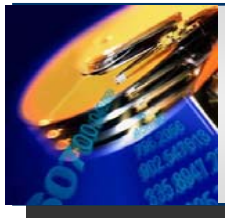
Backup & Recovery EP6.0 SP2

THE BEST-RUN BUSINESSES RUN SAP

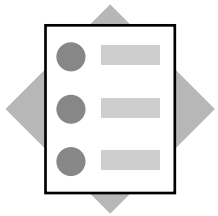
Course Structure



EP 6.0 Portal

- Introduction
- Starting & Stopping J2EE and EP
- Monitoring, Logging & Tracing
- Support Desk
- Configuration Management
- Incident and Problem Management
- Change Control
- Software Change Management
- Backup & Recovery
- Operations Handbook
- Introduction to CCMS
- EP Monitoring Infrastructure
- Computing Center Management System
- Solution Manager

Backup & Restore for the Enterprise Portal 6.0



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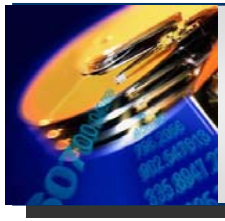
- **Aspects of Backup & Recovery concept**
- **Consistency when Backing up EP 6.0**
- **Risks associated with different backup types**
- **Backup procedures of the EP 6.0**
- **Restore procedure of the EP 6.0**

Objectives

At the end of this unit, you will be able to:

- **Understand the Backup & Recovery concept of EP 6.0**
- **Understand the risks associated with different backup types.**
- **Describe backup and restore procedures for EP 6.0.**

Introduction



EP 6.0 Backup

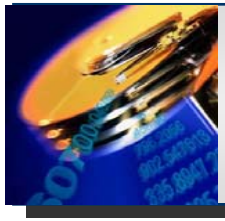
- **Introduction**
- **Aspects of a Backup & Recovery concept**
- **Consistency when Backing Up EP 6.0**
- **Online Backup of the Portal components**
- **Online Backup Procedure with EP 6.0**
- **Offline Backup Procedures with EP 6.0**
- **Questions & Answers**

Introduction

- **SAP Enterprise Portal is usually the central entry point to a number of applications.**
- **Availability is very critical, especially if no fallback options are available.**
- **Precautions have to be done to ensure that the portal can be recovered in case of e.g.**
  - **Hardware Failure**
  - **File system corruption**
  - **Logical inconsistencies in the data**
  - **Software Damages cause from Viruses**
  - **Problems when installing Updates, Patches or new Software**
- **A detailed backup and recovery concept is a must.**
- **The recovery must be tested to show the success of the concept.**

→ We are concentrating on EP6 backup and restore issues.

Aspects of a B&R concept



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Aspects of a Backup and Recovery Concept

A good Backup and Recovery concept should answer the following general questions:

1. **Which system components and which data need to be backed up?**
2. **Which backup methods shall be used (online/offline) depending on the data storage type (File system, Database)?**
3. **What is the backup time and frequency (how often backup should occur, how long to save the tapes, etc)?**
4. **Which tools and media should be used (amount of media required, available resources)? What are the recovery method and recovery windows?**
5. **What are the test and verification procedures?**
6. **What backup strategy should be used under what situation?**

1. System components and data needed to be backed up?

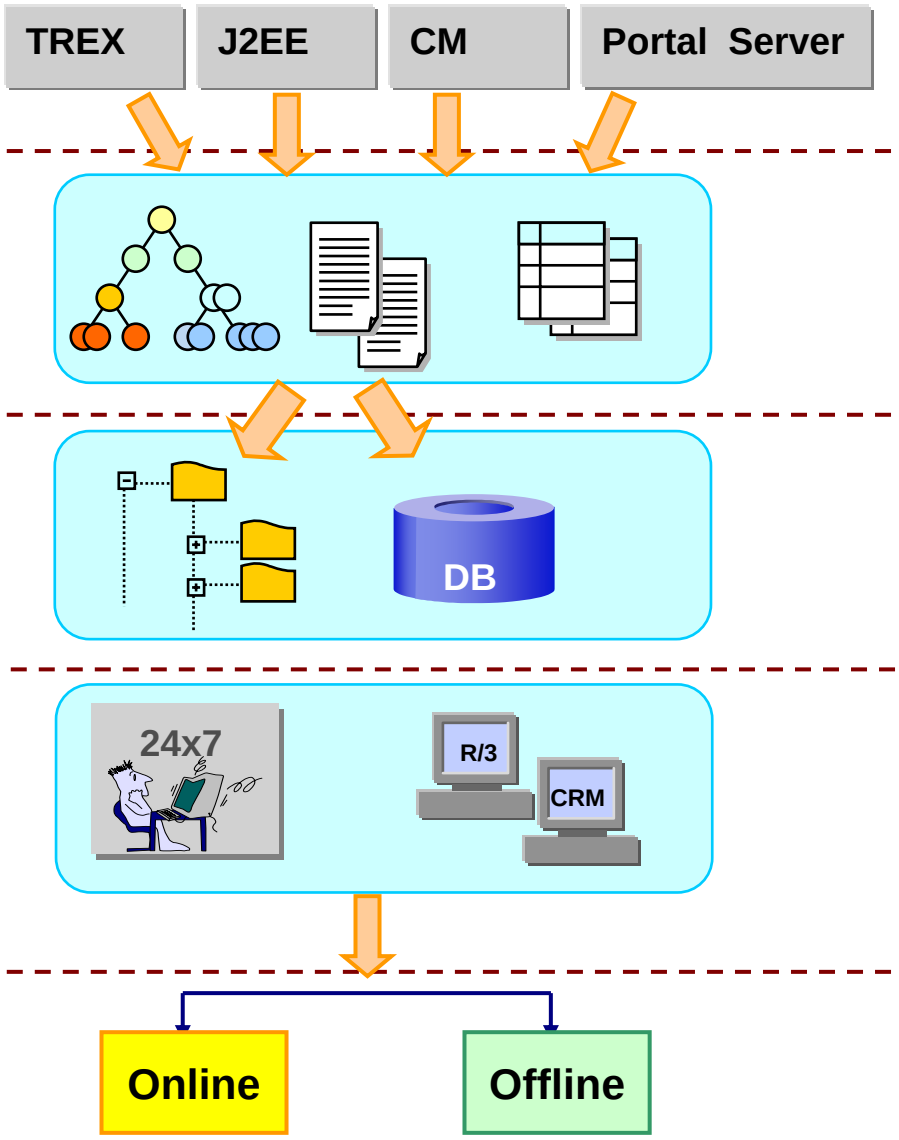
The the following EP Components need consideration for design of backup processes:

- **EP Server**
- **KM**
- **Unification**
- **Connectors**

Critical components are:

- **SAP J2EE Engine 6.20 Cluster**
- **Portal Server Application**
- **Portal System Database**
- **Knowledge Management**
- **User Persistence Store**

2. Which Backup Methods shall be used (online/offline)?



1. Physical distribution?

- Directory path

2. What to backup?

- Application data
- Configuration data
- Software data

3. Where stored?

- File system
- Database

4. Risks and dependencies?

- Availability of the component
- Actions that should be avoided
- Dependant systems

5. Backup type

2. EP 6.0 Backup Strategies: Online vs Offline

Difficulty: some of the components of EP 6.0 SP2 store much information in files directly in the file system (especially SAP J2EE)

Offline Backup

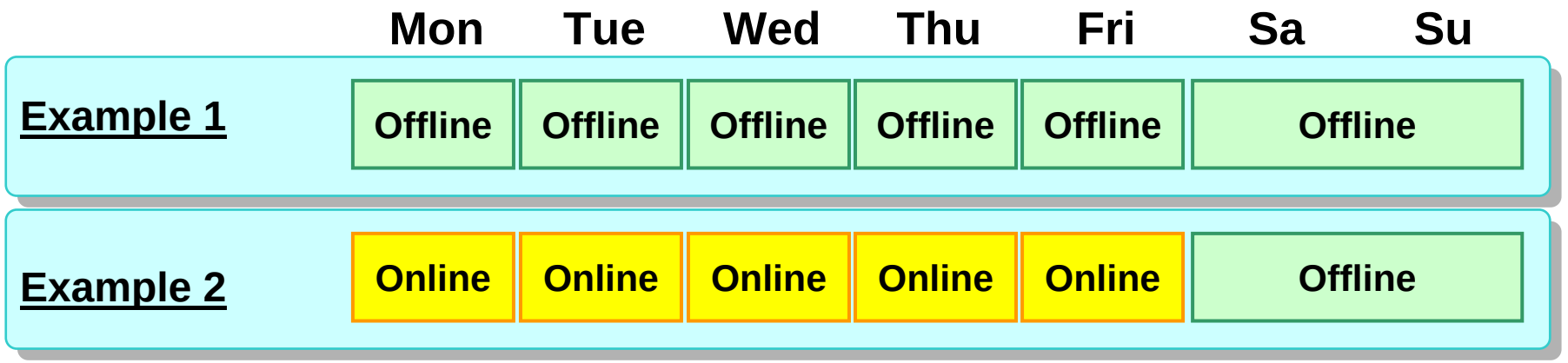
- All portal components are stopped and their files can be copied easily
- Consistent restore should be successful every time
- Downtime necessary
- Only method supported by SAP for EP 6.0 SP2

Online Backup

- Backup procedure needs an open file manager to capture the files in use
- Consistent restore is successful if it is avoided to change configurations during the backup
- No Downtime required
- Not officially supported from SAP for EP SP2

3. What is the Backup time and frequency?

- **Since data consistency can only be guaranteed via OFFLINE Backup, a good Backup Strategy must contain an OFFLINE backup of the critical components.**
- **It is recommended to perform OFFLINE Backup at least once per week .**
- **It is recommended to save the tapes during the four weeks.**



4. Media Rotation Methods (1)

Full Backup:

Refers to the activity of backing up everything on your system. This backup method must be performed regularly, at least once a week, depending on your work volume.

Incremental Backup:

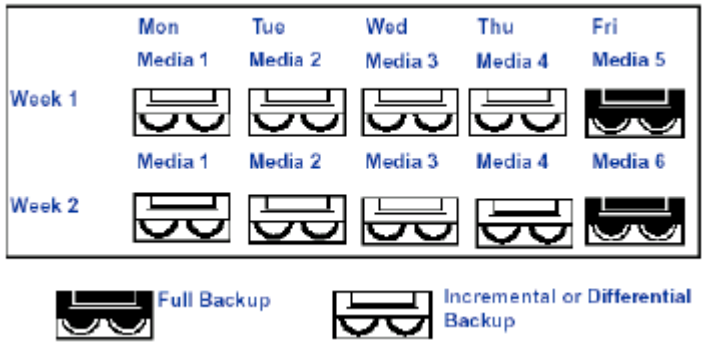
Incremental backup is backing up only new files created, or those that have changed since the last backup was performed. To restore a system from an incremental backup, you need the last full backup and each incremental backup performed.

Differential Backup:

Differential Backup with differential backup, you back up only files that were created or changed since the last normal (or incremental) backup.

4. Media Rotation Methods (2)

Backup Strategy: Father/Son

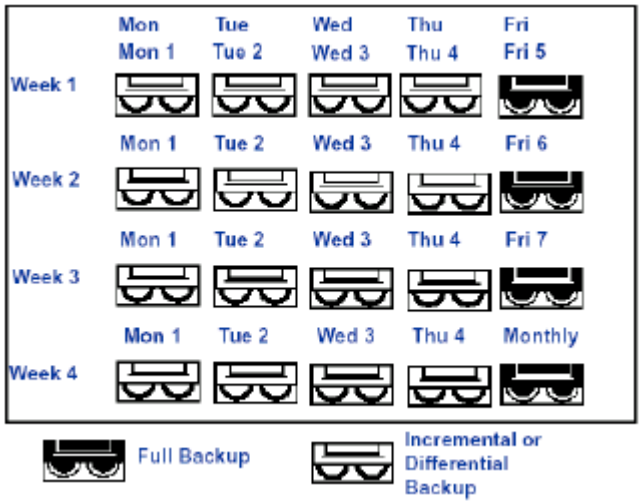


Number of media required: 6 (minimum)

Backup Horizon: Two weeks

The Father/Son media rotation scheme uses a combination of full and Differential or Incremental backups for a two week schedule.

Backup Strategy: Grandfather

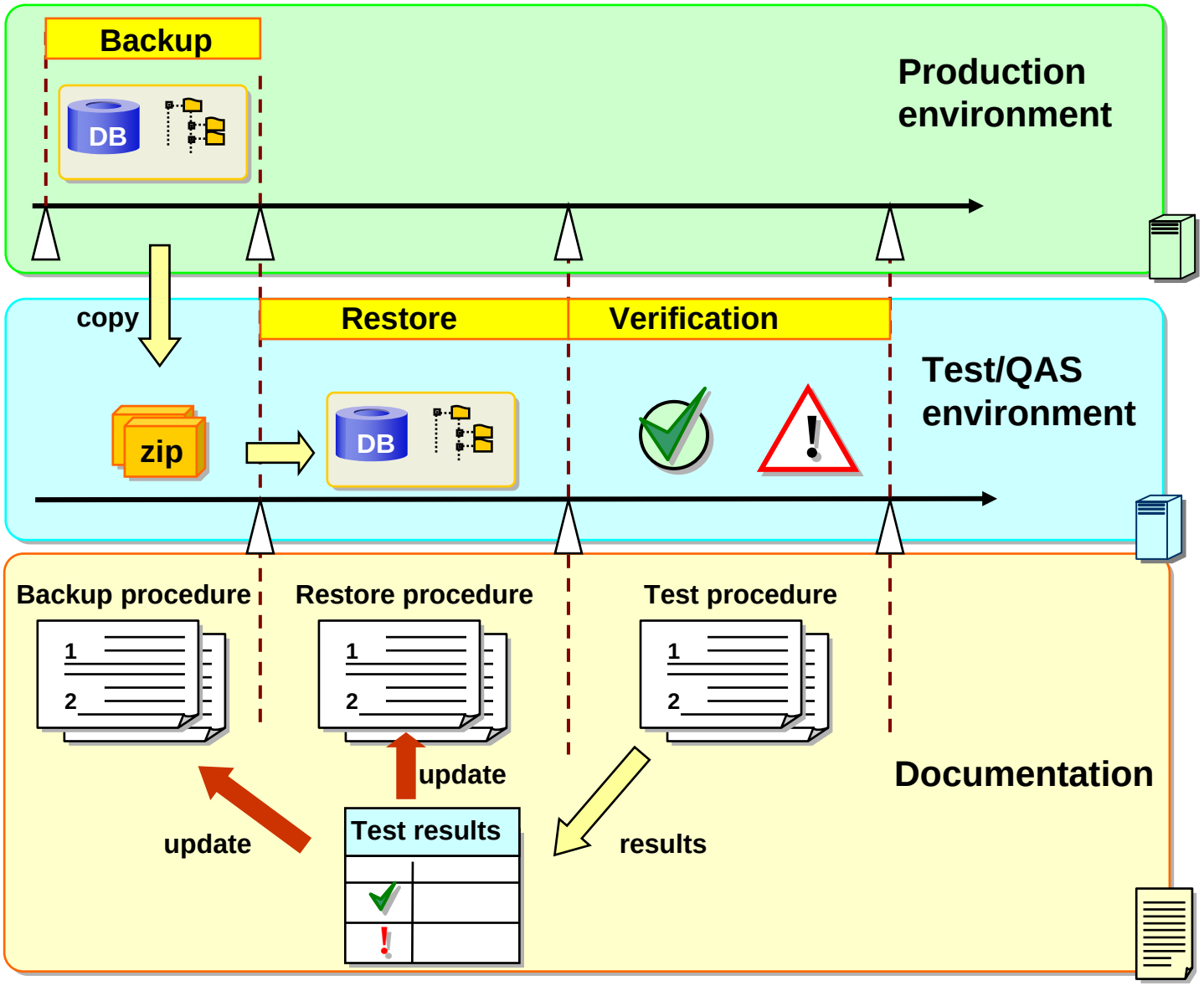


Number of media required: 19 (minimum)

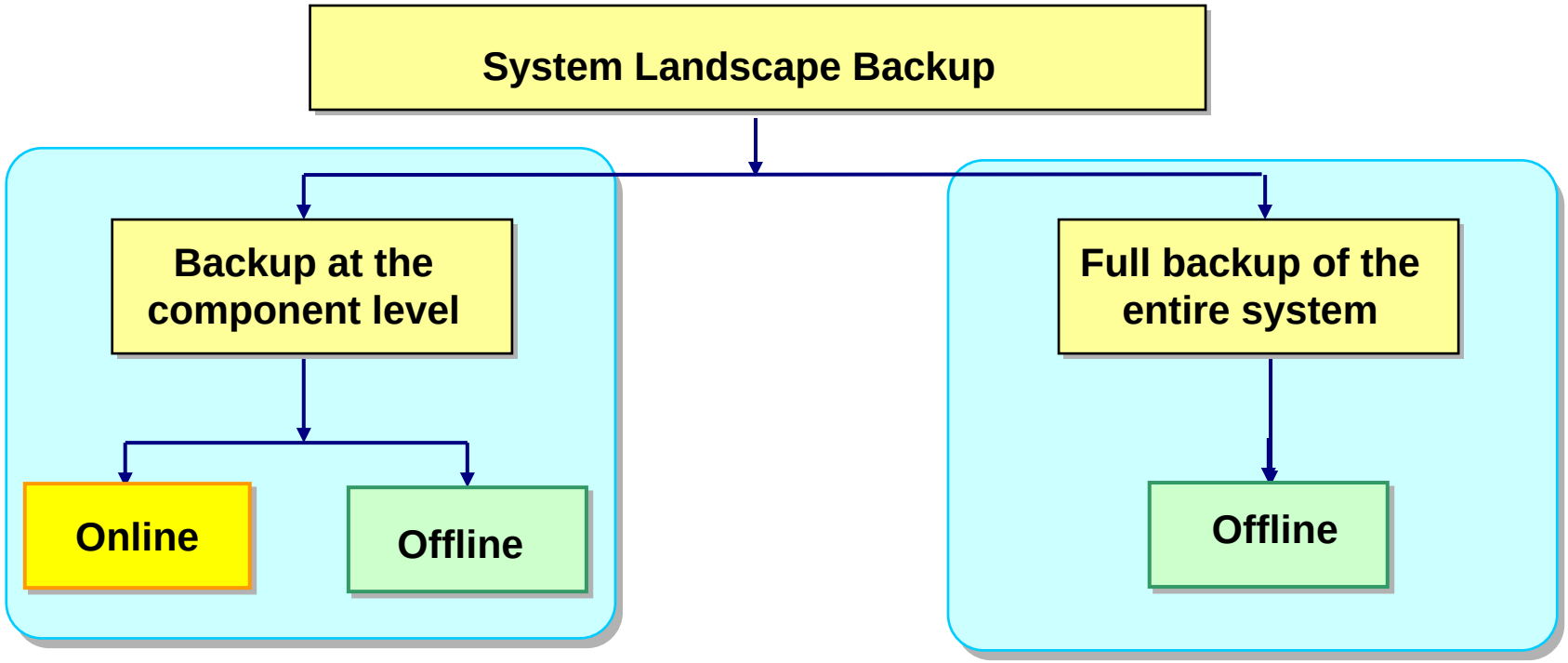
Backup Horizon: One year

The Grandfather method is one of the most common media rotation schemes. It is simple to administrate and comprehensive enough to allow easy location of files when they need to be restored.

5. What are the test and verification procedures?



6. Which backup strategy shall be used?



- Recovery of a single system component
- Incomplete recovery

- Recovery of the complete system environment in case of a disaster or fall back point during Upgrade
- System copy to set up a test environment with the production data (e.g. to test upgrade, migration, etc)

B&R of Application Data

The backup method depends on the following factors:

- **The type of the component managing the data:**
  - **Databases**
  - **File systems**

The backup method and requirements depend on the type of data:

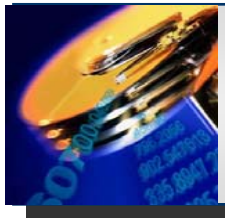
- **Application data**
- **Application Software**
- **Configuration Files**

B & R of Software and Configuration Data

To avoid installation and configuration of a EP 6.0 component, all components' software and configuration files should be backed up regularly (after changes have been made)

- **Operating system**
- **DBMS software**
- **SAP J2EE Engine**
- **Web Server**
- **Other SAP Software and file systems**
  - **Unification Server**
  - **TREX**
  - **ITS**
- **Log files (SAP and others)**
- **Software of other system components (file systems, configuration files, log files)**

Consistency when Backing Up EP 6.0



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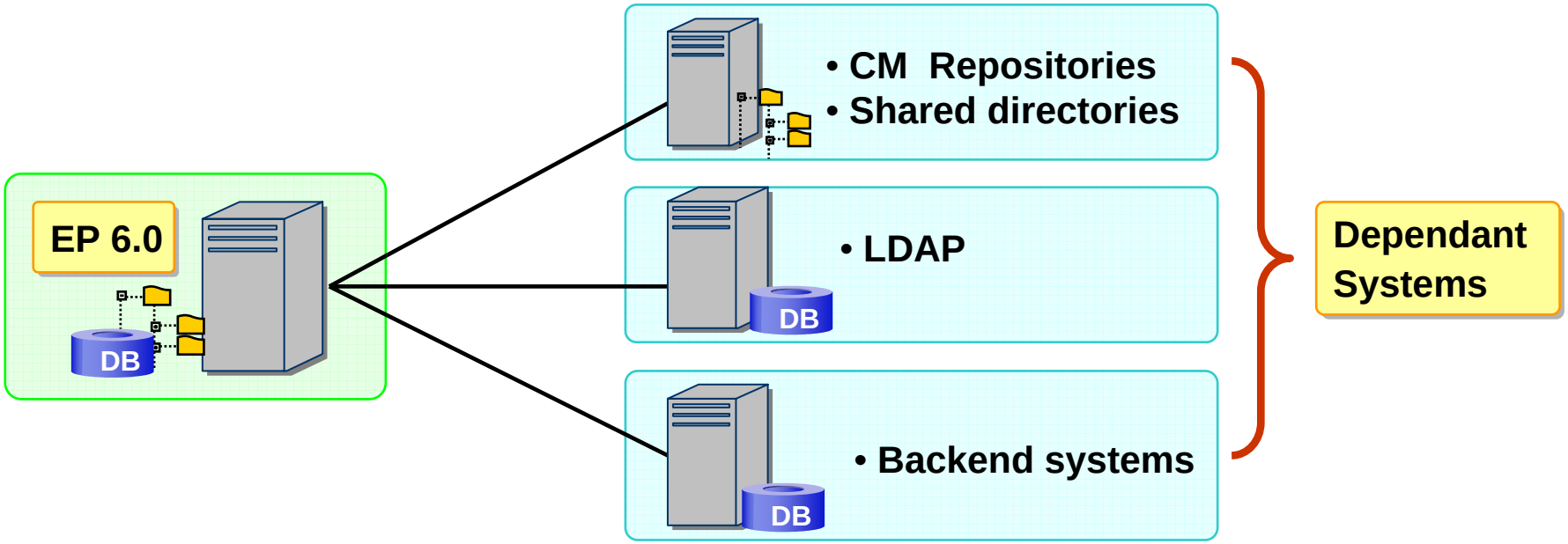
Dependant Systems



In an EP 6.0 system landscape

- **Data are distributed over several systems and transferred or referenced between them**
- **Data are stored in different databases, with no common checkpoint**
- **Data are also stored in different file systems**

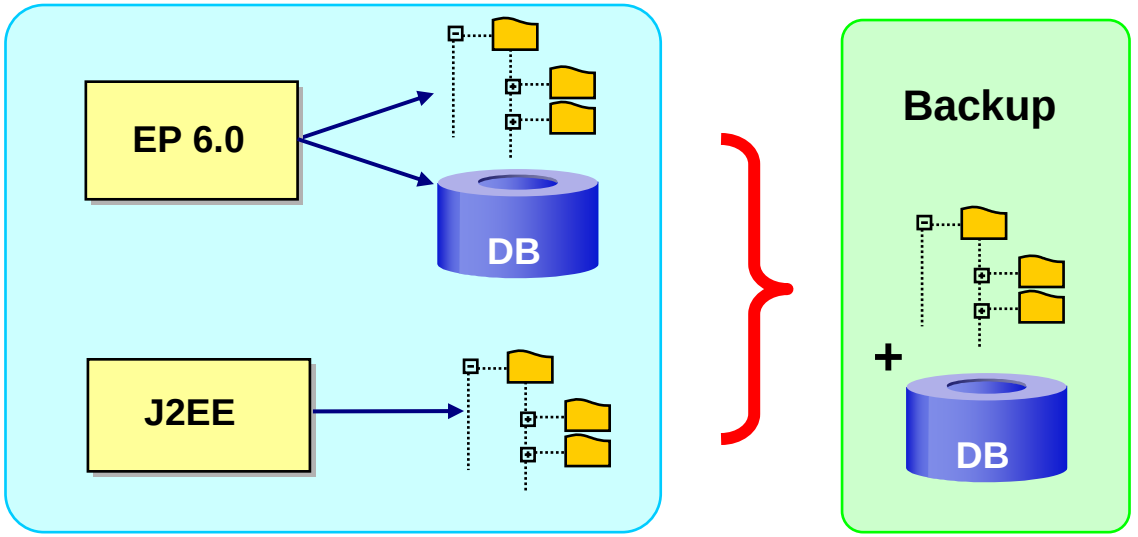
Consequences:

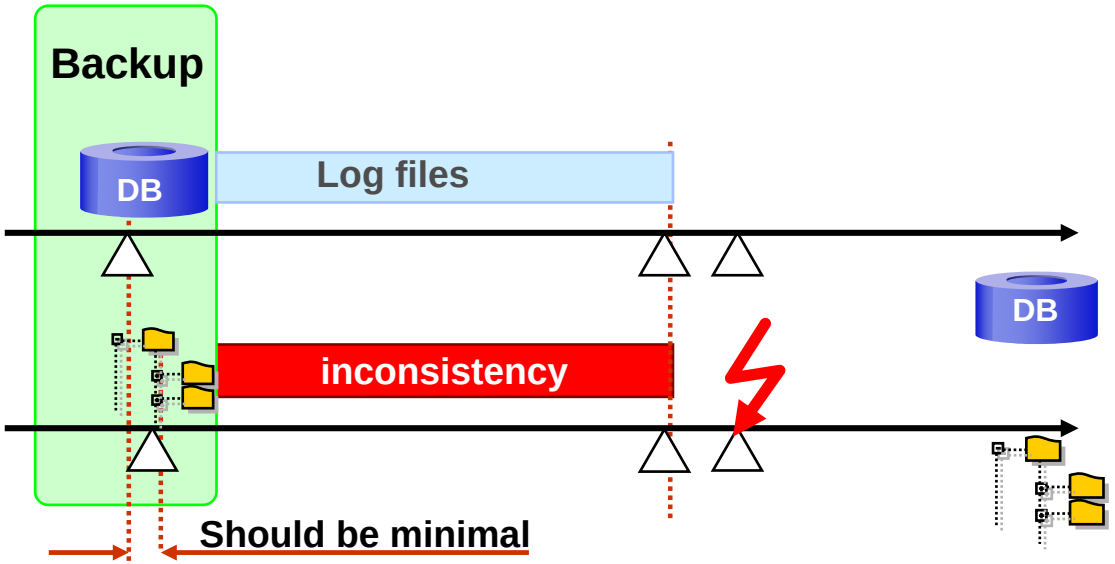
- **Data dependencies between systems**
- **No common point of consistency across the whole landscape**

Requirements:

- **Backup procedure must ensure data consistency between the components**

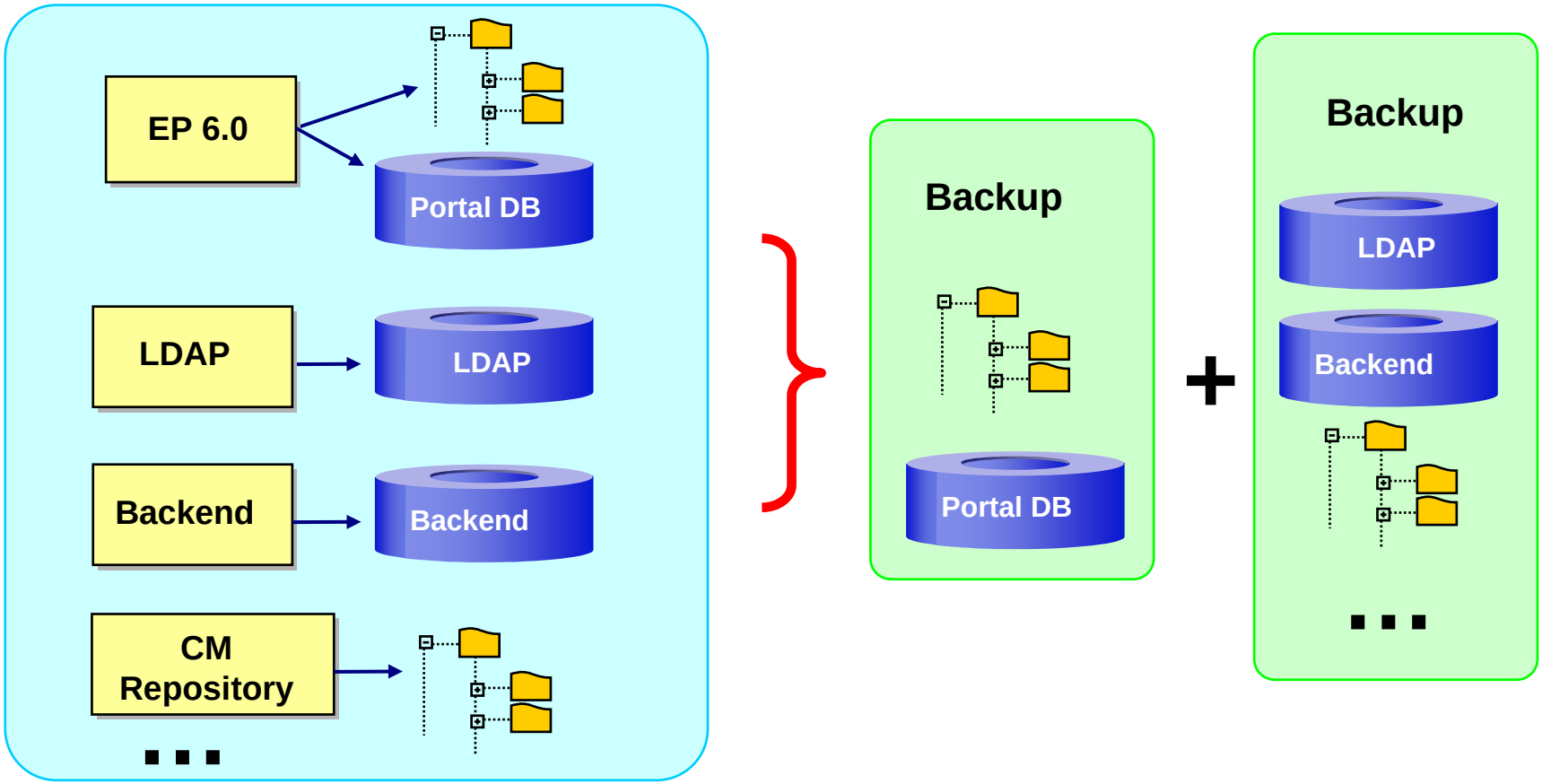
Internal Inconsistency





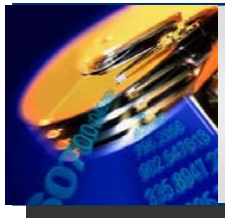
- For the consistent restore Database and File system must be at the same state (time stamp)
- Point in time recovery of the database by using archived redo-log files can not be used

External Inconsistency



- Dependencies to CM-Repositories, external file systems, LDAP and Backend databases have to be considered.
- Although it is possible to start and operate EP 6.0 the inconsistency in this case could lead that e.g. links to some files are not working, etc

Online Backup of the Portal components



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SAP J2EE Engine Backup

How distributed

- In Production environment SAP J2EE Engine is installed as a cluster
- All SAP J2EE engine files and deployed applications (Portal, CM) are located under the directory /usr/sap/<SID>/*

Important data for backup:

1. J2EE Engine file system on all the application servers
   - Software Deployment Manager (SDM) file system
   - Deployed applications (EP 6.0, CM)
   - Internal DBMS
2. Portal System and CM Databases
3. Operating system

Location

1. /usr/sap/<SID>/j2ee/
   - /usr/sap/<SID>/java/sdm/
   - /usr/sap/<SID>/j2ee/j2ee_01/cluster/server/services/servlet_jsp/work/jspTemp/
   - /usr/sap/<SID>/j2ee/j2ee_01/cluster/server/services/dbms/work/
2. Database
3. File system (operating system specific)

CM: What is important for Backup?

How distributed

- **CM is closely integrated with the portal and CM Application is installed on the same machine as the Portal Server. It is recommended to backup all content of the directory /usr/sap/<sid> which includes also CM application.**
- **File-based CM repositories can be distributed over several servers.**
- **CM Database can also be installed on a separate machine.**

Important data for backup:	**Location**
1. CM Repositories	1. Local or external file system
2. Configuration Data	2. /usr/sap/<SID>/global/config

J2EE Engine: Prerequisites for Online backup

Prerequisites for Online backup:

- SDM should not be running during backup (no Deployment)
- No configuration/administration changes in SAP J2EE Engine and deployed applications (EP 6.0, CM)
- No changing of the configuration in:
- Repositories /CM
- Collaboration rooms
- No import/export to EP 6.0
- No changing of the content in the file-based CM Repositories

SAP J2EE Engine Online Backup procedure

Best Practice for ONLINE backup:

1. **Make sure that the prerequisites are met.**
2. **Back up the folder /usr/sap/ on all the application servers (use the open file manager to backup the open files).**
3. **Perform the online backup of the Portal System Database and CM Database via database specific management tools.**
4. **Backup the /usr/sap/<SID>/global/config directory.**
5. **Backup all the external locations for file-based CM repositories.**
6. **In case there are changes in operating system configuration, backup the operating system.**
7. **Test backup.**

J2EE Engine Restore

Best Practice procedure for SAP J2EE Engine restore:

1. **Install a new system via SAPinst or restore the file system from disk image ***
2. **Overwrite the folder /usr/sap/ in the file system**
3. **Import the Portal System Database and CM Database backup using the database specific management tools (e.g. Oracle: brrestore, SQl Server: SQL Server Agent).**
4. **Restart the SAP J2EE engine**

*** Note: Per Default it is recommended to install a new system using the installation wizard SAPinst as described in the installation manual. In order not to avoid new installation and then configuring of SAP J2EE engine it is possible to apply the disk image of the complete file system made after the corresponding SAP J2EE installation or upgrade.**

TREX: What is important for Backup?

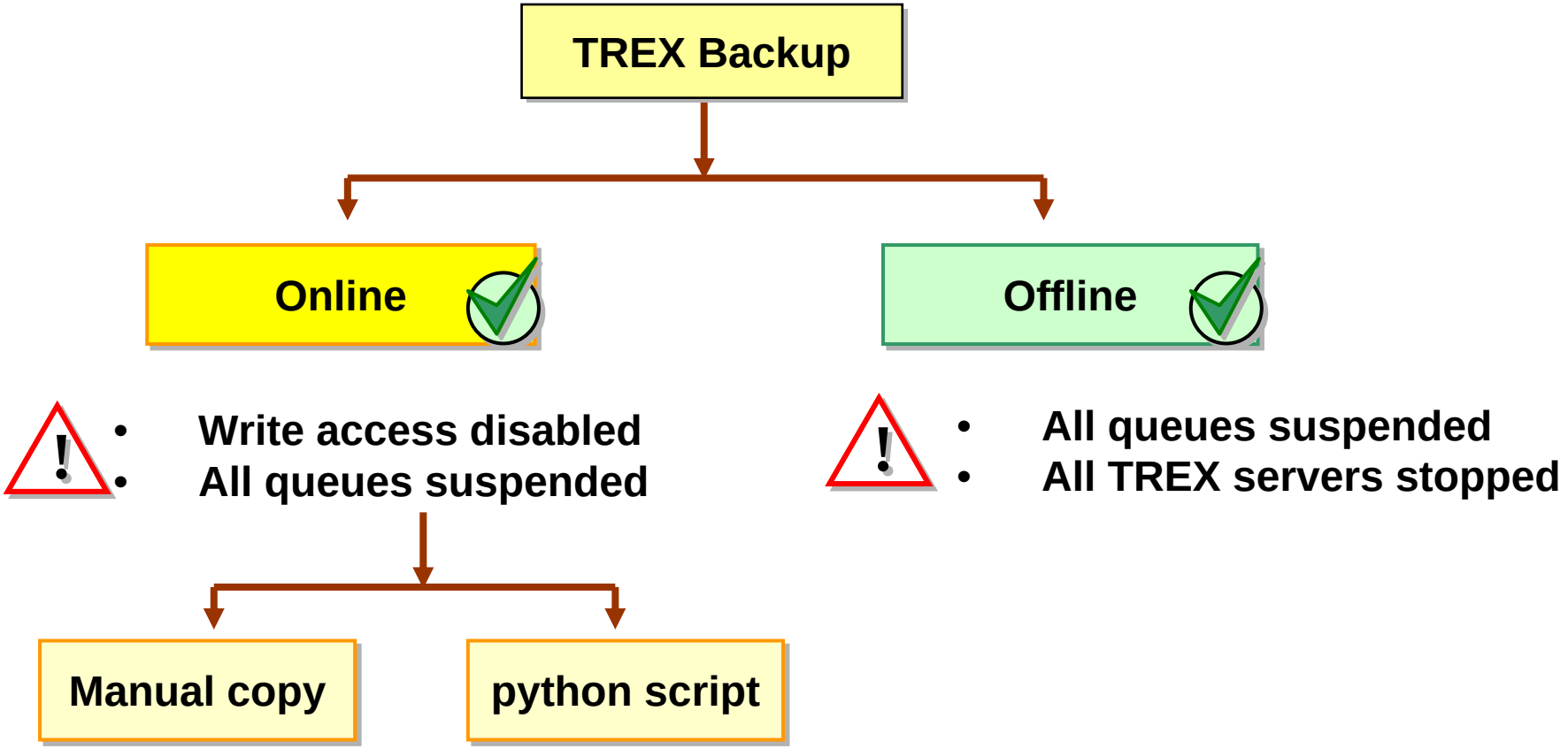
How distributed

In the production environment TREX is normally installed on a separate host (or distributed on several hosts)

Important data for backup:	Location
1. Indexes	1. TREX installation directory*
2. Queues	2. TREX installation directory*
3. Configuration files	3. TREX installation directory*

***Note:** TREX installation directory is defined via variable SAP_RETRIEVAL_PATH

TREX Backup Types



Distributed installation:

A consistent backup and restore of a distributed installation is only possible, if you have replicated all indexes on all TREX installations involved

TREX Online Backup (1)

Recommended procedure for ONLINE backup:

It is possible to perform only a COMPLETE backup of TREX 6.0 installation. The detailed procedure for online backup is described in the SAP Note 666279

Prerequisites for the Online backup (no write access):

- **No creation, deletion or clearing of indexes**
- **No synchronous change of attributes**
- **No indexing**
- **No change of taxonomies**
- **No actions of the TREX name server**
- **No changes in the indexed repositories**
- **No changes in TREX configuration via Portal**

TREX Online Backup (2)

Backup via manual saving of TREX installation:

1. Make sure that the prerequisites are met (no write access).
2. Suspend all queues
3. Copy the entire TREX_6 installation directory including the TREX index directories and backup directories into a backup directory of your choice. It is recommended to use a different computer for a backup directory.
4. Activate all suspended queues

Backup via Python scripts:

1. Make sure that the prerequisites are met (no write access).
2. Suspend all queues
3. Unpack file "Onlinebackup.zip“ attached to the Note 666279 to the directory TREX_6/python_support/test_tools/lib
4. Execute the Python script "OnlineBackupAll.py" as described in the Note 666279
5. Activate all suspended queues

TREX Offline Backup

Recommended procedure for OFFLINE backup:

It is possible to perform only a COMPLETE backup of TREX 6.0 installation.

The detailed procedure for offline backup is described in the SAP Note 639053

OFFLINE backup procedure:

1. **Suspend all queues**
2. **Wait until there are no documents with the status "to be preprocessed“, "to be transmitted“, "to be synchronized"**
3. **Stop all TREX servers on this host (including the TREX WEB server). For a distributed scenario, also stop all TREX servers that refer to this TREX installation.**
4. **Copy the entire TREX_6 installation directory including the TREX index directories and backup directories into a backup directory of your choice. It is recommended to use a different computer for a backup directory.**
5. **Activate all suspended queues**
6. **Start the Crawler if necessary**

TREX Restore

Prerequisites for Restore:

Restored TREX version must be the same as one that used by application .
Example: It is not allowed to create a backup for TREX 6.0 SP0, then upgrade to TREX 6.0 SP1 and then restore the backup of SP0. Such a procedure causes data loss !

Restore procedure:

1. **Stop all TREX services / servers (for a distributed scenario, also on other hosts that use this server)**
2. **Make sure that no old files or directories of TREX exist in the directory into that you want to import the TREX installation.**
3. **If restore is to be done from the online backup, then delete all the files from the directory with the name lock (contained in the TREX installation directory) . This directory contains the files pointing to already started TREX Services. If TREX Services are stopped this directory should be empty.**
4. **Copy the corresponding TREX backup into the TREX installation directory.**
5. **Adjust the TREX configuration files (INI files), if TREX has run on another engine (host) or another port.**
6. **Restart all TREX services / servers (on the host and in case of distributed scenarios also on the other hosts stopped before).**

Backing Up the Portal's LDAP

EP 6.0 no longer requires a separate LDAP directory. User data can be stored in one the following LDAP directories:

- **Novell NDS eDirectory 8.6.1, 8.6.2 or 8.7**
- **Sun ONE Directory Server 5.1 SP1 or higher**
- **Microsoft Active Directory Server 2000 &2003**
- **Siemens DirX v6.0**

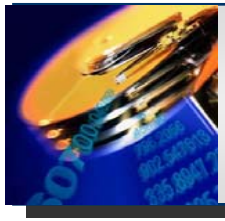
User data can also be stored in SAP WAS 6.20 or higher in one of the supported databases.

The LDAP Servers provide tools to export all their data to a file. This should be done and then the export file should be saved.

For the very frequently used LDAP Novell eDirectory e.g. has the tool `SMSEngn.exe` to export its content. The program can be found in `X:/Novell/NDS/SMS` on the portal server.

Additionally the binaries and configuration files of the LDAP server have to be saved as well.

Online Backup Procedure with EP 6.0



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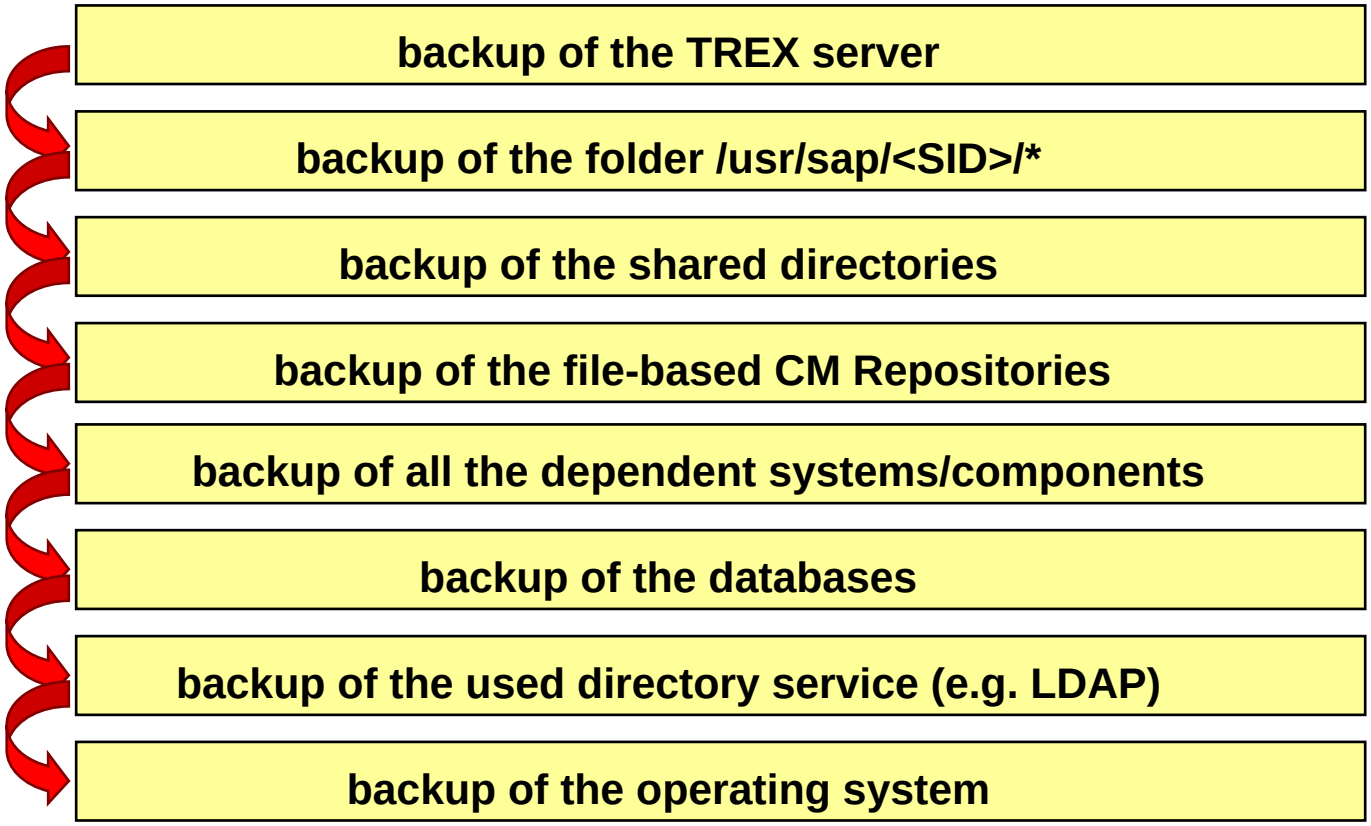
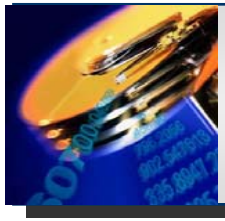
Summary Online Backup Procedure with EP 6.0

***** SAP does not officially support Online Backups of EP6.0 SP2.**
Customers can implement an online backup strategy *at their own risk*

EP 6.0 ONLINE backup procedure:



Offline Backup Procedures with EP 6.0



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Offline Backup Procedures with EP 6.0

Offline Backup

1. Shutdown all services On each Portal application server
2. Perform Backup of the necessary directories and databases.

„Quick“ Offline Backup

Motivation: Making a quick Snapshot and write that to a tape while the Portal runs again

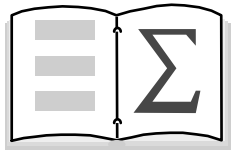
Procedure:

1. Shut down all services On each Portal application server
2. Copy all files quickly to a fast storage device e. g. special hard disks (offline file copy)
3. Start up the portal immediately after the files are copied.
4. Perform a real (slow) backup to tapes from the temporary Directories

Alternative: Use Hardware which can do Snapshots of the hard disks

Effect: Downtime is minimized and backup is consistent

Unit Summary



You are now able to:

- Understand the Backup & Restore concept of EP 6.0
- Understand the risks associated with different backup types.
- Describe backup and restore procedures for EP 6.0.