

SLE12 Service-Pack Migration

What is possible and what supported

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Overview

- History: why was it changed?
- What is supported
- Definitions and Workflow
- Own and Third Party Repositories
- Migration via YaST2
- Migration via zypper
- Migration via own scripts
- Rollback and Recovery

History

History – SUSE Linux Enterprise 11

- System in an undefined state after starting migration tools
- “Migration Product“ needed
- Recovery in error case next to impossible
- Error prone (several registration steps needed)
- Confusing Interface (yast2 wagon)
- Canceling not really possible
- “Rollback“ only via restore of backup
- Third party repositories disabled

Wishes for SUSE Linux Enterprise 12

- System always in a defined state until first RPM is updated
- Canceling possible until first RPM is updated
- Recovery in error case quite simple
- “Rollback“ via system tools, no backup/restore
- Chance that an error occurs very low
- Intuitive graphical tool
- Simple command line tool
- Use all active repositories

Supported Upgrade Scenarios

Supported Upgrade Scenarios

- Media (fully offline)
 - Boot from DVD, ISO image or USB stick
 - autoyast2
- Migration via SCC (online, internet)
 - YaST2 or zypper migration
- Migration via SMT (online, local network)
 - Similar to SCC
- Do-it-yourself “plain rpm” / 3rd Party Tools
 - “rpm -Fhv”, “yum”, ...
- Migration via SUSE Manager

Supported Versions (SUSE Linux Enterprise 12 SP1)

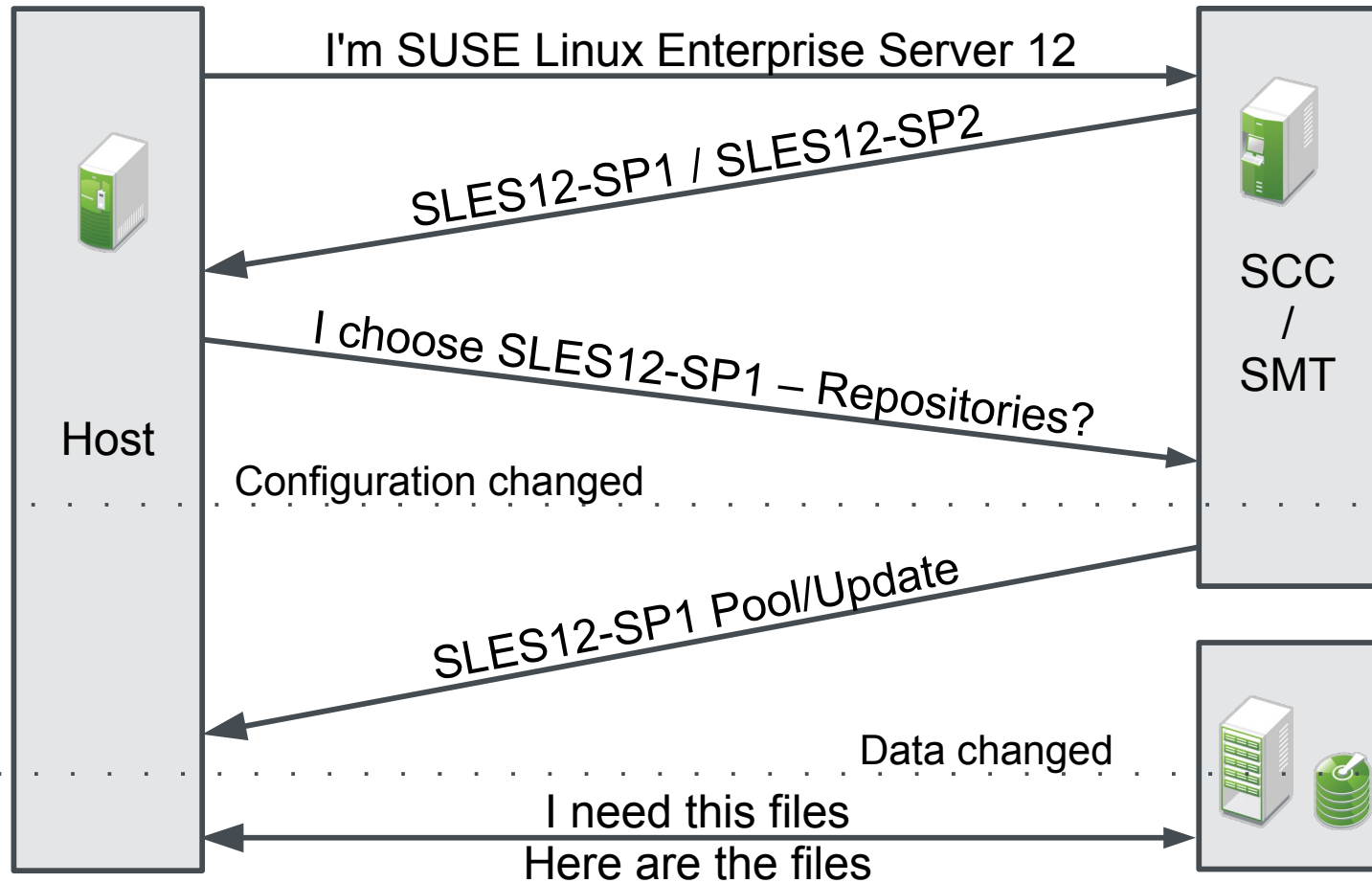
- Offline migration via Media (DVD, autoyast2):
 - SUSE Linux Enterprise 11 SP3
 - SUSE Linux Enterprise 11 SP4
 - SUSE Linux Enterprise 12
- Online migration (YaST2, zypper):
 - SUSE Linux Enterprise 12
- Manual / 3rd Party:
 - SUSE Linux Enterprise 12

Tools you should know

- YaST2
- zypper
- SUSEConnect
- Snapper
- SMT
- RPM

Definitions and Workflow

Migration Workflow



Definition of Migration Targets

- Defines set of products to which the system can be migrated
- One target contains:
 - Version of the products/extensions
- Set of products is known to be compatible
- Multiple migration targets are possible
 - SLES12 SP2 + SES2, SLES12 SP2 + SES3, SLES12 SP3, ...
- Migration targets are dynamic
 - Changing over time, example new release of extension
 - Depend on installed extensions

Workflow

- Find out possible migration targets
- Select one migration target
- Request and enable new repositories
 - Access to repositories is automatically granted
 - All our subscriptions include upgrade protection
 - Adjust 3rd Party repositories manually
- Run migration

Running Migration

Prerequisites

- Have enough free disk space
 - New RPMs needs to be cached local
 - A snapshot of old system will be created
- Check that all installed products are upgradable
 - If there is no new version for one extension, it could be that there will be no migration target
- Create a backup
 - We don't think you need it, but ...

Adjust 3rd Party Repositories

Update /etc/zypp/repos.d/*.repo files

- Adjust URL:
 - Change “SLE_12” to “SLE_12_SP1” (e.g. for SUSE hosted repositories)
 - Ask the responsible person for that repository for new URL

- Use Macros (--releasever) to automate:

```
SLE_${releasever_major}${releasever_minor:+_SP$releasever_minor}
```



Running Migration with standard Tools

- Update update stack first (optional)
 - “zypper patch --updatestack-only” or equivalent
- After that use one of:
 - “zypper migration”
 - “yast2 migration”
- Alternative use:
 - Upgrade by booting from DVD
 - autoyast2

Cancel Service Pack Migration

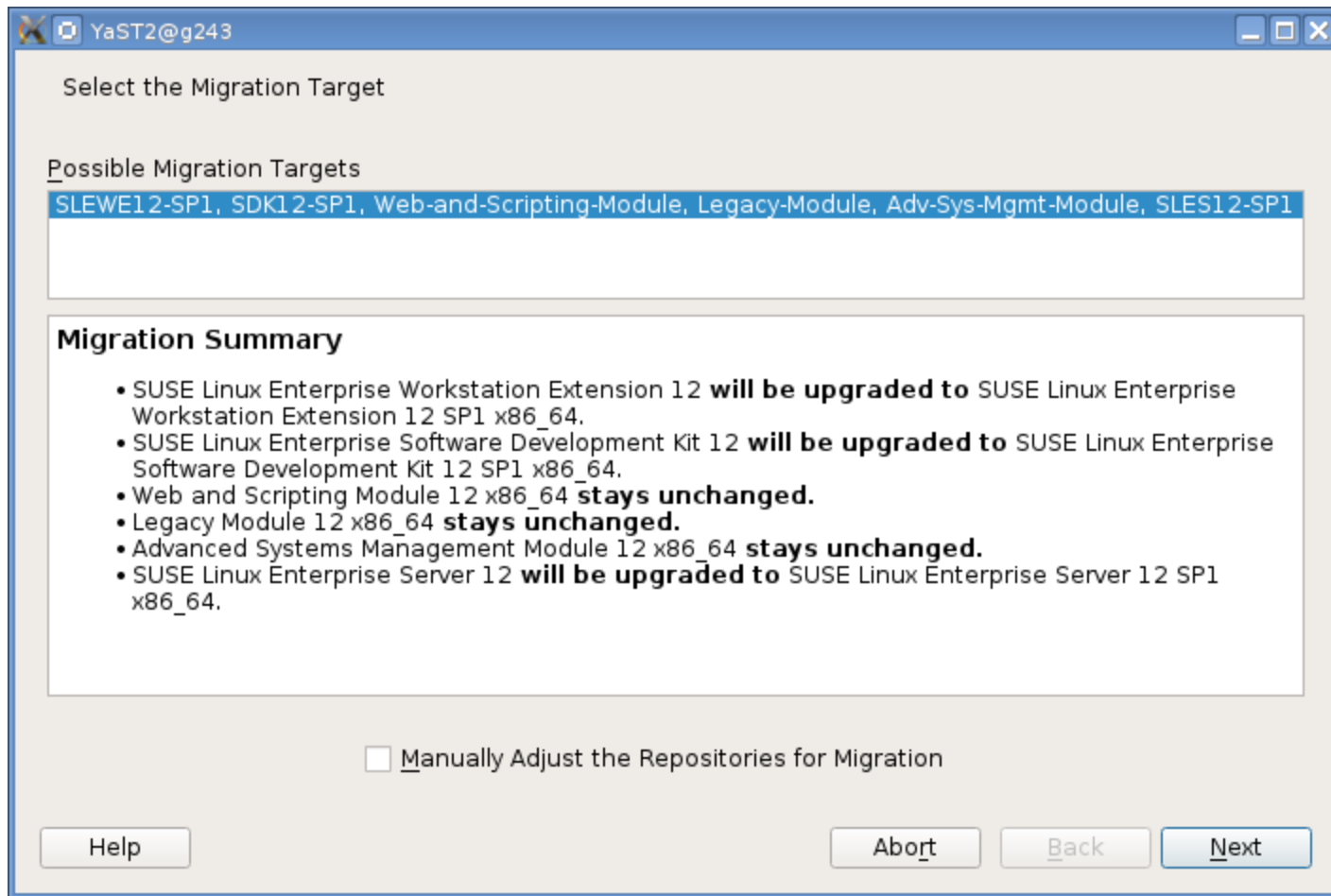
- Until package upgrade starts
 - Minimal changes on the system (only services/repositories)
 - May need a restore:
 - `/etc/zypp/repos.d/*`
- After package upgrade starts
 - Rollback from snapshot
 - Restore from backup
- SCC data changed after selection of migration target
 - Automatically restored by tools
 - Manually: “`SUSEConnect --rollback`”

Migration via YaST2

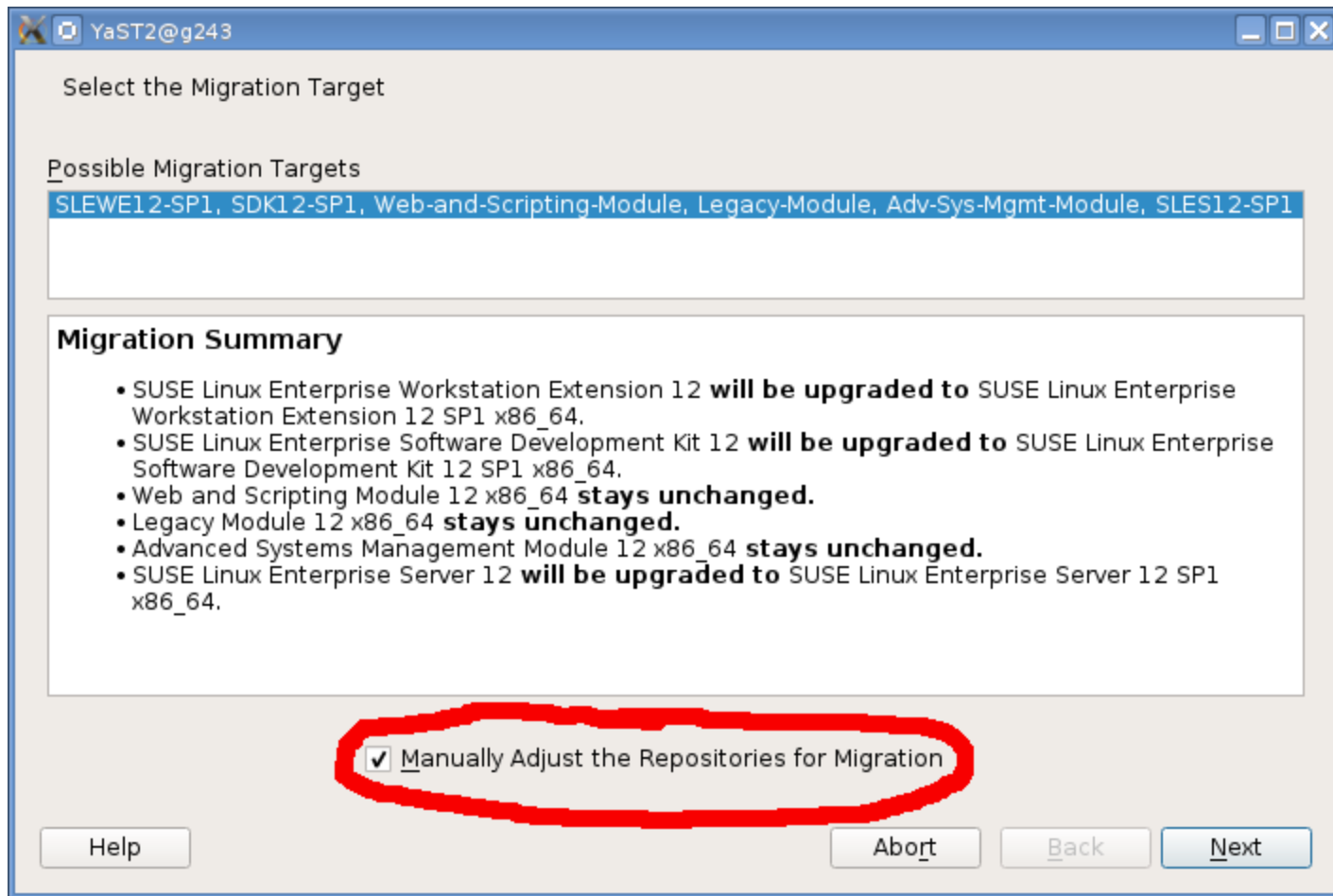
YaST Migration

- Prerequisite:
 - Make sure yast2-migration is installed:
 - “zypper in yast2-migration”
- Start migration:
 - “yast2 migration”

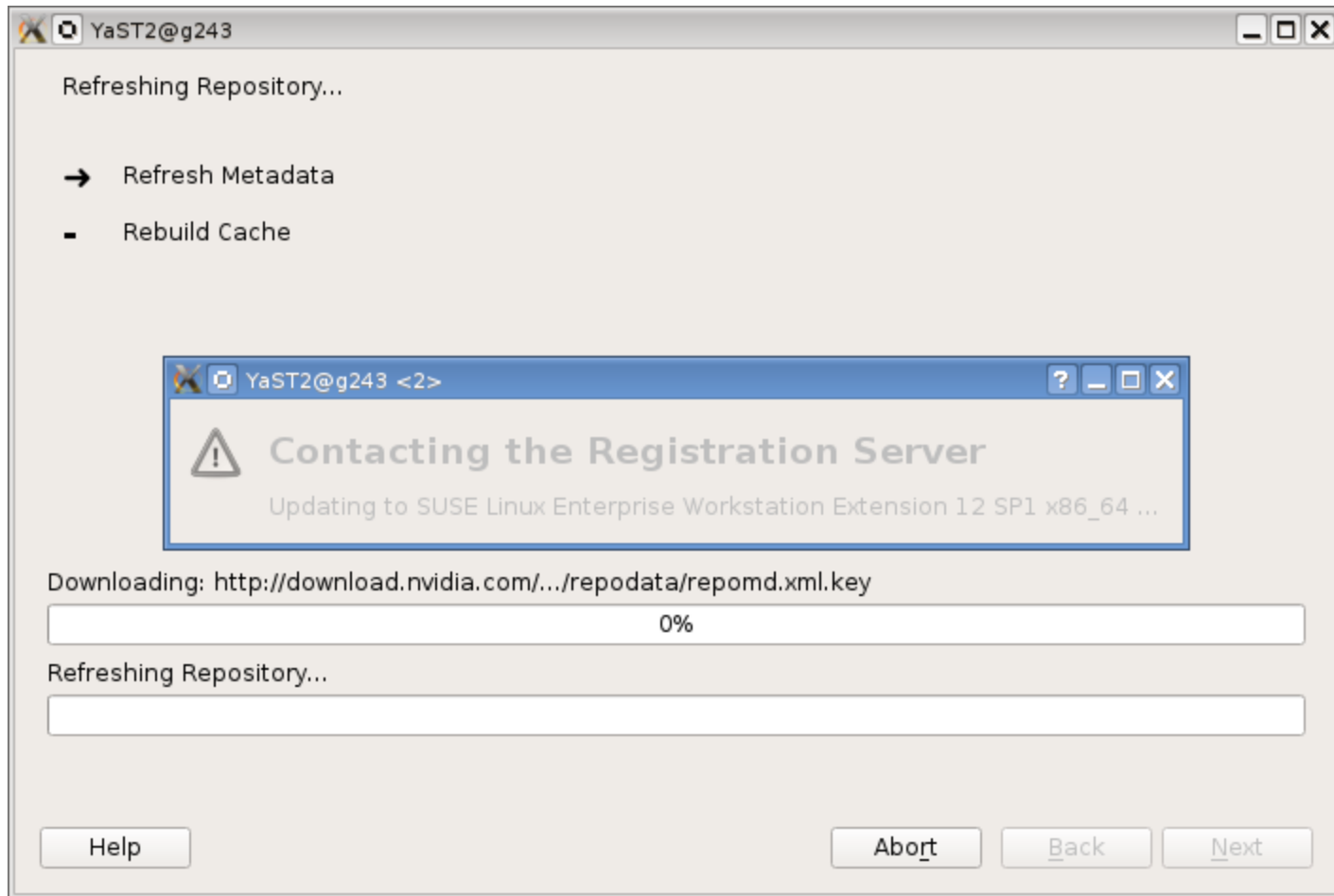
YaST Migration



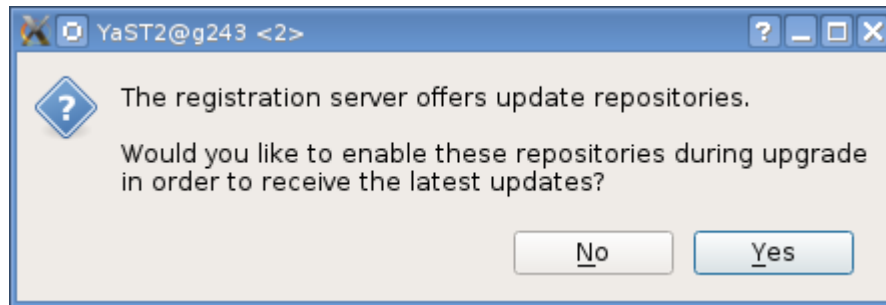
YaST Migration



YaST Migration

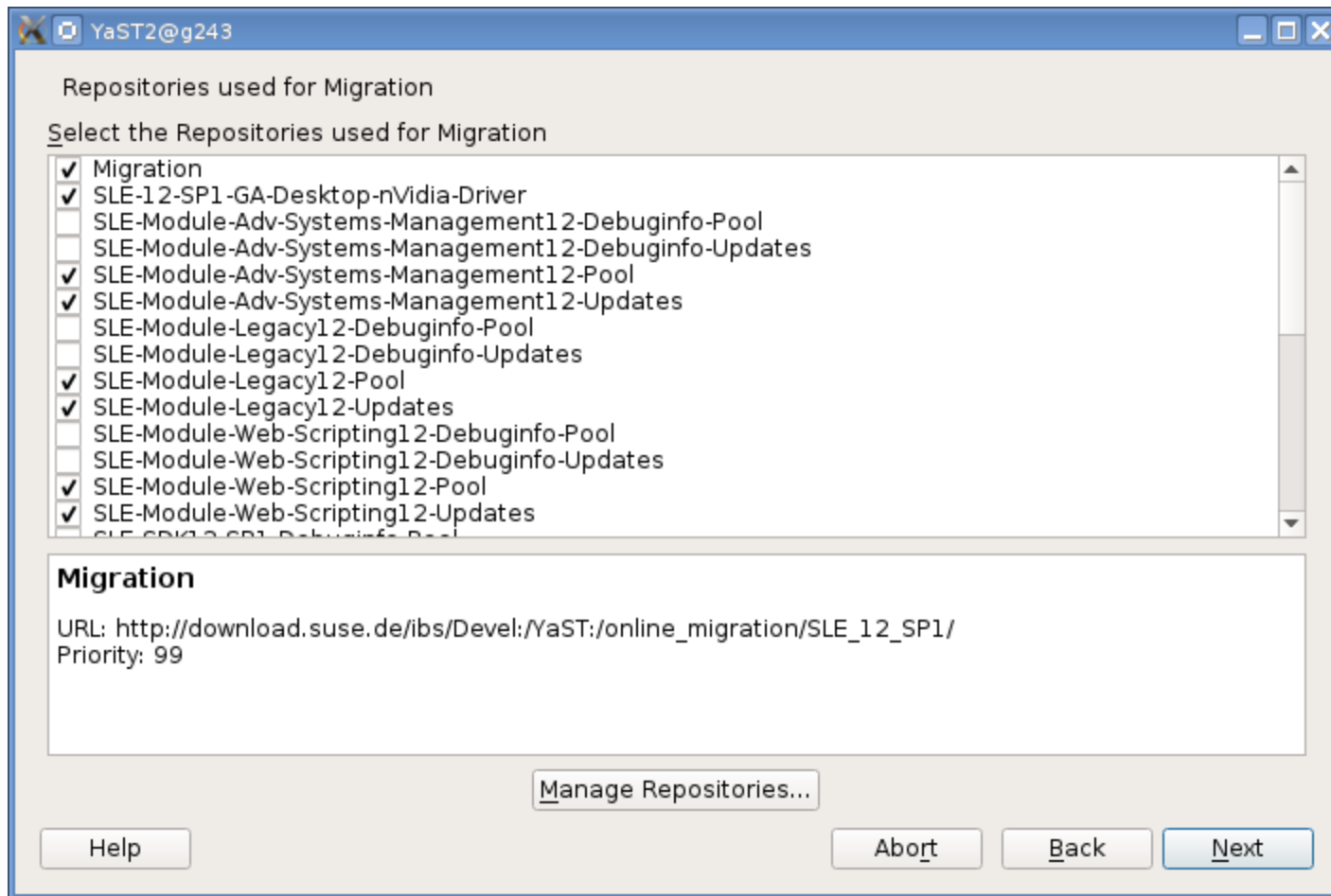


YaST Migration

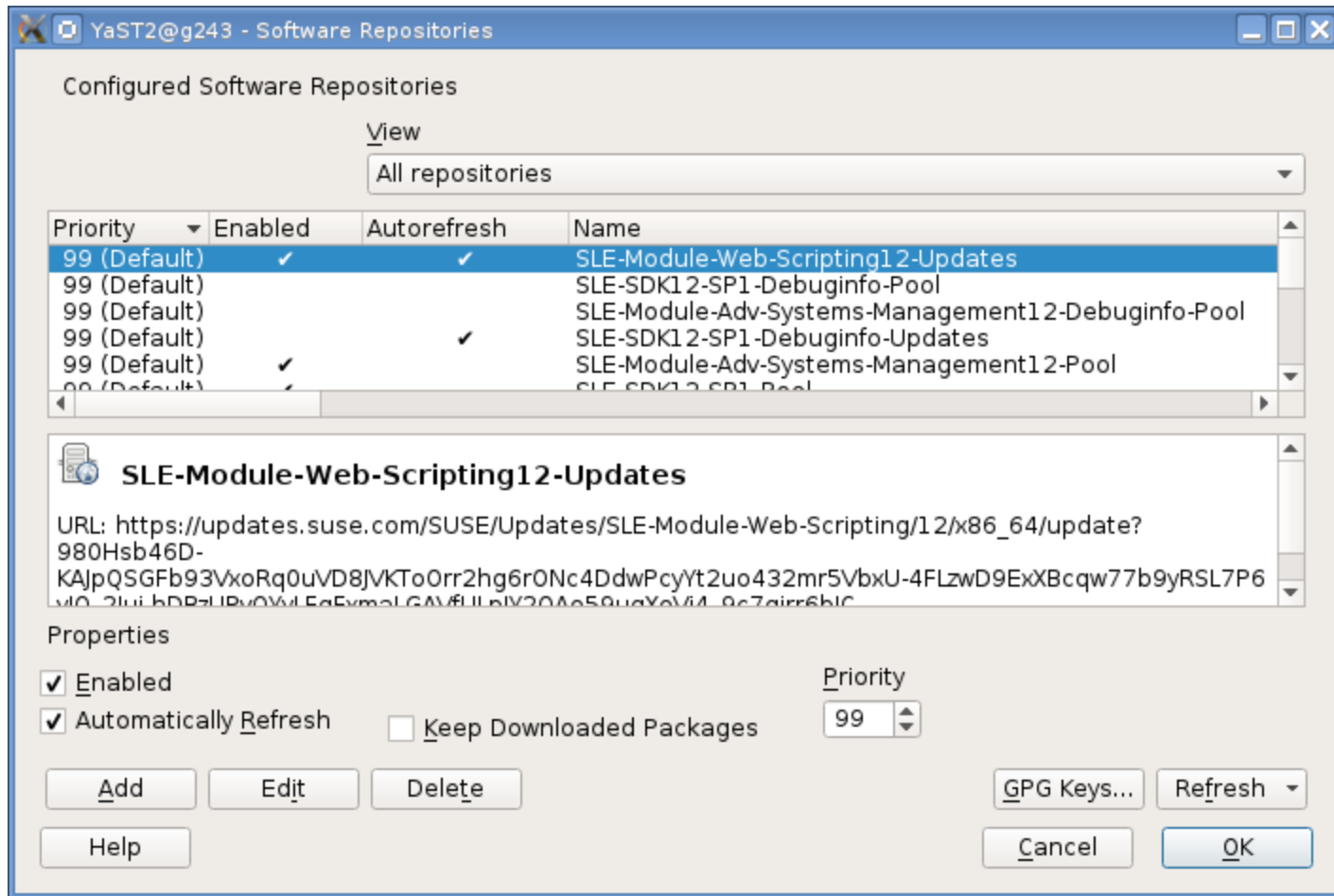


- Choice between:
 - SLES 12 SP1 GA without Updates
 - SLES 12 SP1 with all Updates applied

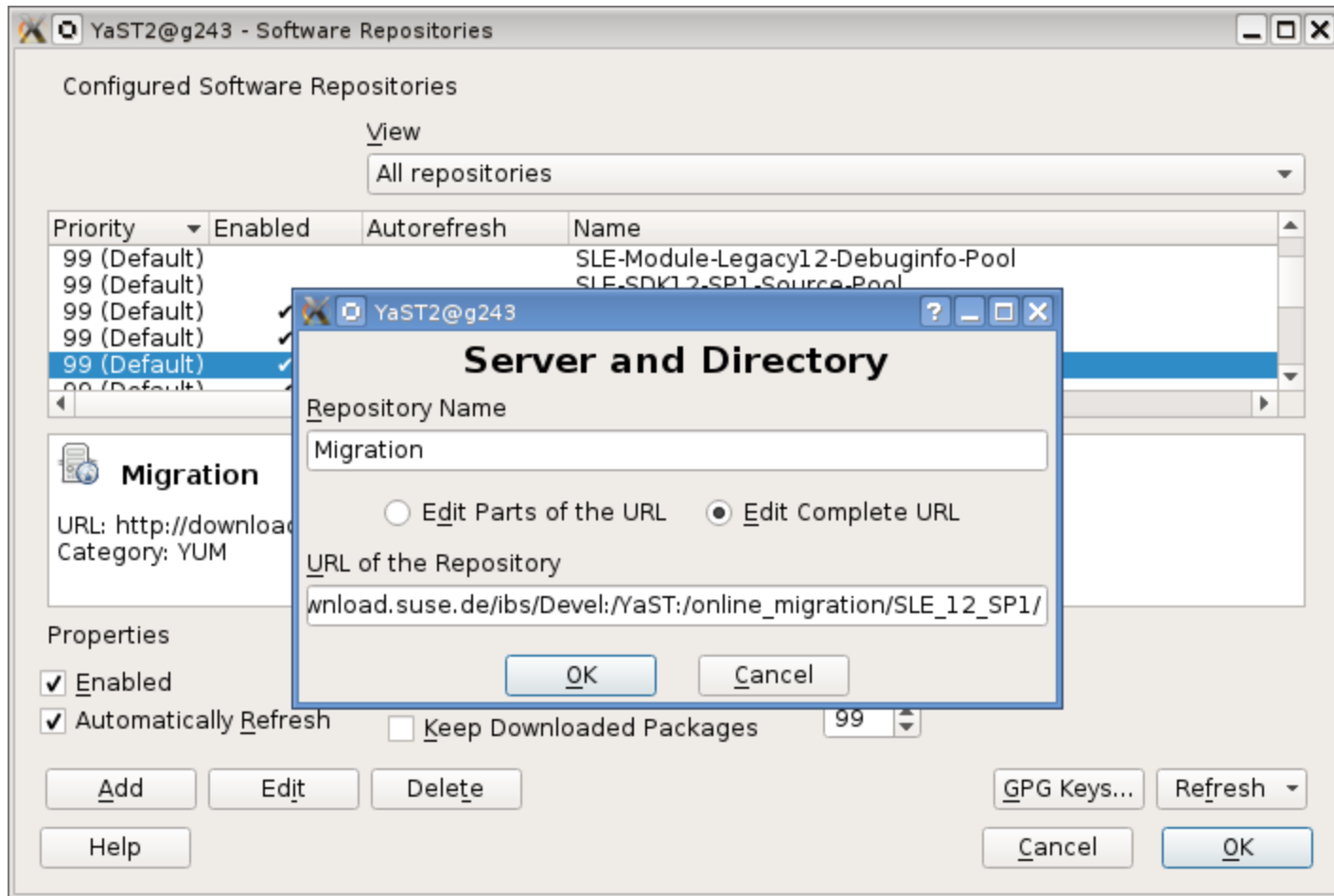
YaST Migration



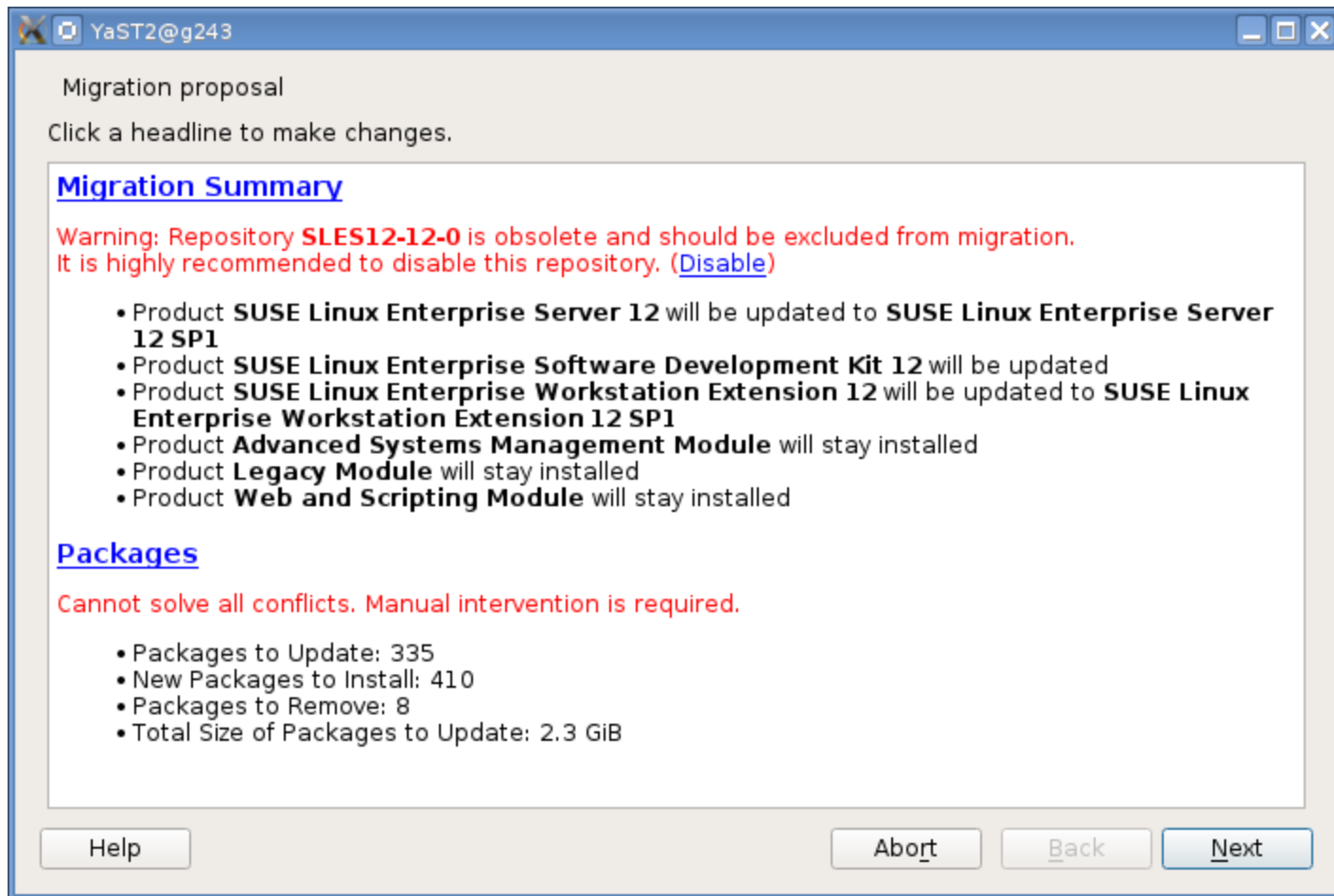
YaST Migration



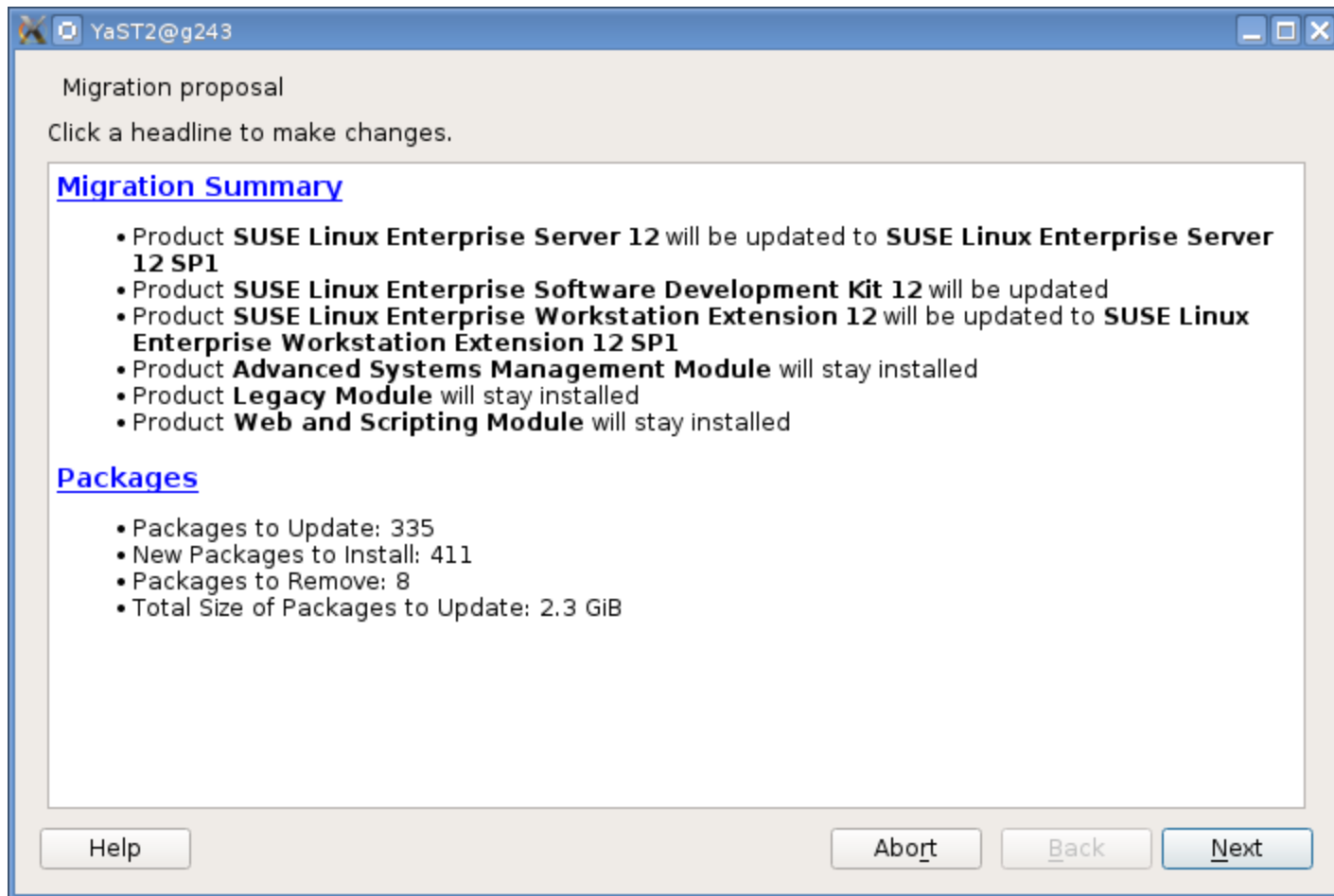
YaST Migration



YaST Migration



YaST Migration



YaST Migration

The screenshot shows the YaST Migration window titled "YaST2@g243". The main heading is "Performing Upgrade". Below this is a table with columns "Media", "Remaining", "Packages", and "Time". The "Total" row is highlighted in blue, showing 2.294 GiB remaining and 746 packages. Below the table, the "Actions performed:" section lists several packages being downloaded, including libcsync0, makedumpfile, crash, sg3_utils, libgfortran3, python3-base, python-base, and pam_pkcs11. A progress bar for pam_pkcs11 shows 94% completion. At the bottom, another progress bar for "Installing Packages..." shows 10% completion. The window includes "Help", "Abort", "Back", and "Next" buttons.

Media	Remaining	Packages	Time
Total	2.294 GiB	746	
SLE-Module-Adv-Systems-Management12-Pool Medium 1	10.49 MiB	5	
SLE-Module-Adv-Systems-Management12-Updates Medium 1	221.9 KiB	1	
SLE-Module-Legacy12-Updates Medium 1	4.31 MiB	1	
Migration			

Actions performed:

- Downloading libcsync0 (download size 31.6 KiB)
- Downloading makedumpfile (download size 148.3 KiB)
- Downloading crash (download size 2.39 MiB)
- Downloading sg3_utils (download size 649 KiB)
- Downloading libgfortran3 (download size 257 KiB)
- Downloading python3-base (download size 4.62 MiB)
- Downloading python-base (download size 5.35 MiB)
- Downloading pam_pkcs11 (download size 407.6 KiB)

Downloading pam_pkcs11 - 16.0 KiB/s (download size 407.6 KiB)

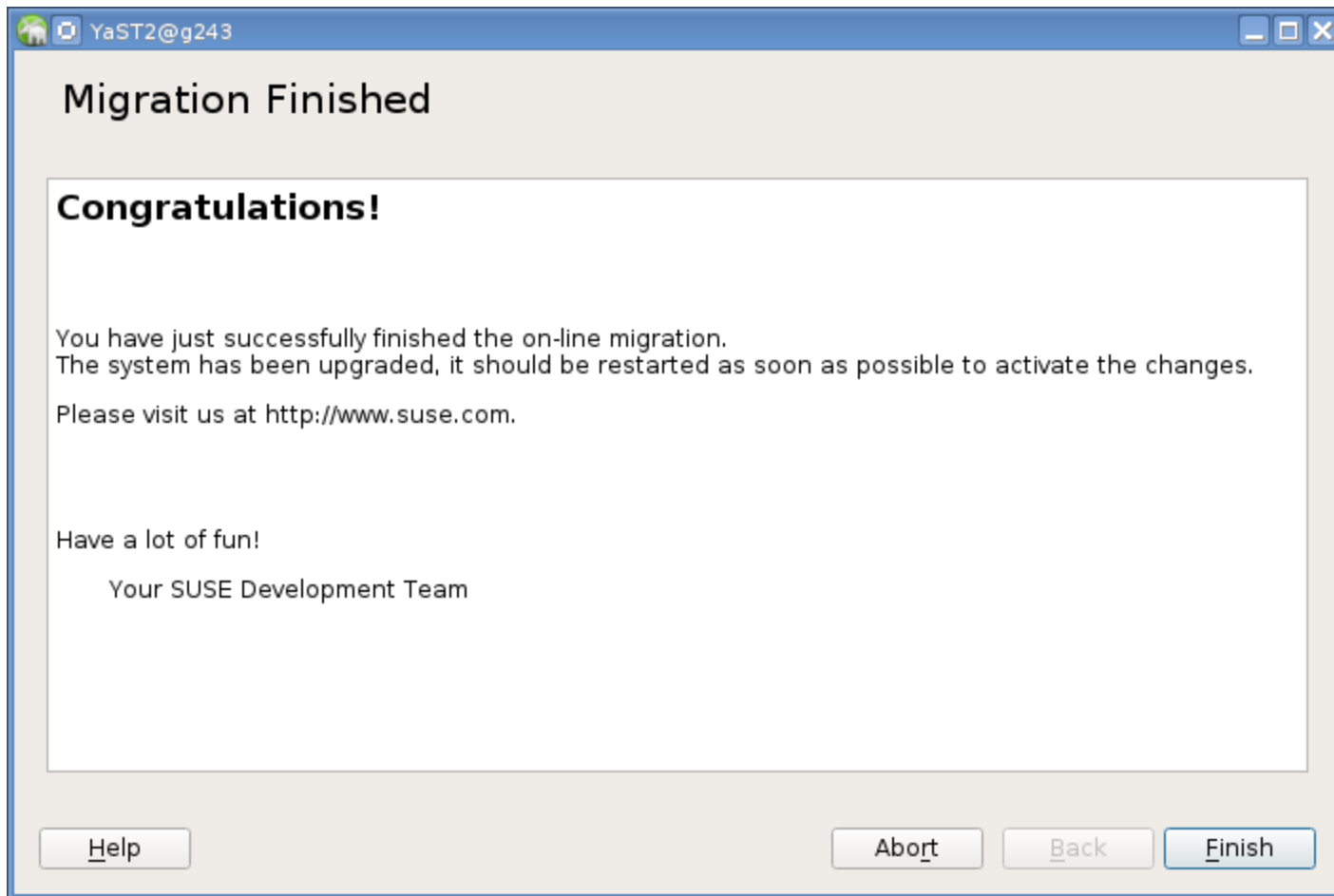
94%

Installing Packages... (Remaining: 2.294 GiB, 746 packages)

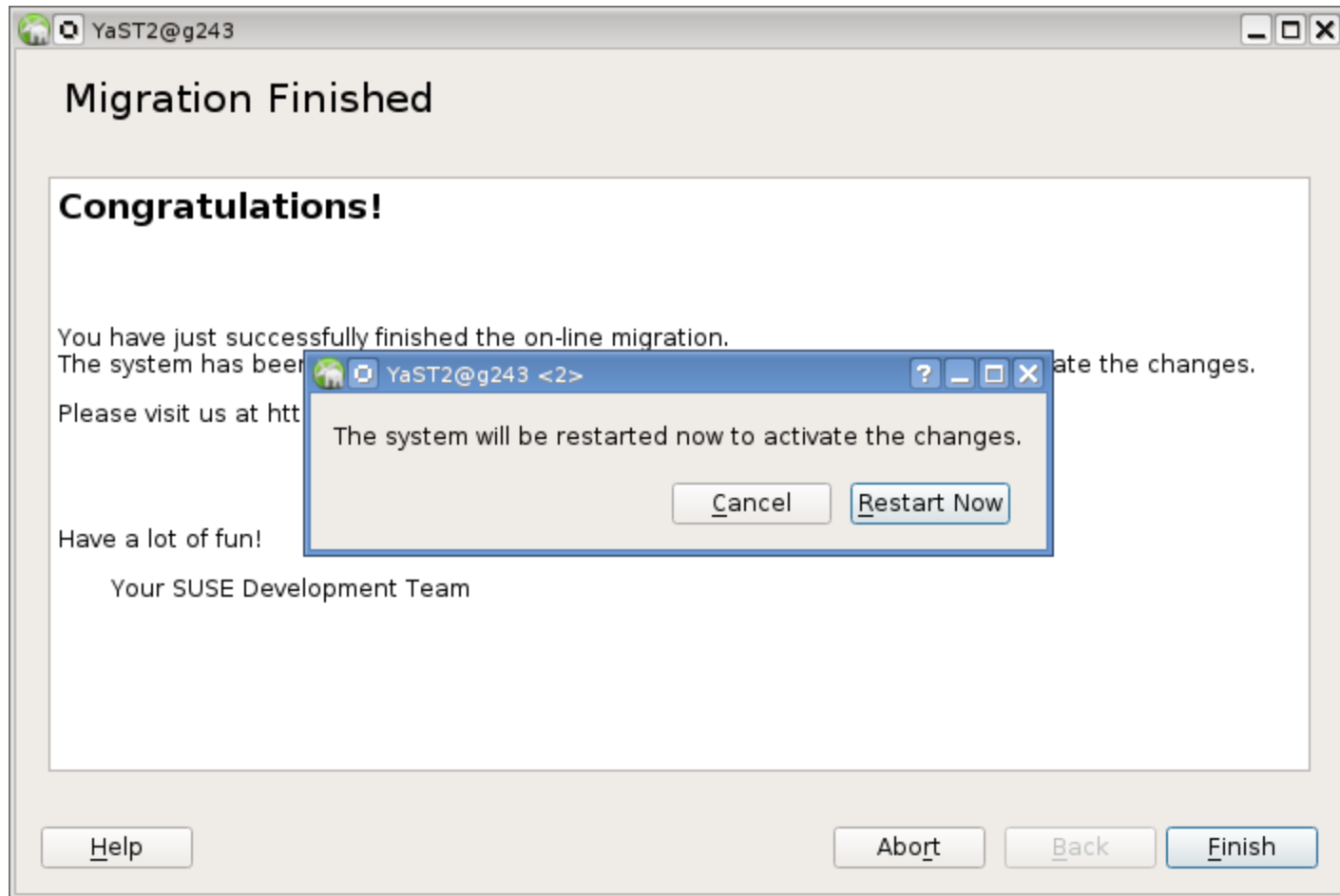
10%

Buttons: Help, Abort, Back, Next

YaST Migration



YaST Migration



YaST Migration

- System is migrated:

```
# lsb_release -d
```

```
Description:    SUSE Linux Enterprise Server 12 SP1
```

Migration via zypper

Run zypper migration (1/4)

- Prerequisite:

- Make sure, that “zypper-migration-plugin” is installed
- “zypper in zypper-migration-plugin”

- Start migration:

```
# zypper migration
```

```
Executing 'zypper patch-check --updatestack-only'
```

```
Refreshing service...
```

```
Loading repository data...
```

```
Reading installed packages...
```

```
0 patches needed (0 security patches)
```



Run zypper migration (2/4)

Available migrations:

```
1 | SUSE Linux Enterprise Server 12 SP1 x86_64
   SUSE Linux Enterprise Workstation Extension 12 SP1 x86_64
   SUSE Linux Enterprise Software Development Kit 12 SP1 x86_64
   Legacy Module 12 x86_64 (already installed)
   Advanced Systems Management Module 12 x86_64 (already
installed)
   Web and Scripting Module 12 x86_64 (already installed)
```

[num/q]:

Run zypper migration (3/4)

```
Executing 'snapper create --type pre --print-number  
--description 'before online migration''
```

```
Upgrading product SUSE Linux Enterprise Server 12 SP1 x86_64
```

```
Found obsolete repository SLES12-12-0
```

```
Disable obsolete repository SLES12-12-0 [y/n] (y): y
```

```
... disabling
```

```
Upgrading product SUSE Linux Enterprise Workstation Extension  
12 SP1 x86_64.
```

```
Upgrading product SUSE Linux Enterprise Software Development  
Kit 12 SP1 x86_64.
```



Run zypper migration (4/4)

324 packages to upgrade, 9 to downgrade, 413 new, 8 to remove, 1 to change arch.

Overall download size: 950.4 MiB. Already cached: 0 B After the operation, additional 1.6 GiB will be used.

Continue? [y/n/? shows all options] (y):

- Now your system will be updated
- Reboot to activate new kernel

SMT

Migration via SMT

- Prerequisite:
 - SMT, which supports migration of SUSE Linux Enterprise 12
 - SUSE Linux Enterprise Server 11: `smt > 2.0.13`
 - SUSE Linux Enterprise Server 12 SP1: `smt >= 3.0.6`
 - SMT needs to use SCC
 - Clients needs to be configured against SMT

- Start migration with:
 - `yast2 migration`
 - `zypper migration`

Migration via own scripts

Migration via own scripts (Preparation)

- De-register current system from SCC:
 - “SUSEConnect --de-register”
- Disable old installation sources like DVD, etc.
 - e.g. /etc/zypp/repos.d/SLES12-12-0.repo
- Adjust 3rd Party Repositories

Migration via own scripts (Add Repos)

- Add new installation sources (online channel)
 - “SUSEConnect -p SLES/12.1/x86_64 -r [code] -e [mail]”
 - See “zypper products”
- Check, that system is registered correctly:
 - “SUSEConnect --status”

Or

- Add local installation source
 - “zypper ar -f <http://example.com/media/SLES12SP1/>”
 - “zypper ar dvd:///?devices=/dev/sr0 SLES12SP1”

Migration via own scripts (Update)

- Refresh all repositories:
 - “zypper --releasever 12.1 ref -f -s”
- Run migration:
 - “zypper --releasever 12.1 dup --no-allow-vendor-change --recommends”
- Register system if not already done
- Check, that system is registered correctly:
 - “SUSEConnect --status”

Migration via own scripts (plain RPM)

- Instead of zypper ref/dup, call
 - “rpm -Fhv */*.rpm”

- Caveat:

Depending on the installed RPMs, it could be that you have to solve at first some dependencies manual by deinstalling RPMs and/or installing other RPMs

Migration via plain RPM (example)

- `mount /dev/sr0 /mnt`
- `cd /mnt/suse`
- `rpm -Uhv */libsnappper3-*.rpm */snapper-*.rpm */libstorage6-*.rpm */yast2-snapper-*.rpm */snapper-zypp-plugin-*.rpm */libstorage-ruby-*.rpm`
- `rpm -Uhv */python-pyOpenSSL-*.rpm */python-cryptography-*.rpm */python-cffi-*.rpm */python-pycparser-*.rpm */python-six-*.rpm`
- `rpm -Uhv */libguile-*.rpm */guile-modules-2_0-*.rpm */libunistring0-*.rpm`
- `rpm -e libpdb0 libpdb0-32bit --nodeps`
- `rpm -Uhv */libsamba-passdb0-*.rpm */libsamba-passdb0-32bit-*.rpm -nodeps`
- `rpm -Fhv */*.rpm`
- `rpm -Va`

Service-Pack Rollback

Rollback via snapper/grub2

- Select snapshot to rollback to via:
 - “snapper rollback”
 - grub2 boot menu
- During boot, registration should be reset automatically.
- Check, that system is registered correctly:
 - “SUSEConnect --status”
- If needed, repair registration:
 - “SUSEConnect --rollback”

Rollback via Disk Snapshot or Restore

- System does not know if a product downgrade was done via:
 - LVM snapshots
 - KVM or VMWare snapshots
 - Restore of backup
- Re-Register system to get back access to old repositories:
 - `"/usr/sbin/rollback-reset-registration"`

Questions?

Thank you.





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