Introduction To SAP Basis

Lesson: Logon & Screen Design

Lesson Objectives

After completing this lesson, you will be able to:

- Log on to the system successfully
- Name and use elements of a SAP GUI screen

SAP **Logon**

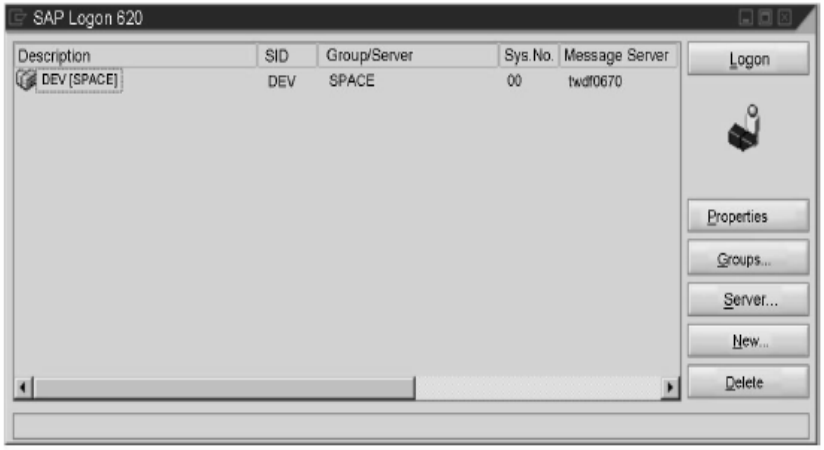


Figure 9: The SAP Logon program

- The SAP GUI program connects the front end computer with SAP systems.

- Theoretically you can specify the SAP system required at the command-line level when calling the SAP GUI program.

- For starting SAP GUI, SAP provides another program: SAP Logon.

- When you call up SAP Logon, it displays a list of SAP systems for which you can start the logon process. This list is taken from a file on the front end: saplogon.ini. This file is usually centrally preconfigured and provided for end users.

- During logon, the SAP Logon program also enables logon load distribution. using the resources available for the system selected.

- When logging on to an SAP system, you will be prompted to enter the user and password, among other things. If you have implemented a Single Sign-On (SSO) solution, you may not need to enter this information.

- You also have the option of specifying a client when logging on. The client field usually already contains an appropriate default value .

Logon Screen

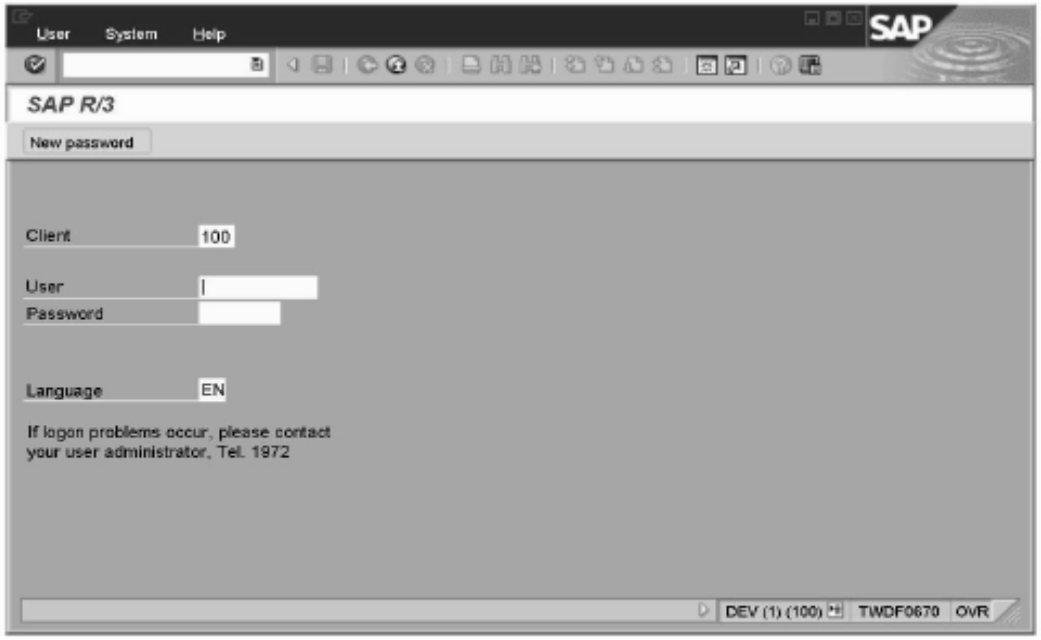


Figure 10: The logon screen for an SAP system

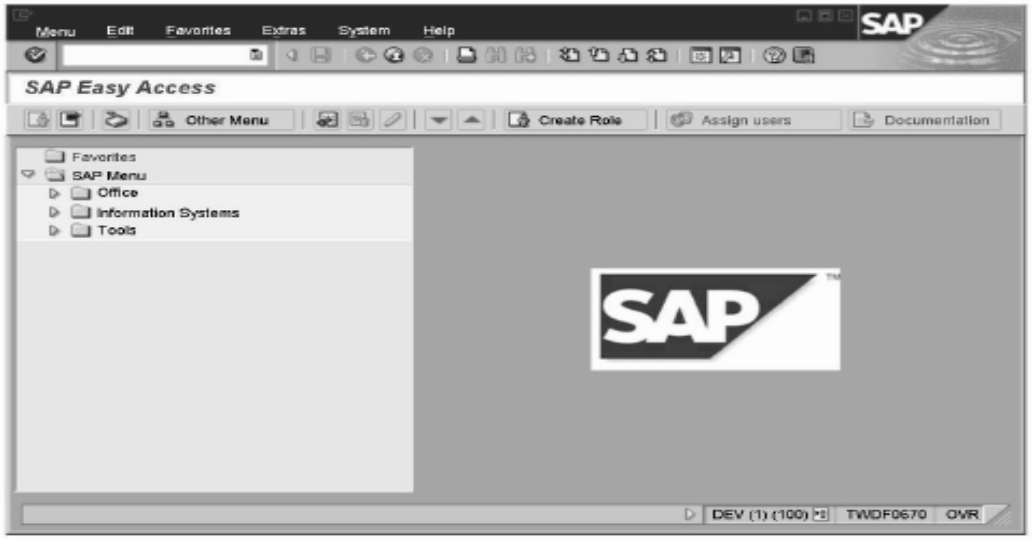


Figure 11: SAP Easy Access

- The SAP Easy Access screen is the default initial screen in SAP systems.

- The left side of the screen contains a tree hierarchy of the menus available

- You can use the right side of the screen to display your company logo. This graphic is made available centrally by your system administrator and cannot be customized by individual users.

Lesson: Configuring SAP Logon

Lesson Objectives

After completing this lesson, you will be able to:

- Set up the SAP Logon program
- Explain the use of logon groups

Setting Up SAP Logon

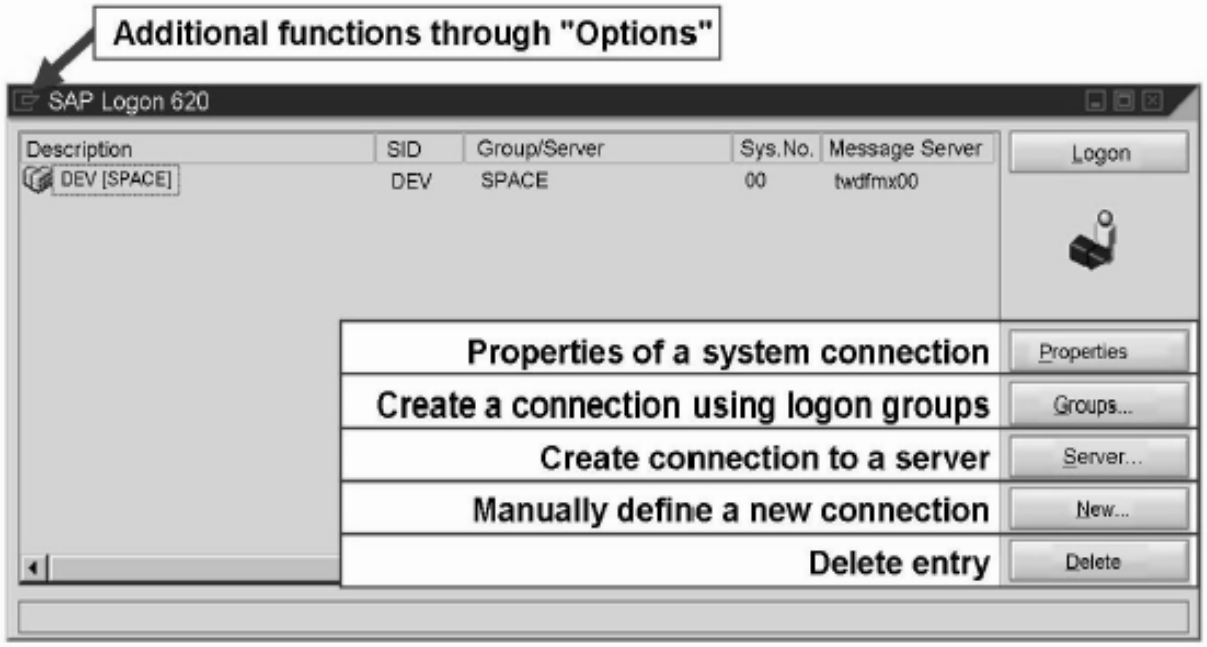


Figure 59: SAP Logon

SAP Logon

Start the system logon

Using SAP Logon and associated files:

• Start of SAP Logon:	Read *saplogon.ini*
• *Properties* Pushbutton:	Edit *saplogon.ini*
• *Groups* Pushbutton:	Evaluate *sapmsg.ini* and *services*
• *Server* Pushbutton:	Evaluate *sapmsg.ini* and *services*
• *New* Pushbutton:	Edit *saplogon.ini*
• *Delete* Pushbutton:	Edit *saplogon.ini*

All actions using pushbuttons (except *Logon*) can change *saplogon.ini*

Figure 60: Setting Up SAP Logon

Lesson: Client / Server Architecture

Lesson Objectives

After completing this lesson, you will be able to:

- Outline simple client/server configurations
- Describe the processing flow for user requests in SAP systems

Client/Server Terminology

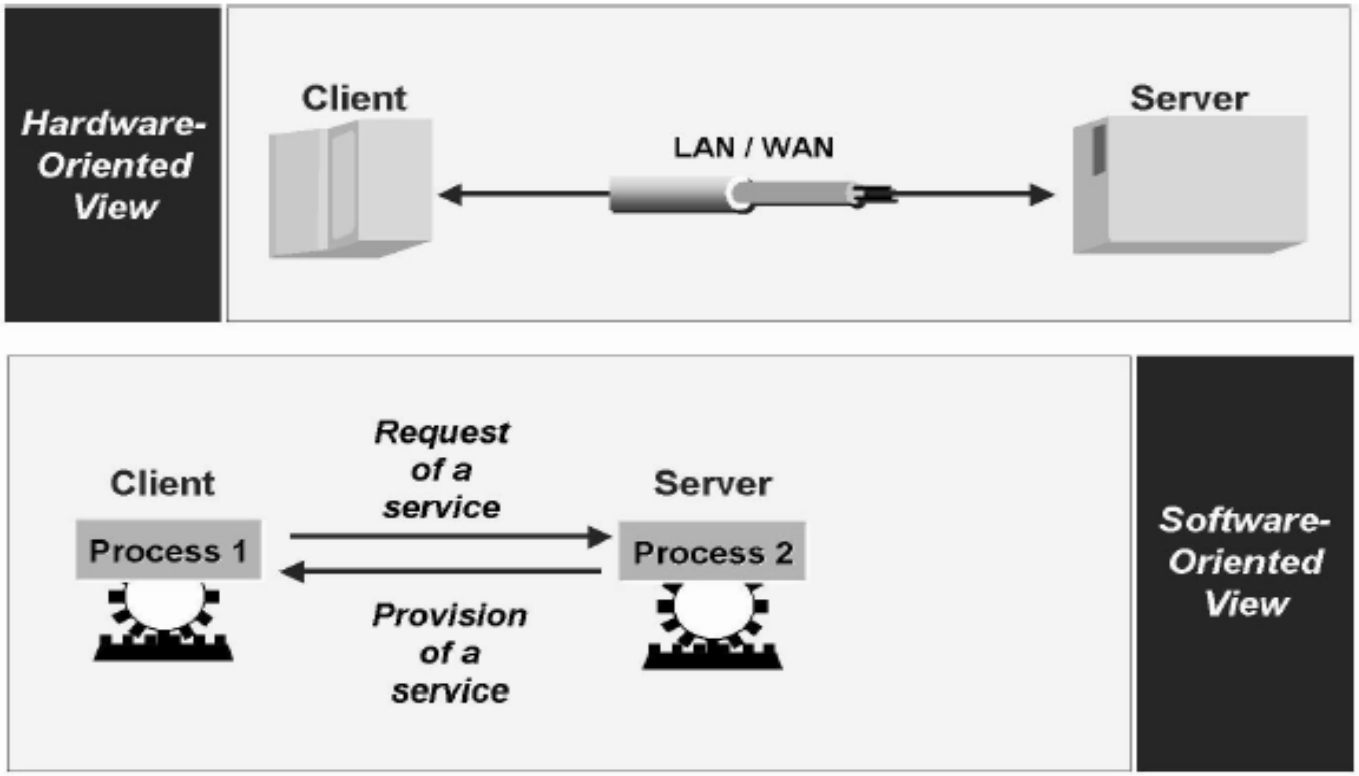


Figure 21: Hardware-oriented view – software-oriented view

The following processes are required for operating business application :

- Presentation processes (for example, for displaying screens)
- Application processes (for example, for executing application programs)
- Database processes (for example, for managing and organizing database data)

SAP Architecture

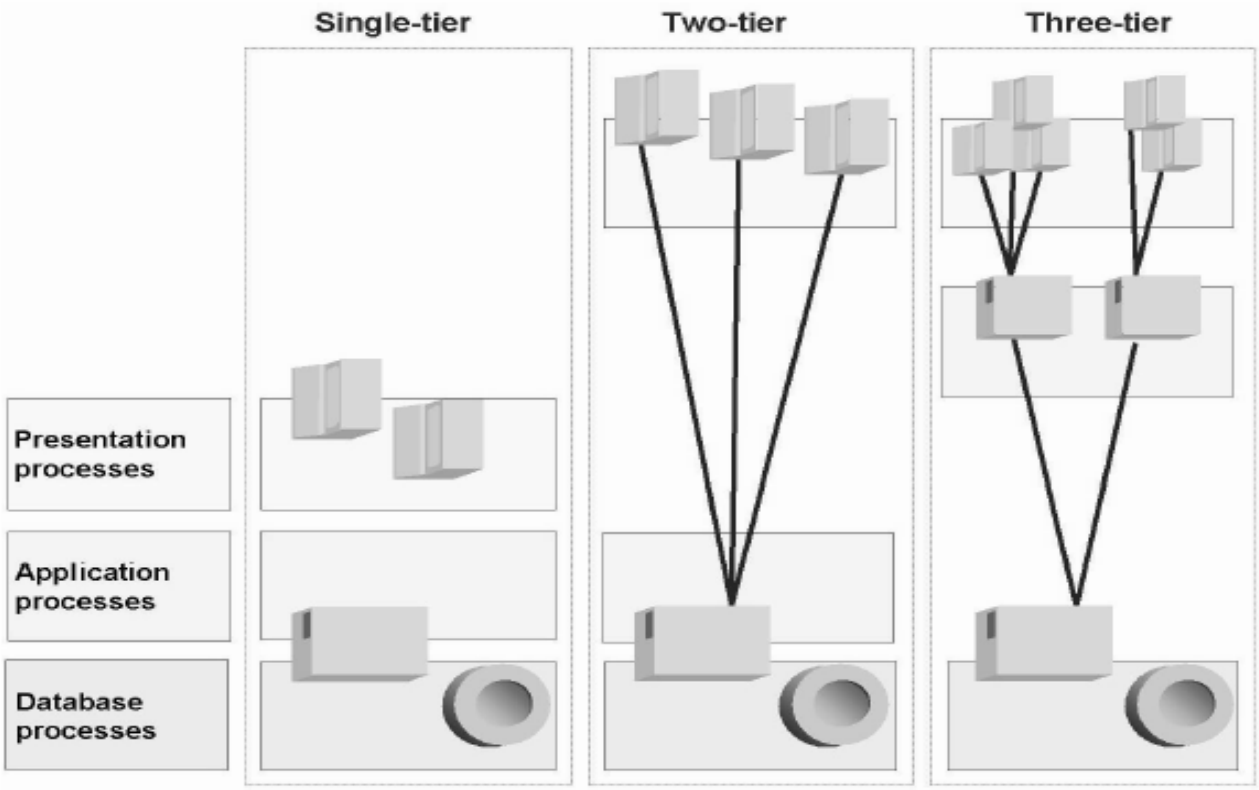


Figure 22: Simple client/server configurations

The SAP R/3 system is an example of business application software.

- In single-tier configurations, all processing tasks (database, application and presentation processes) are performed by one computer. This is classic mainframe processing.
- Two-tier configurations are usually implemented using special presentation servers that are responsible solely for formatting the graphical interface. For example, many SAP users run SAP GUI
- In a three-tier configuration, each layer runs on its own host. Several different application servers can use the data from a database server at the same time.

Processing User requests

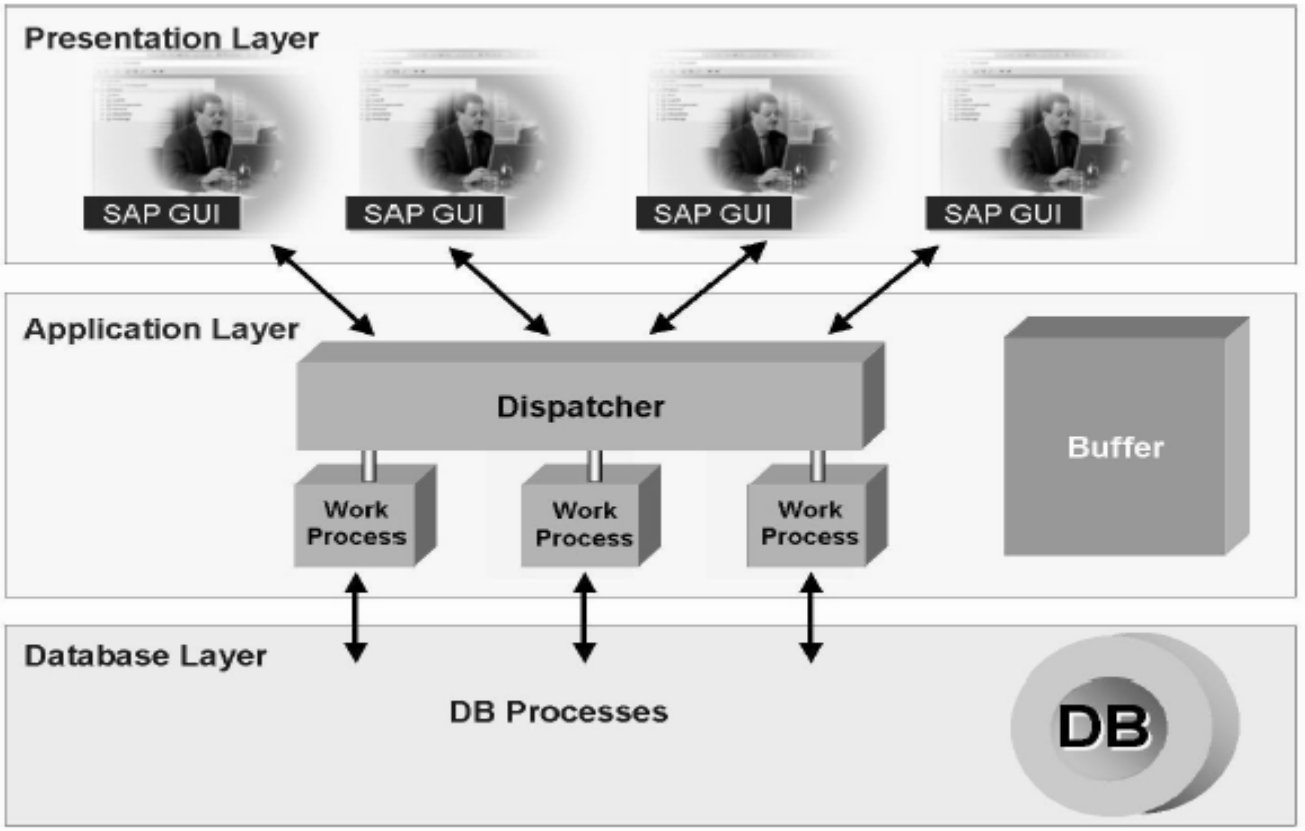


Figure 23: Processing user requests

A user request in an SAP system is processed, as you can see from the graphic, by various processes on all three levels (presentation, application, and database level)

- The screen entries of a user are accepted by the SAP presentation program
- **SAP GUI** (SAP Graphical User Interface), converted to an internal format and forwarded to the SAP Web Application Server (software-oriented view).
- The central process on an SAPWeb Application Server is the **dispatcher**.
- The dispatcher, in association with the operating system, manages the resources for the applications written in ABAP. The main tasks of the dispatcher include distributing transaction load to the work processes, connecting to the presentation level and organizing communication.

Lesson: Structure of an Instance

Lesson Objectives

After completing this lesson, you will be able to:

- Name the most important processes on an SAP Web Application Server
- Define the term instance and recognize the characteristics of a central instance

Application Server Processes

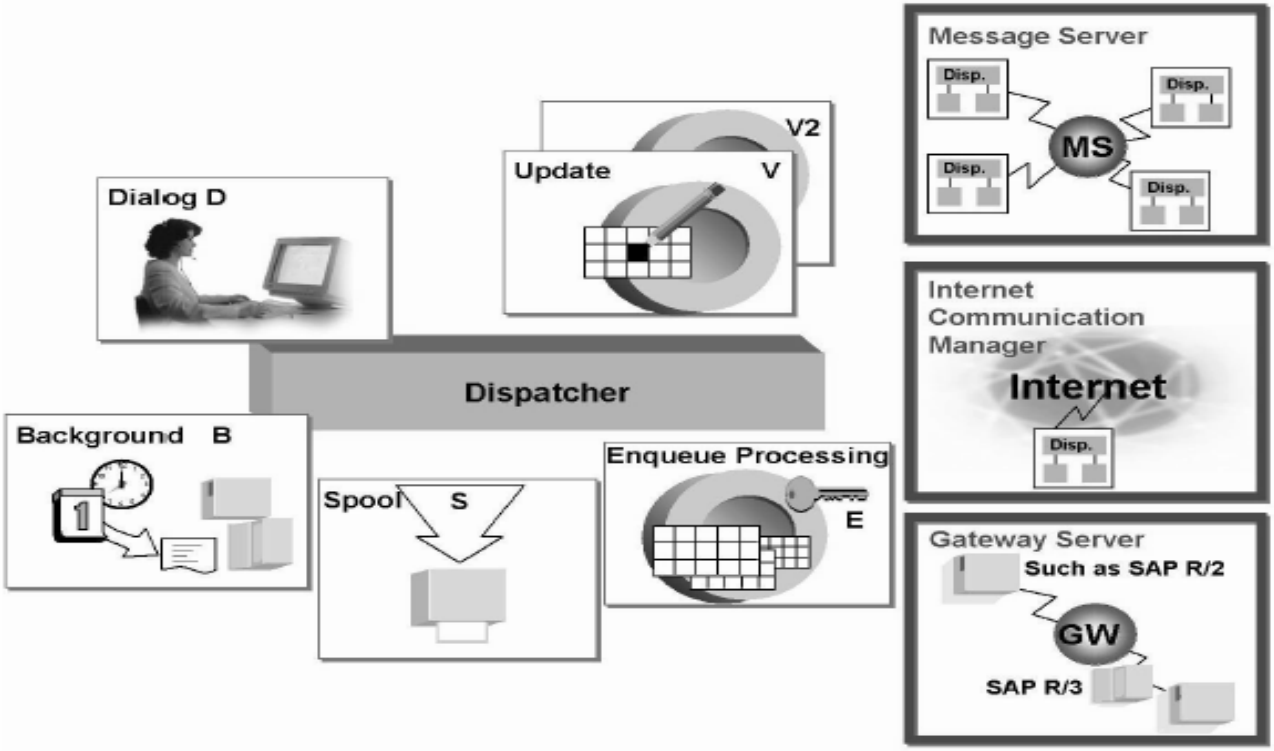


Figure 26: SAP Web Application Server Processes

- **Dialog work processes** fulfill all requests for the execution of dialog steps triggered by an active user. Every dispatcher requires at least two dialog work processes.
- **Spool work processes** pass sequential data flows on to printers. Every SAP system requires at least one spool work process, you can also have more than one spool work process per dispatcher.
- **Update work processes** execute update requests. Similarly to spool work processes, you need at least one update work process per SAP system, and you can have more than one per dispatcher.
- **Background work processes** execute programs that run without interacting with the user. You need at least one per SAP system and you can configure more than one background work process per dispatcher.
- **The enqueue work process** administers the lock table in the shared memory. The lock table contains the logical database locks for the SAP system. Only one enqueue work process is needed for each system.

- **The message server (MS)** handles communication between the distributed dispatchers within an SAP system, thereby enabling scalability of several parallel application servers. The message server is configured only once per SAP system.
- **The gateway server (GW)** enables communication between SAP systems, or between SAP systems and external application systems. There is one per dispatcher.
- **The Internet Communication Manager (ICM)** is a process added with SAP Web AS 6.10. The ICM enables SAP systems to communicate directly with the Internet. The ICM receives requests from the Internet and forwards them to the SAP system for processing. It can also direct HTTP requests from an SAP system to a Web server and send the response back to the SAP system. You can configure a maximum of one ICM process per dispatcher.

The Instance

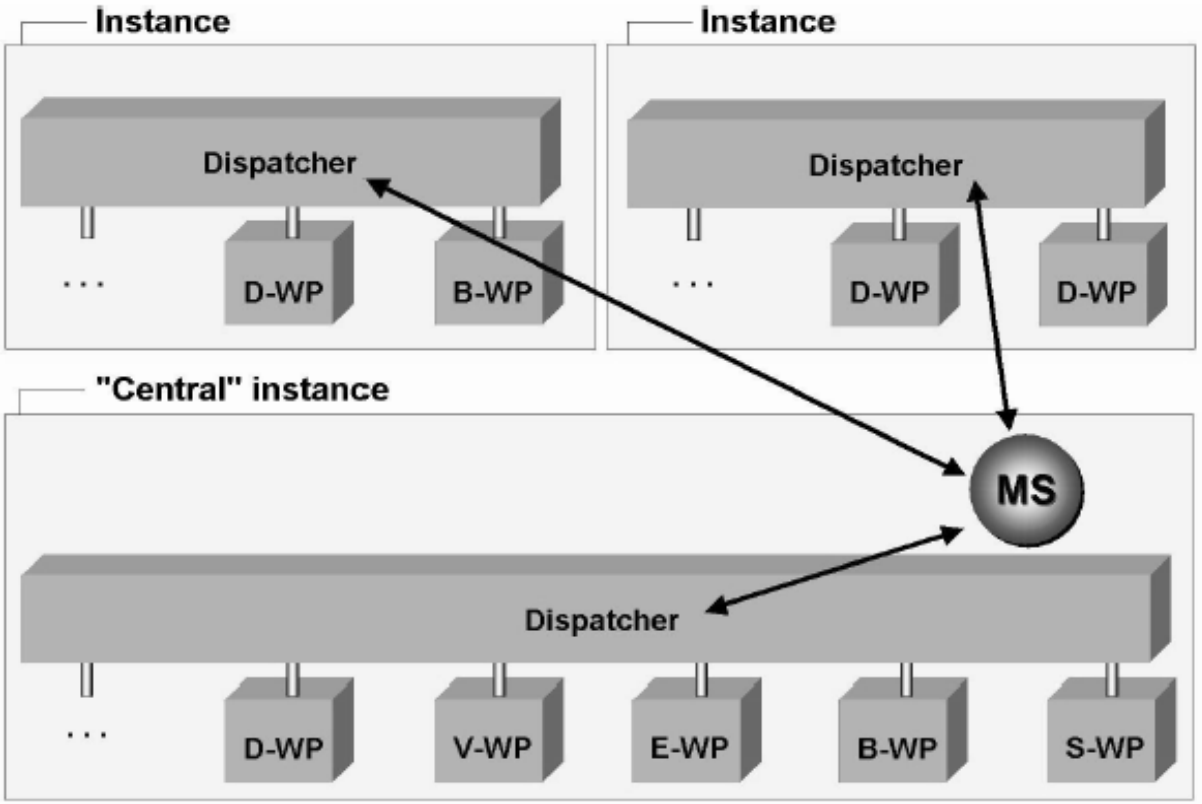


Figure 27: The instance

- An **instance** is an administrative unit that combines SAP system components providing one or more services. The services provided by an instance are started or stopped together. Each instance has its own buffer areas.

- The graphic .The instance. shows all the processes that are required for error-free operation of an SAP system, collected on one instance. This instance is distinct from the other instances of an SAP system and is called the **central instance**.

- This graphic also shows other configured instances. These instances, which provide specific services, generally run on separate servers, but can also run on the same server, if required.

UNIT 5: Fundamentals

Lesson: What is SAP System?

Lesson Objectives

After completing this lesson, you will be able to:

- Outline the structure and architecture of an SAP system
- List the technical components of the SAP Web Application Server
- Use the terms system and instance correctly

What is an SAP system

- An SAP System consists of the components shown in the graphic: Exactly one database and one or more instances. The instance that, together with the database, creates a runnable SAP system, is called the central instance.
- A central instance should be configured in every SAP system.
- A central system exists if the system contains only a single instance, and this is running together with its database on one host.

Elements of SAP System

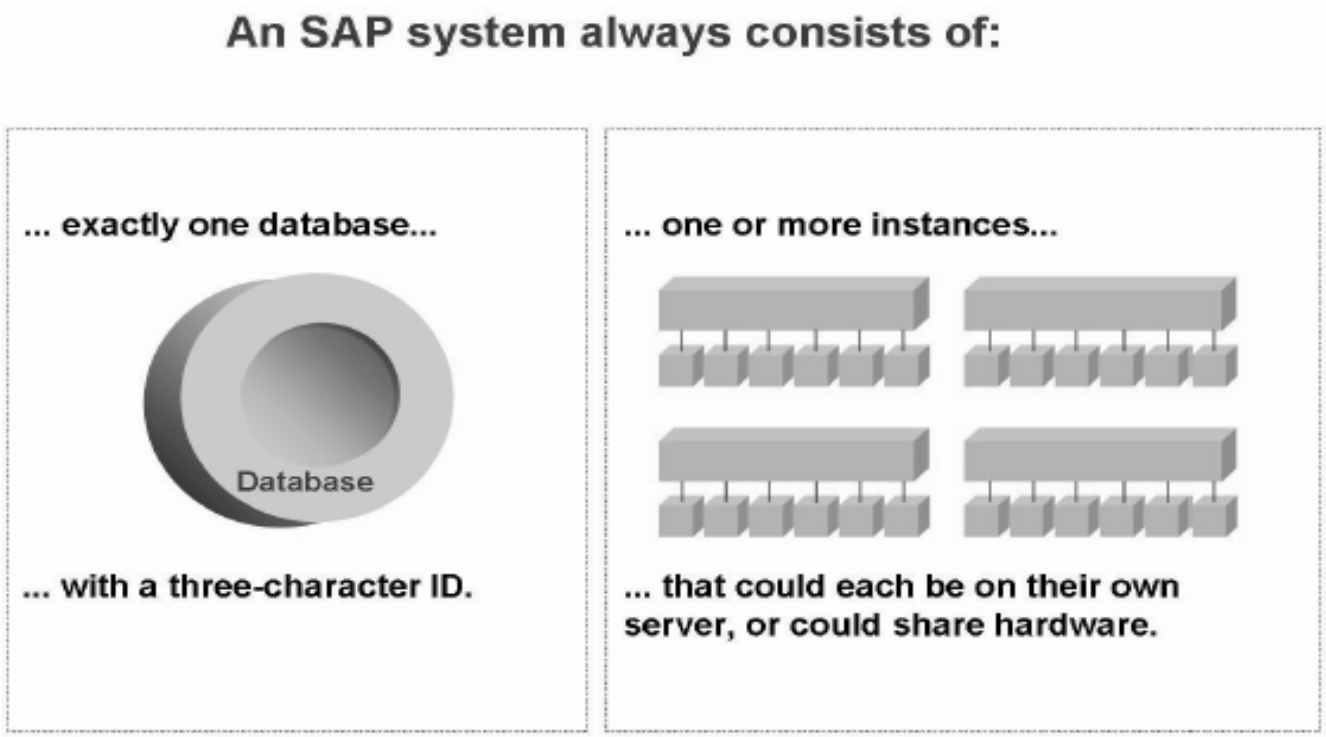


Figure 55: The Elements of an SAP System

What Is an Instance of an SAP System?

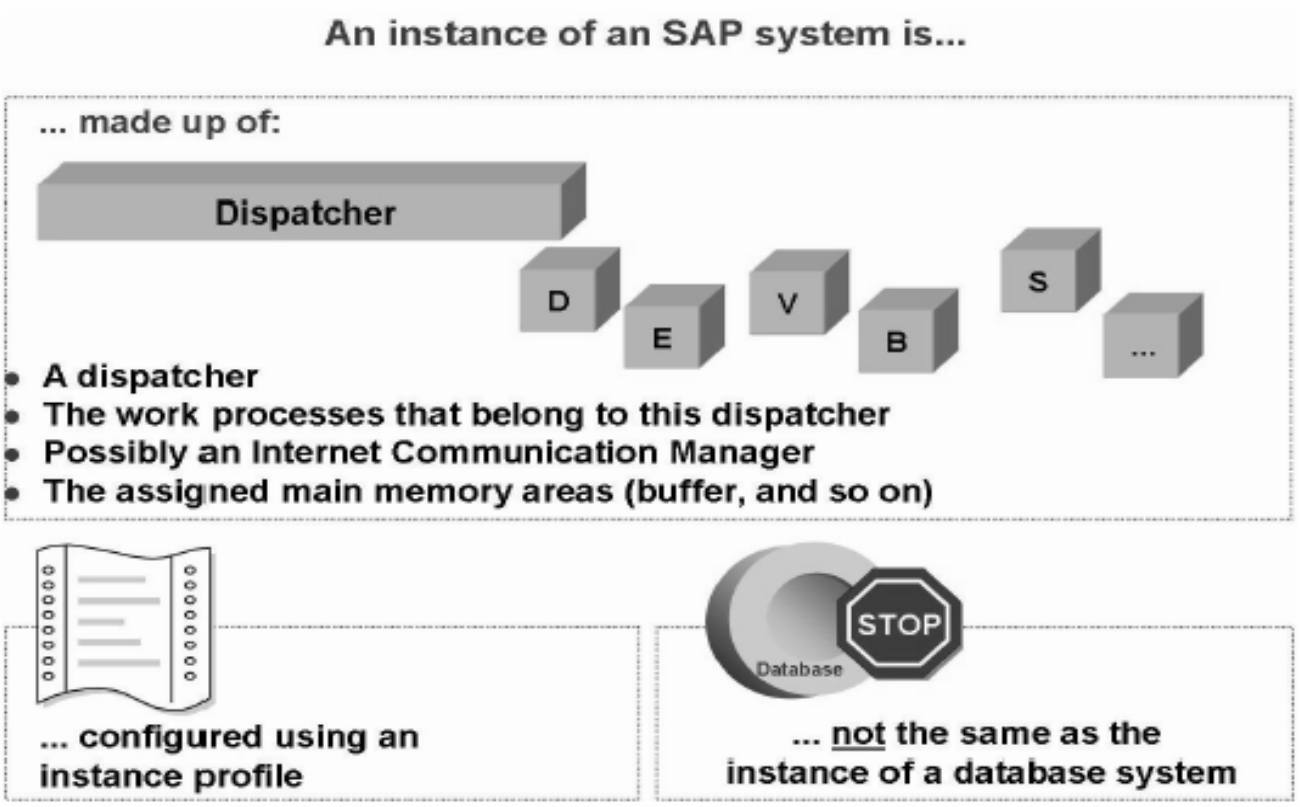
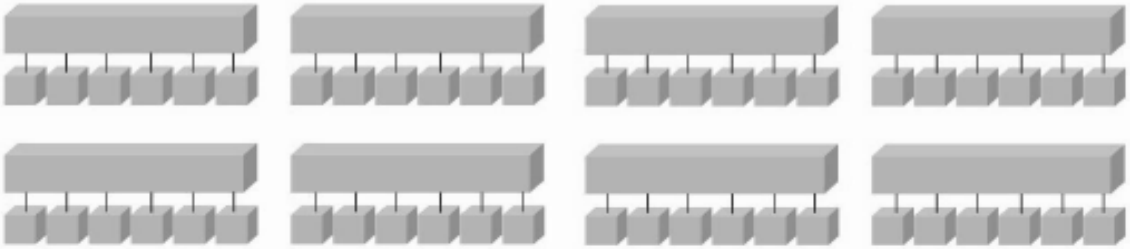


Figure 56: The Composition of an Instance

- An instance of an SAP system is an administrative unit in which the components of an SAP system, that provide one or more services, are combined.
- The services provided are commonly started and stopped.
- All components of an instance are provided with parameters using a common instance profile.

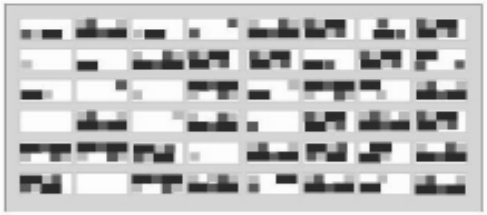
Configuring SMLG

A system may have many instances:



Each of these instances has its own buffer areas which, for example, must hold all of the programs in the instance.

Without the use of logon groups, a typical program buffer for each of the 8 instances shown here looks like this, for example:

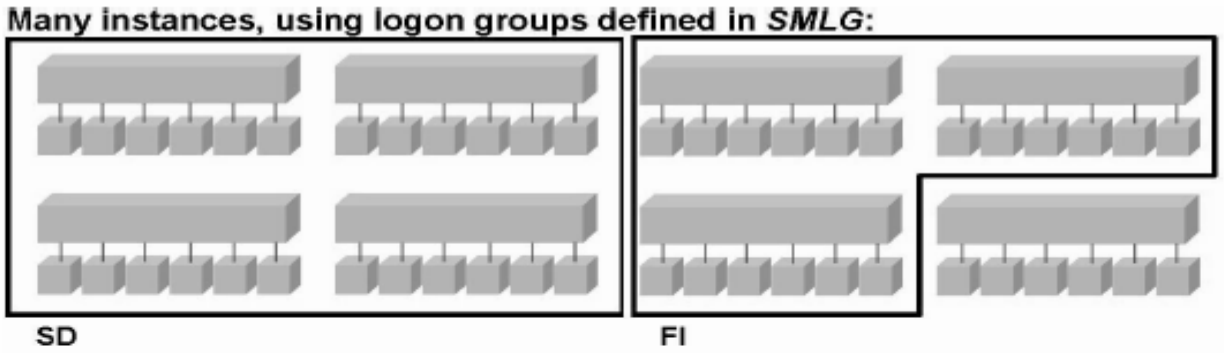


For example: Programs from the following areas:

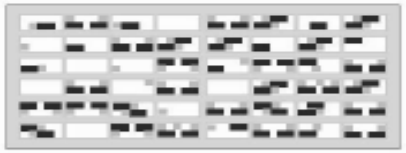
- SD
- FI
- Shared programs

Figure 61: Program Buffer Without the Use of Logon Groups

SMLG Structure



Using logon groups, the program buffers of two instances from different logon groups could look like this:



Programs from the following areas:

- SD
- FI
- Shared programs

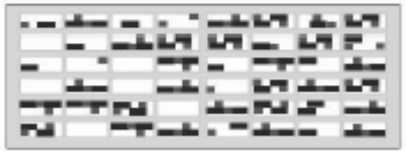


Figure 62: Program Buffer with the Use of Logon Groups

UNIT 6: Starting & Stopping the SAP System

Lesson: System Start: Process

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the process of the start procedure of an SAP system
- Start the entire SAP System or individual instances

Start Process

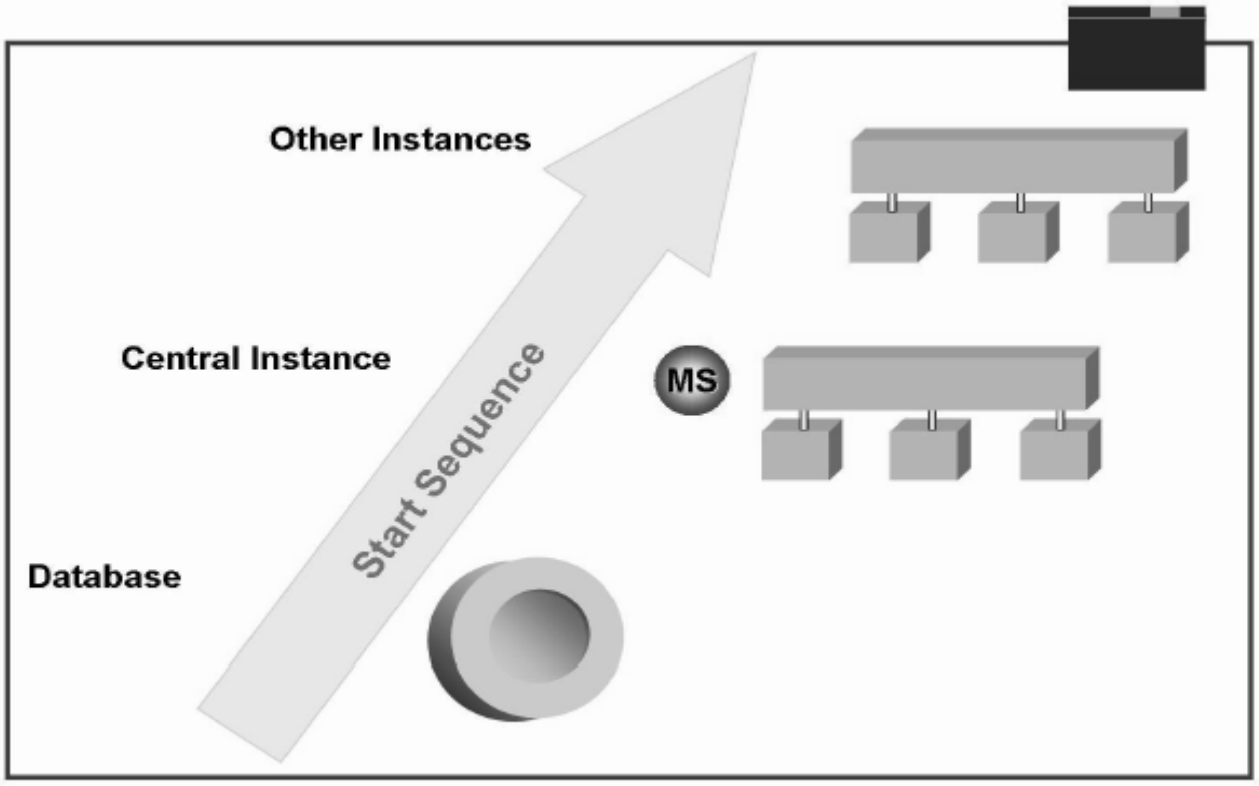


Figure 64: Start Process of the SAP System

Starting an SAP System is performed in a number of steps and is the task of the operating system user <sid>adm.

- Start the database The underlying element of the entire SAP system is the database. Before the SAP instances are started, this must have operational status. The database is therefore always started as the first step.
- Start the central instance:
- Next, the operating system collector SAPOSCOL is started, if it is not already active. This is a standalone program that runs in the operating system background, independently of SAP instances. It collects data about operating system resources and makes this data available through the shared memory of all SAP instances.
- The central instance with the message server and the dispatcher and its work processes is then started. Only once the message and enqueue servers are active can other instances be started, if desired.

Service Concept

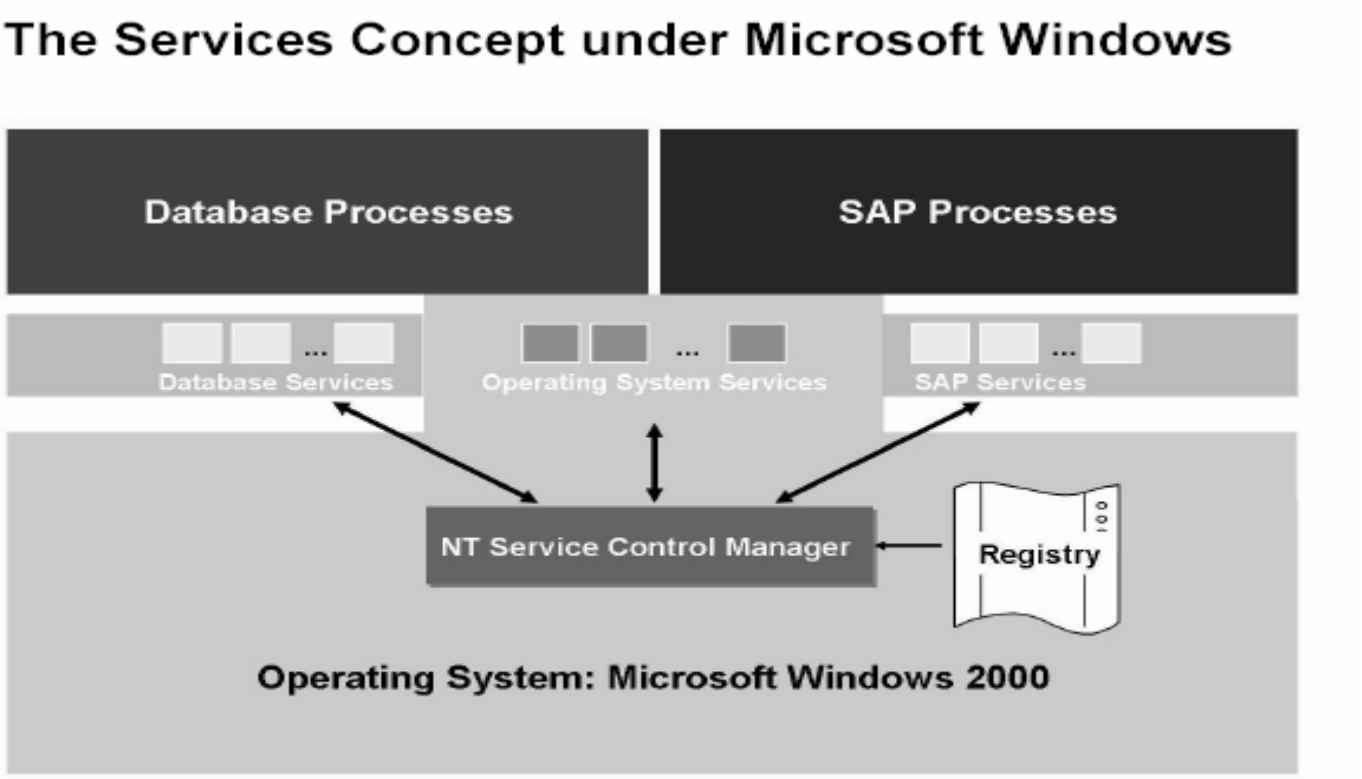


Figure 65: Services Concept

- When starting programs in the Microsoft Windows environment, you should note that these programs are only active as long as the user is logged on to the system. When a user logs off, all of his or her programs are ended. The SAP system therefore uses the concept of services to start.
  These are programs that are automatically started and administered by the operating system. Services provide support to other programs and run
  even if there are no users logged on to the host.

Starting SAP System

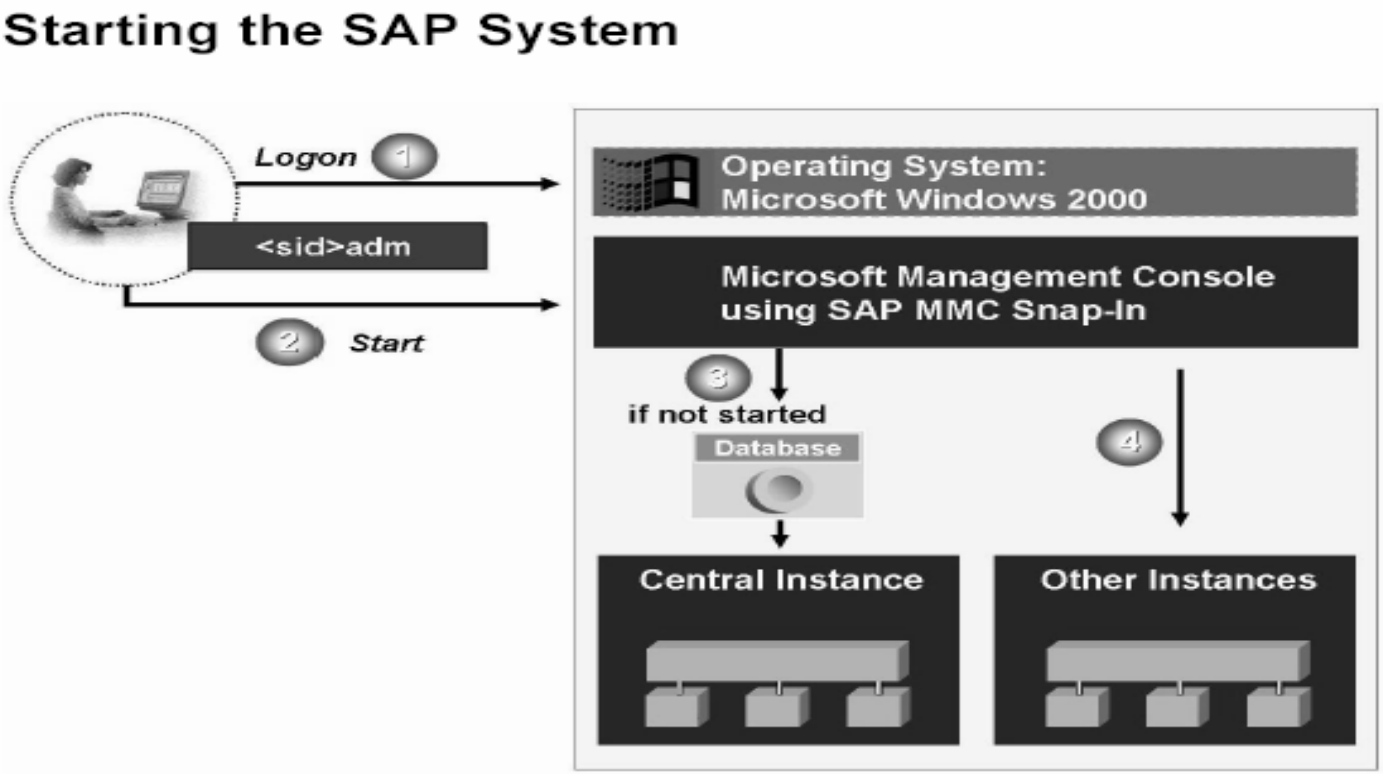


Figure 66: Starting the SAP System

- Under Microsoft Windows 2000, you can start and stop the SAP system with the Microsoft Management Console (MMC).

- To do this, the administrator logs on to the operating system as user <sid>adm, and opens the Microsoft Management Console.

- The status of the SAP system, individual instances, and the message server and dispatcher are displayed in the Microsoft Management Console in accordance with the following color legend:

- gray not running
- yellow is starting
- green active
- red terminated after errors

Lesson: System Shutdown: How & Why?

Lesson Objectives

After completing this lesson, you will be able to:

- Stop the entire SAP System or individual instances

To Do List before Shutdown

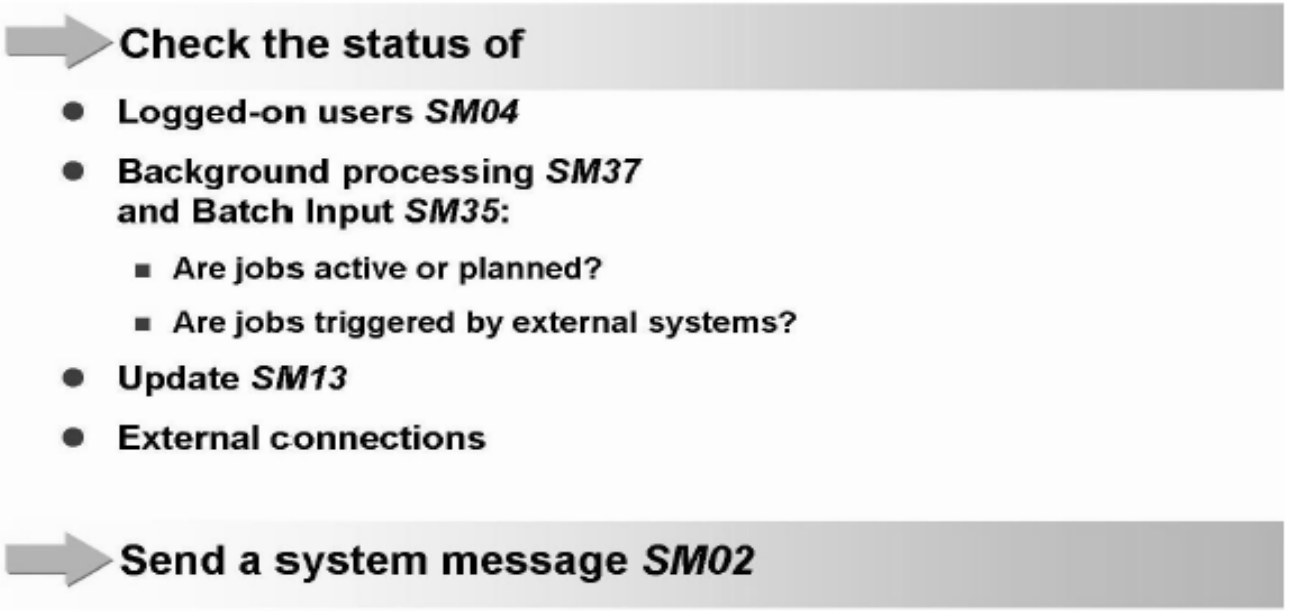


Figure 71: Before Stopping the SAP System

Stopping SAP System

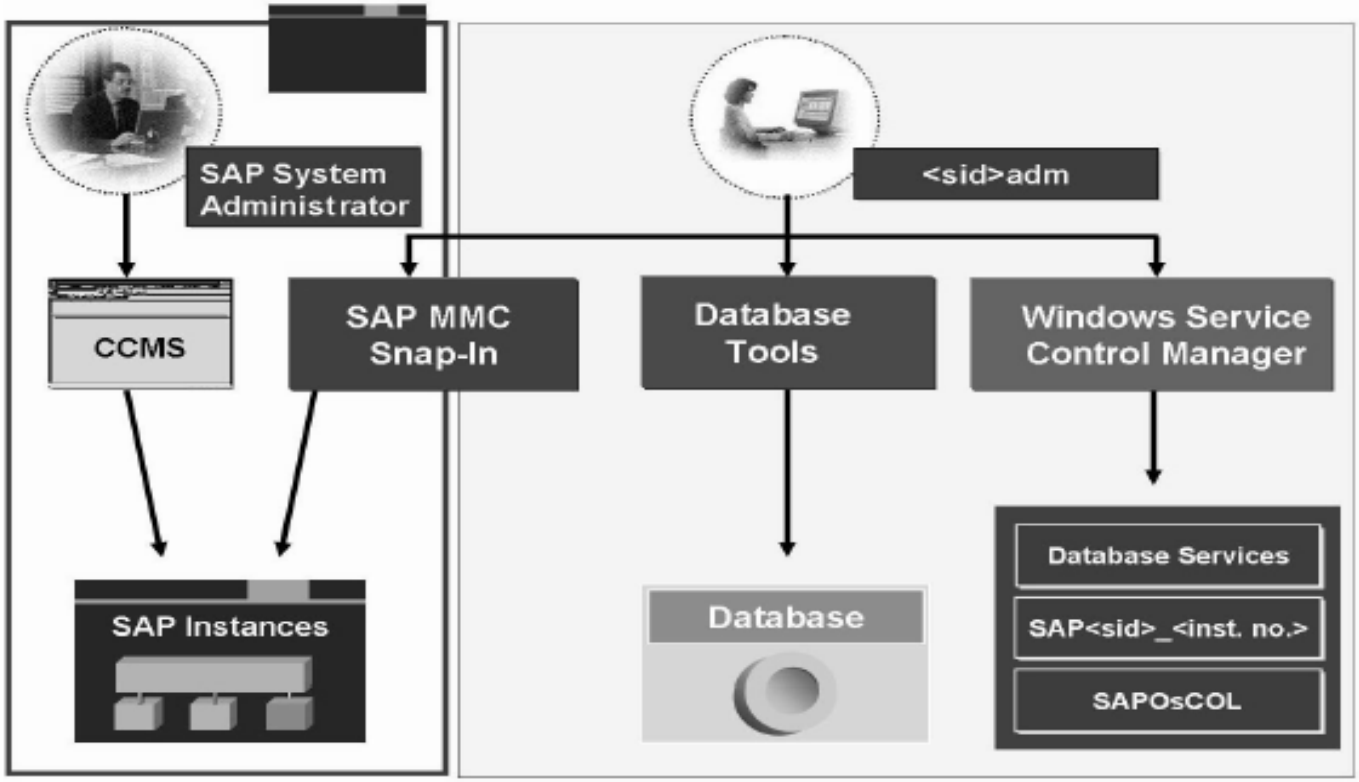


Figure 72: Stopping the SAP System

Lesson: Database Logs

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the locations of the log files for various databases

Database Logs

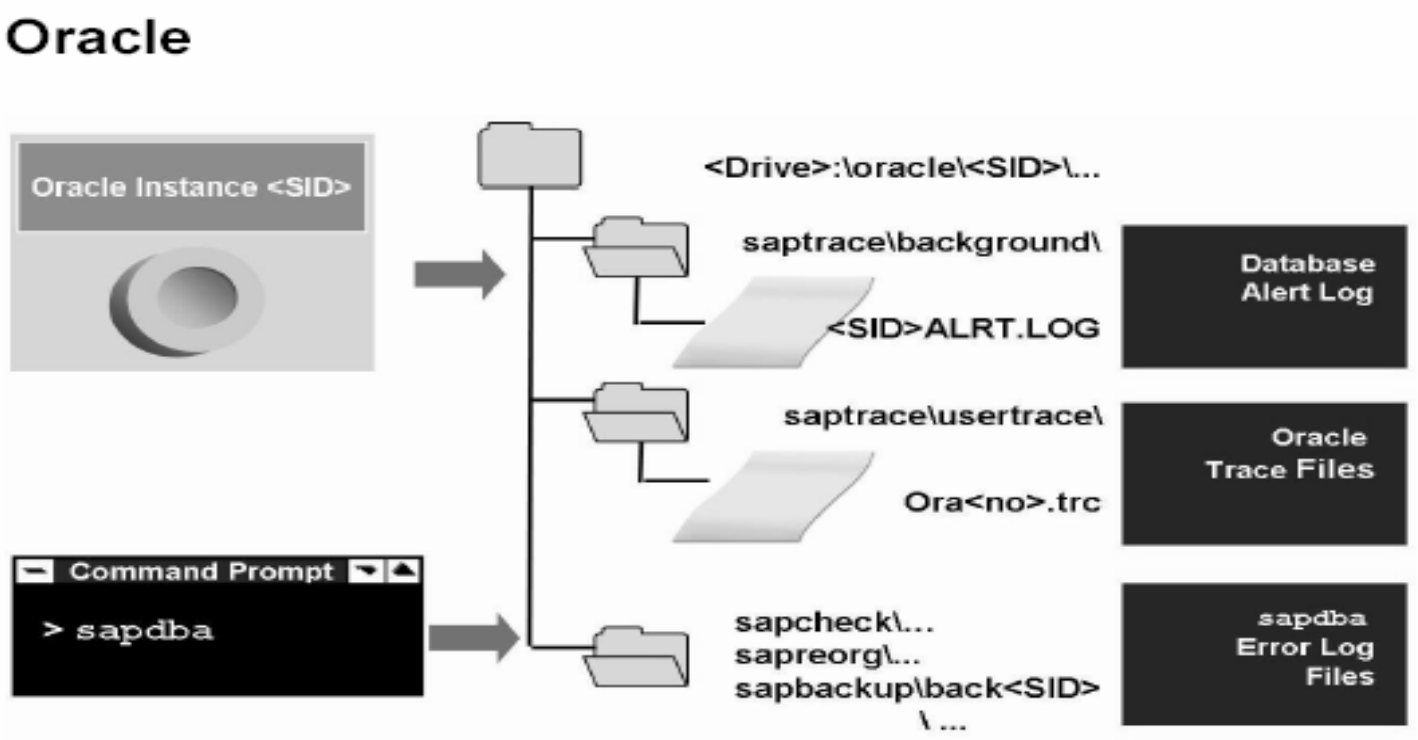


Figure 81: Oracle

Lesson: Data Structure of SAP Systems & System Landscape

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the data Structure of an SAP system
- List the advantages of and requirement for a three-system landscape

Data structure of a Client

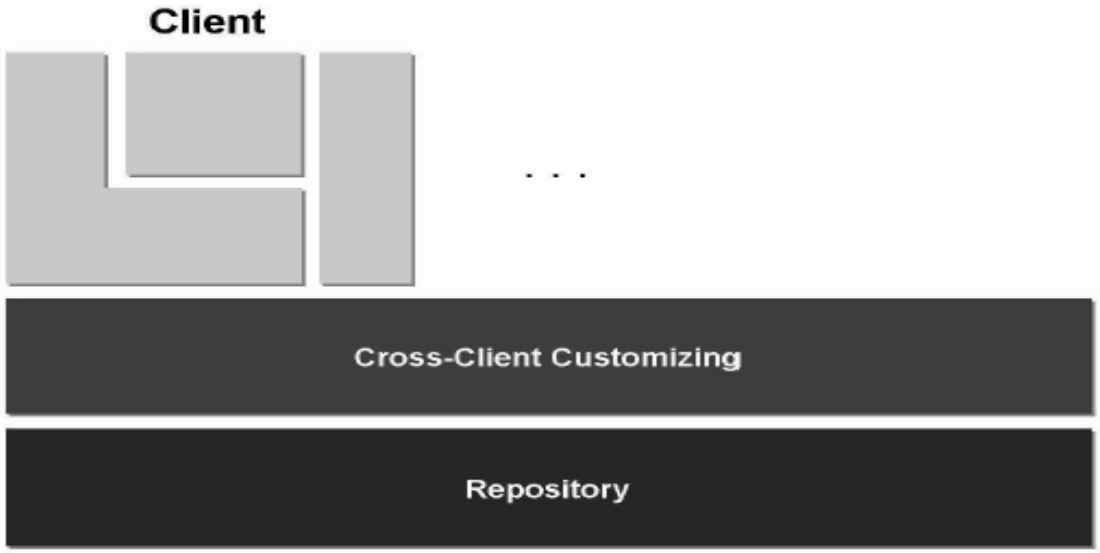


Figure 118: Data Structure of an SAP System

The repository is the central store for all development objects of the ABAP Workbench and is cross-client

The settings of an SAP system are described as Customizing.

Client

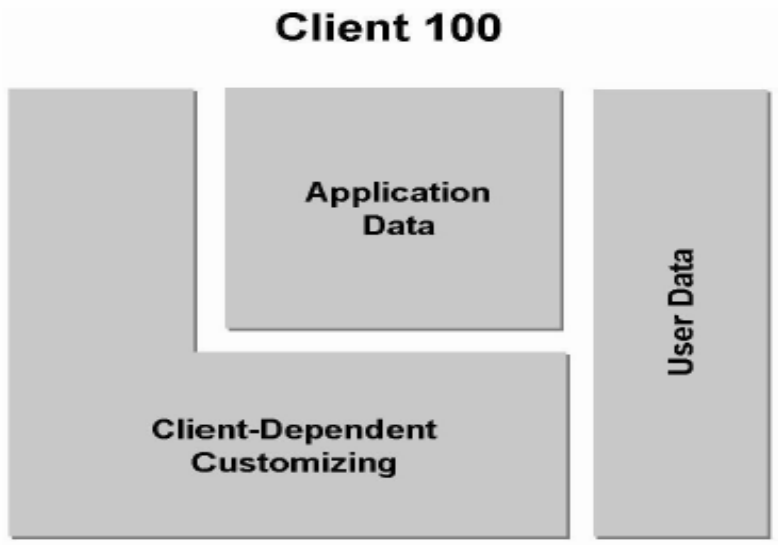


Figure 119: Client

SAP systems are divided into business units, in clients

A client is a self-contained unit in commercial, organizational, and technical terms in an SAP system and consists of business settings (Customizing), its own master and transaction data, and its own user data.

Data Structure

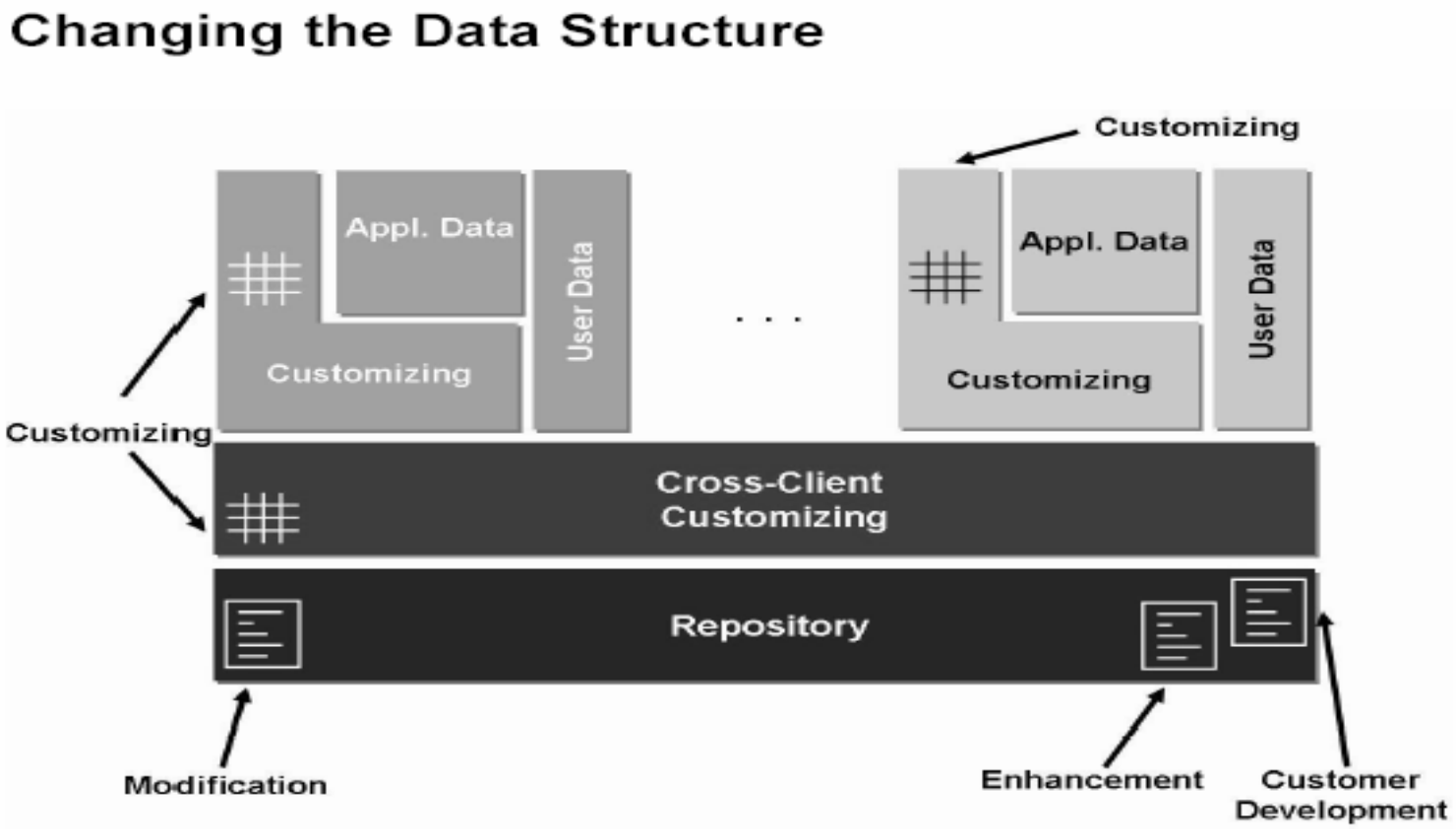


Figure 120: Adjustments to the Data Structure

- Extension of the repository through **customer developments**
- Adjusting the repository with **customer enhancements**. In this case, customer objects are added to the repository. The SAP standard programs can be extended with customer objects at specified points in the coding, called .Customer Exits.
- **Modifications** to the standard SAP system: Changes to SAP objects (programs, table definitions) are described as modification. The repository delivered by SAP is not only extended, but changed.

Three-System Landscape

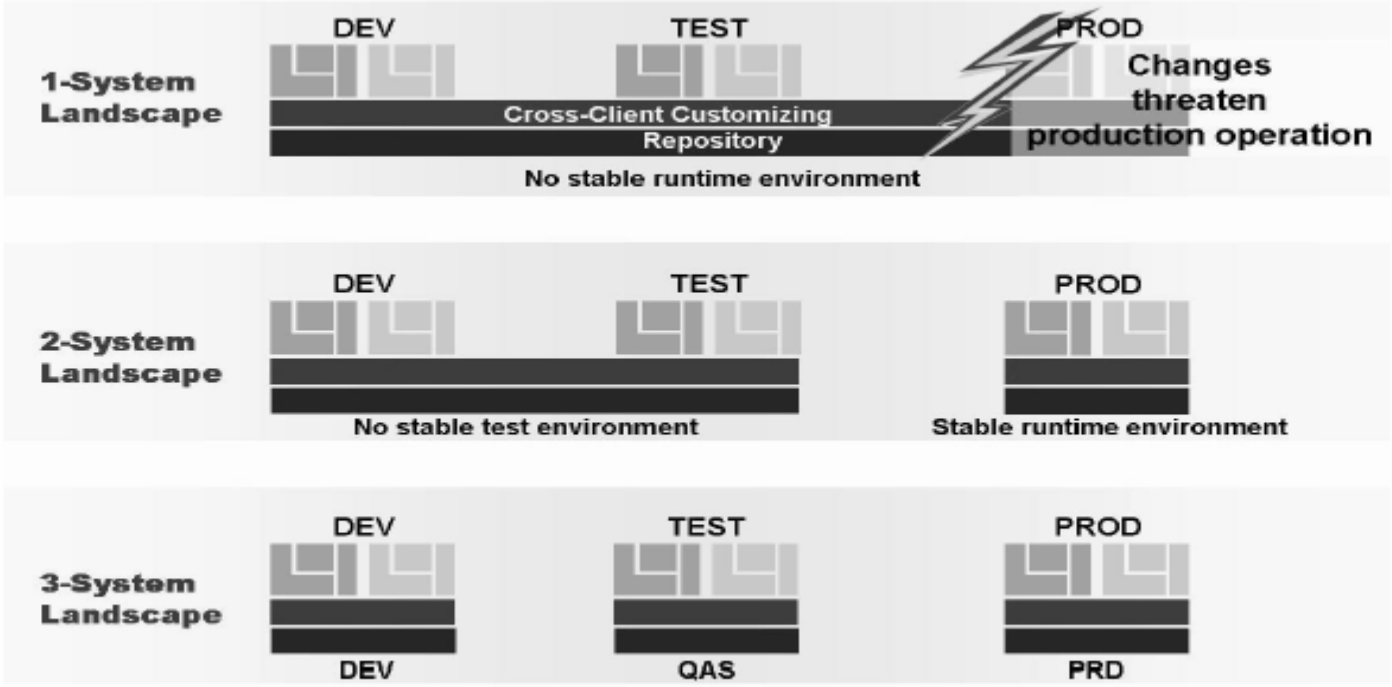
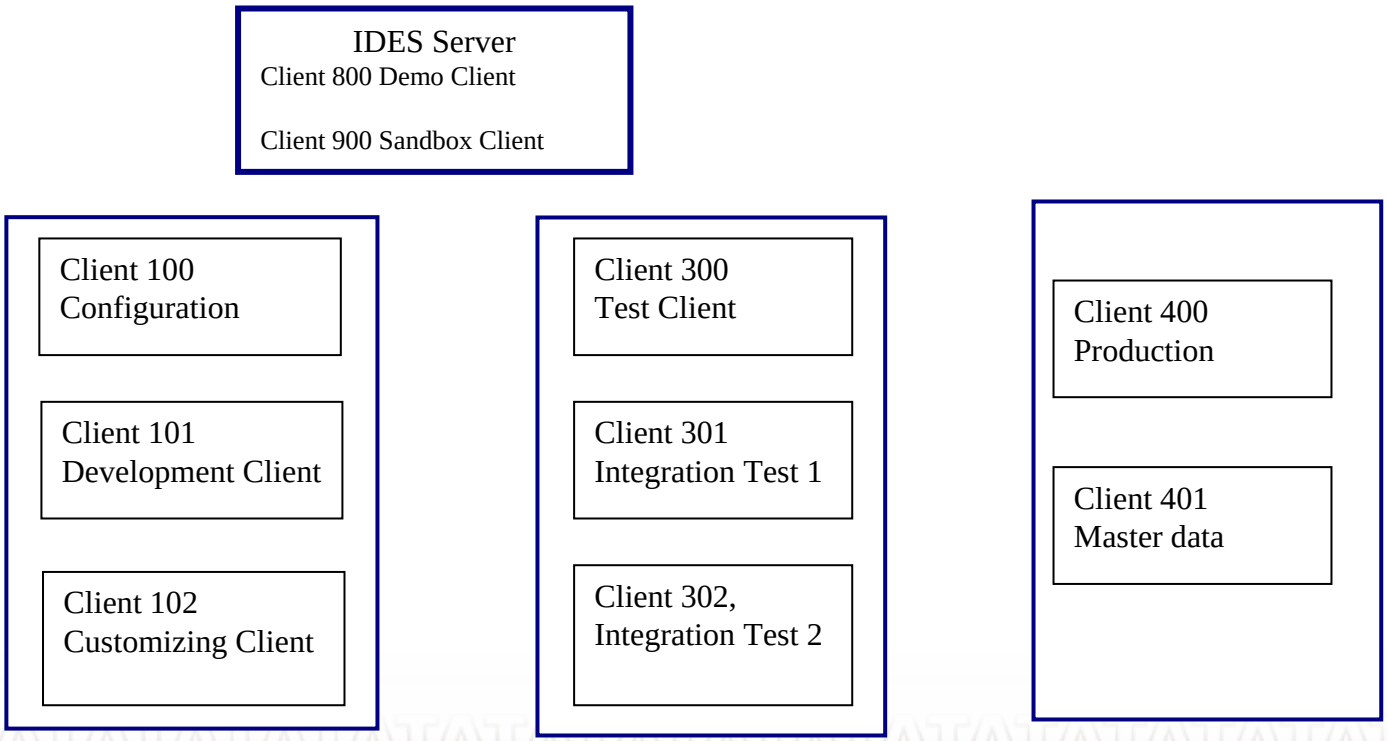


Figure 121: The Three-System Landscape

- You develop your own programs and perform the required Customizing in the development system. The Customizing settings that you make and all changes to the repository (developments, corrections, modifications) are recorded in the development system and then transported to the quality assurance (or Test) system, and are checked there without influencing production operation.

- All objects and settings imported into the test system can then be transported to one or more production systems after a successful test.

Landscape


IDES Server
Client 800 Demo Client
Client 900 Sandbox Client
Client 100
Configuration
Client 101
Development Client
Client 102
Customizing Client
Client 300
Test Client
Client 301
Integration Test 1
Client 302,
Integration Test 2
Client 400
Production
Client 401
Master data
DEV
QAS
PRD

Lesson: Performing and Checking Transports

Lesson Objectives

After completing this lesson, you will be able to:

- Create and release transport requests
- Describe the architecture of the SAP transport system
- Import transport requests

Transports

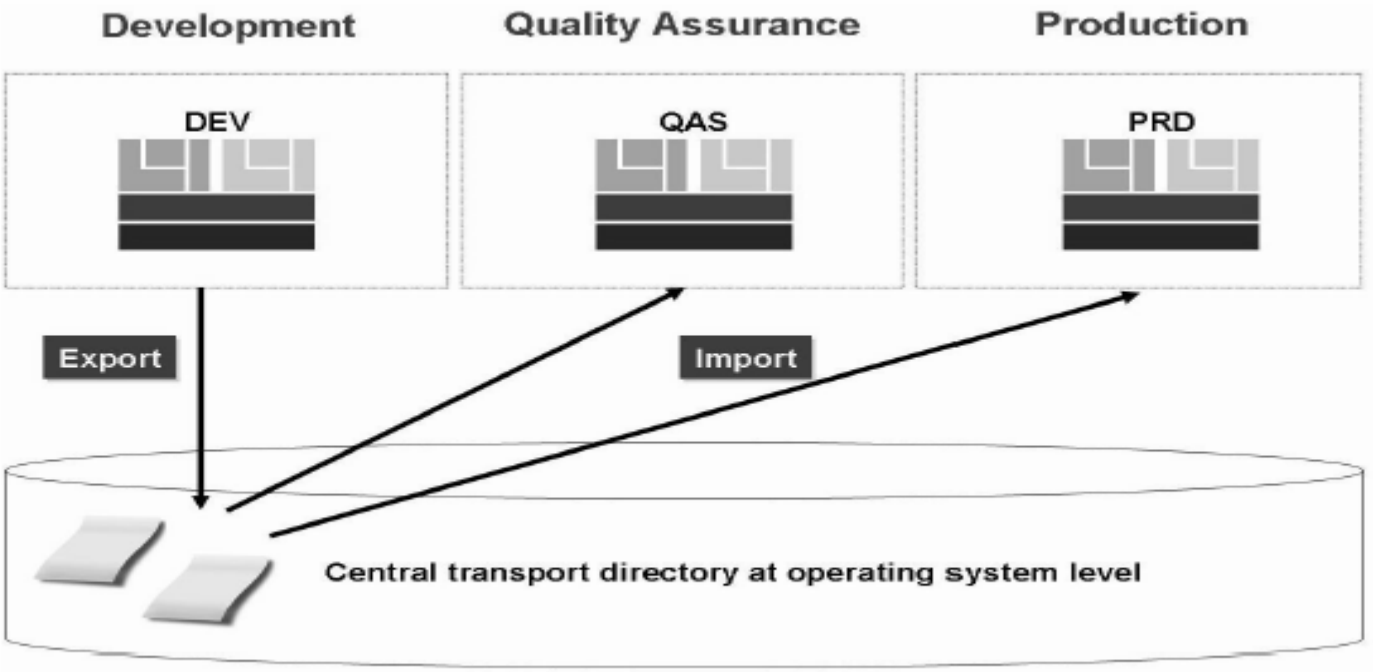


Figure 126: Transports in a Three-System Landscape

Export & Import Process

The transport of objects is divided into Export and Import. phases:

- Export from the development system, import of the objects into other target systems, such as the test system and production system.
- In technical terms, a copy of the data from the development system database is written to the central transport directory during the export of the change request.
- During the import, the change request stored in the central transport directory is copied into the database of the target system.
- The central transport directory is physically stored on a server in the system landscape (the transport host.), to which all systems in the system landscape must have access using a share or mount.
- The profile parameter DIR_TRANS specifies for each system where the transport directory to be used, which is called /usr/sap/trans, is stored.

Import Queue

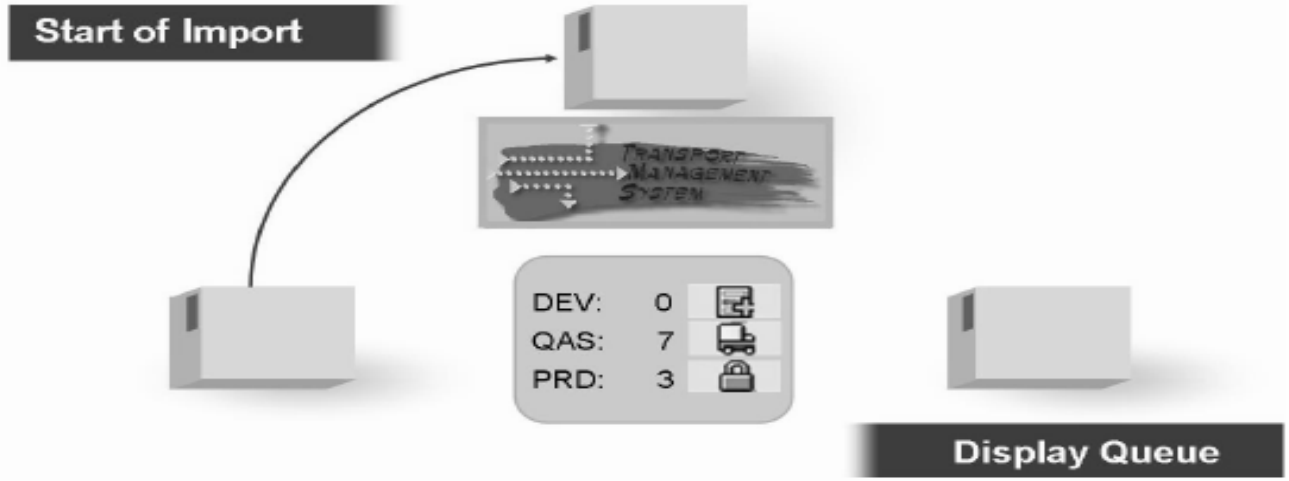


Figure 127: Working with the Import Queue

Import Status

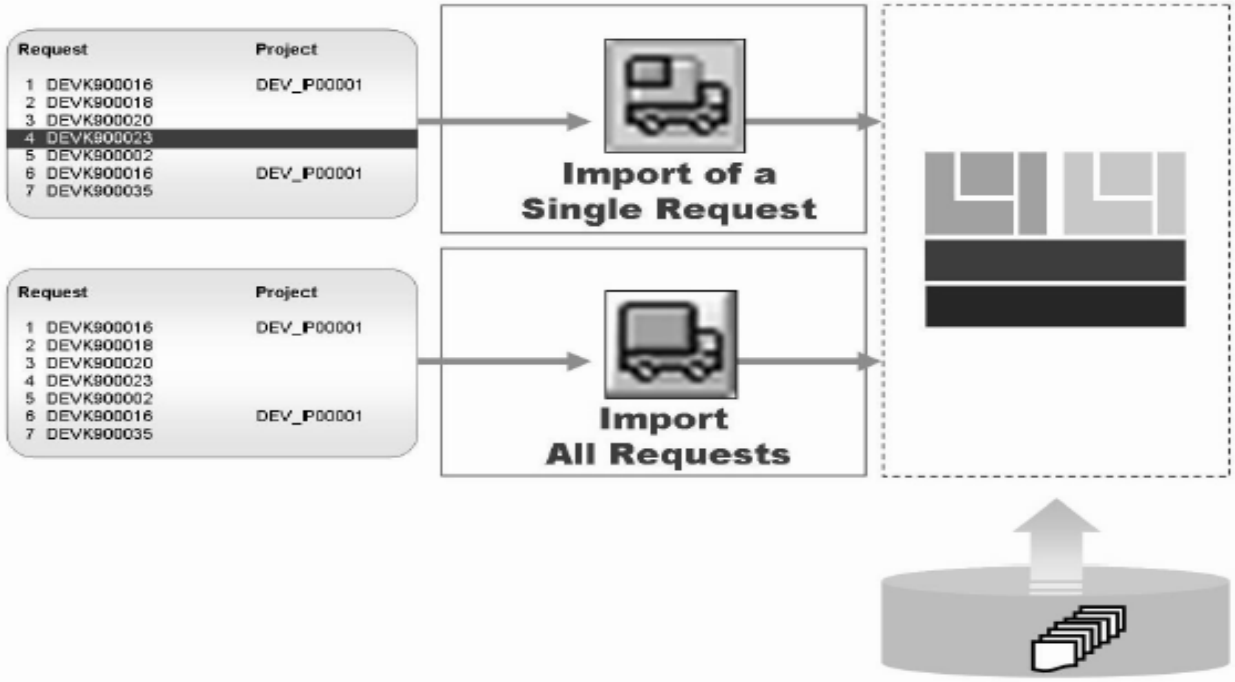


Figure 128: Import

Transport Logs

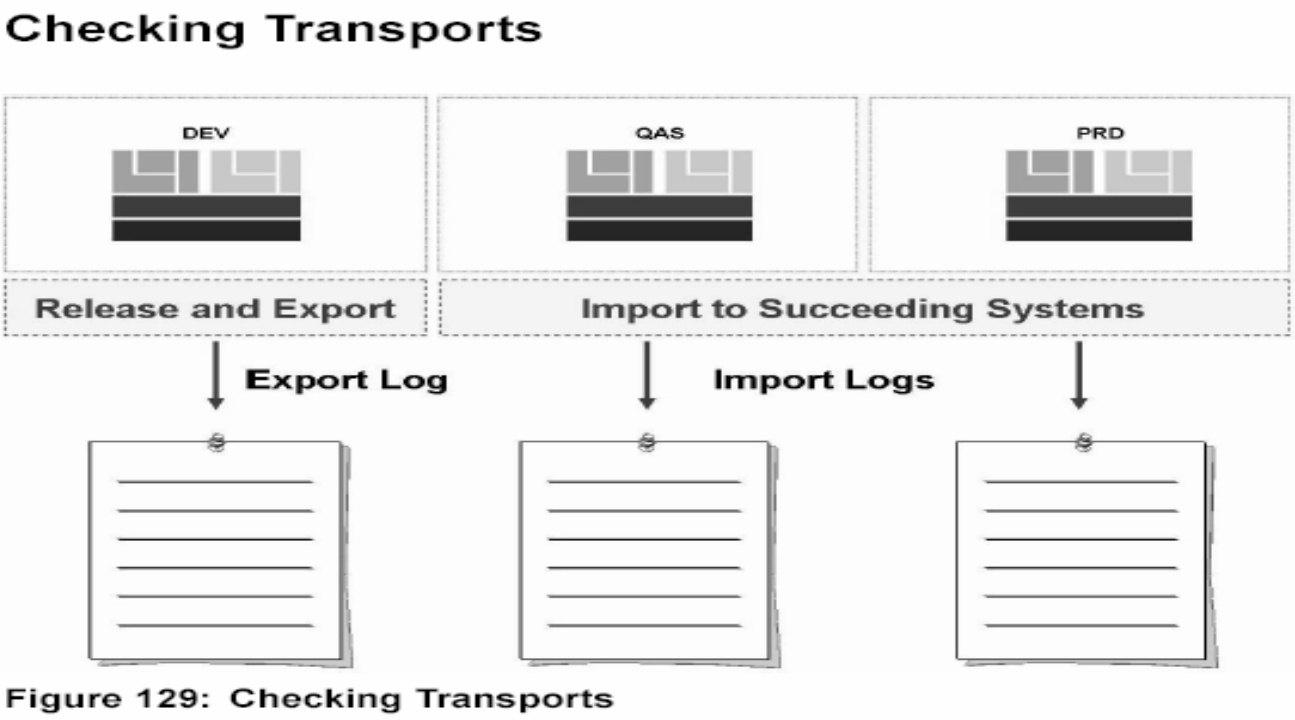


Figure 129: Checking Transports

During transporting, the transport steps performed in the various transport phases are logged. You can use the Transport Organizer to control transports.

Lesson: Term Definition: Support Packages

Lesson Objectives

After completing this lesson, you will be able to:

- List the differences in principle between Support Packages, Plug-Ins, and Add-Ons

What Is a Support Package?

- A Support Package is a quantity of corrected SAP objects. Support Packages are required to correct errors in various components. This is done by replacing erroneous objects with corrected versions of these objects.
- Each software component has a separate sequence of Support Packages.
- The following list contains the technical names of a number of components and the notation for their Support Packages:
  COP (Component Package):
- SAP_APPL (SAP R/3 Support Package): SAPKH<rel><no>
- SAP_BASIS (Basis Support Package): SAPKB<rel><no>
- SAP_ABA (Application Interface SP): SAPKA<rel><no>
- SAP_HR(SAPR/3HRSupportPackage) : SAPKE<rel><no>
- SAP_APO (APO Support Package): SAPKY<rel><no>
- SAP_BW (BW Support Package): SAPKW<rel><no>
- SAP_CRM (CRM Support Package): SAPKU<rel><no>
- SAP_SRM (SRM Support Package): SAPKU<rel><no>

Lesson: Fundamentals of Background Processing

Lesson Objectives

After completing this lesson, you will be able to:

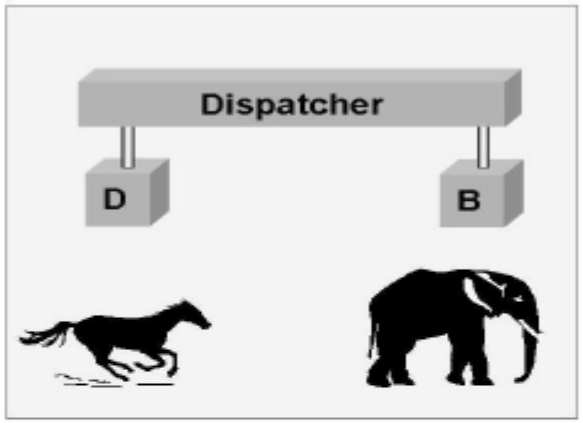
- Describe the uses of background processing
- Schedule and monitor jobs

Basics

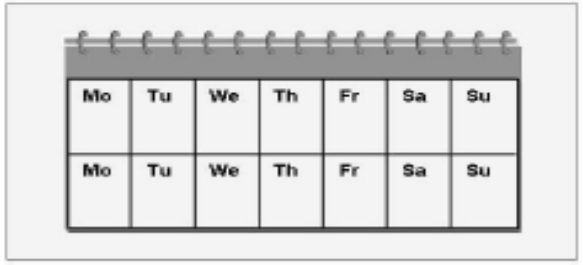
The following questions are answered in the course of this lesson:

- Why do we need background processing?
- What is a background job?
- What can be performed in the background?
- What start criteria are there?
- How are jobs scheduled and monitored?
- What status can a job have?

Why Background Processing



- Lessen the load on dialog resources



- Schedule regular tasks

Figure 154: Why Background Processing?

- Dialog work processes should be able to respond to end users requests quickly. Dialog resources should therefore not be burdened with long-running programs. This can lead to bottlenecks in the dialog response time.
- You can use the background work processes for long-running tasks. These are sometimes also called batch work processes.
- Normally, background processing is used not only for long-running, but also for recurrent tasks. Examples of this type of task are the daily database backup or the month end work for financial accounting.

Background Job

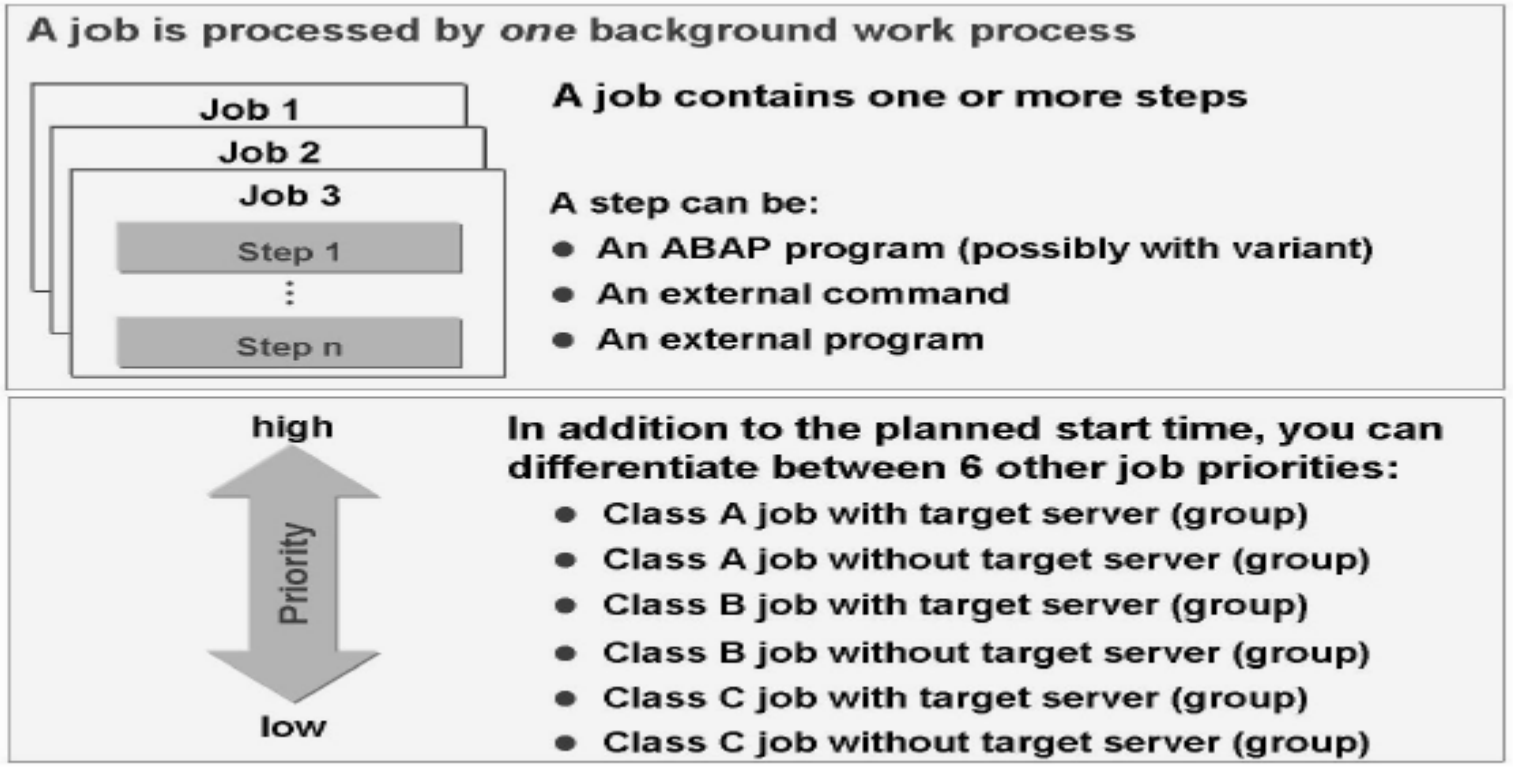


Figure 155: What Is a Background Job?

A background job consists of one or more steps (job steps). A step can be:

- An ABAP program
- An external command
- An external program

- Every job is processed without interruption by one single background work process.

Background jobs can be scheduled with different priorities:

- Class A (highest priority)
- Class B (medium priority)
- Class C (normal priority)

Start Criteria

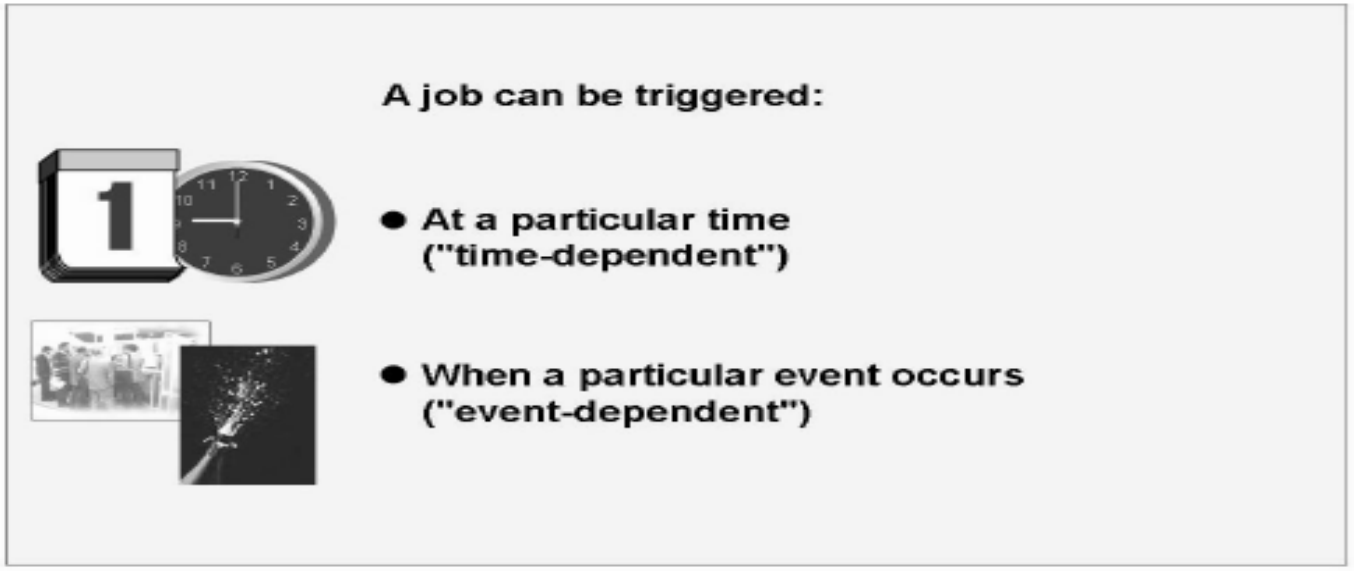


Figure 157: Start Criteria for a Background Job

A job can be triggered by scheduling it on a particular date at a particular time (this includes the start time .immediately., if there are no free background work processes available when the job is scheduled).

Job Monitoring

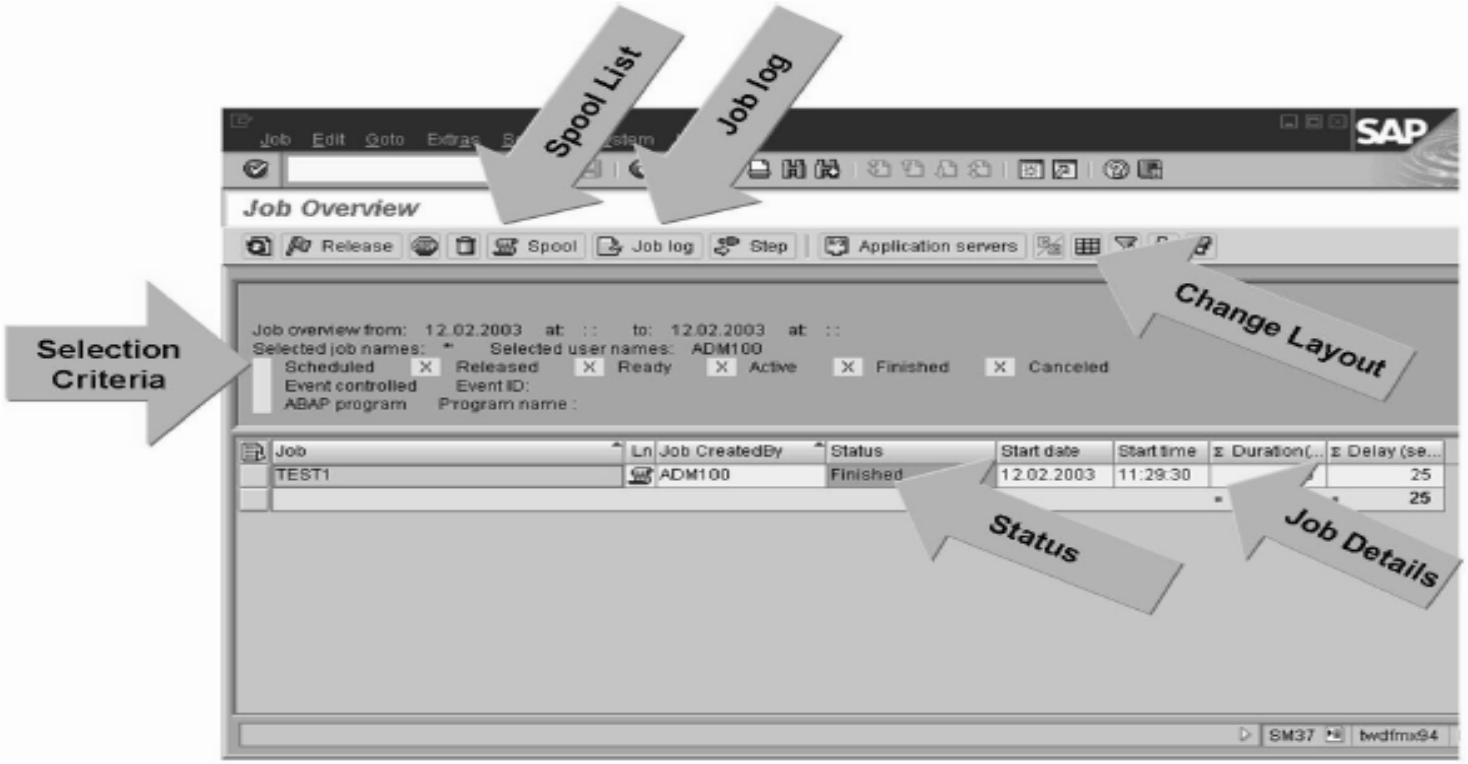


Figure 159: Job Monitoring

Use transaction SM37 to monitor jobs.

Job Status

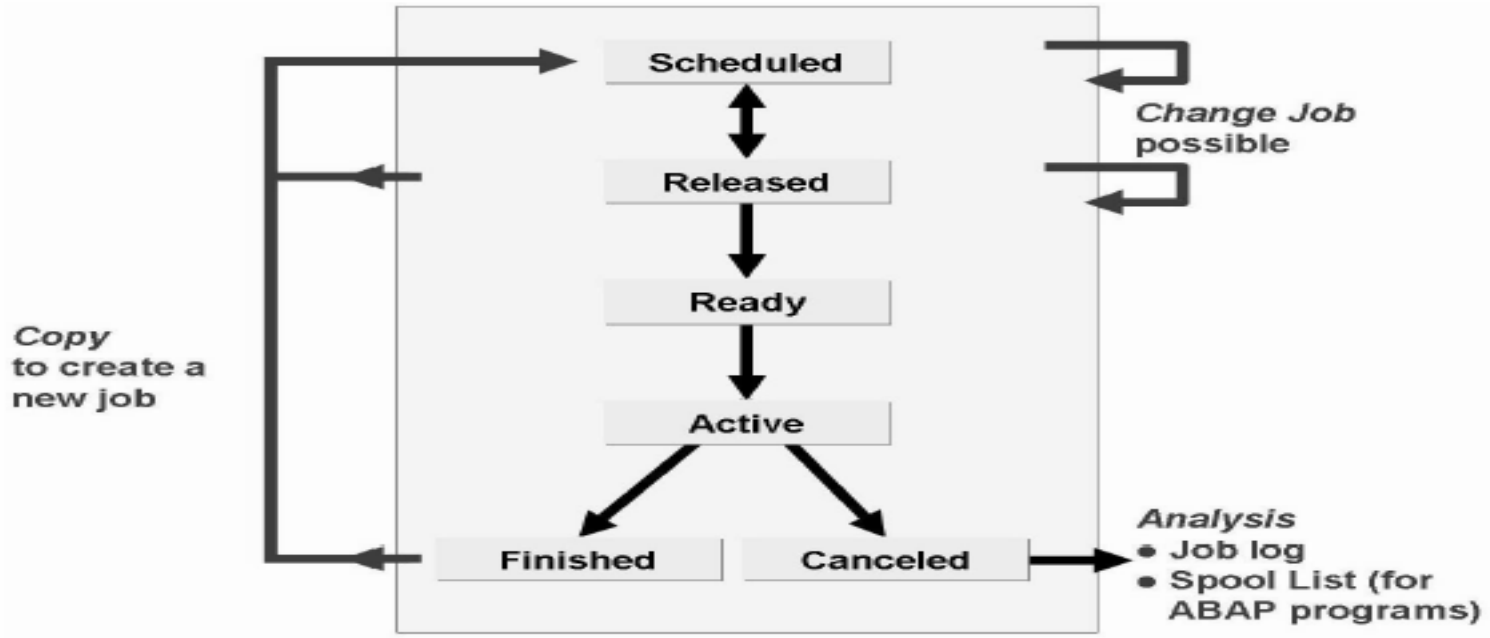


Figure 160: Status of a Job

Lesson: Configuring Printers in SAP Systems

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the architecture and data flow of output processing in the SAP system
- Create printers and spool servers in the SAP system
- List important access methods
- Manage spool requests

Creating Output Devices

- To create an output device, choose *Output Devices* on the *Devices / Servers* tab page.
  Output device
- Name, maximum of 30 characters long (case-sensitive).
  Short name
- For internal system purposes (can be automatically generated).
  Device type
- Printer model/family (more information about this below). The device type SWIN transfers the SAP system format to the Microsoft Windows printer driver. This is useful, for example, if various printers
  are used for front end printing in a Microsoft Windows environment.
  Spool server
- SAP application server with spool work processes or logical server.
  Location
- For example, building and room number (so that users can find their output).
- **Message**
  Used to temporarily override the location (such as .Is currently in maintenance.).

Lesson: User Administration Concept

Lesson Objectives

After completing this lesson, you will be able to:

- Create users

Basics Of User Administration

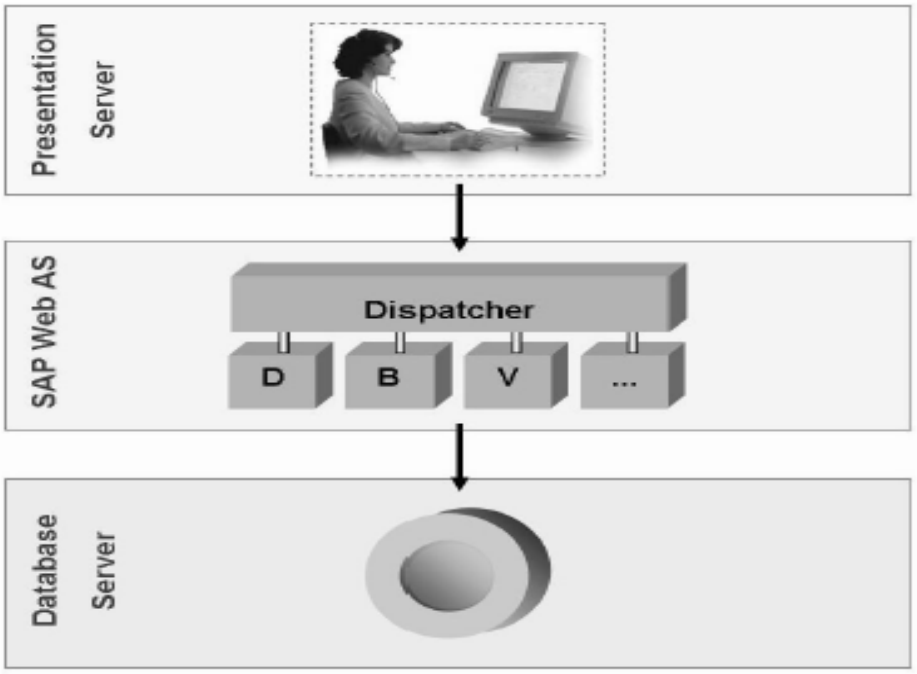


Figure 189: Users in the SAP Environment

- The term user usually means user ID here. People log on to an operating system, a database, or an SAP system using a user/password combination.
- Operating systems, databases, and SAP systems usually have different authorization concepts. If a user/password combination is created in an SAP system for a person, this does not mean that it is possible to log on to the operating system of a host with the same user/password combination.
- However, it is possible that identical user/password combinations are created for SAP systems and operating systems

Users and Authorization

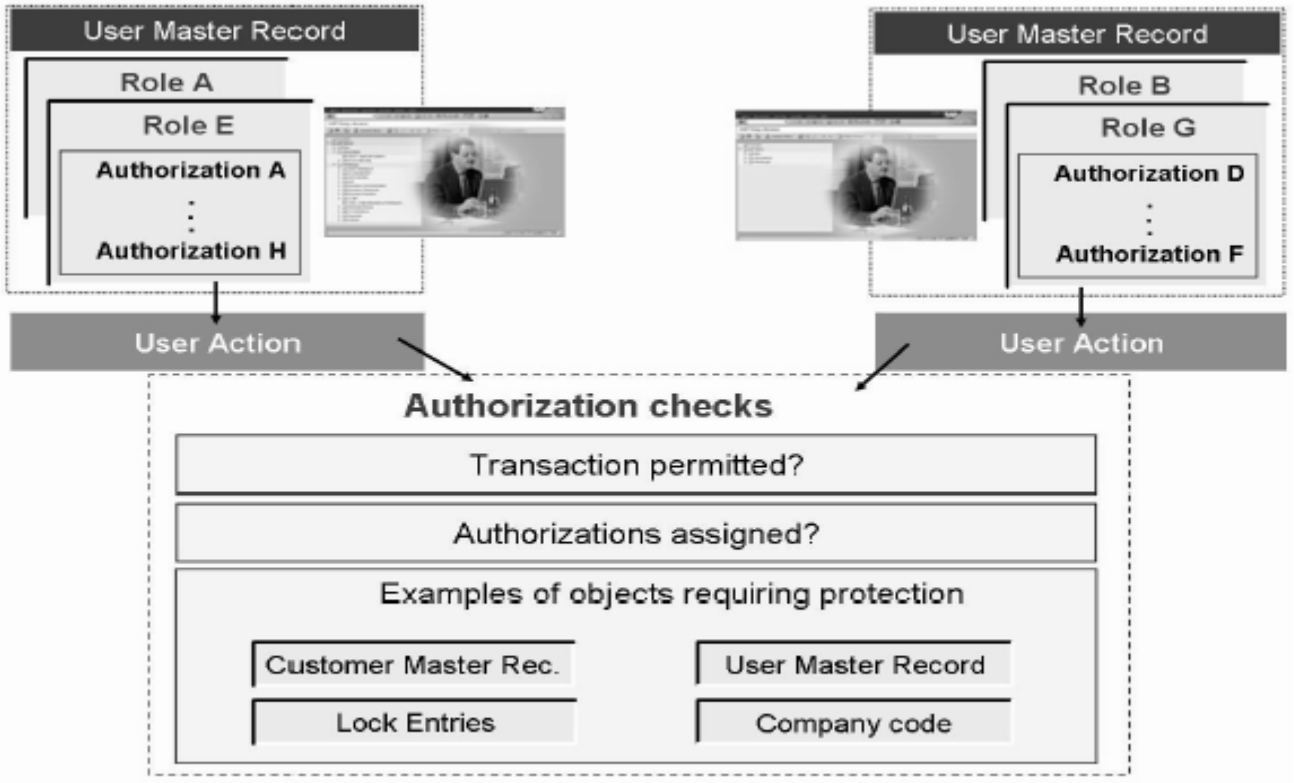


Figure 190: Users and Authorizations

User Master Record

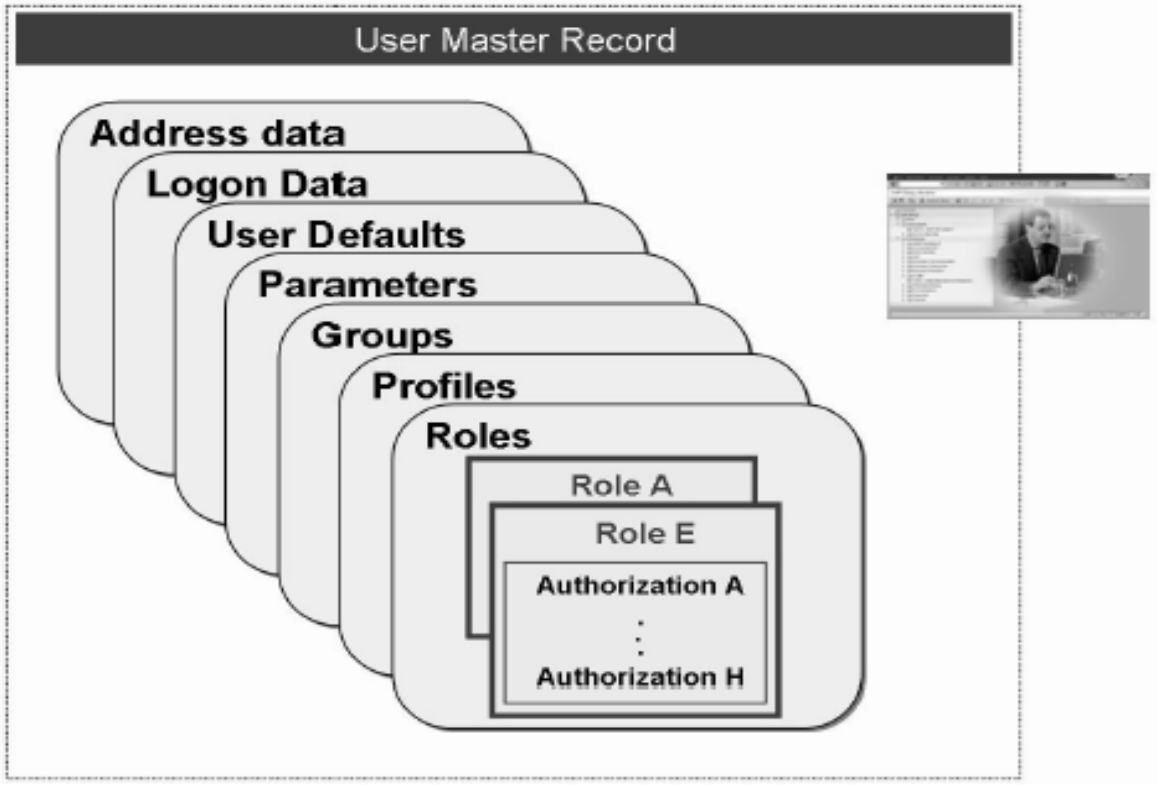


Figure 191: User Master Record

Lesson: Authorization Concept

Lesson Objectives

After completing this lesson, you will be able to:

- Copy, create, and maintain roles
- Maintain the assignment of roles and users

Authorization Concept

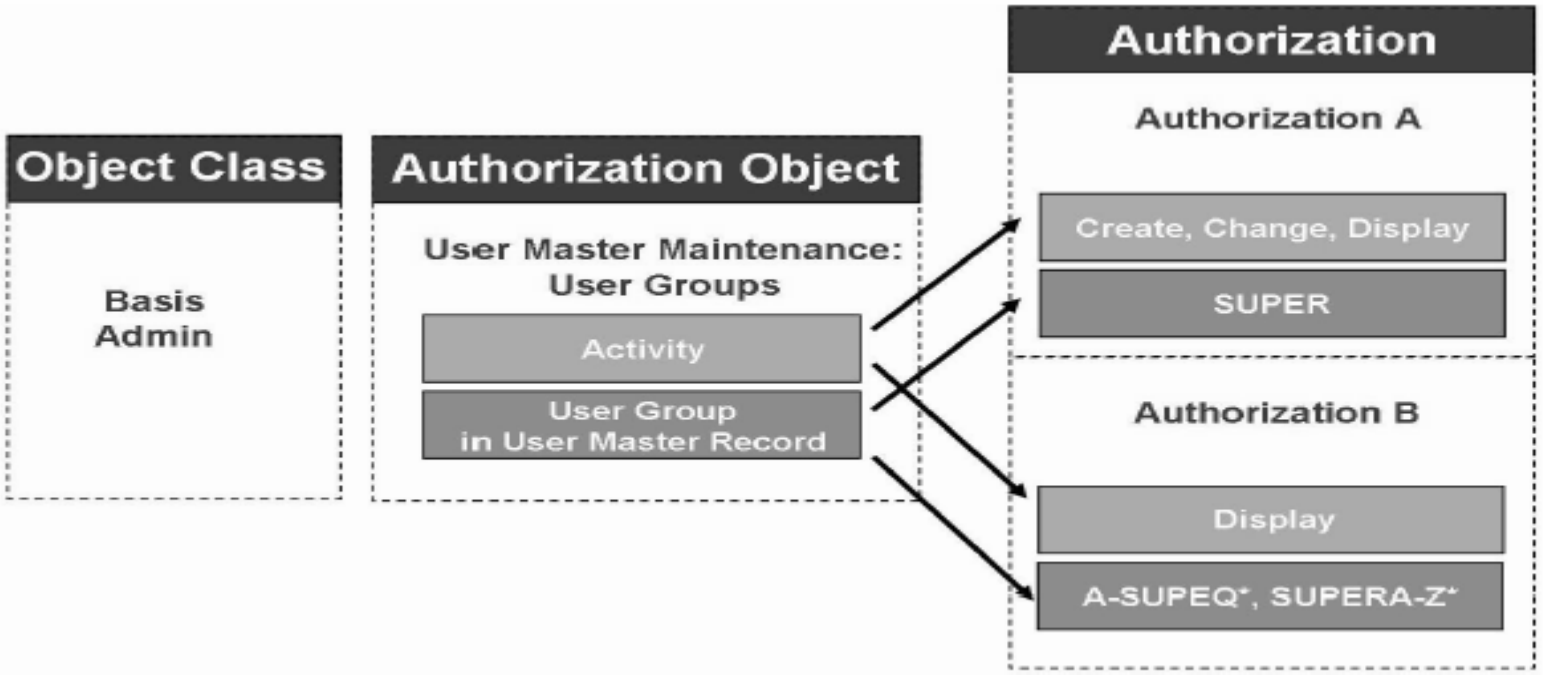


Figure 192: Authorization Objects

Authorization object as a template for objects that are to be protected.
Authorization is always associated with the authorization object. It specifies the form of protection.
Object class for grouping/sorting.

Authorization Check

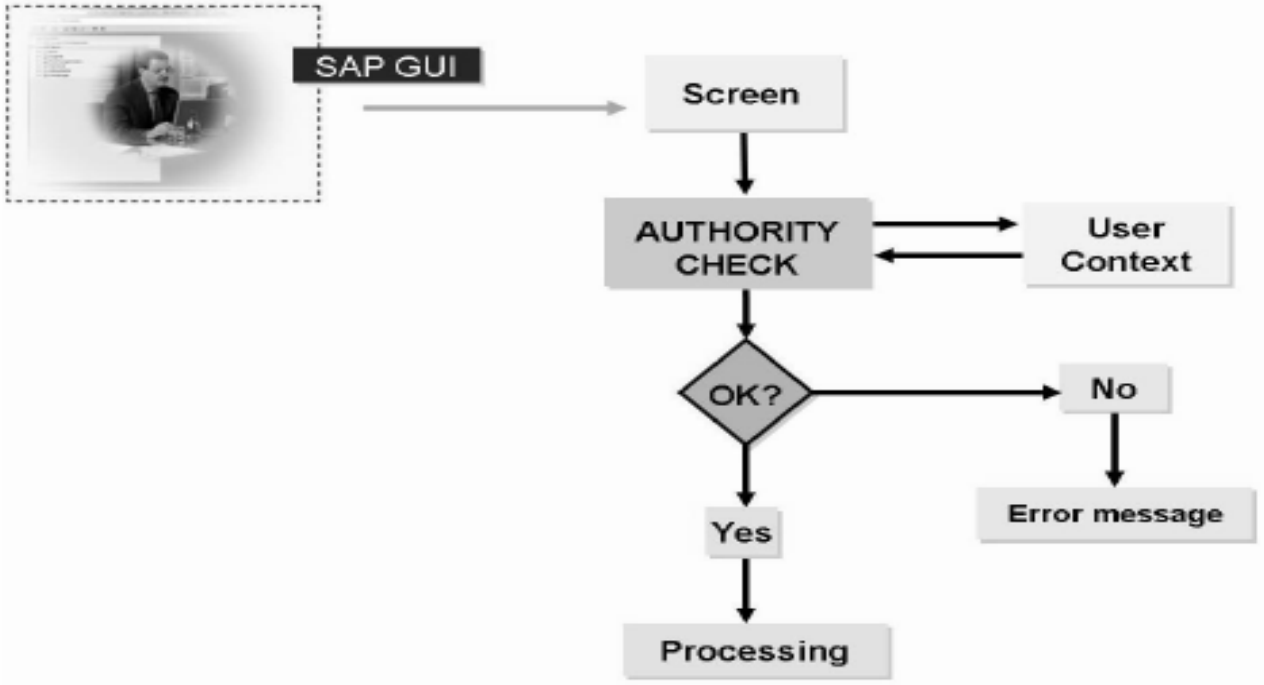


Figure 193: Authorization Check

Role Maintenance

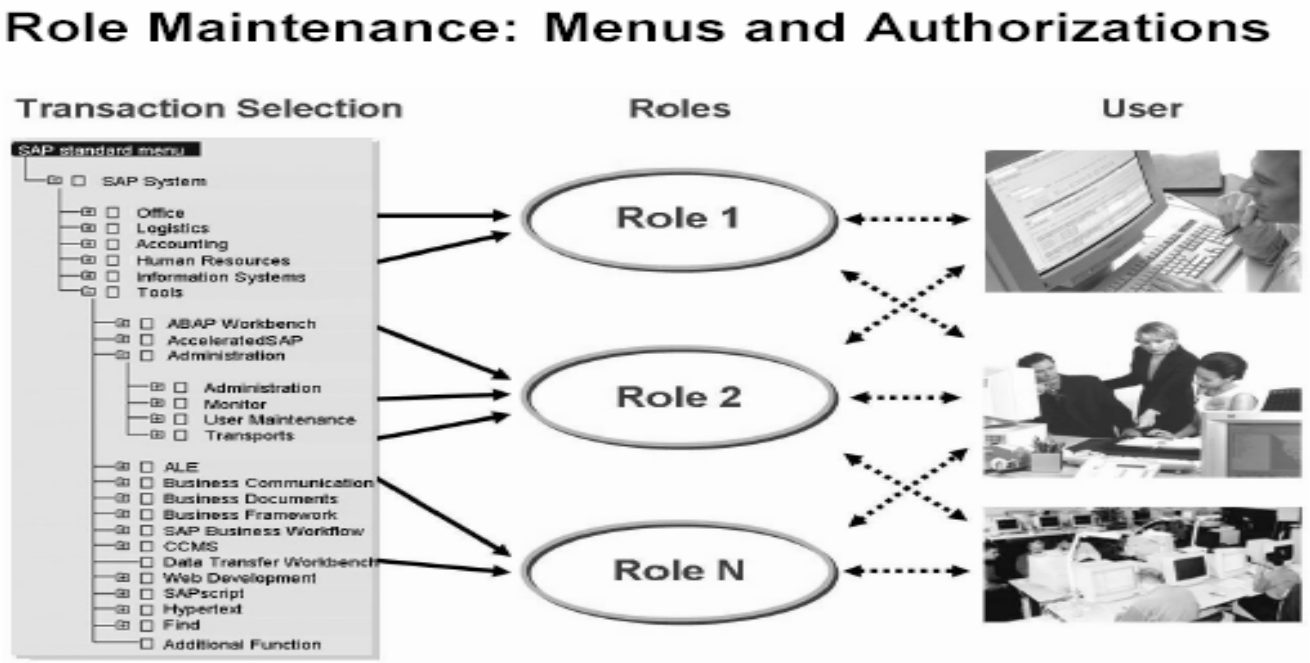


Figure 194: Role Maintenance

- Role Maintenance (transaction PFCG, previously also called Profile Generator or activity groups) simplifies the creation of authorizations and their assignment to users.
- In role maintenance, transactions that belong together from the company's point of view are selected.
- Role maintenance creates authorizations with the required field values for the authorization objects that are checked in the selected transactions.
- A role can be assigned to various users.
- Changes to a role therefore have an effect on multiple users. Users can be assigned various roles.

Menu Layout

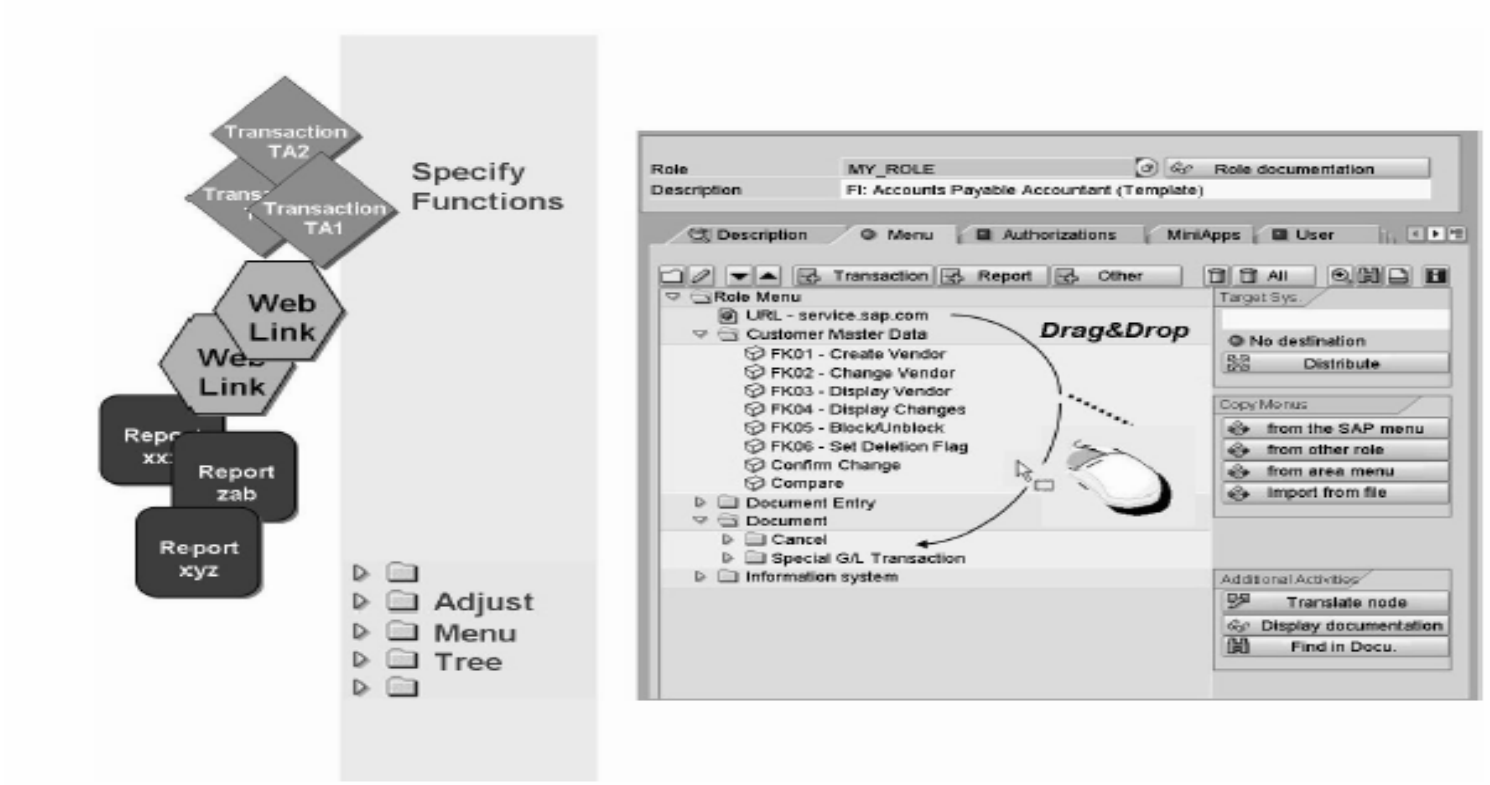


Figure 195: Menu Layout

System Administration

- SAP system monitoring is very important task of the Basis Administrator. System monitoring and database administration should be done regularly. Doing this we can ensure smooth functioning of production system and avoid unplanned downtimes. These needs to be done for all the SAP system installed in the organization.

Daily SAP System monitoring Transactions

- SM21 - System Log
- ST22 - ABAP Dump Analysis
- DB02 - DB Performance - Table/Indices
- DB12 - Backup Monitor
- DB13 - DB Calendar
  Online Backup
  Offline Backup
  Database Compression
  Update statistics
  Cleanup logs
  DBVerify
- DB14 - DB Logs
- ST02 - Buffer Monitor
- ST03 - Work Load Analysis
- ST04 - DB Monitor

- ST06 - OS Monitor
- SM50 - List of WP
- SM51 – List of SAP Servers
- SM66 - WP List for all servers
- SM04 - Logged on users and sessions
- AL08 - User Overview
- SM12 - Lock Entries Monitor
- SM13 - Failed Updates Monitor
- SM36 - Scheduling Background Jobs
- SM37 - Monitoring Background Jobs
- SP01 - Spool monitor
- SBWP - SAP office

Transactions as an when required

- RZ04 - Operation Modes Maintenance
- RZ03 - Operation Modes Manual Switching
- RZ10 - Profile Maintenance
- SM01-Transaction List - Lock / Unlock
- SM02-System Message
- SPAD - Printer Definition
- STMS - Transport Management
- STAD - User Logon Data
- SUIM - Report for User/Auth/Profile/Role according to complex selection criteria

SAP Service Marketplace & OSS

- If any help is required or any problem in SAP can not be solved by administrator, he can approach or search for any SAP notes on Service market place or escalate the problem to SAP. For this he can use the below links :
- To search Notes in OSS for a particular problem http://service.sap.com/notes
- Create message in OSS, is like escalating the problem to SAP, if it is not solvable by the Administrator. Link to create message in OSS www.service.sap.com/inbox
- The other way to access SAP net through OSS using transaction OSS1.
  This will be like your SAP screen.