to detect problems ahead

# OES2 SP2 Features: Data Migration

- Disable Login during data migration
  - User logins are disabled during data migration for better data integrity and to minimize open file errors
- Sync enhancements
  - files skipped due to open file errors are migrated during sync, meta data changes like trustee addition etc.
- Multiple path selection
  - Drag and Drop multiple paths during consolidation
- Non English character directories
  - Non English character support using Novell Client
- Support for cluster data migration

# Supported Platforms

- Only OES 2 SP2 Linux is supported as the destination
- NetWare: 5.1 SP8, 6.0 SP5, 6.5 SP6 or Later
- Linux: OES 1, OES 2
- Windows: NT, 2000 and 2K3
- eDirectory: 8.6.2 or later
- File Systems:
  - NSS, NCP and POSIX on target server
  - Traditional, NSS on NetWare source
  - NSS, NCP and POSIX on Linux source server
- SCMT for NetWare to NetWare migrations

# Screen shot of the GUI

The screenshot displays the Novell Migration GUI with the following components:

- Window Title:** Migration(/var/opt/novell/migration/NewProj3.xml)
- Left Sidebar:**
  - New Project
  - Open Project
  - Save Project
  - Scheduler
  - Email Notification
  - View Logs
  - Project Summary
  - Help
  - Quit
- Migration Section:**
  - Source:** Server: 192.168.0.73
  - Target:** Server: OES2UTP.UTOPIA.NOVELL.COM
  - Migration Type:** Consolidate
  - Start** button
- Services to Migrate Section:**
  - Order** and **Dependencies** columns
  - Add** and **Remove** buttons
  - Configure**, **Sync**, and **Summary** buttons
- Add Services Dialog Box:**
  - Service Name** list:
 

File System
Novell FTP
Novell NTP
Novell iPrint
Novell DHCP Service
Novell Archive Versioning Service
  - Ok** and **Cancel** buttons
- Status Section:**
  - Service** and **Logs** tabs
  - Overall Migration Status** area
- Bottom Left Note:** Click on the Add button to Add services for Migration

# File System: Migration Procedure

- Uses SMS and the available nbackup utility to move data
  - As a result file system meta data preservation is equivalent to what SMS supports
- The CLI has numerous parameters that can be used to migrate data (see migfiles)
- The GUI uses a SCMT like approach
  - Drag/drop directories or volumes to the target
  - Select date/time or pattern based filters

# iPrint: Migration Procedure

- iPrint data migrated includes
  - Printer objects, printer drivers, driver profiles, print managers, ACL's, banners and printer pools
- Using the GUI
  - Select the active print managers on both the source and the target
  - Select all or required printers to migrate
- The printers can keep the same name and context in eDirectory. The eDirectory Objects of the old ones are renamed

# DHCP: Migration Procedure

- NetWare DHCP Configuration is mapped to Linux DHCP
  - The NetWare schema and Linux schema in eDir are different
  - All the subnets get migrated inside a single DHCP Service (dhcpService Object) including leases
- The GUI and the CLI support three levels of migration
  - Server Level:  
Migrates NetWare Server with all the associated subnets
  - Subnet Level:  
Migrates the selected NetWare subnets only
  - Tree Level:  
Migrates all the servers in the tree with the associated data

# After the Migration to OES

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# Activation / Implementation of NEW Features

- After the migration
  - Wait some time before new features are activated
  - Make sure the migration was successful
  - Monitor the system for some time
  - Fix if there are problems
- Implementation of additional features
  - DST
  - DFS
  - DSfW
  - QuickFinder
  - iFolder



Q&A

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