Skill Ramp Up Session: sap DB2 Migration Preparation

IBM SAP DB2 Center of Excellence
Agenda – Day 1

- DB2 Overview
  - Product Overview
  - Architectural Overview / DB2 Objects
Agenda – Day 2

- DB2 Administration
  - Backup / Recovery
  - RUNSTATS / REORG
  - Monitoring / Tuning
  - Problem determination
- DB2 / SAP integration
  - DBA Cockpit
  - SAP DB2 Tools
- Layout planning for SAP / DB2 databases
  - Table space concepts
  - Design recommendations
- SAP migration overview
  - Terminology and concept
  - Available tools
Agenda – Day 3

- **Migration optimizations for DB2**
  - Using DB2 load for SAP migrations
  - Data transfer using sockets
  - SAP incremental migration
  - SAP migration monitor
  - IDS to DB2 optimizations
  - DB2 optimizations for migrations

- **SAP BW migrations specifics**
  - DB2 partition layout
  - Migration of partitioned tables
  - Post migration tasks
What are we speaking about?

**SAP System**

SID

**DB (Informix, MS SQL Server, ORACLE, ...)**

TAB A

TAB B

**Migration**

Export

Import

**DB2**

TAB A

TAB B
Workshop Migration Landscape

NetWeaver 04 (SRC)
DB2 V8 FP12 on LINUX

NetWeaver 04 (TAR)
DB2 9.1 FP0 on LINUX

Network
# SAP Migration Overview – Terminology and Concepts

<table>
<thead>
<tr>
<th>SAP Term being used</th>
<th>Change of Operating System (OS)</th>
<th>Change of Database System (DB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homogeneous System Copy</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>SAP OS Migration</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>(heterogeneous system copy)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAP DB Migration</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>(heterogeneous system copy)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAP OS/DB Migration</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>(heterogeneous system copy)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SAP Marketplace - Informations

- Quicklink: osdbmigration
- FAQ-Section answers the most important questions about OS/DB Migration
  - What is it all about?
  - Service Contract and Software Delivery
  - Service Session Delivery
  - Planning and performing the Migration
SAP OS/DB Migration Check

<table>
<thead>
<tr>
<th>Br.</th>
<th>Task Name</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Preparation Phase</td>
<td>11.5 days</td>
</tr>
<tr>
<td>2</td>
<td>Plan status for Going Live - Migration Check</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Prepare project plan and signed contract “R/3 Migration Services” and send them to SAP</td>
<td>3 days</td>
</tr>
<tr>
<td>4</td>
<td>SAP approves migration and sends the migration tools and documentation</td>
<td>5 days</td>
</tr>
<tr>
<td>5</td>
<td>Request adaptation of the SAP license for the target system</td>
<td>5 days</td>
</tr>
<tr>
<td>6</td>
<td>Request installation package for the target system</td>
<td>5 days</td>
</tr>
<tr>
<td>7</td>
<td>Check if packages for the target operating and database system are available</td>
<td>2 days</td>
</tr>
<tr>
<td>8</td>
<td>Check if installation CD(s), patch, and installation notes are available for the target system</td>
<td>0.25 days</td>
</tr>
<tr>
<td>9</td>
<td>Hardware installation of the target host and system network installation</td>
<td>2 days</td>
</tr>
<tr>
<td>10</td>
<td>Adapt operating system parameters on the target machine</td>
<td>0.25 days</td>
</tr>
<tr>
<td>11</td>
<td>Set up remote access to the source and target system</td>
<td>1 day</td>
</tr>
<tr>
<td>12</td>
<td>Determine customer migration ID (see “R/3 Noninteroperable System Copy”)</td>
<td>0.25 days</td>
</tr>
<tr>
<td>13</td>
<td>Analysis of the source system</td>
<td>6 days</td>
</tr>
<tr>
<td>14</td>
<td>Distribution of file system and data, NFS file systems, files, etc.</td>
<td>1 day</td>
</tr>
<tr>
<td>15</td>
<td>Database configuration (number of log files, size of filespaces/filespaces)</td>
<td>0.5 days</td>
</tr>
<tr>
<td>16</td>
<td>Configuration of the R/3 System; distribution of central instance and dixing instances</td>
<td>1 day</td>
</tr>
<tr>
<td>17</td>
<td>CCS configuration (operation modules, profiles, etc.)</td>
<td>0.5 days</td>
</tr>
<tr>
<td>18</td>
<td>Interface to other application modules</td>
<td>0.5 days</td>
</tr>
<tr>
<td>19</td>
<td>Backup strategy</td>
<td>0.25 days</td>
</tr>
<tr>
<td>20</td>
<td>Solve jobs - which jobs are assigned to which host?</td>
<td>0.25 days</td>
</tr>
<tr>
<td>21</td>
<td>Methods of data archiving</td>
<td>0.25 days</td>
</tr>
<tr>
<td>22</td>
<td>Printer configuration</td>
<td>0.25 days</td>
</tr>
<tr>
<td>23</td>
<td>RFC configuration</td>
<td>0.25 days</td>
</tr>
<tr>
<td>24</td>
<td>Customer-specific adaptations for R/3 (scripts, data transfer formats the R/3 System, etc.)</td>
<td>0.5 days</td>
</tr>
<tr>
<td>25</td>
<td>Additionally installed R/3 tools (sapconrr, Archivtools, EDI gateway, etc.)</td>
<td>0.5 days</td>
</tr>
</tbody>
</table>

Analysis Session: 4-6 weeks before on source system
Verification Session: 2-4 weeks after on target system
Next: SAP - Upgrade

23 May, 2008
SAP Migration Questionaire

- Prerequisite for the Remote Project Audit
- SAP-Questionaire.pdf

INTRODUCTION FOR MIGRATION ..............

PROJECT AUDIT ................................

2 GENERAL COMPANY DATA ..................

3 MIGRATION - PROJECT AUDIT ............

3.1 TECHNICAL DATA ..........................

3.2 SCHEDULE ................................

3.2.1 Development System..................
3.2.2 Quality Assurance System ..........
3.2.3 Production System....................
3.2.4 Training System ......................
3.2.5 Test System ...........................

4 COMMENTS ....................................
Reasons for Copying a SAP System

- **Requirement**
  - To copy a SAP System **WITHOUT** changing the OS or DB
  - To copy a SAP System **WHILE** changing OS and/or DB

- **Potential Solutions**
  - Client transport?
    - (#96866 – Client copy tools not supported as system copy tools for productive systems)
  - Backup/Restore?
    - (homogeneous or OS-Migration in some cases)
  - 3rd party tools for data unload/load?
    - Not supported by SAP
  - SAP system copy tools!
    - Should be used (since 3.0D)
Migration: The Backup / Restore process

- With DB2 UDB Version 8, you can use redirected restore to create a Heterogeneous System Copy between two systems running on different platforms
  
  Note 628156 - DB6: Cross-Platform System Copy using Backup/Restore with V8

- Document:

  “Copying Your SAP/R3 System Across Platforms Using DB2 Universal Database V8 Redirected Restore”
  
SAP Migration (Heterogeneous System Copy)

- Must be done by a SAP Technology Consultant with a special Certification for OS/DB-Migration (TADM70)
- SAP OS/DB Migration Service must be ordered for every productive system involved
- **Common reasons**
  - Hardware enhancements
  - Performance improvements
  - Availability of new technologies
  - Administrative efficiency
  - Cost reduction
  - Standardization through group-wide platform strategy
  - UNICODE-Conversion
SAP Migration – typical challenges

- **Export**
  - Long runtimes
  - Insufficient storage space in the export filesystem
  - Not enough temporary database space for sorting (PSAPTEMP)
  - Inconsistencies between ABAP dictionary and DB dictionary
    (QCM-tables → SAP Note 9385)

- **Import**
  - Long runtimes
  - Database space problems (tablespace, log space)
  - Not enough temporary database space for sorting (PSAPTEMP)
  - Permission problems on import files and directories
Migrating a System Landscape

- Two different strategies
  - DEV, QAS, PRD are all migrated (PRD as much test migrations as needed)
  - DEV and PRD are migrated, QAS is build up by homogeneous system copy

> 3 migrations

DEV
QAS
PRD

> 2 migrations

DEV
QAS
PRD

system copy
Basic Definitions and Relationships

- **Definitions**
  - TABART
  - DDART
  - SAPTA
  - TS<DBS>
  - TA<DBS>
  - TG<DBS>
  - IG<DBS>

- **Tables**
  - TSD
  - TAB
  - TSI
  - IND_P
  - IND_S

- **Files**
  - DD09L
  - TS<DBS>
  - TA<DBS>
  - TG<DBS>

- **Package**
  - TA<DBS> → TSD
  - TA<DBS> → TSI
  - TABART ↔ Tab.

23 May, 2008
# Types of TABARTs

<table>
<thead>
<tr>
<th>Type</th>
<th>TABART</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data</td>
<td>APPL0</td>
<td>Master data, transparent tables</td>
</tr>
<tr>
<td></td>
<td>APPL1</td>
<td>Transaction data, transparent tables (big tables)</td>
</tr>
<tr>
<td></td>
<td>APPL2</td>
<td>Organization and customizing</td>
</tr>
<tr>
<td></td>
<td>USER, USER1</td>
<td>Customer data class</td>
</tr>
<tr>
<td>Special</td>
<td>CLUST</td>
<td>Cluster tables</td>
</tr>
<tr>
<td></td>
<td>POOL</td>
<td>Pool Tables</td>
</tr>
<tr>
<td>System</td>
<td>SAUS</td>
<td>Exchange tables for Upgrades</td>
</tr>
<tr>
<td></td>
<td>SDIC</td>
<td>ABAP Dictionary tables</td>
</tr>
<tr>
<td></td>
<td>SDOCU</td>
<td>Documentation</td>
</tr>
<tr>
<td></td>
<td>SLDEF</td>
<td>Repository switch (SAP Upgrade)</td>
</tr>
<tr>
<td></td>
<td>SLEXC</td>
<td>Repository switch (SAP Upgrade)</td>
</tr>
<tr>
<td></td>
<td>SLOAD</td>
<td>Screen and report loads</td>
</tr>
<tr>
<td></td>
<td>SPROT</td>
<td>Spool and logs</td>
</tr>
<tr>
<td></td>
<td>SSDEF</td>
<td>Repository switch (SAP Upgrade)</td>
</tr>
<tr>
<td></td>
<td>SSEXC</td>
<td>Repository switch (SAP Upgrade)</td>
</tr>
<tr>
<td></td>
<td>SSRC</td>
<td>Source of screens and reports</td>
</tr>
<tr>
<td>BW / BI</td>
<td>DDIM</td>
<td>Dimension tables</td>
</tr>
<tr>
<td></td>
<td>DODS</td>
<td>ODS, PSA tables</td>
</tr>
<tr>
<td></td>
<td>DFACT</td>
<td>Fact tables</td>
</tr>
</tbody>
</table>
Excercise

- How many tables belong to which TABART?

```sql
select tabart,
       count(tabart) as "Tabs in TABART"
from sapsrc.dd091
group by tabart
```
Excercise (continued)

- How many tables belong to which TABART?

```sql
select  tabart,
        count(tabart) as "Tabs in TABART"
from sapsrc.dd091
group by tabart
```

<table>
<thead>
<tr>
<th>TABART</th>
<th>Tabs in TABART</th>
</tr>
</thead>
<tbody>
<tr>
<td>APFL0</td>
<td>4853</td>
</tr>
<tr>
<td>APFL1</td>
<td>2420</td>
</tr>
<tr>
<td>APFL2</td>
<td>5240</td>
</tr>
<tr>
<td>DDIM</td>
<td>1</td>
</tr>
<tr>
<td>DFACT</td>
<td>2</td>
</tr>
<tr>
<td>DODS</td>
<td>4</td>
</tr>
<tr>
<td>SDIC</td>
<td>311</td>
</tr>
<tr>
<td>SDCCU</td>
<td>105</td>
</tr>
<tr>
<td>SLEXC</td>
<td>11</td>
</tr>
<tr>
<td>SLCAD</td>
<td>11</td>
</tr>
<tr>
<td>SPROT</td>
<td>207</td>
</tr>
<tr>
<td>SSEXC</td>
<td>272</td>
</tr>
<tr>
<td>SSRC</td>
<td>168</td>
</tr>
<tr>
<td>USER</td>
<td>3</td>
</tr>
</tbody>
</table>
Excercise (continued)

- Same as before, but additionally with tableclass

```sql
select d9.tabart, d2.tabclass, count(d2.tabclass)
from sapsrc.dd09l d9,
     sapsrc.dd02l d2
where d9.tabname = d2.tabname
group by d9.tabart, d2.tabclass
```

<table>
<thead>
<tr>
<th>TABART</th>
<th>TABCLASS</th>
<th>COUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>POCL</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>TRANSF</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>VIEW</td>
<td>111</td>
</tr>
<tr>
<td>APPL0</td>
<td>CLUSTER</td>
<td>8</td>
</tr>
<tr>
<td>APPL0</td>
<td>POCL</td>
<td>22</td>
</tr>
<tr>
<td>APPL0</td>
<td>TRANSF</td>
<td>4823</td>
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<tr>
<td>APPL1</td>
<td>CLUSTER</td>
<td>16</td>
</tr>
<tr>
<td>APPL1</td>
<td>POCL</td>
<td>20</td>
</tr>
<tr>
<td>APPL1</td>
<td>TRANSF</td>
<td>2304</td>
</tr>
<tr>
<td>APPL2</td>
<td>POCL</td>
<td>136</td>
</tr>
<tr>
<td>APPL2</td>
<td>TRANSF</td>
<td>5104</td>
</tr>
<tr>
<td>DDIR</td>
<td>TRANSF</td>
<td>1</td>
</tr>
<tr>
<td>DFACT</td>
<td>TRANSF</td>
<td>2</td>
</tr>
<tr>
<td>DODS</td>
<td>TRANSF</td>
<td>4</td>
</tr>
<tr>
<td>SDIC</td>
<td>INITAB</td>
<td>3</td>
</tr>
<tr>
<td>SDIC</td>
<td>POCL</td>
<td>19</td>
</tr>
<tr>
<td>SDIC</td>
<td>TRANSF</td>
<td>289</td>
</tr>
<tr>
<td>DSOCU</td>
<td>CLUSTER</td>
<td>7</td>
</tr>
<tr>
<td>DSOCU</td>
<td>POCL</td>
<td>9</td>
</tr>
<tr>
<td>DSOCU</td>
<td>TRANSF</td>
<td>89</td>
</tr>
<tr>
<td>SLEXC</td>
<td>TRANSF</td>
<td>11</td>
</tr>
<tr>
<td>SLOAD</td>
<td>TRANSF</td>
<td>11</td>
</tr>
<tr>
<td>SPROE</td>
<td>POCL</td>
<td>15</td>
</tr>
<tr>
<td>SPROE</td>
<td>TRANSF</td>
<td>192</td>
</tr>
<tr>
<td>SEXEC</td>
<td>TRANSF</td>
<td>266</td>
</tr>
<tr>
<td>SRC</td>
<td>POCL</td>
<td>4</td>
</tr>
<tr>
<td>SRC</td>
<td>TRANSF</td>
<td>164</td>
</tr>
<tr>
<td>USER</td>
<td>TRANSF</td>
<td>3</td>
</tr>
</tbody>
</table>
Migration with R3load – Process Overview (< 6.x)

Source System
- Migration Preparations
- Create R3LOAD CTL Files
- Create Template for DB Size
- Create R3LOAD Cmd Files
- Unload DB with R3LOAD

Target System
- Create SAP Instance
- Get Migration Key
- Create DB
- Import into DB with R3LOAD
- Migration Post Processing

Database independent format

File Transfer

Disk

Disk
Migration with R3load – Process Overview (≥6.x or BW)
Migration Preparations (1)

- Retrieve latest SAP Notes
  - Homogeneous/Heterogeneous system copy
  - Installation

- Operating System Level
  - Set up the migration file systems / directories
  - Install migration tools
  - De-schedule all OS/DB data backups
  - Shut down external interfaces
  - Make sure that the database is not being accessed during the export
Migration Preparations (2)

- **Database Level**
  - Run update statistics or other performance-relevant activities

- **SAP System Level**
  - Delete unnecessary data (Spool, test clients)
  - De-schedule all SAP jobs and data backups
  - Release all repairs and corrections if changing SAP SID
  - DB02: Missing tables/indexes – compare?
  - Check for DB-specific modifications
  - Report SMIGR_CREATE_DDL (create <TABART>.SQL files)
  - Stop the SAP System
Create R3load CTL files

**Tables**

- DDLOADADD
- DDLOADADH

**Files**

- DDL<DBS>.TPL
- SAP<TABART>.STR
- SAP<TABART>.EXT

**R3szchk**

- Read
- Write

**R3ldctl**

- Read
- Write

up to several hours
(check SAP Note 558746 if runtime is >> 2 hours)

some minutes
Excercise

- Run R3ldctl and put the files to /mig_exp/test, the logfile should be named test.log

R3ldctl -l test.log -p /mig_exp/test
Excercise (continued)

- Run R3ldctl and put the files to /mig_exp/test, the logfile should be named test.log

`R3ldctl -l test.log -p /mig_exp/test`
Create template for DB-Size

- R3SZCHK generates DBSIZE.XML for SAPINST on target
- R3SETUP generates DBSIZE.TPL for R3SETUP on target
- step runs some minutes
Create R3load *.cmd and *.TSK Files

- runs a few minutes

```
<PACKAGE>.cmd
[tsk: .../<installation>/<PACKAGE>.TSK]
icf: .../DATA/<PACKAGE>.STR
dcf: .../DB/DDL<DBS>.TPL
dat: .../DATA bs=1K fs=1000M
dir: .../DATA/<PACKAGE>.TOC
```

```
DDL<DBS>.TPL
<PACKAGE>.STR
<PACKAGE>.cmd
<PACKAGE>.TSK
```

≥ 6.10 only
Unload DB with R3load

- This step can take from some to many hours!!

R3load

read

write

DB

read / write

DDL<DBS>.TPL

<PACKAGE>.STR

<PACKAGE>.TOC

<PACKAGE>.nnn

<PACKAGE>.log

<PACKAGE>.TSK

STOP

Do not use NFS (write)!
File Transfer (1)

- FTP
- Tape
- DVD
- USB disk devices
- Laptop with high capacity disk drive
- NetApp device

Be sure to use a safe copy method!!!
## File Transfer (2)

<table>
<thead>
<tr>
<th>Directory</th>
<th>Filename(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>&lt;export_dir&gt;</code></td>
<td>LABEL.asc</td>
</tr>
<tr>
<td><code>&lt;export_dir&gt;/DB</code></td>
<td>DDL&lt;target_DBS&gt;.TPL</td>
</tr>
<tr>
<td><code>&lt;export_dir&gt;/DB/&lt;target_DBS&gt;</code></td>
<td>&lt;PACKAGE&gt;.EXT</td>
</tr>
<tr>
<td></td>
<td>DBSIZE.{TPL</td>
</tr>
<tr>
<td></td>
<td>&lt;TABART&gt;.SQL (if exists)</td>
</tr>
<tr>
<td><code>&lt;export_dir&gt;/DATA</code></td>
<td>&lt;PACKAGE&gt;.STR</td>
</tr>
<tr>
<td></td>
<td>&lt;PACKAGE&gt;.TOC</td>
</tr>
<tr>
<td></td>
<td>&lt;PACKAGE&gt;.nnn</td>
</tr>
</tbody>
</table>

**Do not transfer files from the `<installation>`-directory !!** (*cmd, *.TSK*)
Create SAP Instance

- **Install Central Instance**
  - Same procedure as in a standard SAP installation
  - Install latest backwards-compatible SAP kernel

- **Install the database software**
  - Same procedure as in a standard SAP installation
  - Install the latest database patches

**Check SAP product „platform / release“ combinations!**
Get Migration Key

Logon to SAP Marketplace. Use an S-User valid for the installation number of the source system

Alias „migrationkey“

Accept migration key license agreement

Select installation number of the SOURCE system

Provide migration parameters

Check migration key as soon as possible!

Customer task

Case sensitive!

Note 338372 - Migration key does not work
Gives hints how to choose the right values for the fields when acquiring a migration key.
Create DB

- Determine the DB configuration
  - Size the table spaces
  - Distribute the table spaces (disk layout)
  - Configure the database logs (size, number, primary, secondary)
  - Adjust DBSIZE.{TPL|XML}

- Create DB
  - May be very time-consuming when large databases are involved (big table spaces)
  - Can take place in parallel to the unload of the source DB
Import Data with R3load

- This step can take from some to many hours!!
Migration Post Processing (1)

- **Operating System Level**
  - ABAP / DB DDIC consistency check
  - SAP license
  - Copy external SAP system files (job logs, archives, external spool files, interface data, etc.)
  - Access to transport directory
  - External interfaces
  - Perform file system backup
Migration Post Processing (2)

- **DB Level**
  - DB backup
  - DB restore test
  - Update statistics or other performance-relevant activities
  - DB parameters
  - Delete old SAP system monitor and statistics data
Migration Post Processing (3)

- SAP System Level
  - Transaction SICK
  - Initialize TMS if SAPSID has changed
  - Configure TMS
  - Regenerate ABAP Loads
  - Schedule Batch-Jobs (check if jobs are defined with target server, change if necessary!)
  - Schedule data backups
  - Adjust printer definitions
  - Adjust RFC destinations, profiles and operation modes
  - Check that the install RFC reports have finished successfully
Migration Post Processing (4)

- **RS_BW_POST_MIGRATION**
  - Variants: SAP&POSTMGR, SAP&POSTMGRDB (DB was changed)
  - Connect all data source systems to the target system
  - Make sure that the data source systems will keep active while the report is running
  - Run the report in background mode (may take several hours)
  - Check spool protocol carefully
Post Migration Test Activities

- Functional tests (compare results to those in source system)
- Typical transactions from day-to-day business
- Critical transactions (runtime tests)
- Performance tests under heavy load
- Test month closing activities / reports
- Verify communications to external systems (be sure not to mix test and productive data)
- Create a cut-over plan for the final migration
- Include the end users into the test procedure (key users, normal users)
Migration Scenarios

- **SAP Standard Migration Tool**
  - Use R3setup / SAPinst dialogs and run R3load for export and import without special options

- **IBM DB2 Fast Migration**
  - Use unsorted export (Note 954268 - Optimization of export: Unsorted unload)
  - Use R3load „fast LOAD“ option for DB2 to use DB2 Load API instead of inserts
  - Use socket option if possible

- **Incremental Migration**
  - Use if no other procedure is possible during downtime

  Note 454173 - DB6: R3load migration accelerated with CLI LOAD API
  Note 864861 – ORACLE DIRECT PATH LOAD SUPPORT IN R3LOAD 6.40 AND ABOVE
SAP Standard Migration Tool

- SAP migration tool needs to be ordered
- New license key required for target system
- Data unloaded into database independent format
- Data transferred from one system to another via flat file (e.g. FTP)
- Capacity: ~ 400 GB per weekend
- Source system needs to be available until SAP approval

Capacity: ~ 400 GB/weekend
However: 800 GB achieved in 60 hrs (~13.5 GB/h) incl. admin. tasks
IBM DB2 Fast Migration

- Unload, Transfer & Load done in parallel
  - Multiple processes, multiple sockets
- Use of DB2 Load vs. DB2 Insert
- Use of sockets instead of files
- Eligible SAP systems
  - Capable of using SAP 4.6c kernel
  - Detailed analysis needed
- SAP authorization needed
  - Currently only SAP-internal IBM migration team authorized

Capacity: 800 GB in 22 hrs (~ 36.5 GB/h) 
Max. capacity depending on available hardware
Incremental Migration

- Migration happens in 3 phases.
- The 30 largest tables are migrated while the productive system is running.
  - Create shadow tables with additional columns for timestamp and row action for largest tables to track changes.
- Remaining tables are migrated on a weekend during downtime.
  - Approx. 20% capacity.

Capacity: no specified limit on total DB size; process limited by size of largest tables and change rates.
Criteria for choosing the right method

**SocketFastloader**
- DW < 48h
- DB < 2TB

**Fastloader**
- DW < 48
- DB < 1TB

**Incremental Migration**
- DW < 24h
- DB > 2TB

**Standard Process**
- DW > 60h
- DB < 500GB

**DW:** Downtime Window
**DB:** Database Size
Directory Structure

```
/  <installation>
    <sap-instance>/j2ee/sltools
    <export>
        / APPS
        / ADS
        / KM
        / PORTAL
        / DB
        / DB6
        / DATA
        / J DMP
        / SDM

TSK - cmd - log
EXPORT.STA
*.SAR
(application data stored in filesystem)
DDL<DBS>.{TPL|XML}
SQL - EXT
STR - TOC - nnn
XML - EXPDUMP.nnn
SDMKIT.JAR
```
# Tools - Files - Directories

<table>
<thead>
<tr>
<th></th>
<th>Tool</th>
<th>File</th>
<th>Directory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SMIGR_CREATE_DDL</td>
<td>&lt;TABART&gt;.SQL</td>
<td>&lt;export&gt;/DB/&lt;DBS&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(since 6.20)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>R3ldctl</td>
<td>DDL&lt;DBS&gt;.TPL</td>
<td>&lt;export&gt;/DB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;Package&gt;.STR</td>
<td>&lt;export&gt;/DATA</td>
</tr>
<tr>
<td>3</td>
<td>R3ldctl / R3szchk</td>
<td>&lt;Package&gt;.EXT</td>
<td>&lt;export&gt;/DB/&lt;DBS&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[DBSIZE.{TPL</td>
<td>XML}]</td>
</tr>
<tr>
<td>4</td>
<td>R3load</td>
<td>&lt;Package&gt;.TSK</td>
<td>&lt;installation&gt;</td>
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<tr>
<td></td>
<td></td>
<td>(since 6.10)</td>
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</tr>
<tr>
<td>5</td>
<td>R3setup / SAPinst / MigMon</td>
<td>&lt;Package&gt;.cmd</td>
<td>&lt;installation&gt;</td>
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<tr>
<td>6</td>
<td>R3load</td>
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<td>&lt;export&gt;/DATA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;Package&gt;.nnn</td>
<td>&lt;export&gt;/DATA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;Package&gt;.log</td>
<td>&lt;installation&gt;</td>
</tr>
</tbody>
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Questions ?