GWAVACon

Migrations Without Tears

Preparing for migrating to OES2 without driving yourself crazy.

Messaging Security • Unified Archiving • Business Continuity

www.GWAVACon.com

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Housekeeping

Cell phones, pagers, Treos, Blackberries, etc., set them all to stun, please. **No noise is good noise**.

If you have a question, **it's absolutely OK to ask**. It'll help if you raise your hand first to get my attention. I'll try to answer on the fly.

It's OK to **have fun** in here. Honest.

Who is This Guy, Anyway?

Allan Hurst

Works for KIS ("Keep IT Simple")

Partner and Director of Enterprise Strategy

Master CNE℠ working with Novell® products since 1988 (2.0a)

One of four partners at KIS, a Novell Platinum Partner and Novell Gold Training Partner in Fremont, CA, Kansas City, MO, Cleveland, Denver, and New Jersey.

Runs the Enterprise Strategy Practice (network planning, migrations, upgrades, moves, re-architecting, and clean-up)

Also runs "The WAP Squad." ("WAP" stands for …)

Who are you?

NetWare® administrator moving to Open Enterprise Server 2 on Linux or parvirtualized NW65SP8.

You have some combination of NetWare 5.x, and/or 6.x servers hanging around waiting to be migrated.

All of the horror stories about how terrible migrations are have scared you away from upgrading in the past.

For some odd reason, you’re now required to either migrate to OES2 or find a new job.

What this session is about.

There are plenty of resources on how to perform the actual migration (and two of them will be talking about just that shortly).

This portion does *not* talk about the migration itself.

This portion talks about how to *prepare* for a successful migration.

NetWare 6.5

Open Enterprise Server 2 (Linux)

Where did this session come from?

Several years ago, our local NUI chapter had a discussion during a Q&A session about how much trouble it was to migrate.

The next month, we held a “Migration Planning ~~Party~~ Workshop”, in which we prepped and migrated a NetWare® server live.

The discoveries from that session were transcribed, and built into this formal presentation ... which was presented the following year to a packed room.

Basic Terms: “Migration”

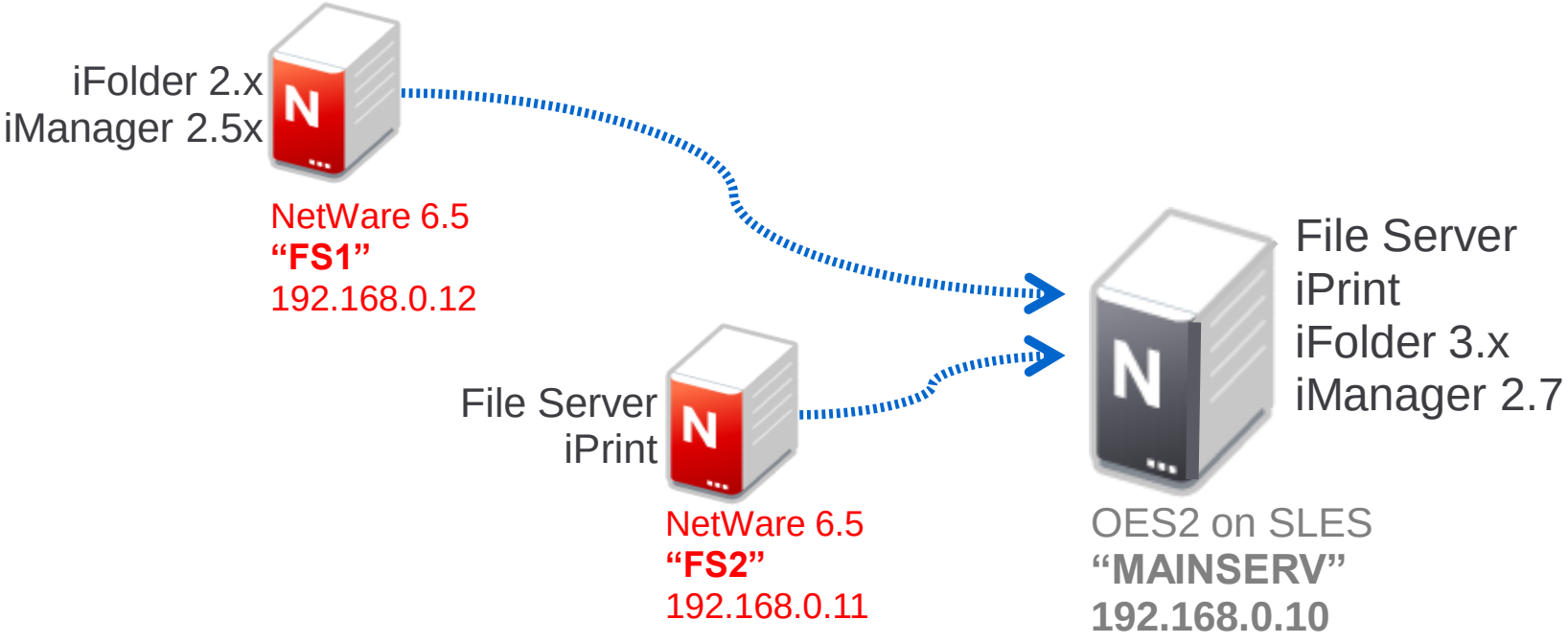
For purposes of this session:

Migration means you're moving a NetWare server to a paravirtualized or fully-virtualized NetWare destination machine with the same server name and IP address.

Basic Terms: “Consolidation”

Consolidation means you're moving one or more NetWare service(s) (file, iPrint, iFolder, etc.) to a real or virtualized OES2.

In a consolidation, the destination machine has a *different* server name and IP address than the original server.



Why Migrate?

All versions of NetWare® now unsupported except for NetWare 6.5 SP8, which is on Extended Support.

OES2 Linux provides core NCP services of NetWare, and looks and works just the same for end users.

If you need to hang on to a NetWare server beyond 30 Sep 2013*, get ready to migrate or consolidate to a [para]virtualized NW65SP8 machine running under SLES/Xen or VMware…*soon*.

*That's the Extended Support end date. Self Support ends 07 Mar 2015.

Paravirtualization vs. Virtualization

There are two versions of the NetWare 6.5 SP8 OS kernel.

The Paravirtualized kernel is optimized to run as a virtual guest. This is the kernel that runs under SLES/XEN.

The Standard kernel doesn't know about virtualization. It always thinks it's running on real hardware. This is the kernel that runs under VMware (and non-Novell versions of XEN).

Why Virtualize?

Current hardware often doesn't have NetWare® drivers.

Easy way to hang on to a NetWare server beyond the 2010 “drop dead” date.

Hint: Put enough RAM in your virtualization host server for *both a* NetWare *and* a future OES2 VM.

NetWare 6.5 (Native)

NetWare 6.5 SP8 (Paravirtualized)

Open Enterprise Server 2 Linux (Paravirtualized)

SLES with Xen

Why Virtualize?

Virtualizing frees you from one of the top two causes of NetWare crashes: hardware drivers.*

You may think this information isn't relevant to you because you're going to migrate to OES2.

However, a lot of customers right now are finding that while "~~the spirit~~ NetWare is strong, the ~~flesh~~ hardware is weak." You may need to virtualize your NetWare to buy yourself time until you can move to OES2.

*Third-party NLMs are the other top cause. The NetWare kernel itself is very rarely at fault.

What are my options?

1. "**Backup/Restore**" **Migration** – Won't properly move trustees between NetWare® and OES2 Linux.
   Not recommended.

2. "**In-Place**" **Upgrade** – NetWare 5.0 to 5.1, 6.0 to 6.5.
   Should be used only to stabilize older source servers.

3. "**Across The Wire**" **Options:**

   - **Migrate/Consolidate to NetWare 6.5 VM**
     From NetWare to [paravirtual] NetWare 6.5 SP8 via the Novell Server Consolidation Migration Toolkit (SCMT)

   - **Consolidate to OES2 Linux (real or VM)**
     From NetWare to OES2/SLES, via either the SCMT or the migration wizard built into OES2.

Common Barriers to Successful Migrations

- Incorrect IP / DNS / SLP
- Inaccurate network time
- Still have IPX on the wire (bars migration to OES2/Linux/eDir 8.8)
- Outdated network print server firmware
- Leaving network printers on during print queue migration
- Damaged, expired or missing NICI/SAS/PKI objects
- Damaged NDS®/eDirectory™
- Mixed and/or Obsolete NDS/eDirectory versions
- Insufficient NDS/eDirectory rights to objects or containers
- Damaged trustees
- Damaged file systems
- Protocol errors during migration
- Incorrectly sized destination file systems

Resist The Urge To Change Stuff

When possible, *don't* change file locations, volume names, or trustee rights during a migration.

For consolidations, run a test migration, and ensure that your existing login script has been modified appropriately to find old data in its new location on the new (and differently named) server.

Don't add a lot of products during a migration or consolidation.

- Get basic file/print services working first, and ensure that user logins aren't affected.
- *After* basic services are working, *then* add the advanced services iFolder, NetStorage, etc.) that were present on the original server.

Failing to Prepare = Preparing to Fail

Careful preparation can overcome nearly all obstacles.

Work through the migration scenarios first on paper or a whiteboard.

Create a written checklist *before* you touch the first machine.

Take extensive notes of what's being done during the migration; don't rely on your memory.

Review everything before starting each migration.

The most common error during migration is assuming that all basic information is already/still correct.

Basics Count:
IP Information

- Each server must have a correct:
  - IP Address
  - Subnet Mask
  - Default Gateway
  - DNS Servers & DNS Domain
  - Sys:etc\hosts
  - Sys:etc\hostname

Basics Count:
Hosts file

sys:etc\hosts

```
# SYS:ETC\HOSTS
#    Mappings of host names and host aliases to IP address.

127.0.0.1       loopback lb localhost      # normal loopback address

192.168.129.10  beast.allanh.com beast     # primary file server

192.168.129.12  admin.allanh.com admin castle.allanh.com castle
  # Server ADMIN holds the master replica of the tree "CASTLE"
```

The hosts file normally only needs to contain three entries:

1. Loopback entry (127.0.0.1)
2. Entry for the server itself
3. Entry pointing to the server holding the master replica of [root]

Basics Count:
Hostname file

sys:etc\hostname

```
192.168.129.10  beast.allanh.com
```

- Contains *only* the IP address and FQDN of the server.
- This file is used for Certificate Services/SSL.
- If this entry doesn't match the server's actual IP address and name, spurious certificates will be generated.

Basics Count:
Hosts and Hostname Files

FQDN server entry in hosts file *must match* server's entry in the hostname file.

No duplicates allowed in hosts file.

Hostname file requires FQDN server name.

sys:etc\hosts

```
# SYS:ETC\HOSTS
#    Mappings of host names and host aliases to IP address.

127.0.0.1        loopback lb localhost       # normal loopback address
192.168.129.10  beast.allanh.com beast castle.allanh.com castle # tree = castle
```

sys:etc\hostname

```
192.168.129.10  beast.allanh.com
```

Basics Count: DNS

Every server must be in DNS.

(Including the destination server's temporary server name!)

The source and destination tree names must be in DNS.

Uncertain about managing DNS?
Attend the session ***Demystifying DNS***.

Basics Count:
Service Location Protocol

SLP must be running on the source and destination servers.

SLP must be working.

This means you have a *defined scope* (not default!), at least *one defined Directory Agent*, and that *all NetWare® servers* can successfully respond to both of the following commands:

`DISPLAY SLP DA` – shows active directory agents, scopes

`DISPLAY SLP SERVICES` – shows all other NetWare servers

Basics Count:
Trustworthy External Timesync

Don’t use a public time server chosen at random. Such servers may drop connections unexpectedly, and often require prior authorization.

Instead, use the international NTP pools listed at http://www.pool.ntp.org/.

```
0.north-america.pool.ntp.org
1.north-america.pool.ntp.org
2.north-america.pool.ntp.org
```

Basics Count:
Still More Timesync

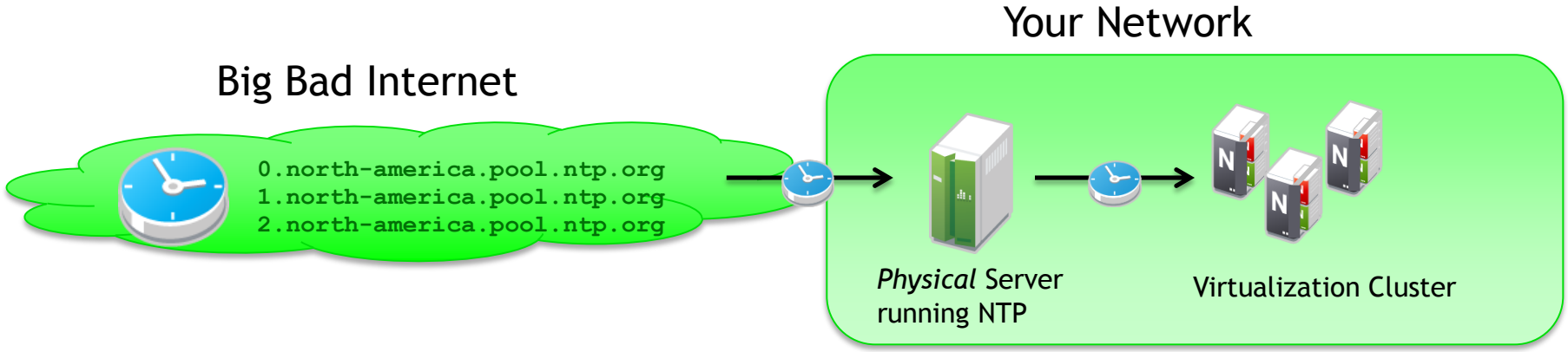
No timesync = Untrustworthy directory.

Untrustworthy directory = Don't try to migrate.

Convert NetWare® servers to NTP-style timesync
(e.g. from "**fs1;**" to "**fs1.acme.com:123;**")

On OES2 Linux, check timesync using **`ndsrepair -T`**

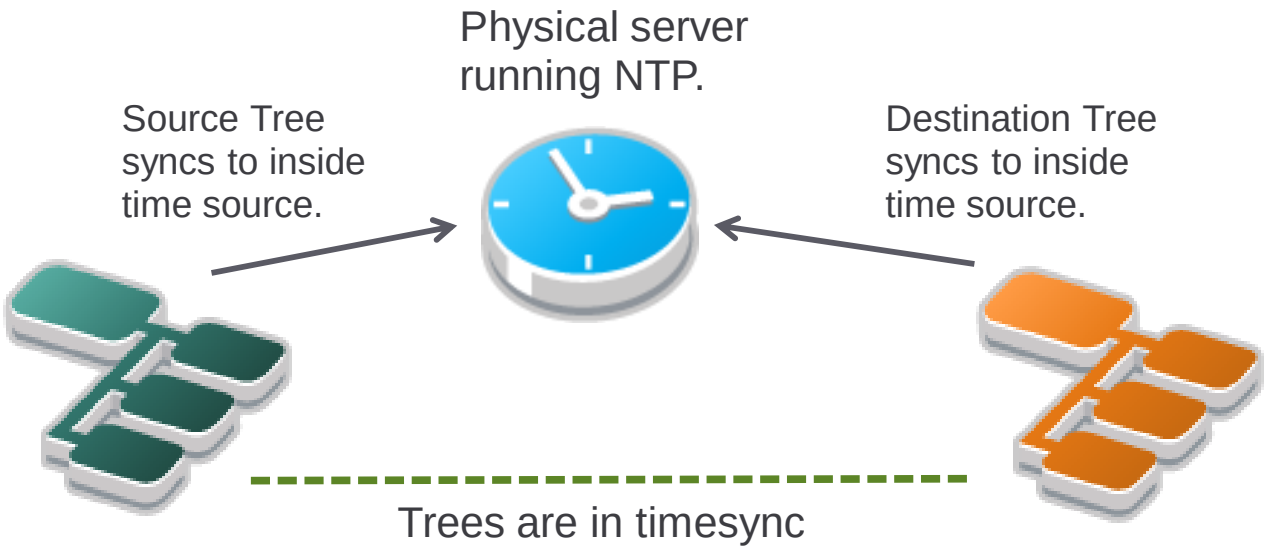
If virtualizing, convert all virtual servers to timesync type SINGLE, and point them all to the same *physical* NTP source on your *local* network.



Basics Count:
Timesync Sources

Start with an external time source you trust, and work your way down through the network.

If migrating or consolidating between trees, the source and destination trees should use the same time source:



Basics Count:
No More IPX...Ever.

SLES, OES2 Linux, or eDirectory™ 8.8 *don't support IPX*.

You should already have a “Pure IP” network ... meaning that SLP is working, and IPX is no longer required on both your servers and clients.

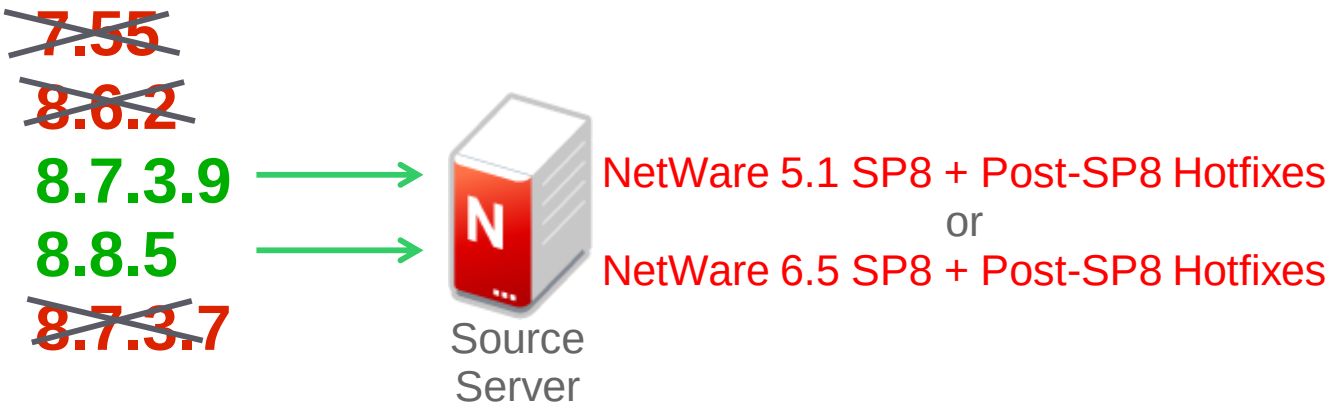
If you haven't yet implemented SLP, please pass up your business card with “SLP” written on the back; I'll send you a copy of my presentation *SLP Made Easy*.

Basics count:
eDirectory™ & Patch Versions

Damaged NDS®/eDirectory leads to botched migrations and dead servers. Ditto unpatched servers.

Obsolete NDS/eDirectory versions are just as bad as a damaged directory.

Bring *all* network servers up to the *same current version* of eDirectory and OS patch levels prior to migrating.



Basics Count: eDirectory™ Health

Time must be in sync.

Synchronization must be current.

Servers must have consistent replica assignments.

There must be no lingering obituaries.

Learn how to perform at least basic NDS®/eDir health checks.

TID #3564075 explains how to perform a full NDS/eDir health check. *Learn it, live it, love it.*

Basics Count:
eDirectory Rights

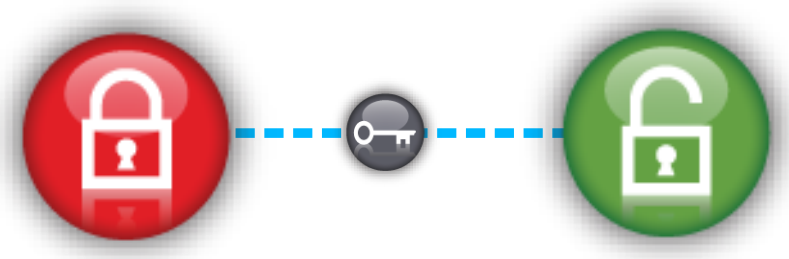
Although (officially and technically) not required, our experience has been that many migrations fail due to inadequate NDS®/eDir object rights.

The admin object needs *full* rights to:

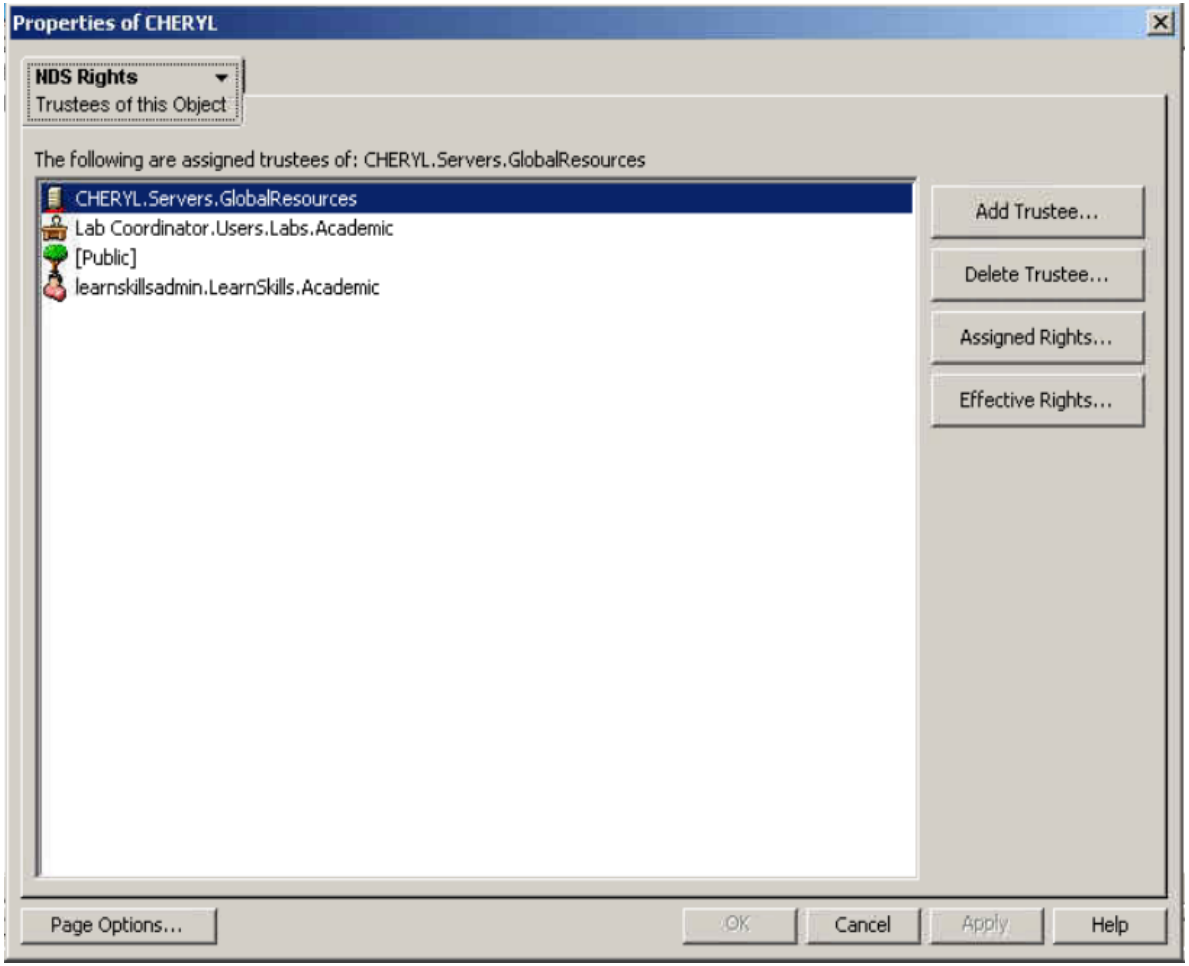
- the root of both (source/dest) trees.
- each server object in both (source/dest) trees.

Each server needs *full* rights to:

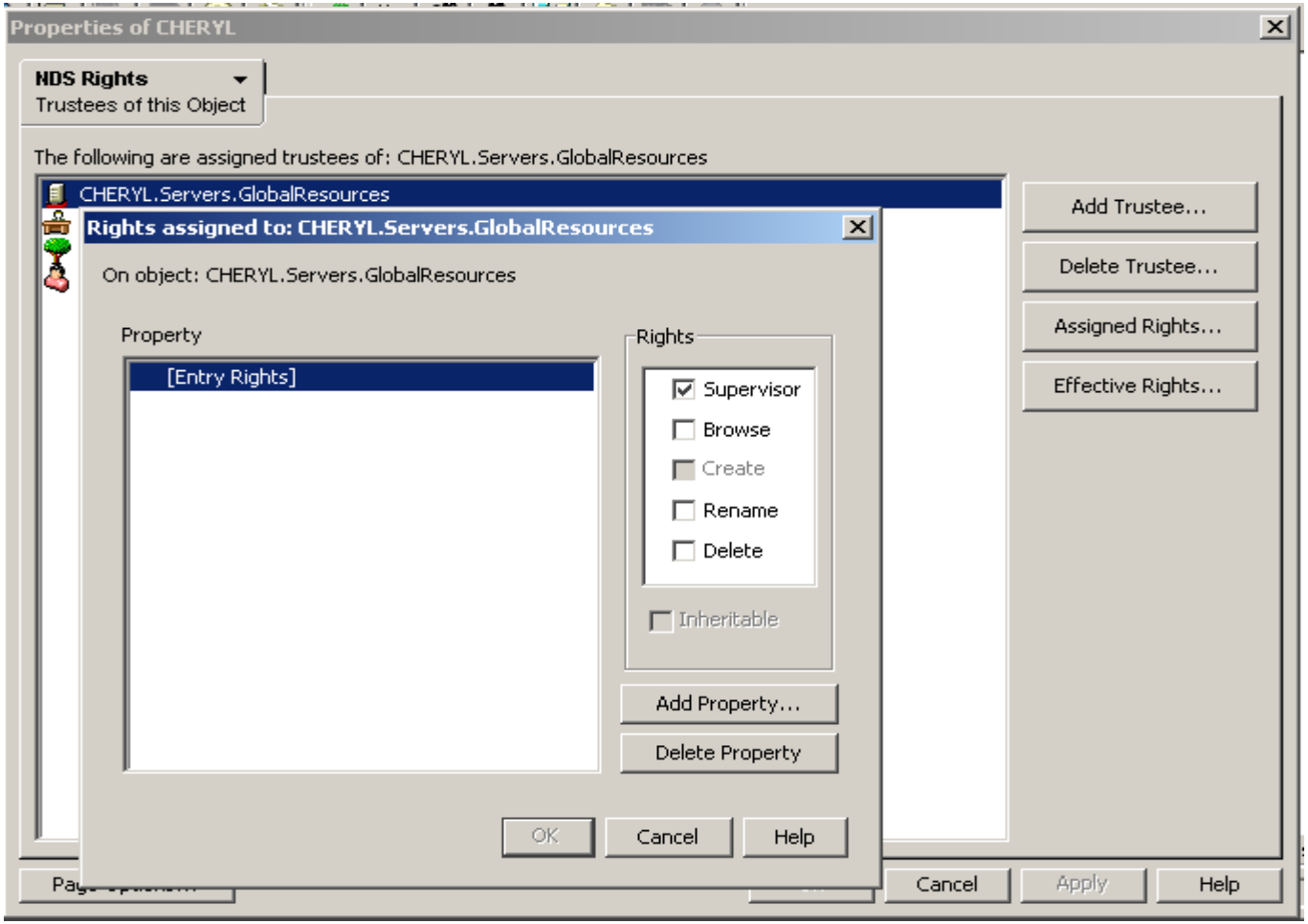
- itself in its own tree.



Adding Server eDirectory Rights



Adding Server eDirectory Rights



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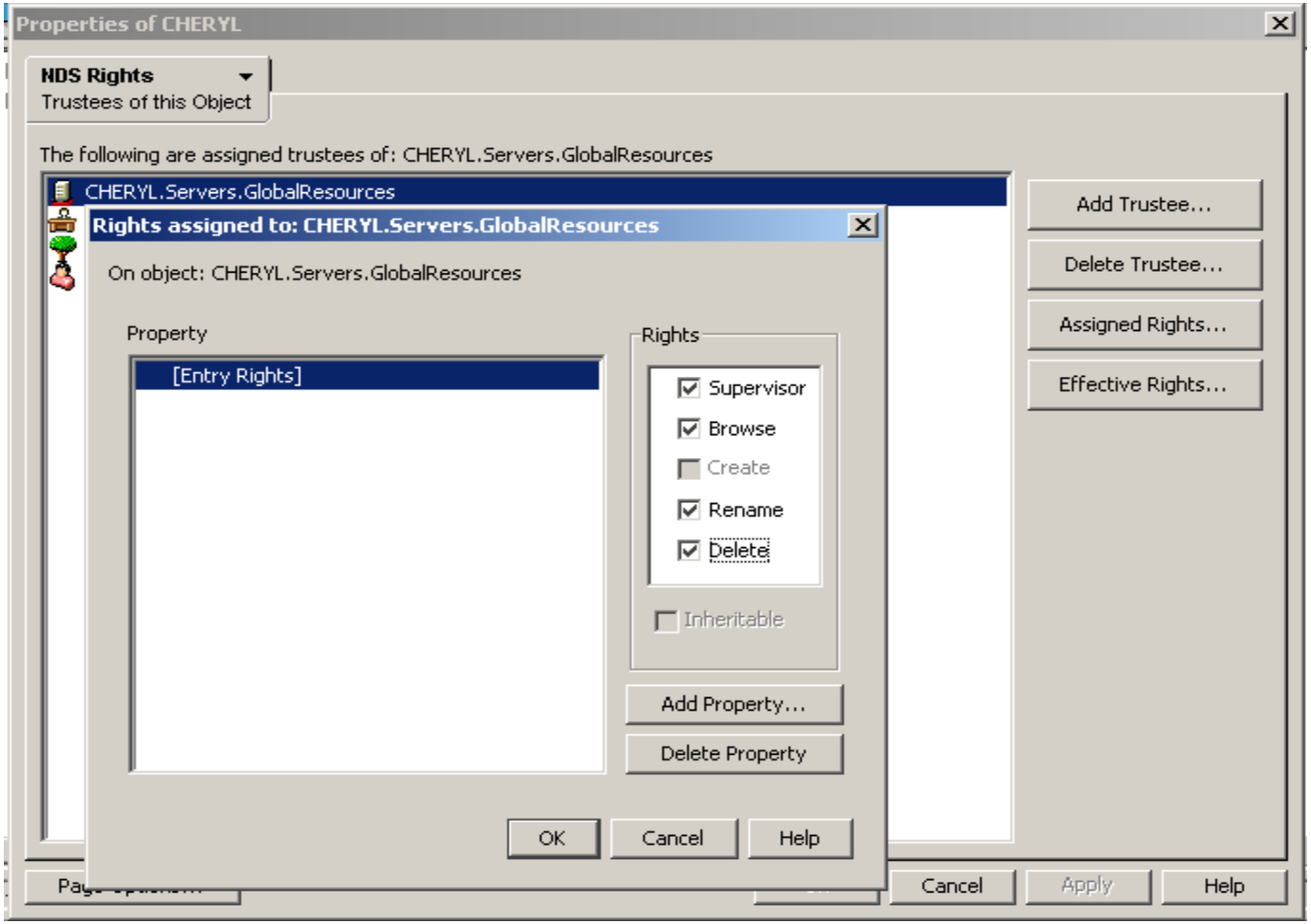

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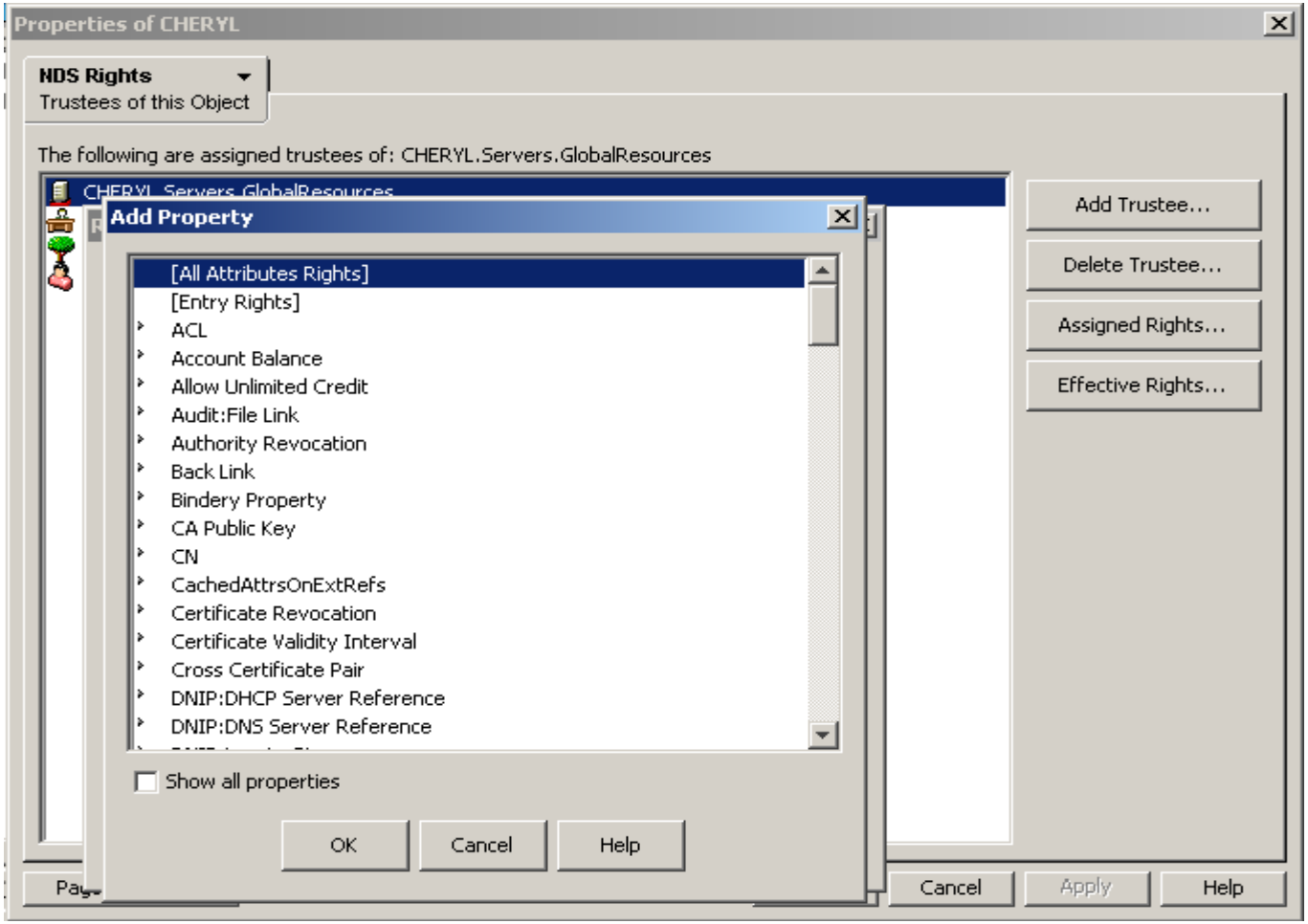

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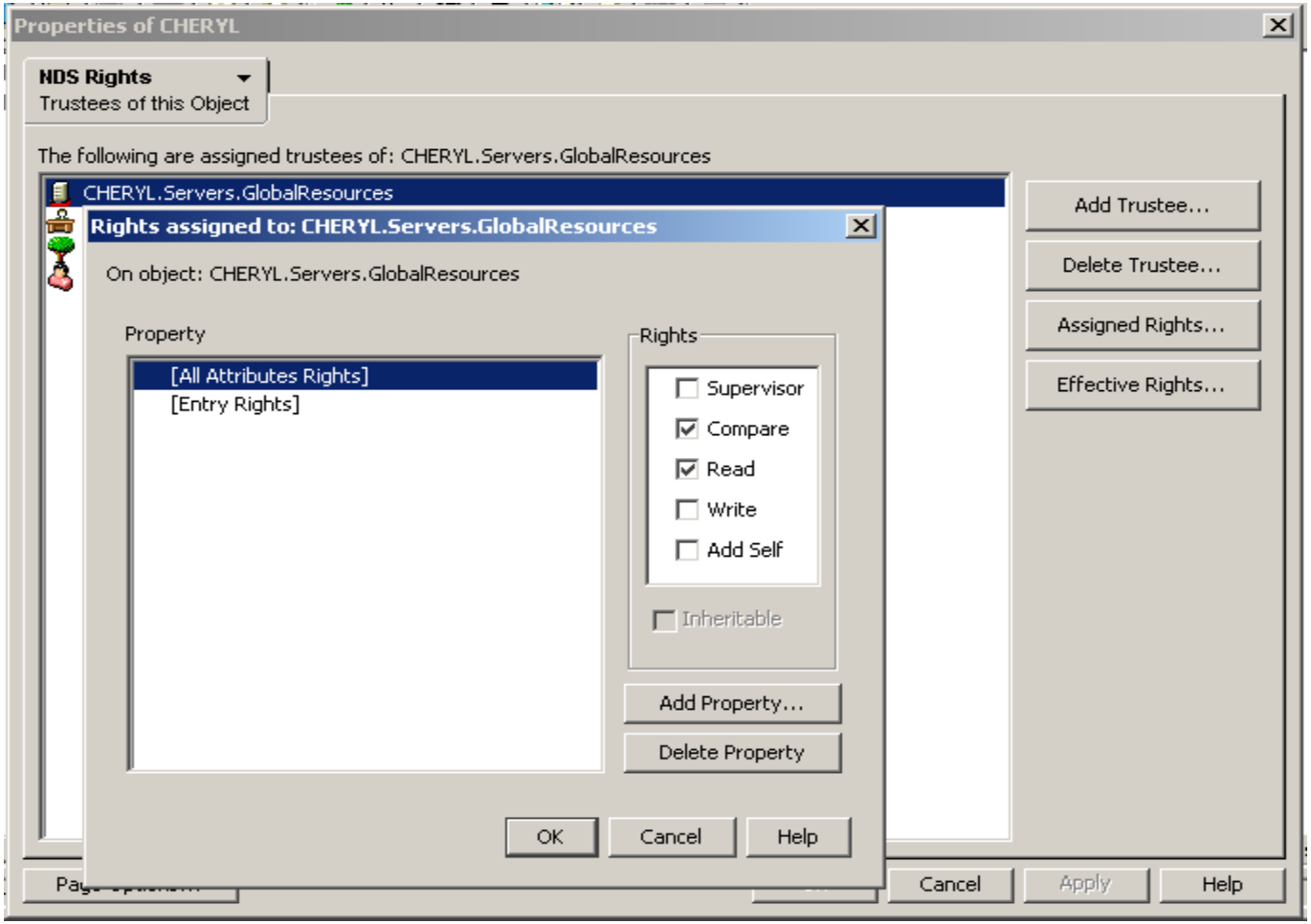
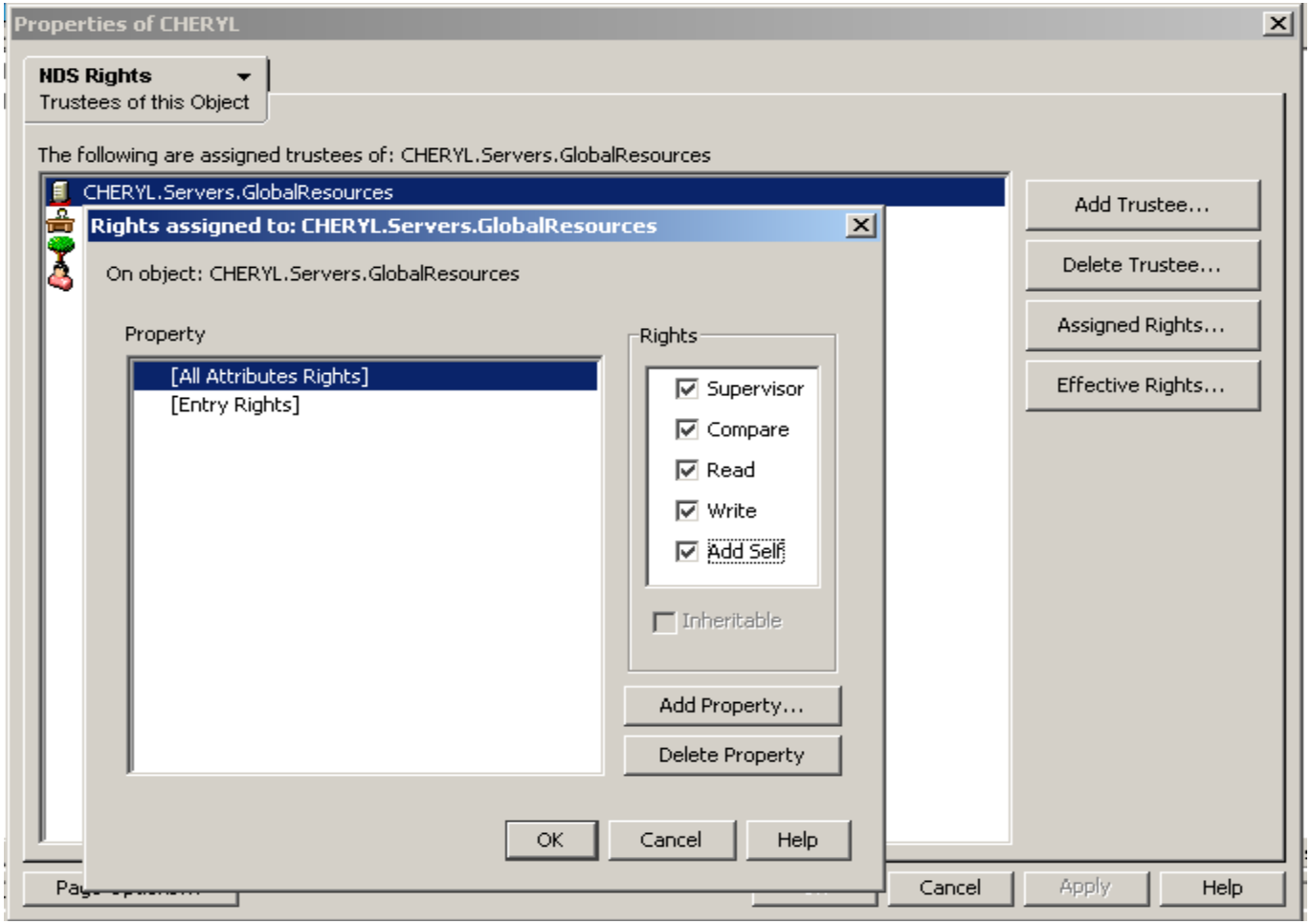
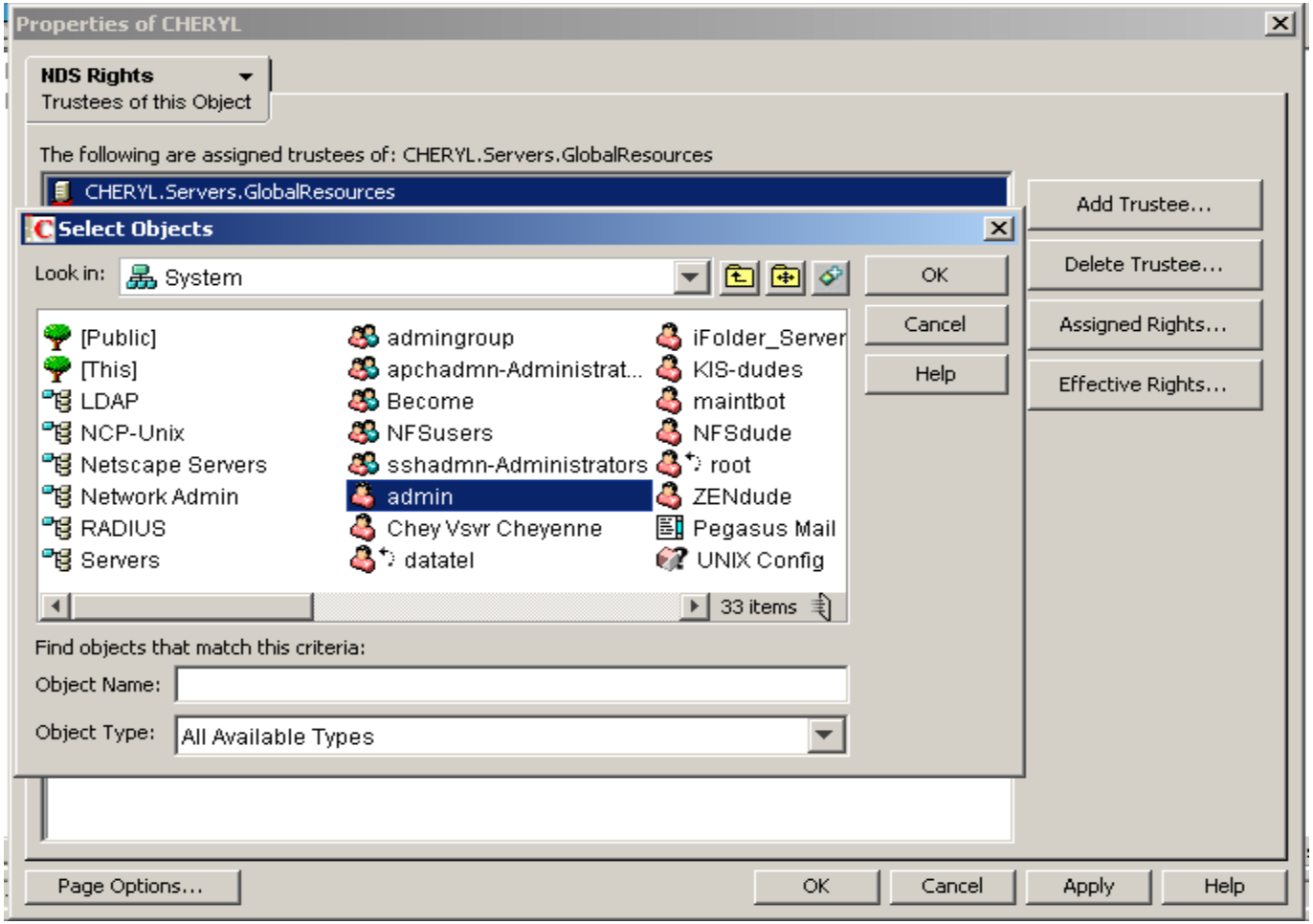


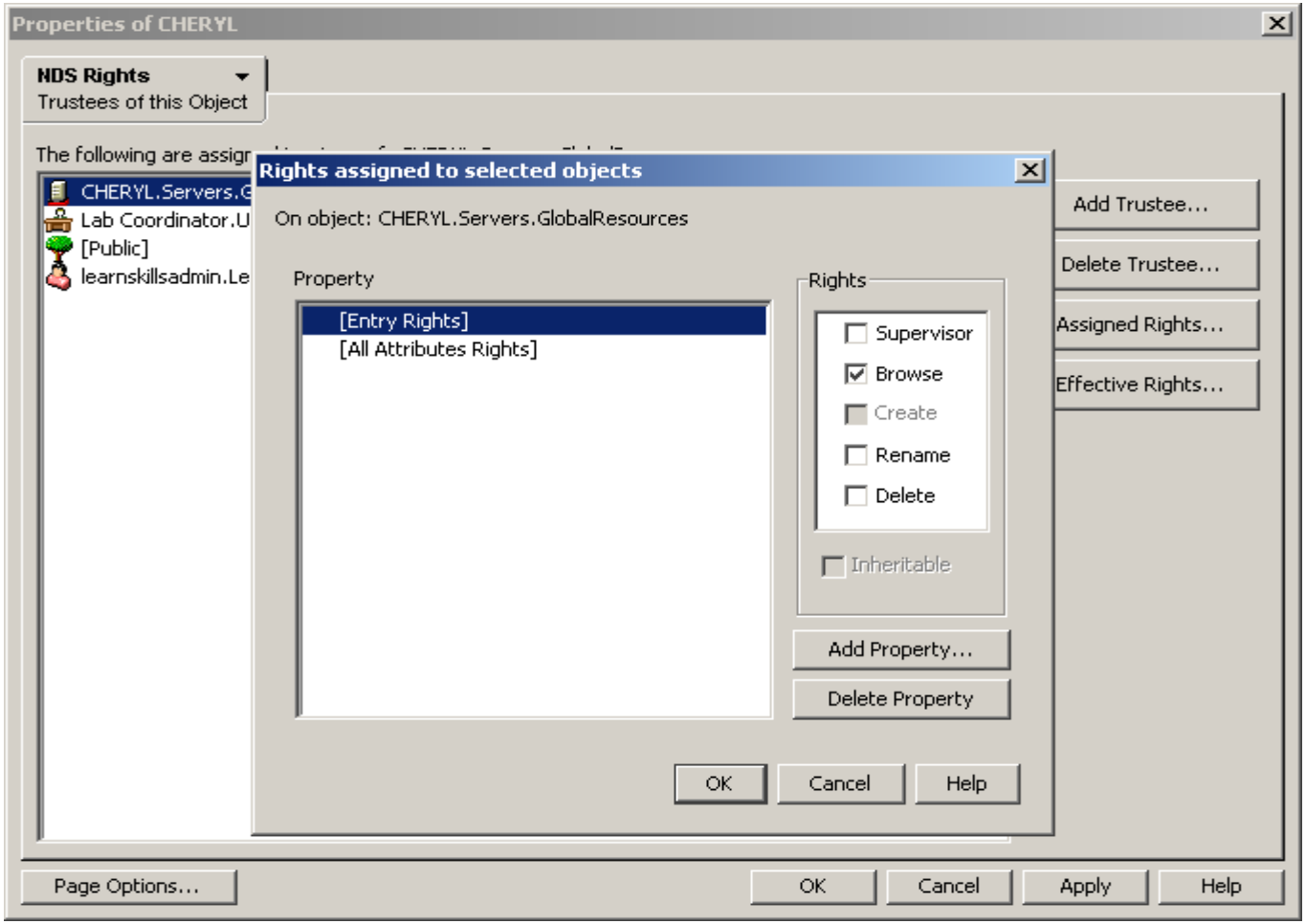
Adding Server eDirectory Rights



Adding Server eDirectory Rights



Adding Server eDirectory Rights



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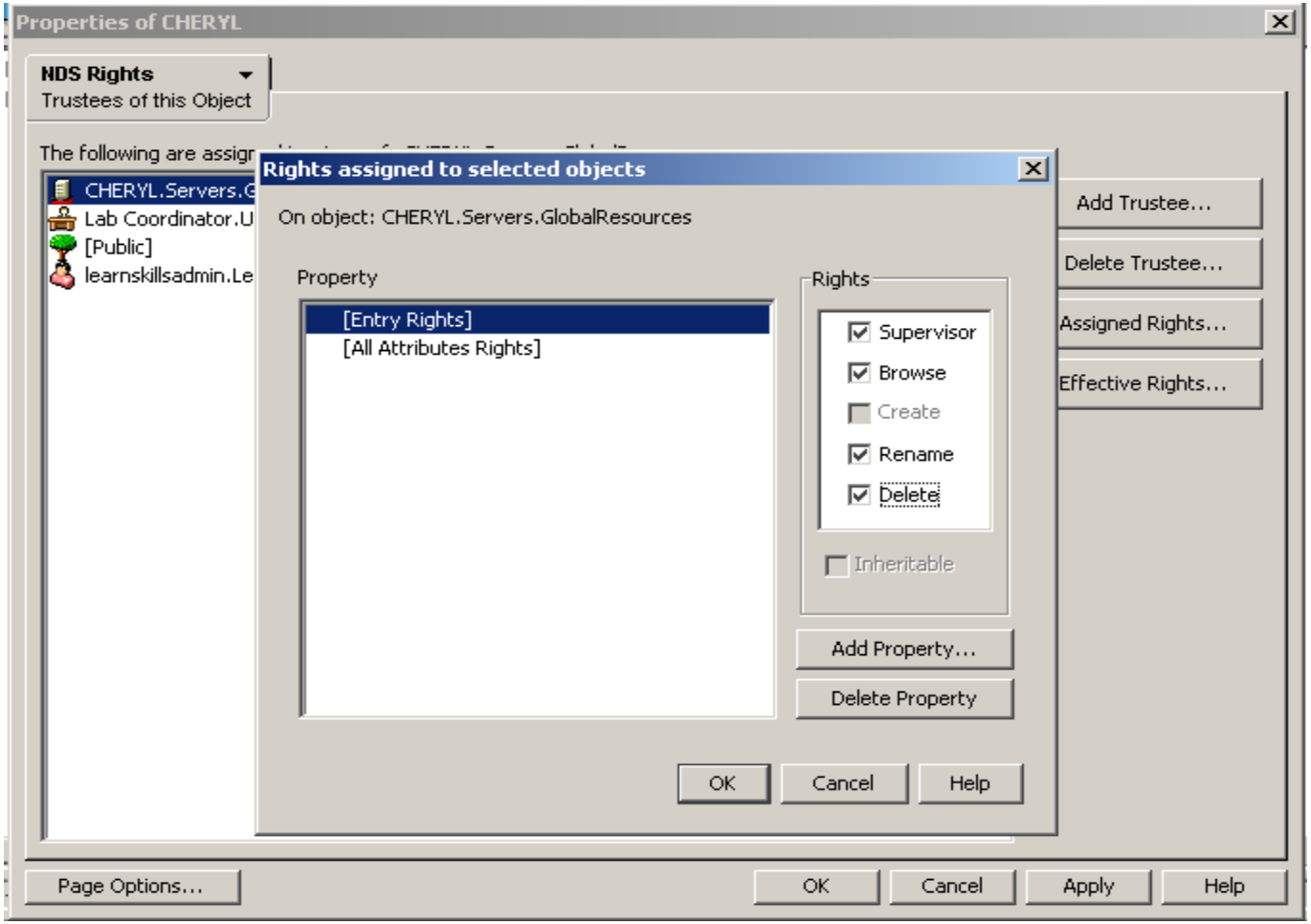
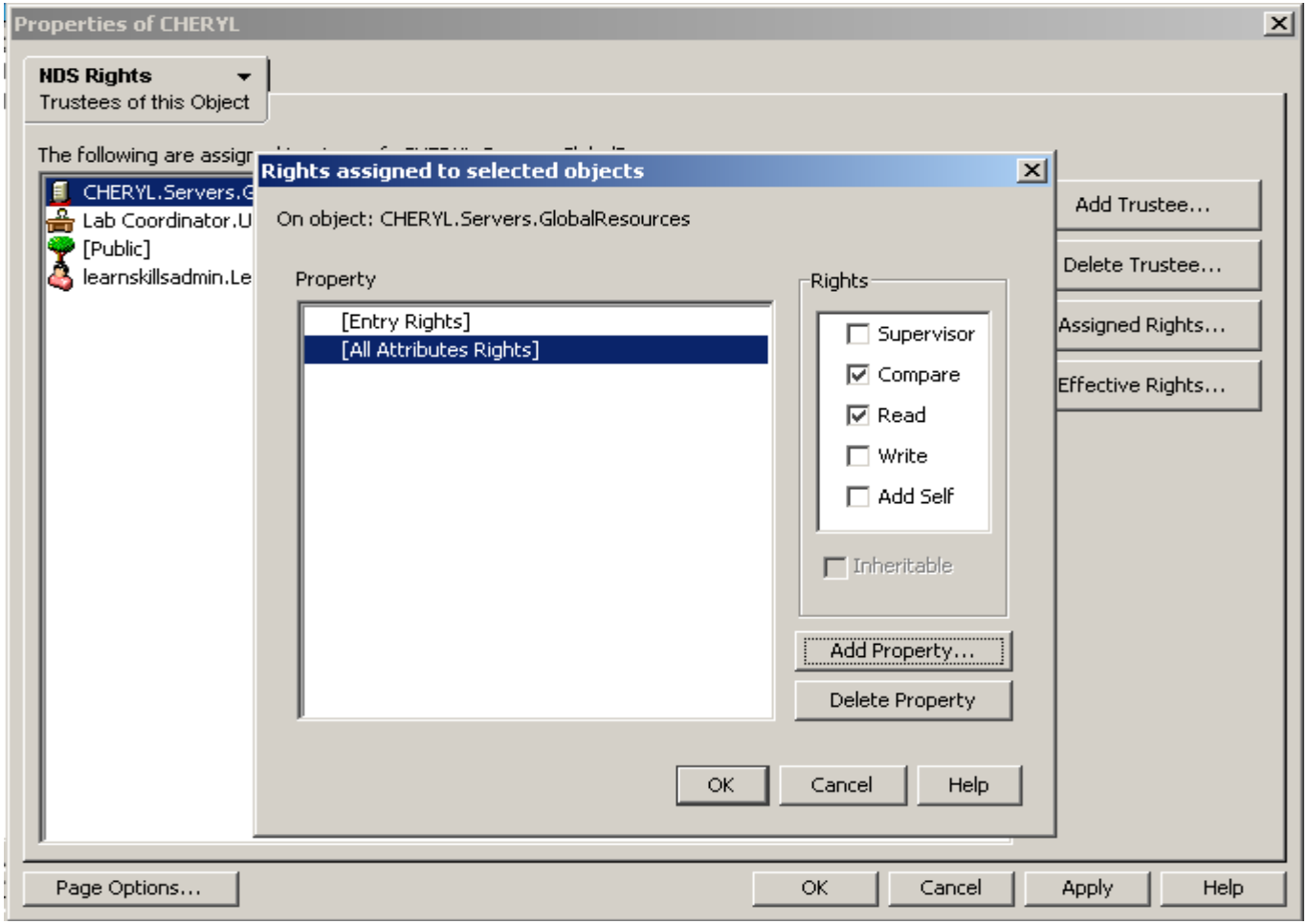


Adding Server eDirectory Rights



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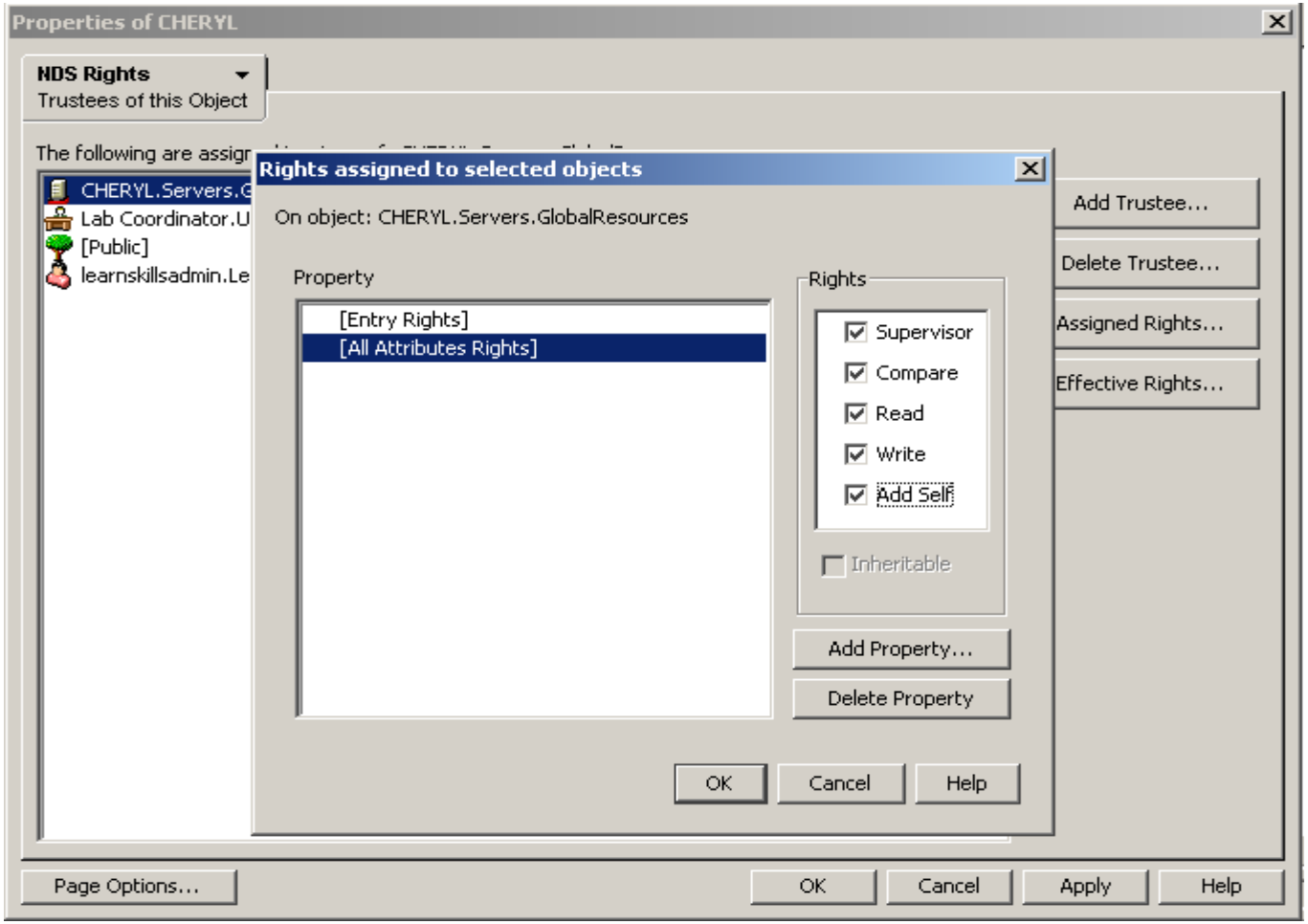

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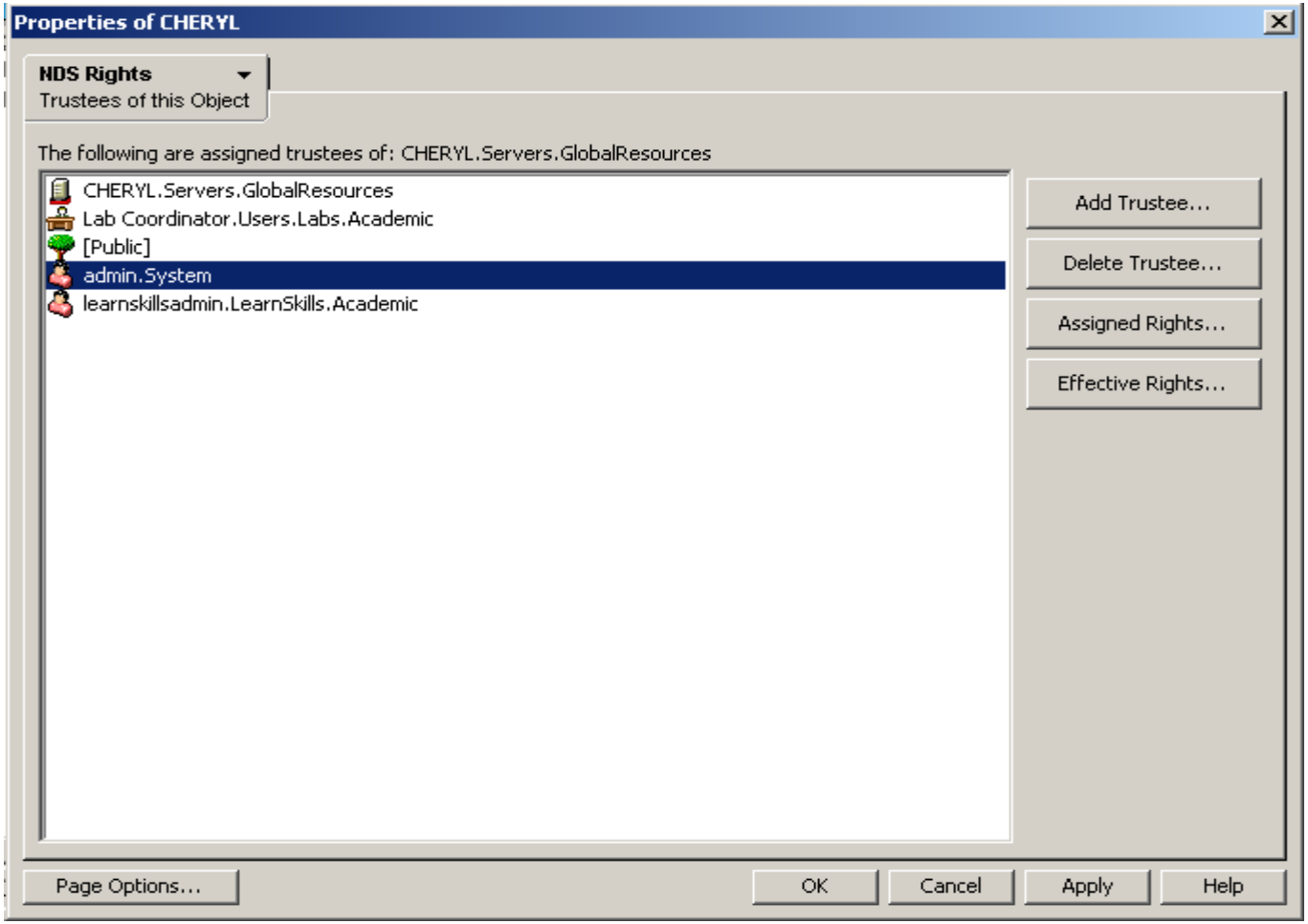


Basics Count:
Printers - The Bane of Migrations

Outdated versions of network print server firmware can't log in to updated NDS®/eDirectory™.

IPX protocol (and therefore printing) is not supported under Linux; many older network print servers only support IPX printing.

Inventory all print servers very early in your migration planning process. Most shops have to replace at least a couple.

Update firmware on *all* print servers to be used with OES2. Ensure that they can use TCP/IP printing for NDPS/iPrint.

Convert queue printers to iPrint prior to migration. (At least switch to NDPS servicing existing print queues on the source server.)

Turn printers off during migration. Printers left on during migrations *will* cause damage to migrated print queue directories.

Basics Count: Encryption

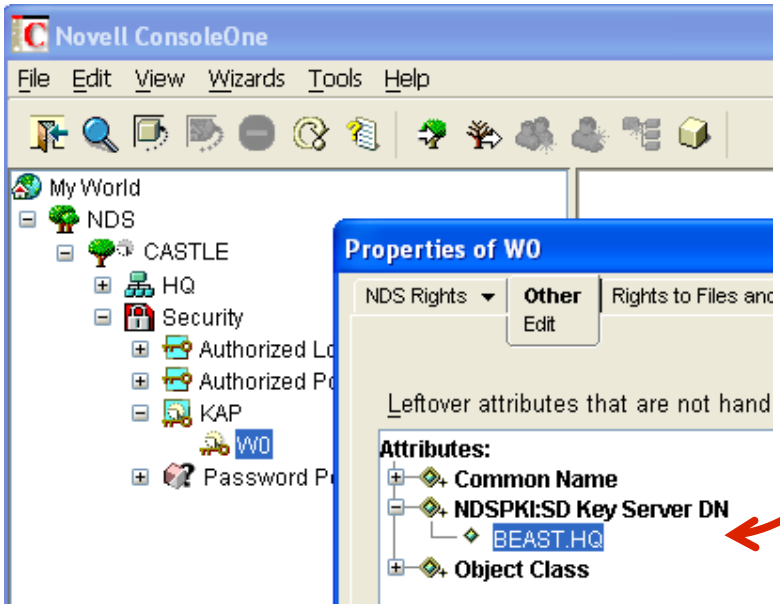
- It's common for older servers to have expired SSL certificates, which prevent successful migrations.
- NICI, SAS and PKI must be working on every NetWare® 5.1 or later server BEFORE the migration.
- A current version of NICI (2.6.4 or later) must be installed on every NetWare 5.x/6.x server prior to the migration.
- SSL *must* be functional on every NetWare 5.1/6.5 server prior to the migration. (Get to know PKIDIAG very, very well. It's one of your new best friends during migration preparation.)
- It wouldn't be a bad idea to get familiar with SDIDIAG as well.


Basics Count:
Certificate Authority

Migrating the server holding your tree's Certificate Authority (CA) is usually not a great idea.

Move the Certificate Authority to another server prior to migration.

Find your tree's CA host under “Other” properties of the “W0” object, under the “Security” container in ConsoleOne:



Certificate Authority (“BEAST.HQ”)

Basics Count:
Making The Connection

- Protocol errors during migration can cause serious issues.
  - Examples include slow migration speed, incomplete data transfer, or damaged data
- Lock the speed & duplex on *either* the server NIC or switch port.
- Use a gigabit switch to connect the old and new servers and the (if applicable) migration workstation. *During a migration, time is your most valuable non-renewable resource.*
- Lots of data? Consider a temporary gigabit NIC for the old server.
- **Test it!** Can the source and destination servers ping each other? Do they both have only IP loaded? (Remember, you should have removed IPX from all of your servers at this point.)
- SLP must be working on both servers.

Basics Count: File System

Damaged trustees and file systems are a leading cause of file migration/consolidation failures.

Use TRUSTEE.NLM on NetWare® source servers to

- make a backup of your existing trustee rights
- clean up invalid trustees before migrating.

Check your nightly or weekly tape backup reports for signs of damaged trustees or files.

Any “weird” garbled file names? Fix them before you migrate, even if it means deleting the file or “masking it out” of the migration/consolidation operation.

Prior to migration, VREPAIR every traditional volume on your source file system until there are NO errors.

Questionable NSS volumes? See TID #10021842, “Repair a Damaged NSS Volume”.

Match Your File Systems

- Incorrectly sized destination file systems are a major cause of migration headaches.
- The destination server's volumes must be at least as large as the source server's volumes.
- *Name Spaces must match on source and destination volumes* – the SCMT and OES2 Migration Wizards will warn you about this during pre-migration check.

Under Pressure…uh, Compression

Have a compressed file system on your source server?

File compression isn’t generally needed in contemporary times. Disk space is cheaper and faster now.

Compressing and decompressing files takes extra time.

If you want to get rid of file compression, make your destination volumes at least twice as big as your source volumes. (3x original size is a better idea.)

WARNING: If you get rid of file compression, be aware you won't be able to restore compressed files from old backup tapes to the new server's non-compressed volumes.

You're ready to migrate/consolidate!

Use this presentation to start building a preparation checklist.

Decide if you're going to migrate, consolidate, or both.

Check basic information all over again for each server you migrate or consolidate.

Make full, verified backups before:

- starting your preparation
- touching old (source) hardware (such as to upgrade NICs)
- Performing the actual migration/consolidation.

Don't rush it: use the checklist, take your time.

It helps to have two people prepare or run a migration: one to perform the work, the other to verify the work and mark it off the checklist.

Got Reference?

If you would like an updated copy of this presentation, please pass me your business card.

On the back, please write any or all of:

Migration … for *this* presentation, *Migrations Without Tears*

Advanced DNS … for the presentation, *Demystifying More DNS*

Basic DNS … for the presentation, *Demystifying DNS*

SLP … for the presentation, *SLP Made Easy*

(Also pass your card in if you want to be in the drawing for a USB stick!)

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Questions?

Thank You!

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