



Hyderabad:+91-9550645679

Bangalore:+91-8861770545



Skype id:keylabstraining

SAP Basis Training

BUSINESS APPLICATION SOFTWARE FOR INTEGRATED SOLUTIONS (BASIS)

VOLUME 1

BASIS

OPERATING SYSTEMS ADMIN.

DATABASE ADMINISTRATION

R/3 ADMINISTRATION

SAP:

Systems applications products for data processing.

Developed in Germany.

It's an ERP

ERP: Enterprise Resource Planning.

Planning the resources in an organization is called ERP.

What are the functionalities in a company?

A company is having different modules like

- Sales
- Financials
- Purchasing
- Production
- Human Resources

Integration of all the modules done by ERP – SAP.

Basics to startup with BASIS Administration:

Computer

A **computer** is a machine for manipulating data according to a list of instructions or an electronic device for the storage and processing of information or a programmable machine which runs with two principal characteristics as

- ✓ It responds to a specific set of instructions in a well-defined manner.
- ✓ It can execute a prerecorded list of instructions (a program).

Software:

Written coded commands or set of instructions that tell a computer what tasks to perform or Computer instructions or data. Anything that can be stored electronically is called as software. The storage devices and display devices are hardware.

Software is often divided into two categories:

- ✓ **Systems software:** Includes the operating system and all the utilities that enable the computer to function.

✓ **Applications software:** Includes programs that do real work for users. For example, word processors, spreadsheets, and database management systems fall under the category of applications software.

Program

An organized list of instructions that, when executed, causes the computer to behave in a predetermined manner. Without programs, computers are useless.

A program is like a recipe. It contains a list of ingredients (called *variables*) and a list of directions (called *statements*) that tell the computer what to do with the variables. The variables can represent numeric data, text, or graphical images.

Computer Hardware

Hardware is the physical medium built with electronic technology lies between input and Output.

As an example objects that you can actually touch, like disks, disk drives, display screens, keyboards, printers, boards, and chips.

In contrast, software is untouchable. Software exists as ideas, concepts, and symbols, but it has no substance.

The distinction between software and hardware is sometimes confusing because they are so integrally linked.

Computer Hardware devices:

Random Access Memory (RAM) – The temporary storage device and part of CPU which is used for program execution and short term data storage, so the computer does not have to take the time to access the hard drive to find the file(s) it requires. More RAM will normally contribute to a faster PC. RAM is almost always removable as it sits in slots in the motherboard, attached with small clips. The RAM slots are normally located next to the CPU socket.

Motherboard – It is the main component inside of a computer designed using electronic technology with all circuits internally within it. It holds the processor, memory, and any add-in boards. It's inside the case and is the component that all of your peripherals plug into. It is also called the "mainboard," or, "mobo," for short.

Processor - The exact term processor is a sub-system of a data processing system which processes received information after it has been encoded into data by the input sub-system. These data are then processed by the processing sub-system before being sent to the output sub-system where they are decoded back into information. However it is usually termed as the microprocessor, the brains of the modern day computers.

Hard disk – It is a permanent storage area of a computer and a hardware device part of CPU which can store anywhere from 20MB to more than 200GB. Hard disks are also from 10 to 100 times faster than floppy disks.

It is physically a round plate, Magnetic or Optical, on which data can be encoded.

Operating system

It is what is needed to run the programs on a computer. It makes the link between programs and hardware.

Computer Network

It is combination of multiple computers connected together using a telecommunication system for the purpose of sharing data, resources and communication. For a while, a home computer network may consist of two or more computers that share files and a printer using the network. The size and scalability of any computer network are determined by the hardware used as well as which protocols are being implemented.

Or a network consists of two or more computers that are linked in order to share resources (such as printers and CD-ROMs), exchange files, or allow electronic communications. The computers on a network may be linked through cables, telephone lines, radio waves, satellites, or infrared light beams.

The three basic types of networks include:

Local Area Network:

A Local Area Network (LAN) is a network that is confined to a relatively small area. It is generally limited to a geographic area such as a writing lab, school, or building. Rarely are LAN computers more than a mile apart.

- ✓ A local area network (often called a LAN) connects two or more computers in a house or an office.

Wide Area Network:

Wide Area Networks (WANs) connect larger geographic areas, such as a Solar Soft, the India, or the world. Dedicated transoceanic cabling or satellite uplinks may be used to connect this type of network.

- ✓ A corporate network enables communication among various offices of the same organization.

In fact, two computers connected over the Internet are *not* considered a computer network. Some basic types of computer networks include:

- ✓ An "internetwork", sometimes called a Wide Area Network (because of the **wide** distance between networks) connects two or more smaller networks together. The largest internetwork is called the Internet.

Computers can be part of several different networks. Networks can also be parts of bigger networks.

If we consider as the *local area network* in a department store is usually connected to the *corporate network* of the parent company, and may have privileges with the corporate network of a bank. Any connected machine at any level of the organization may be able to access the *Internet*, for example to demonstrate computers in the store, display its catalogue through a web server, or convert received orders into shipping instructions.

Where in the network technology, there are two different computers existing, known as
Server Computer - A computer that delivers information and software to other computers linked by a network

Client Computer - A computer that receives information and software from server computer linked by a network

What is a Protocol?

A protocol is a set of rules that governs the communications between computers on a network. These rules include guidelines that regulate the following characteristics of a network: access method, allowed physical topologies, types of cabling, and speed of data transfer.

What is Database and uses?

- 1) Storing data in an organized way
- 2) Duplication of data avoided.
- 3) Indexing for fast retrievals or access.
- 4) Normalization

What is Normalization?

It is the process removing duplication by splitting tables into different parts.

Difference between i) on site and ii) Off site

- i) People working at Client location are called Onsite.
- ii) People working in company and giving support for client is called offsite.

What is Data Centre?

Data centre is the server room, where all the data of the company will be stored.

Different OS:

- 1) Windows 2) Unix 3) Linux 4) Solaris 5) AIX

Databases:

- 1) Oracle 2) SQL server 3) DB2 4) Sybase 5) Informix
6) MAX DB

End users:

People who are using for productive work for the company are called as end users.

Named users:

People are working for the client (eg: If client is Airtel, the all Airtel employees are called as named users).

Concurrent Users:

Users who are login in infrequent time (eg: customers of the client)

High Availability: For Hard Disks

- 1) Mirroring.
- 2) RAID – Redundant Array of Independent Disks
- 3) SAN – Storage area network.
- 4) Clustering - (In case of Overload)
- 5) Stand by server – Incase of Disaster Recovery
 - i) Log shipping
 - ii) Replication
- 6) Backups.

Mirroring:

It is used in case of operating system as well as database log files. If one hard disk fails another hard disk will take care.

In this technique data is written to two duplicate disks simultaneously. Using this way if one of the hard disk fails the system can initially switch to another disk without analysis of data or server.

RAID: (Redundant Array of Independent Disks)

Storing the same data in different locations on multiple hard disks.

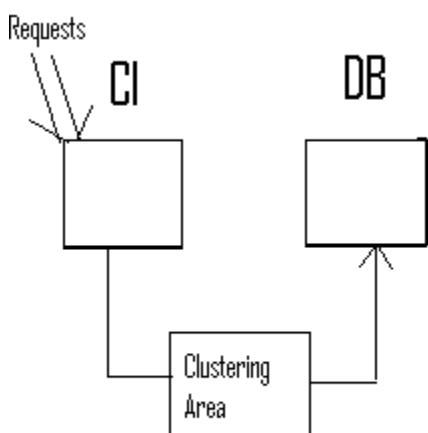
If any one of the hard disks fails the data will store automatically in a disk called hot spare by RAID.

SAN:

If we are having 5 applications for each application here we are having 5 servers. Maintaining 5 servers is tough. So here SAN came into scenario, where we will store all data in a common place.

SAN is also having mirroring. So there is no chance to lose of data.

5) Clustering (In case of Overload):-



->Here when the load is more on CI (central Instance) automatically it will transfer the transactions to DB directly is called as clustering.

- In other words connecting 2 or more computers together in such a way they behave like a single computer which is also called as clustering.
- Clustering is used for parallel processing.
- If any one of the above server fails another server will take of user.

5) Stand by servers (In case of Disaster Recovery)

In case of any disaster/calamities, there may be neither chance of nor working of server. If one server is not working another server will take response and will give service for the users.

- a) Log shipping: - It is time consuming.

If server is slow we have chance of lose of our data

- b) Replication: - It will directly do at database level.

Exact copy will pass to all related server, wherever the servers were located. So there is no chance of lose of data.

6) Backups:

- a) OFF line Backups: -

During offline backup we shutdown the server and we will take back up. It is also called as cold backup.

- b) ON line backup:-

When the system is up and running then we take the backup which is called as ON line backup. It is also called as HOT backup.

Connectives:

- 1) HUB
- 2) SWITCH
- 3) ROUTER

Advantages of SAP:

- 1) Rich set of modules.
- 2) Data Integrity.
- 3) Data sharing between modules is easy.
- 4) Easy administration.
- 5) Only one database.
- 6) It will support all the available databases and os.
- 7) Upgrade from time to time.
- 8) 24X7X365 Global support.
- 9) User Friendly.
- 10) Security.
- 11) Supports interface to other SAP/non-SAP systems
- 12) SAP supports Multilanguage's available using UNICODE>
Unicode: - It is R/3 software provides access to almost all languages in the world.
It uses 2 bytes.
Non-Unicode: - It is the version of R/3 which supports only few languages in the world.
- 13) One GUI for all R/3 systems.
- 14) Common Programming Language which supports OOPS and ABAP.
- 15) SAP supports JAVA.

16) Easy Add-ons

Hour Glass State:

When the user can't navigate from one screen to another screen that situation is called as hour glass state.

Hardware Sizing:

To analyze the business requirements of an organization level depending upon the user's data will allocate the hardware resources.

We can give over business time, standby time, legacy data, o/s and DB version, data archiving.

There are 2 types of Hardware sizing.

1) User Based 2) Object based / through put

1) User based: In this again of 2 types i) Named users ii) concurrent users.

Names Users:

Low	Normal	0-480 dialog steps.
Medium	Transactional	480-4000 ds
High	Power Users	4000-14,000 ds

Steps for Hardware sizing:

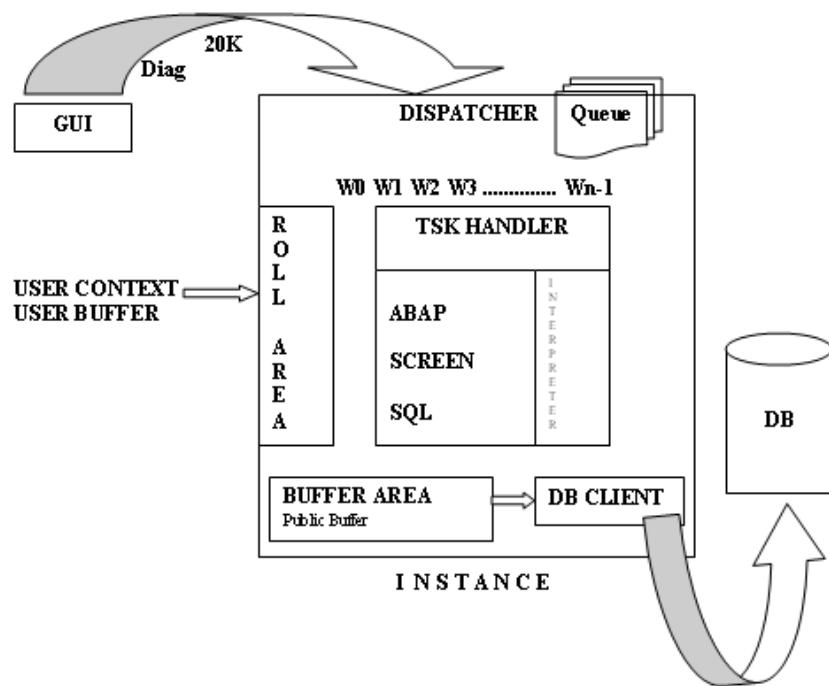
- 1) Contact SAP
- 2) Get OSSID (Online SAP Service ID)
- 3) Login to www.service.sap.com/qsizing (It is sap official site)
- 4) Go to QuickSizer Tool
- 5) Enter project name/Customer Number
- 6) Create Project
- 7) No. of Users (Low/Medium/High Activities)
- 8) Amt. of legacy data.
- 9) No. of modules.
- 10) I) user based ii) object based.
- 11) Select operating system of SAP
- 12) Select database and its version.
- 13) Select the peak load time.
- 14) High availability.
- 15) Data Security[Mirroring/Raid/Clusteringetc.,]

- 16) Save the details.
- 17) Calculate the Results.

Output:

- 1) Disk size.
 - 2) Memory requirement in MB
 - 3) CPU requirement in SAPS [System Application Benchmarks for Performance standards]
- SAPS are calculated based on the usage of processors.
 - Analysis says that each 1500 saps we require one CPU.

Architecture of SAP R/3:



Presentation layer/tier/server:

It is the interface to a user. This is the only layer from where users connect to the SAP system. DIAG (Dynamic Information Active Gateway) is the protocol which is used to communicate b/w user and SAP system. Using this we can have

- I) Our own font settings
- II) Our own languages settings.
- III) It is user friendly.
- IV) With the help of message server which identifies favorite server and logs onto it.
- V) It is intelligent server.
- VI) It is operating system & db independent.

Presentation layer is nothing but SAP GUI: SAP GUI is to facilitate users to log into R/3 system. This logon can be used to all the components of SAP (CRM, APO, BW, XI etc.)

Types of SAP GUI:

- 1. SAP GUI for Windows.
- 2. SAP GUI for HTML.
- 3. SAP GUI for JAVA.

SAP GUI for Windows: It is for the windows environment. Support platforms
Includes windows 98, windows NT4, Windows 2000 and
Windows XP.

SAP GUI for HTML: Front end requires only a web browser, an ITS is necessary
to convert the presentation into HTML.

SAP GUI for JAVA: It is used only where java is supporting.
It supports Windows 98, windows NT4, Windows 2000 and
Windows XP
MacOS 9
MacOS x
Linux, HP UX, Solaris, AIX
OS/2.

SAPGUI version: GUI versions are released from time to time based on the component releases. Up to 4.6D version it is following the release of the R3 component. From 4.7D onwards it follows the release of SAPWEBAS.

Application layer/tier/server:

It is used to:

- i) Provides business areas
- ii) Configure work process
- iii) Reduce traffic on DB.
- iv) Configure memory areas.
- v) Business logic & presentation logic handled.

It consists of dispatcher, work processes, memory areas, buffer areas and interpreters,

Dispatcher: There will be only one dispatcher per instance. This is used to handle the user requests. Dispatcher receives the users request and keeps them in the queue (dispatcher queue) based on the available free resources, user request will be assigned with work process on FIFO basis. Dispatcher runs by an executable disp+work.exe. This can be monitor by using a command line tool DPMON(It listens on the port 32<sysnr>).

Dispatcher assigns the user request to a dialog work process, so it will distribute request to respected work process.

Dialog process: It is used for handling generation of reports, updating the temporary tables, updating the spool tables, updating the background tables so that update, spool background processes reads those tables for execution. If the request is long running job then it will assigns to its relevant work process.

Dialog work process runtime is restricted to 600 sec to 1800 sec based on the parameter rdisp/max_wprun_time.

Update work process: This process is used to update the database initially update requests are handled by dialog work process as they couldn't execute within the specified time, it is called asynchronous update process. If the task has been moved to update work process then first dialog process updates the temporary tables (VBHDR, VBDATA, VBERR, VBMOD) update process reads the temporary tables and update the database.

Enque process: Enqueue process is used to lock and unlock SAP objects. It will update the database and takes the users request. In order to handle this mechanism SAP has defined enqueue and dequeue (unlock) modules. Enqueue process will issue locks to

message server to all the dialog instances. That is dialog communicates with message server & message server in term talks to enqueue to get the lock.

- Dialog process communicates with the message server and message server communicates to enqueue
- Dialog processes on central instance can communicate with enqueue directly to obtain locks.

Background Process: The long running, time consuming and expensive reports or updates will be used to schedule in the non-dialog mode using the background process. Dialog work process receives the background request & updates background request & updates background job tables. Background work process reads the job tables for every 60 sec & executes them

Message Server: Message server is used to communicate with all the available dispatchers under the port number 36<sysnr>. If logon load balance is configured, message server identifies the least loaded server in the logon group. It is run by an executable msg_server.exe. This is also used to communicate with enqueue to issue locks to the work process coming from dialog instance.

Gateway: There will be one gateway work process for each instance. Gateway is used to communicate with external system. It listens on the port 33<sysnr>

Spool Process: Spool process is used to output the documents to the printer, fax, email, pager and sms. Dialog process receives the spool request and updates spool tables or stores spool data at OS level. Spool process reads the spool tables or spool data and output to specific device.

Note: All the work process runs with executable disp+work.exe

Memory Areas:

In order to define a work process we should have enough resources at the rate of 75mb to 150mb for each work process. When the user request is assigned to a work process, work process requires certain amount of memory to execute the user request.

Ex: Roll memory, extended memory and heap memory

Buffer Areas:

There are two types of buffer areas

1. User related buffer (user specific)

2. R/3 buffer (non-user specific)

User buffers are nothing but user context.

User Context: User context is the area where user logon attributes, parameters, authorizations and earlier accessed content are stored. These are valid until the user session. User logout, buffers are lost.

R/3 buffers: Frequently accessed contexts like programs, tables, fields, currencies, calendar, and measurements are stored in R/3 buffers.

The data which is frequently accessed and rarely changed is eligible for buffering. These buffers are accessed by all the users. These will remain until the restart of the instance. If the instance is restarted, buffers are lost.

Interpreters:

1. ABAP Interpreter: This is used to interpret the ABAP code embedded in the user request
2. Screen Interpreter: This is used to interpret the screens.
3. SQL Interpreter: This is used to interpret SQL Statements in the ABAP program.

Note: Task handler which is a part of work process handles the interpreters.

Dispatcher: It receives user request and assigns work process or keep user request in dispatcher queue.

Task Handler: It is the agent which processes the user request by segregating into screen, ABAP, SQL interpreters.

User Context:

The user context is the buffer area where it stores user logon attributes, authorization parameters.

Dispatcher Queue: It is the queue where user exists when work processor is busy. It follows FIFO.

Database Layer/tier.

It is the layer where database is hosted. It has its own memory areas, buffer areas, work processes etc. A central RDBMS realizes the database layer of SAP R/3 systems. Initially SAP database will use open SQL but database client will convert open SQL into native SQL. That is the reason SAP supports different databases.

Installation:

ASAP Methodology:

It stands for Accelerated SAP.

- 1) Preparation.
- 2) Business Blue print.
- 3) Realization.
- 4) Pre-go-live.
- 5) Go-live & support.

In the realization phase we have to build the systems. In order to build the systems installations should be done based on the modules requirement.

Pre-Requisites:

1. Proper hardware is received according to H/W Sizing.
2. Verify SAP Software.
3. Installation document from SAP → www.service.sap.com
4. Read the document and highlight the steps involved inst. guides.
5. Internet connection to resolve the runtime issues.
6. Get the known problems in installation [ECCS] from SAP Market place [www.service.sap.com/notes].
7. Install o/s and patches [h/w vendor]
8. Get a static IP address from N/W team
9. Install db & patches (SysDBA, Basis)
10. Specify an entry in \etc\hosts
11. Dump the s/w into server
12. Setup Virtual Memory
13. Install current version of JAVA because SAP Installation too requires JAVA Runtime Environment [JRE]
14. Set the environment variable JAVA_HOME & Path
15. Set the Ethernet Card/LAN/ for mass file sharing.

[Landscape: Arrangement of systems.]

There are 2 installation tools:

1. R/3 setup <= 4.6C

2. sapinst >=4.7 EE

Services:

1. saposcol.
2. SAP<SID>_instace<number>
3. Oracle services.

SAP Installation consists of 3 Types:

1. Central Instance:
2. Database Instance:
3. Dialog Instance:

Central Instance: This is the instance where all the services are configured and it manages all the instances through message server. CI is named as "DVEBMGS"00&instance number. The services of instance number are as follows:

D -> Dialog
V -> Update
E -> Enque
B -> Background.
M -> Message
G -> Gateway
S -> Spool

4. Go to dump
NT/386/sapinst.exe
 5. Select central instance.
 6. Specify the <SID> and instance number.
- <SID> : System Identifier which is of 3 character and it should be unique in the landscape. It should not be either SAP , ERP or other reserve words. The main objective of <SID> is used to identify the Instance.**
7. Specify the host name.
 8. Specify the ORACLE home path.
 9. Assign 60% of memory to CI. (for productive 70%(CI)+30%(DI))
 10. Specify the path for usr directory C:,D:, or E....
 11. Specify passwords for <SID>ADM, SAPSERVICE<SID>.

<SID>ADM: Is R/3 system administrator which is used to start & stop R/3 systems and has administrative privileges.

SAPSERVICE<SID>: This is a service user which is used to run all the SAP services like **SAPOSCOL, SAP<SID>_<instance number>**.

12. Specify kernel path.
13. Specify the Dispatcher/Gateway/Message server port numbers.
14. Continue installation.

Database Instance:

1. Select Database Instance.
2. Specify SID, host name and Instance number.
3. Specify the installation on new database or use existing database.
4. Specify the database, SchemaID (SAP<SID>)
SchemaID: It is the owner of the database (SAPSR3 for As ABAP, SAPSR3DB for As JAVA).
5. Specify the memory 40% of physical memory.
6. Specify the log files location.
 - i) Mirror logA, OriglogB -> 1 disk
 - ii) OriglogA, Mirror Log -> 1 disk

Log files contain the changed data.
7. Specify the path of Kernel Directory.
8. Specify the path for SAP directory
[sapreorg, spacheck, sapbackup, saptrace, saparch, oraarch]
9. Specify the path for data directory.
[sapdata1, sapdata2....sapdata<n>]
10. Specify the export DVD/dump path.
11. Specify passwords for **<SID>ADM and SAPSERVICE<SID>**.
12. No. of parallel processors to expedite the installation process.
13. Select MNLS [Multi National Language Support].
14. Specify passwords for system, sys, for DB etc.,

Dialog Instance: This is an additional application server which is to install and to provide more number of work processors to cater more number of users. (Provides additional memory and CPU). Dialog Instance is also called as Application Server and these application servers will be installed mostly in Production system only, in order to serve huge number of users.

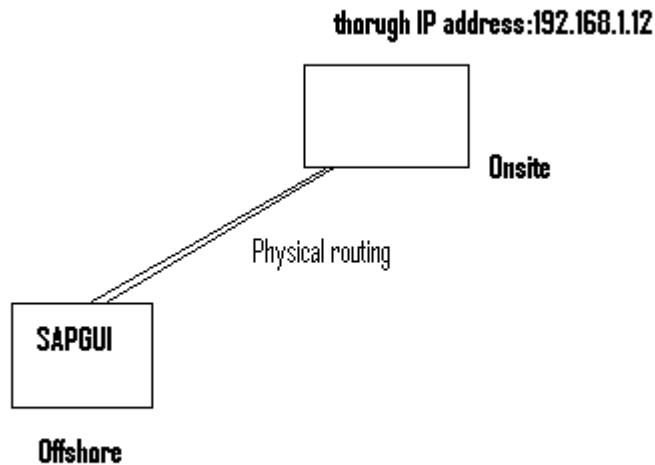
1. Select the dialog instance.
2. Specify the CI. (Host name)
3. Specify the DI (Host name) (This is where data is stored).
4. Specify the host name and number
D<Instance number>
D01, D02.....
5. Specify the kernel path.
6. Specify the passwords.

Installation of GUI:

1. Double click SapGuiSetup.exe and install as normal software.
2. Give the instance entries by click on new entry button and specify application host name, Instance number and SID of the server.
3. If there are more number of entries was present, and then copies the file Saplogon.ini on already existing desktop.

GUI initialization: GUI is initialized by the following INI files.

1. saplogon.ini
 2. sapmsg.ini
 3. saproute.ini
 4. sapdoccd.ini
16. **saplogon.ini**:- This file consists of the system details like name of the server, SID and instance umber. When we click on new tab in SAP GUI to enter description of the new server after saving it will be entered into this file. Without this file we cannot logon into the system and there will be no entries to logon from SAPGUI.
17. **sapmsg.ini**:- This file is used to identify least loaded server in the logon group, if logon load balance is configured. This file consists of message server details.
18. **saproute.ini**:-This file is used to communicate with SAP systems over the sap router.



19. sapdoccd.ini:- This file is initialized when the library is accessed. It contains the path of library.

Check CI installation:-

1. Check the services.
 - a) Saposcol: SAP Operating system collector. This is only one SAPOSCOL in the system.
 - b) Sap<SID>_00: It is an instance service which is used to start the SAP instance.
 - c) oraTNSlistener:
 - d) oraService_SID: This is oracle service user <SID> which is used to start oracle.
2. Check users: <SID>ADM and SAPSERVICE<SID> and DB users.
`OP$<SID>ADM` and `OP$SAPSERVICE<SID>`

To see them connect system/mananger

`SQL> select * from dba_users.`

OP\$ mechanism: It is used to logon on to the database by O/s users without prompting a password.

3. Logs:

- i) syslog in MMC
- ii) Application system logs in Event Viewer.
- iii) sapint.log
- iv) alert<SID>.log
- v) Developer traces in work directory.

R3trans -d: It generates a trans.log in home directory where command is executed.

Note: sapstartsrv.exe: When we were not getting MMC. Type details of the SAP system which is asking.

4. Directories:

- i) \usr\sap\trans
- ii) \SID\sys\exe\run\sys\profiles
- iii) Check all the sap data...
- iv) Check all the folders in /oracle/SID

Starting R/3 system.

Stopping R/3 system.

Profiles:

Profiles are used to configure various system parameters. For R/3 system we have 3 types of profiles.

- 1) Startup profile.
- 2) Default profiles.
- 3) Instance profile.

Startup profile: - START_DVEGMGS00_hostname.pfl

It is used to start i) database database startup executable-> **strdbs.cmd**
ii) Start message server. **msg_server.exe**
iii) Start dispatcher : **disp+work.exe**

Default profile: - (**Default.pfl**)

It consists of global parameters which will be applicable across all the instances in an R/3 system. It consists:

```
SAPSYSTEMNAME = S47
SAPDBHOST = lolla
rdisp/mshost = lolla
rdisp/sna_gateway = lolla
rdisp/sna_gw_service = sapgw00
rslg/collect_daemon/listen_port = 37
rslg/collect_daemon/talk_port = 13
rdisp/bufrefmode = sendoff,exeauto
ms/http_port = 8100
```

db\$/ora/tnsnames = S47

Instance profile: - This profile is used to set the parameter for an instance.

<SID>_DVEBMGS00_hostname.pfl

SAPSYSTEMNAME = S47
INSTANCE_NAME = DVEBMGS00
SAPSYSTEM = 00
rdisp/wp_no_dia = 7
rdisp/wp_no_btc = 2
rdisp/wp_no_vb = 5
rdisp/wp_no_vb2 = 2
rdisp/wp_no_enq = 1
rdisp/wp_no_spo = 1
SAPGLOBALHOST = lolla
PHYS_MEMSIZE = 1222
DIR_TRANS = D:\usr\sap\trans
icm/server_port_0 = PROT=HTTP, PORT=8000, EXTBIND=1
DIR_ORAHOME = D:\oracle\ora92

Path Of the profiles

/usr/sap/<sid>/sys/profile

The naming conventions for the profile:

- 1) START_DVEBMGS00_HOSTNAME.pf; -> CI
START_D01_DVEBMGS00_HOSTNAME.pfl -> DI
- 2) Default.pfl
- 3) <SID>_DVEBMGS00_HOSTNAME.pf; -> CI
<SID>_D01_DVEBMGS00_HOSTNAME.pfl -> DI

DVEBMGS : Specifies central instance i.e., all the work processors are configured here.

Note: Here there is only one Default.pfl which Global.

Startup profile in DI consists of startup of dispatcher.

Instance profile in DI will be same as Instance profile of CI.

The parameters which are configured in default profile will be overridden by Instance profile.

Startup problems:

- 1) Check all the services.
- 2) Check for syslog in MMC.
- 3) Check for application log, system log in even viewer.
- 4) Check alert<SID>.log
- 5) Check memory.
- 6) Check all the environment variables.
- 7) Check all the executables.
- 8) Stderr0,1,2
7 & 8 files are available in
|usr|sap|<SID>|DVEBMGS|work directory
- 9) Enough space is not available.
- 10) Archive stuck
- 11) Changes in profile parameters.
- 12) Tablespace overflow.
- 13) Check n/w connective between CI/DB.
- 14) Kernal executable corrupted.

Post – Installation Activities:

- 1) SICK / SM28 (SAP Installation Consistence Cheek)
- 2) Silence (Used to install saplicense) Get hardware key -> saplicence –get
Got to SAP market place get license key with the help hardware key.
3. SE06 -> Click perform-post installation
4. SR13
5. SMLT :- Perform any additional language installation.
6. RZ10 :- Utilities -> import profiles of all the active servers.
7. SU01-> Create super user and change passwords of sap* and ddic and lock them.
8. STMS
9. SCC4 -> Client creation.
10. SCCL -> Local client copy.
11. SPRO -> Allow for customizing. SE38 and SE80

SAP GUI problems:

Reason: User couldn't logon to the system First, ask the user to send the screenshot of the error msg.

1. Network Interface problem.
2. N/W connectivity b/w GUI & SAP system.
3. Check the entries.
4. GUI showing special characters.

PROCESS MANAGEMENT

SM50/ SM66

Work process list is displayed in SM50/ SM66. Each process has the following

- **Serial Number** : Starts with 0 to n number (DEV_W0) in work directory
- **Type of Process** : (DVEBS) Message and Gateway are not displayed
- **Process PID** : The identifier at OS level. It is used to kill the process at OS Level. They are displayed as [DISP+WORK] on windows in the Task Manager.

DW - dispatcher work process in UNIX
 0 to 11 [12]
 And 1 is for dispatcher 13 Total

- **status** : Waiting, Stopper, Running

Waiting : The process is waiting "Available" to serve the user request.

Stopped : The process is stopped due to an error.

Running : The process is executing the task (SM50 running with our Userid should not be considered)

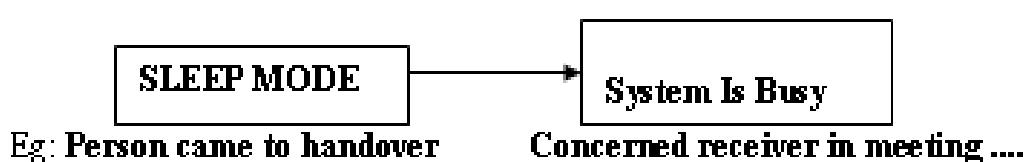
On Hold : The user request is on hold by process for waiting certain Resources on the other systems (RFC, CPIC)

Shutdown : The process is killed/ shutdown but restart mode set to NO

Waiting for

PRIV Mode: The process goes into Heap mode. It will be completed only after the task completion/ timeout.

SLEEP MODE: The work process goes into sleep mode waiting for resources (RFC problem)



- Restart YES/ NO : if the process is terminated and it will restart automatically (Yes), not restart(No)

- Error : No of times the process is restarted
- Semaphore : The block that hold at OS Level (DISK)
- CPU : The amount of time WP spends utilizing CPU resources
- Runtime : The amount of time the process spends on the user request.
- Report : The name of the program/ report the WP is executing
- Client : The client number logged in
- User name : Name of the user
- Action : Select, Update, insert i.e. action on the database.
- Table : Name of the table.

SM66 GLOBAL WORK PROCESS OVERVIEW

It displays the processes based on status. It displays the processes belongs to all the instances.

From SM66 - Click on SELECT PROCESS

The major advantage of this is it displays the memory consumed by work process. Double click on the WP to display (Extended, Roll and the Heap Memory)

On Oracle execute

```
PS -ef |grep ora* (lgwr, smon, pmon, dbwr, ckpt, arch)
```

SM04 : is used to display the logged in users along with the sessions. We can terminate the session or the user completely using End session or logoff user.

From User > Logoff User > Local or End the session

BACKGROUND PROCESS SM36

It is used to run the expensive programs, reports that consumes more time in the background mode. i.e. a job is scheduled to run at a specific time or periodically.

Example: Daily report, Weekly sales report or expensive to run in the peak hours so they are scheduled to run in the background mode during off peak hours.

Process Flow

1. User submits the request via dispatcher to a WP.
2. The Dialogue work process handles the request and updates the tables

3. Tables **TBC*** are used to store the BTC Jobs
 4. A program **SAPMSSYS** starts in the dialogue mode at frequency that is defined in the parameter **rdisp\btctime=60Sec**

SAPMSSYS - Checks for every 60 sec into the TBTC* table.

* To delay the BTC processing increase the time as much as possible.

Example : 100000 seconds 27Hrs
RZ11 (rdisp/btctime)

Refer - BTCTRNS1 from SE38

We can also use BTCTRNS2 to resume the background jobs (Execute the program)

5. BWP looks into the table and identify the jobs which are in the **Ready** State.
 6. BWP runs the job in the Active mode till completion/ Cancelled.
BWP are defined by using **rdisp/wp_no_btc=2** (Min 2 per system)
We can increase as many as possible depending upon the resources.

** Note: We can pause jobs by setting the value to 0 zero **

BWP jobs are defined in SM36

Specify Job name: Daily report

Job Class: C A, B, C (High, Medium, Low Priority)

Class A requires a dedicated BTC of class A which are defined in operation modes.

Class B has medium priority over class C jobs

Class C jobs runs with Normal Priority

JOB STATUS

1. Scheduled: The job is defined but time to execute is not specified.
 2. Released: The time to execute is specified
 3. Ready: The Time to run the job is reached
 4. Active: BWP processing the task
 5. Cancelled: The job is cancelled
 6. Completed: The job is completed or finished

Execution server - Name of the instance that provides BWP to run the job

Exec Target - Lolla_<SID>_00

Click on step

JOB STEPS

We need to specify the following for the JOB Execution

1. ABAP Program
 2. External Command
 3. External Program

1. ABAP Program - Is a predefined program that will be run in the background with user inputs as variants.

Variant - Is a predefined value that is populated during the runtime.

Eg: consider RSPO1041 from SA38
Goto SA38 and define variant for 7 & 15 days
Prog: RSPO1041
Variant: lolla SAVE

Click on **start condition** - IMMEDIATE or DATE....

2. External Commands: The job can be executed by external commands which are defined in SM49/ SM69. These commands are OS commands that will be executed at command level.

Eg: BRBACKUP, BRARCHIEVE, BRRESTORE, BRCONNECT
Use DB13 to schedule the jobs. The jobs in DB13 uses OS Commands.

3. External Programs:

NAME: Name of the program
Parameter:
Target Host:

Name : Specify the name of the program and the parameters. Specify the name of the target host.

Specify the **start condition**
Immediate/ Periodic/ Jobstart, Event (SM62)/ Operation. Modes.

Job Started: When dependent job started this gets triggered.

Event: When an event triggered in SAP it also triggers the job as well.

OPERATION MODES RZ04 SM63

It is the process of switching DIA to BTC and vice versa during the peak hours as we need more dialogue process and during off peak we need more BWP to run the BTC jobs.

RZ04 > Define
1. Instance
2. Operation Modes (Peak and Off Peak)
3. Specify the processes for modes

Goto SM63 to define timing for the modes

RZ04 > click on Create [Instance Operation Mode]

Peak_mode
Peak_mode operations
Default

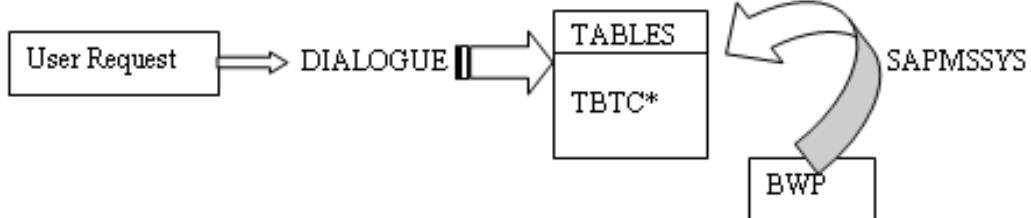
SAVE

Off peak
Off peak Mode

Create new Instance

lolla28
Start profile
Save.

BACKGROUND JOB MONITORING SM37



rdisp/wp_no_btc = 2
rdisp/btctime = 10

Operation modes - to make use of the resources optimally

SM37 is used for BTC monitoring

Execute SM37

Specify username, date & time, job name, status ----- Execute F8

1. The jobs with status **RELEASED** indicate the jobs are released with scheduled time and waiting for their turn/ time.

2. The jobs with status **READY** indicates the jobs are ready to pickup by the scheduler
Eg: Consider a CAB - might come late
No sufficient CABS

Long time in ready status indicates

1. The existing jobs are running for a long time i.e. expensive programming or sql statements/ fetching huge amount of data.

2. The configured BTC processes are not sufficient to handle the requests in Ready status.

3. May be due to heavy load on the system

4. Also due to passing the jobs by extending scheduler time/ making BTC to 0 by running the program BTCTRNS1.

Action:

1. Increase BTC work processes based on the available resources by using the parameter **rdisp/wp_no_btc = 2**
2. Schedule the jobs appropriately during off peak hours.

3. ACTIVE BTC in active status (long time recorded)

The job is running an expensive activity like client copy, pay roll run.

Jobs that fetch information from BW systems, annual reports, dunning reports may take hour's together or even days to complete successfully.

Active indicates the following

1. Jobs are expensive and running to fetch the content.
2. Jobs are waiting to be processed by the target system (RFC, CPIC)
3. Jobs are waiting for the locks to update the records.

Reasons and Resolutions ACTION.

1. Some jobs are bound to run for hours and based on history leave them to run.
2. Check the bottle neck on the target system (ERP-BI-EP-SRM-SCM-SRM)
3. Wait until the locks are released/ jobs are completed. Report to SAP in case of dead locks.

Select the status - Db click - and click on Job Logs

Execute SM37

Simple Job Selection

Execute Extended job selection Information

Job name	*
User name	*

Job status

Planned Released Ready Active Finished Canceled

Job start condition

From To

Highlight the job

<input checked="" type="checkbox"/> BI_WRITE PROT TO_APPLLOG	SAP*	Finished
<input type="checkbox"/> BI_WRITE PROT TO_APPLLOG	SAP*	Finished
<input type="checkbox"/> BI_WRITE PROT TO_APPLLOG	SAP*	Finished
<input type="checkbox"/> BI_WRITE PROT TO_APPLLOG	SAP*	Finished

Click on Job log

Job Overview



Sap takes at most care to avoid dead locks.

4. FINISHED

The jobs are completed successfully but check the log for further information/completion.

5. CANCELLED

Job status cancelled/ finished but failed in the log.

Reasons for cancellation of Job

1. User and password Issues (Authentication/ Authorization) user lock, userid expiry, password change, lack of roles etc.
2. File system problems: BTC reads from the file system to update the database. File not opened, or corrupted, file sharing issues, file came with different characters, file not found as well.
3. Variants are not properly defined.

4. Dead locks issue (Lock mechanism congested)
5. Update mechanism failed
6. Table space over flow (ORA-1653; ORA-1654)
7. Table space max extent reached (ORA-1631; ORA-1632)
8. Archive struck (ORA-255; ORA-272)
9. The memory is not sufficient and errors
(No Roll Area, PXA (Buffer), Page Errors)
10. Problem in the program and inputs (Indefinite loops like 1/0)
11. Dependent jobs/ events failure
12. Target systems are not available to process the jobs.

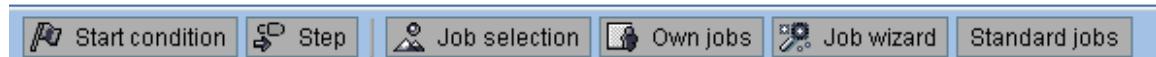
Standard Background House keeping Jobs

1. As a part of the post installation we need to schedule house keeping jobs in SM36

Execute SM36

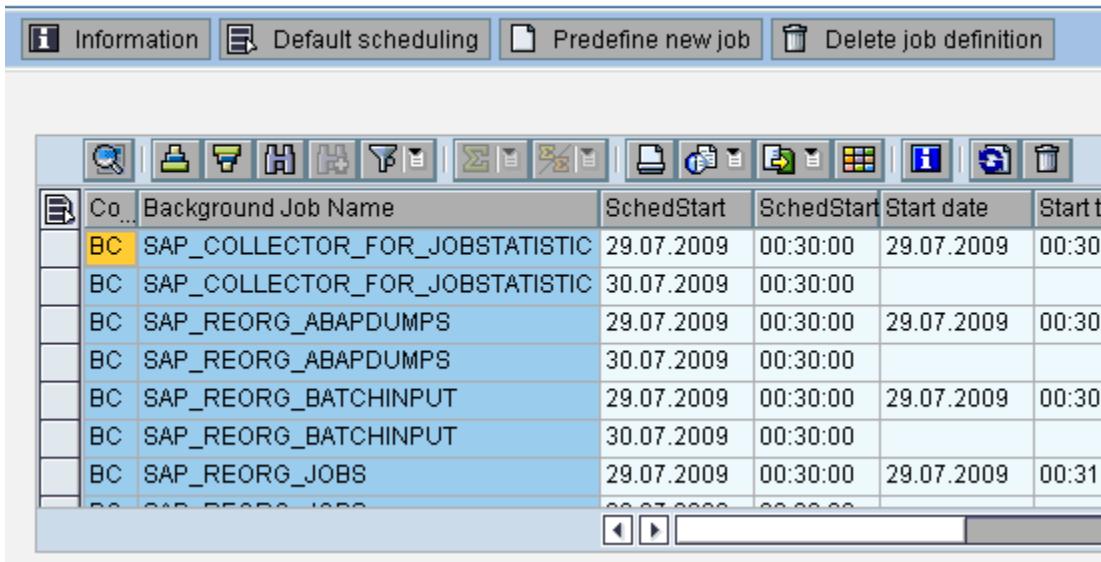
Click on "Standard Background Jobs"

Define Background Job



Click on "Default Scheduling"

Standard Jobs



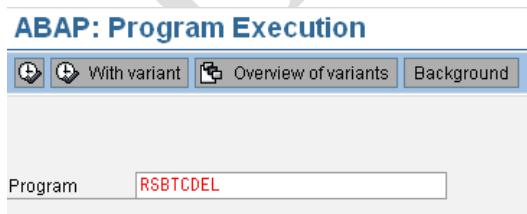
The screenshot shows the SAP Standard Jobs interface. At the top, there are tabs: Information, Default scheduling, Predefine new job, and Delete job definition. Below the tabs is a toolbar with various icons. The main area is a grid table with columns: Co... (Job Type), Background Job Name, SchedStart, SchedEnd, Start date, and Start t. The table lists several jobs under the 'BC' category, such as SAP_COLLECTOR_FOR_JOBSTATISTIC, SAP_REORG_ABAPDUMPS, and SAP_REORG_BATCHINPUT.

Co...	Background Job Name	SchedStart	SchedEnd	Start date	Start t
BC	SAP_COLLECTOR_FOR_JOBSTATISTIC	29.07.2009	00:30:00	29.07.2009	00:30
BC	SAP_COLLECTOR_FOR_JOBSTATISTIC	30.07.2009	00:30:00		
BC	SAP_REORG_ABAPDUMPS	29.07.2009	00:30:00	29.07.2009	00:30
BC	SAP_REORG_ABAPDUMPS	30.07.2009	00:30:00		
BC	SAP_REORG_BATCHINPUT	29.07.2009	00:30:00	29.07.2009	00:30
BC	SAP_REORG_BATCHINPUT	30.07.2009	00:30:00		
BC	SAP_REORG_JOBS	29.07.2009	00:30:00	29.07.2009	00:31
BC	SAP_REORG_JOBS	29.07.2009	00:30:00		

And schedule the BTC jobs with default time.

- 1. RSBTCDEL** - Used to delete the background jobs Reporting structure "BTC" "DEL"
- 2. RSSNAPDEL** - Delete the old ABAP Dumps
- 3. RSPO1041** - Delete the old spool logs and files
- 4. RSMO13002** - Delete old update requests/ logs
- 5. RSCOLL00** - Collects performance info in transaction ST03.
- 6. RSPO1043** - Spool Reorganization

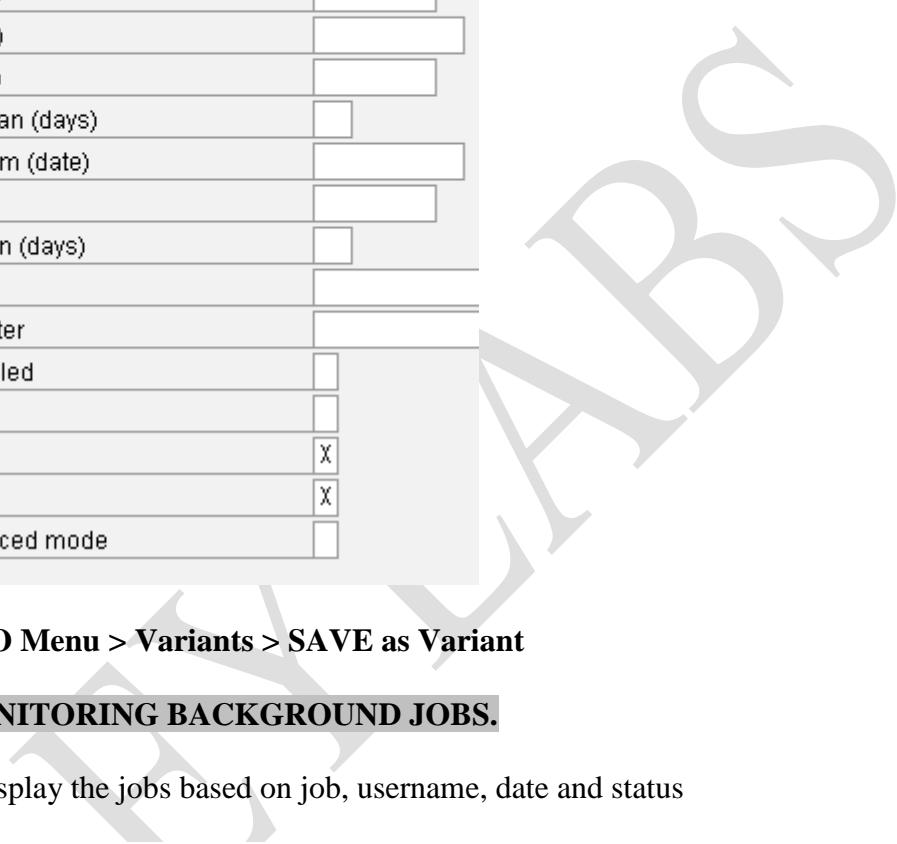
Eg: from SA38



Click on Execute

And Specify the Days ...

Delete batch jobs



Job name

User name

Start from (date)

 (time)

to (date)
 (time)

older than (days)

Finish date from (date)

 (time)
 older than (days)

Event ID

Event Parameter

Status scheduled

 released
 finished X
 canceled X

Delete with forced mode

From GOTO Menu > Variants > SAVE as Variant

SM37 - MONITORING BACKGROUND JOBS.

- Used to display the jobs based on job, username, date and status

Simple Job Selection

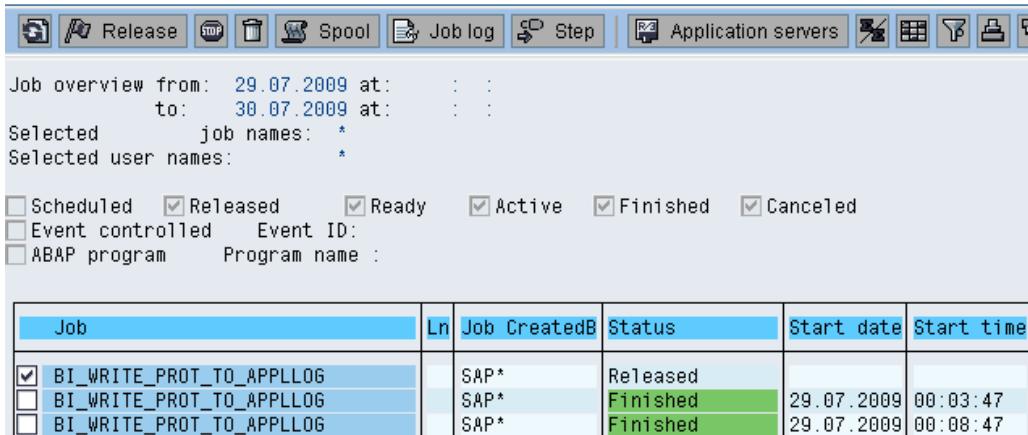
Execute Extended job selection Information

Job name	<input type="text" value="*"/>		
User name	<input type="text" value="SHAWN"/>		
Job status			
<input type="checkbox"/> Planned <input checked="" type="checkbox"/> Released <input checked="" type="checkbox"/> Ready <input checked="" type="checkbox"/> Active <input checked="" type="checkbox"/> Finished <input checked="" type="checkbox"/> Canceled			
Job start condition			
From	<input type="text" value="29.07.2009"/>	To	<input type="text" value="29.07.2009"/>
	<input type="text"/>		<input type="text"/>

- It displays the job logs

By highlighting a job and click on **Job Log**

Job Overview



Job overview from: 29.07.2009 at: : :
 to: 30.07.2009 at: : :
 Selected job names: *
 Selected user names: *

Scheduled Released Ready Active Finished Canceled
 Event controlled Event ID:
 ABAP program Program name:

Job	Ln	Job CreatedB	Status	Start date	Start time
<input checked="" type="checkbox"/> BI_WRITE PROT_TO_APPLLOG		SAP*	Released		
<input type="checkbox"/> BI_WRITE PROT_TO_APPLLOG		SAP*	Finished	29.07.2009	00:03:47
<input type="checkbox"/> BI_WRITE PROT_TO_APPLLOG		SAP*	Finished	29.07.2009	00:08:47

3. Do not kill the active job unless it is permitted by the owner
4. We can repeat the scheduling of the job if required
5. Background job output is a report to a spool (Printer), fax or email or even updating a database (Eg. Client Copy)
6. We can move the jobs from one instance to another instance.
 From Menu Job > Move to different server. (Consider the above screen)
 Active jobs can be moved.

There are Third Party BTC Job Schedulers

1. CONTROL-M Scheduler
2. RED WOOD Scheduler
3. TIDEL Scheduler
4. SAP Job Scheduler
5. MAESTRO Scheduler / IBM

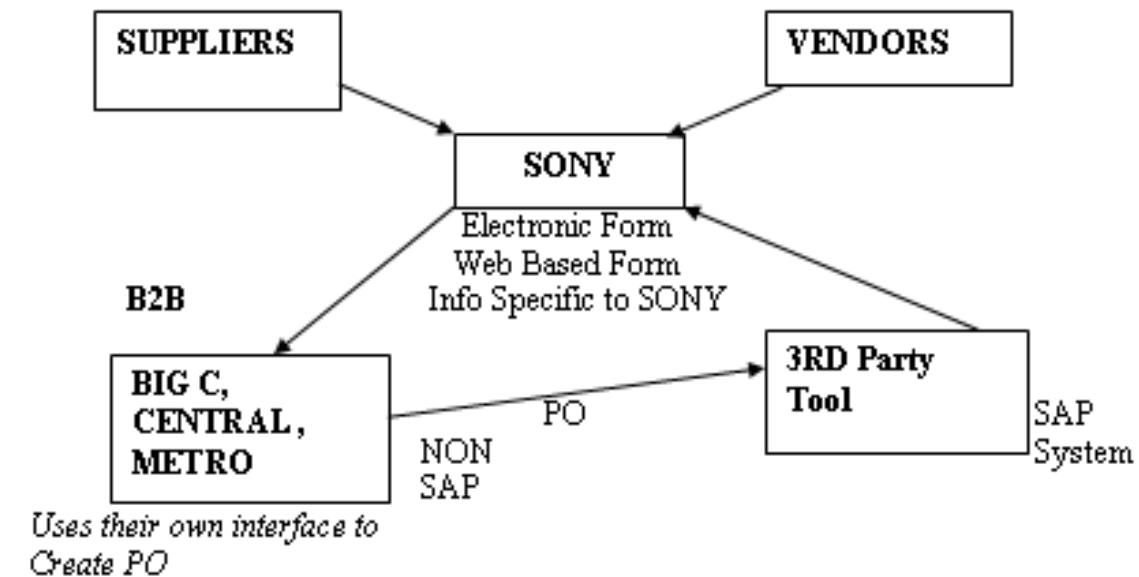
These Third party schedulers are not specific to SAP but we can customize these to SAP
 These job schedulers are intelligent to work based on the status of Predecessors.
 The tool defines when to trigger, how to handle various statuses and alert users accordingly.

Eg. KODAK Runs 14,000 Jobs/ day
 HP Runs 20,000 Jobs/day

BTC - Business Case

Sony an electronics company communicates with suppliers for the TV Cabinets/ Circuit boards, Picture tubes, assembling & packing.

Vendors instead of communicating in hand documents they are advised to communicate in soft documents. SAP also sends soft documents as well.
i.e. the communication is performed electronically.



BTC Jobs performs the following:

1. Run long running reports for an End User
2. Runs payroll for the employees
3. Client copy for the technical consultants
4. R/3 BIW Replication
5. Communication with NON SAP Systems to fetch the data
6. Dunning report for Finance team
7. Weekly, Monthly and Annual Reports
8. Runs standard jobs for House Keeping

9. To run Database jobs using external commands DB13 (**SM49** provides commands)

External Operating System Commands			
Type	Command name	Op.system	Name of external program
SAP	ARCAUTO	ANYOS	arcauto
SAP	BACKUP_HISTORY	ANYOS	sddb6his
SAP	BRARCHIVE	ANYOS	brarchive
SAP	BRBACKUP	ANYOS	brbackup
SAP	BRCONNECT	ANYOS	brconnect
SAP	BRTOOLS	ANYOS	brtools
SAP	BTC_CHECK_STATE	ANYOS	sapchkst
SAP	CAT	UNIX	cat

NOTE: In table **TSTC**, we can get a list of all existing Tcodes and which programs are called by those transactions.

From SE11 - Provide the table name **TSTC** and execute providing the T-Code to find the Program

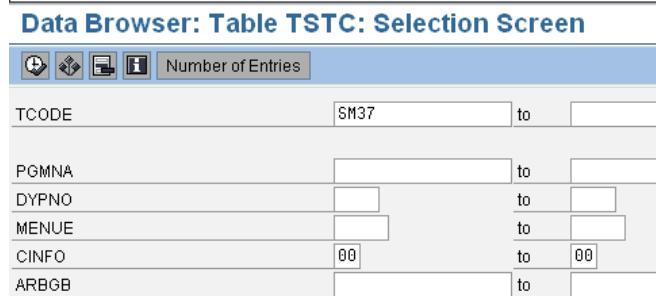
ABAP Dictionary: Initial Screen



Database table

Database table View

Data Browser: Table TSTC: Selection Screen



TCODE	<input type="text" value="SM37"/>	to	<input type="text"/>
PGMNA	<input type="text"/>	to	<input type="text"/>
DYPNO	<input type="text"/>	to	<input type="text"/>
MENU	<input type="text"/>	to	<input type="text"/>
CINFO	<input type="text" value="00"/>	to	<input type="text" value="00"/>
ARBGB	<input type="text"/>	to	<input type="text"/>

Data Browser: Table TSTC Select Entries 1

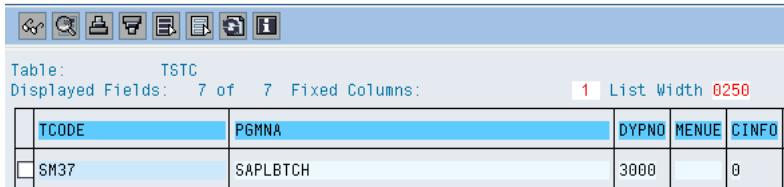


Table: TSTC
Displayed Fields: 7 of 7 Fixed Columns: 1 List Width 0250

TCODE	PGMNA	DYPNO	MENUE	CINFO	
SM37	SAPLBTC	3000		0	

No bother of "Schedule/ Released" Will not in our scope

We need to take care about the Status

Ready for longer time

Active for the longer time.

BTC logs are deleted by scheduling **RSBTCDEL** which deletes the log files from TBTC* based on the time interval in the Variant SA38.

UPDATE PROCESS

It is used to update the database from Temporary tables. There are three 3 Types of updates

V1 - Handles High Priority Updates

V2 - Handles low priority updates

V3 - Reserved by SAP (Currently no use)

Updates are defined by the parameter

Rdisp/wp_no_vb=1

Rdisp/wp_no_vb2=2

from RZ11

Technically for every 5 dialogue work process there should be one update of type V1/ V2

Update Flow:

1. User submits the request for an update
(Let us say a Purchase Order)

Eg: Bearers won't go to the Pantry

Similarly All dialogue won't go to the.... DB

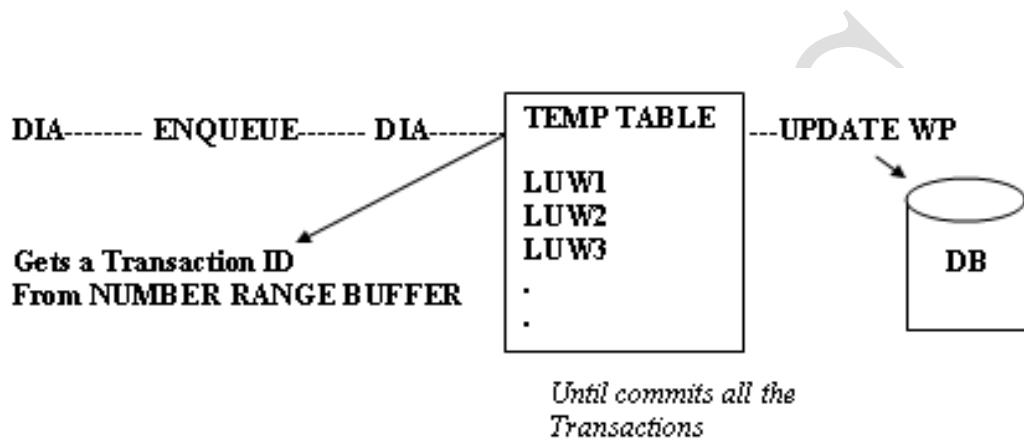
2. Dispatcher handles the request and provides a dialogue process to it.
3. Dialogue process interprets the request and communicates with enqueue process to provide a lock to update the record consistently.
4. Dialogue process updates the temporary tables called as VB* asynchronously

VBHDR - To store update header information

- VBDATA - To store data that needs to be updated
 VBMOD - The modules through which the data is updated
 VBERR - Update Error Table

DIA → ENQUEUE → DIA → TEMP TABLE → DATABASE

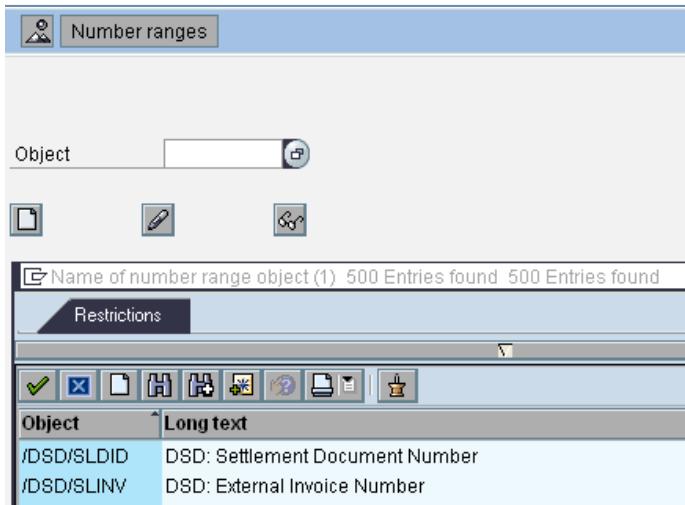
LUW



And gets a transaction ID from Number Range Buffer (Transaction **SNRO** and Table **NRIV** Number Range Interval Table)

SNRO

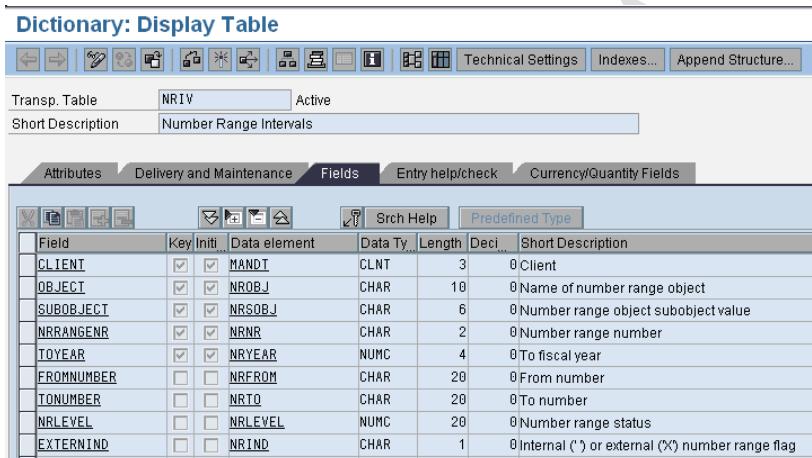
Number Range Object Maintenance



The screenshot shows the SAP Number Range Object Maintenance interface. At the top, there's a toolbar with icons for search, refresh, and other maintenance functions. Below it is a header bar with the title 'Number Range Object Maintenance'. The main area contains a table with two rows:

/DSD/SLDID	DSD: Settlement Document Number
/DSD/SLINV	DSD: External Invoice Number

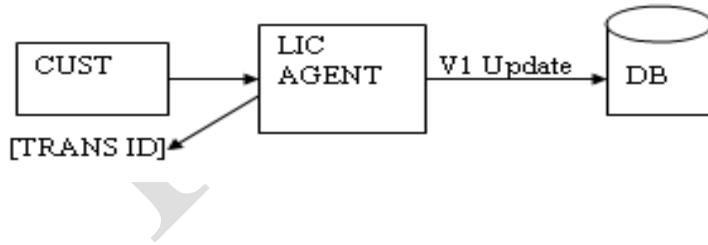
NRIV



The screenshot shows the SAP Dictionary: Display Table for the NRIV table. It includes fields such as CLIENT, OBJECT, SUBOBJECT, NRRANGENR, TOYEAR, FROMNUMBER, TONUMBER, NRLEVEL, and EXTERNIND. The table also lists their data types (CLNT, CHAR, CHAR, CHAR, NUMC, CHAR, CHAR, NUMC), lengths, decimal places, and short descriptions.

Field	Key Init.	Data element	Data Ty...	Length	Deci...	Short Description
CLIENT	<input checked="" type="checkbox"/>	MANDT	CLNT	3	0	Client
OBJECT	<input checked="" type="checkbox"/>	NROBJ	CHAR	10	0	Name of number range object
SUBOBJECT	<input checked="" type="checkbox"/>	NRSOBJ	CHAR	6	0	Number range object subobject value
NRRANGENR	<input checked="" type="checkbox"/>	NRNR	CHAR	2	0	Number range number
TOYEAR	<input checked="" type="checkbox"/>	NRYEAR	NUMC	4	0	To fiscal year
FROMNUMBER	<input type="checkbox"/>	NRFROM	CHAR	20	0	From number
TONUMBER	<input type="checkbox"/>	NRTO	CHAR	20	0	To number
NRLEVEL	<input type="checkbox"/>	NRLEVEL	NUMC	20	0	Number range status
EXTERNIND	<input type="checkbox"/>	NRIND	CHAR	1	0	Internal (' ') or external ('X') number range flag

Eg:



Dialogue Updates - Update Releases the lock.

5. Update gets initialized and reads from Temp Tables and updates the permanent tables synchronously. Update inherits the locks and releases them upon updating permanent tables. Update updates the record based on transaction-ID using VBMOD Table (Every update is module based in SAP)

6. When the Dialogue updates the temp tables the record is displayed in SM13 which will be processed by update.

UPDATE MONITORING SM13

The record that needs to be updated by update process is displayed in SM13 with status INIT. If the records stays for longer time in **INIT** status that indicates the updates are busy or there are no sufficient update processes or update mechanism is deactivate from SM14.

Update handles the record and change the status to "**RUN**"

If the update stays long time in status RUN

1. Longer Update
2. Dead Lock (Needs to inform SAP for Program correction)

Updates which could not be updated will be thrown into ERR Status.

1. Update deactivated in SM14
2. Programming problems in LUW
3. Table Space overflow (ORA-1653; ORA-1654)
4. Max Extents reached (ORA-1631; ORA-1632)
5. Archive Struck (ORA-255; ORA-272)

BATCH/ BTC/ BACKGROUND

Each SAP transaction is considered as Single LUW (Logical unit of work) which in turn contains multiple LUW's needs to be committed to commit the SAP Transaction. If any one of the LUW is failed the entire transaction is rolled back. That is the reason why dialogue updates Temp Table.

1. User submits the request.
2. Dialogue handles the request.
3. Obtains lock from Enqueue so the data consistency is achieved and the records are only for display.
4. Updates the request in Temp tables (VBHDR, VBDATA, VBMOD, VBERROR)
5. Gets the transaction ID from NRIV (Number Range Interval Table)
6. Update gets initiated to update the VB* content permanently into the database.
7. Update inherits the locks.
8. Updates the database based on transaction ID.
9. Update releases the lock from the record.

UPDATE Statuses.

The following are the statuses displayed in SM13 Transaction.

- INIT** The record is waiting to update by an update process.
- ERR** The record runs into an Error (Update Error)
- RUN** The update is executing the record into DB
- AUTO** The error records are reprocessed after a system restart/ update activation Automatically.

SM13 - Repeat Update

Used to repeat the ERR updates. The update are terminated or cancelled due to the following reasons

1. Table space overflow
2. Max Extents reached
3. Archive struck
4. Programmatically Error
5. Update Deactivation (SM14)

Running updates during deactivation

DEACTIVATE -----> THROWS TO ERROR -----> GOES TO AUTO

At this point of time we need to select the update (put a check mark of the update from SM13) and click on [Repeat Update]

Refer modules from SM13

The updates can be repeated with status **ERR**

Rdisp/vbmail = 1 to send email to the users if an update is failed.

Update mechanism can be deactivated by setting the parameter

rdisp/vb_stop_active=0 to deactivate the update mechanism in case of DB errors.

It can be activated from SM14.

rdisp/vbdelete=30 to delete the update records older than 30 days irrespective of the status.

Rdisp/vbreorg =1 to delete the incomplete update request during a system restart.

To delete the old update requests.

Deletes the executed update requests. Reorganize the update tables. (Its a background job)

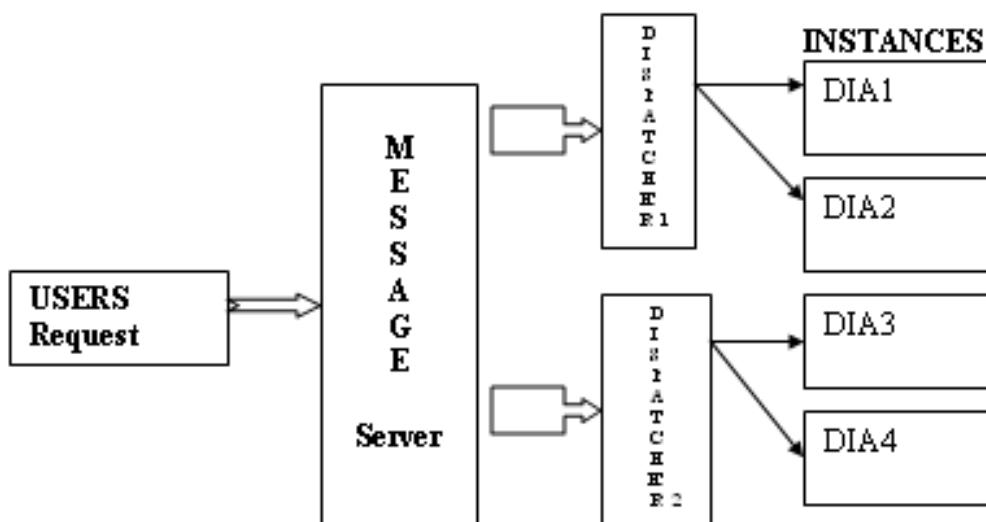
V1 and V2 updates needs to be defined in the system.

V1 handles critical updates and V2 handles the non-critical updates which are defined by the programmers.

We can see either V1 or V2 in the standard SAP Program **SAPMV45A** by executing SE38

MESSAGE SERVER/ PROCESS

1. There will be only one message server through out the System.
2. It is used to manage all the dispatchers and identify the least loaded dispatcher and forward the user request to the dispatcher provided logon load balancing is configured in transaction SMLG



Logon Groups **SMLG**

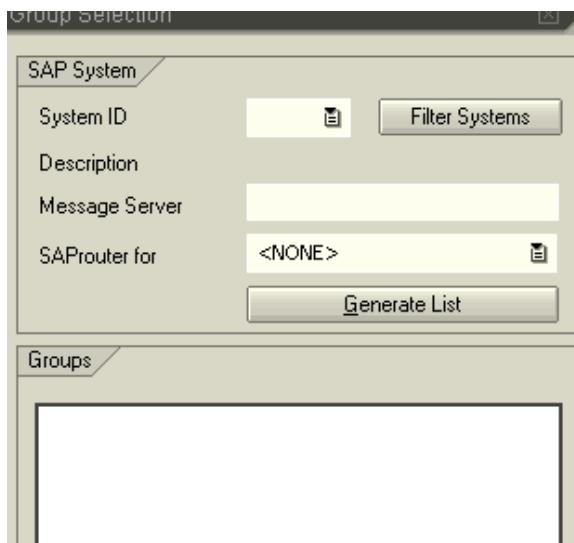
SMLG > Create

Provide GROUP:
INSTANCE:

For Eg: **MARKETING**
dewall36_R3I_00

Now from SAP Logon Screen

Click on Groups > and Provide SID and Message Server.



We can find the Active servers from **SM51** and on db click on the Host name to view all the Processes.

CONFIGURING SMLG

1. Define a logon group from TCode SMLG
2. Assign the instance.
3. Open GUI > Select groups and create entry by choosing group.
4. Add an entry in etc/ services
As **sampsDEV** (Message Server Name) **3200/tcp**

Entry should be made on all GUI systems.

Note: The load is calculated based on in ST07

5. create a file sapmsg.ini if not exists from (x:\windows)
Sapmsg.ini > open [MESSAGE SERVER]
 DEV = <hostname>

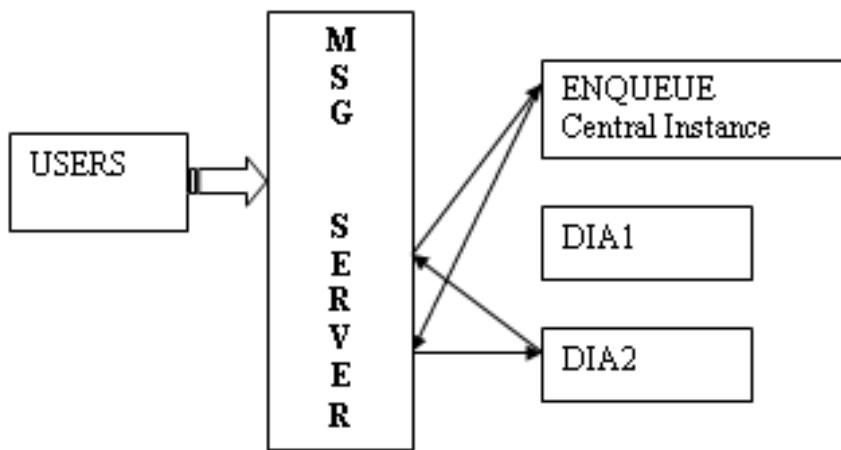
Mechanism

1. User communicates using GUI.
2. **sapmsg.ini** gets evaluated and checks the port in **etc\services** to communicate with the message server.

3. Message server maintains the details of favorite server and routes the request to that dispatcher

4. Dispatcher handles the request - Queue - Dialogue

Message server obtains the lock for dialogue process if the request is coming from the Dialogue instances.



SMMS: MESSAGE SERVER MONITORING

ENQUEUE PROCESS / SERVER

SM12 Monitoring

Note: Server Naming convention is used because each of the process serving the user requests (Dialogue, BTC, Update, Enqueue, Message, Gateway and Spool DVEBMGS)

It is also possible to install and configure all the above servers on different instances or hosts.

ENQUEUE:

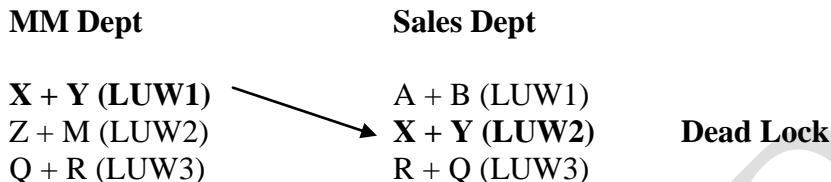
It is used to provide data consistency while updating the system. It provides locks from a lock table before a record gets updated and ensure that the record is available for display during an update.

There will be 1 One Enqueue process installed during installation. It is also possible to increase Enqueue processes to more than one depending upon the updates but most of the customer environments there will be only 1 One enqueue process.

It is configured by the parameter
rdisp/ wp_no_enq = 1

DEAD LOCK

SAP TRANS ----- MULTIPLE LUWS

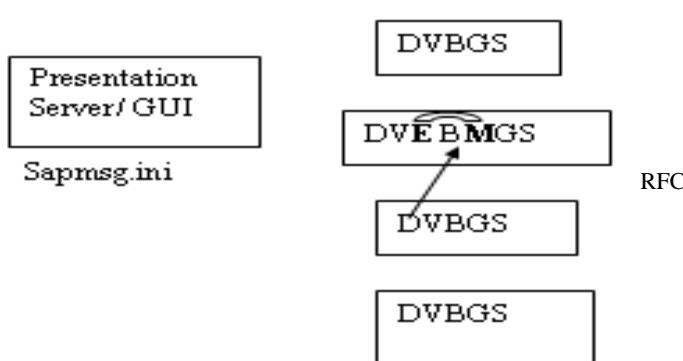


Enqueue process the locks and unlock the record during an update.

Enqueue server maintains the lock table on the shared memory of the Central Instance (or on the instance where it is installed)

It is recommended to increase the Enqueue processes only on the Central Instance.

Technically the Message and the Enqueue should reside on the same instance (It is not mandatory). If both are installed on the same machine then it will be more comfortable for message server to communicate with Enqueue process to obtain locks for Dialogue process that are coming from other instances.



DIA - MSSG - ENQ - MSSG - LOCK - DIA

TCODE - SM12 (Lock Management)
 Enqueue table size is defined by the parameter

Enqueue/table_size=4MB (Earlier 1 MB to 4 MB) in Netweaver systems this can be increased to 100MB

LOCK MONITORING/ ENQUEUE MONITORING SM12

Shared Mode
Exclusive Mode.

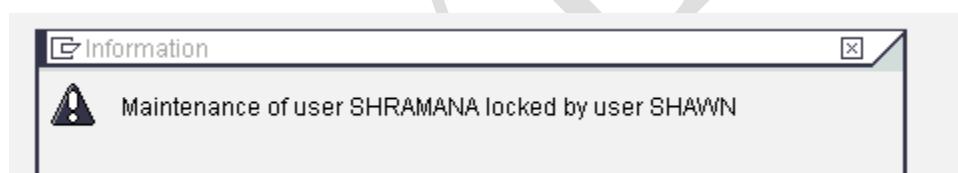
Locks are monitored in transaction SM12. In principle the lock which are older than one hour should be reported to the escalation manager. If the lock table is filled (**Enque/ Table_size**) an overflow occurs in the lock table.

1. Check whether the update server is still performing the updates. If the updating has stopped, then the lock table can quickly become over filled with the locks held by update requests. We can resolve the problem by restarting the updates. If updating has not been interpreted, then we must enlarge the lock table.

Note: Enque table overflow is recorded in **SM21 and ST22**

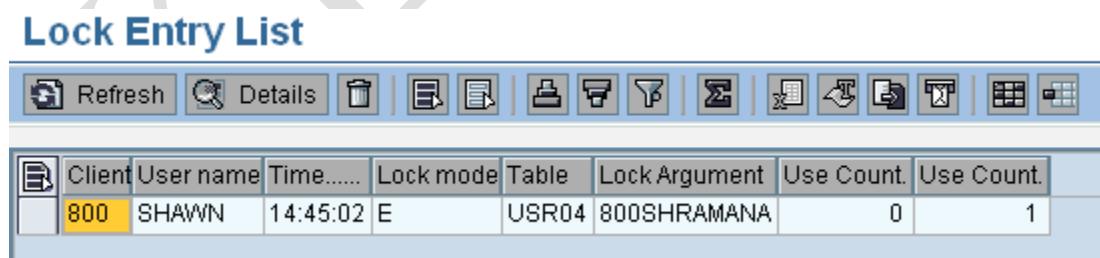
Eg: Execute SU01 from **Shawn** user/ 800 and edit **shramana** user
 Execute SU01 from **Shawn** user/800 and edit **shramana** user

Following message is displayed



And now execute SM12 which displays the Exclusive Mode lock

Lock Entry List



Client	User name	Time.....	Lock mode	Table	Lock Argument	Use Count	Use Count
800	SHAWN	14:45:02	E	USR04	800SHRAMANA	0	1

2. Enque time is too high

As a part of the response time enqueue time should be 1ms - 5ms for Central instance and 100Ms in case of the request that is coming form Dialogue instance.

Then we can consider the following

1. Lock table is overflow and the locks are held in SM12
2. Update is deactivate (SM14) due to any of the issues in DB. If the update gets deactivated then the locks are not released.
3. If the Enqueue time increases i.e. there could be RFC issue or Enque wait time is increasing then consider increasing Enqueue work processes.
4. Dead locks (Usually never occurs, but there is a collision between PP, Manufacturing and Material Module, so highlight this issue to SAP)

In some instances we may need to release the locks but we need to follow certain process.

Do not release the lock in SM12 (Even though there is an option)

Lock deletion is recorded in SM21.

1. Users complaint that he could not update a record and message pop up stating that the record is locked by user XYZ.
2. Check the period of lock (if it is older than 1 hour inform to the escalation manager)
3. Get the written B&W approval from the user and terminate the session of that user using SM04. (Only Terminate or End that session)

All the transaction activities are recorded in CDHDR

Note: Initially 20Kb Mem is given from ztta_roll_first.

We may need to allow some locks for more than one hour or days (Eg. Payroll update processing) consumes lot of time. We need to ensure that dialogue process should not hold for longer time, but however BTC is allowed.

SPOOL PROCESSING

User request - DIA - (Tables TBT*) BTC---- (TST01, TST03)--SPOOL -- PRINT

User request - DIA-- (TST01, TST03) --- SPOOL ----- PRINT

PROCESS/ FLOW:

1. User request to print a purchase order (or) user schedule to print dunning reports (LEGAL Notices, Credits, LOANS etc)

2. These print requests are processed by the respective Dialogue/ BTC and stores the content in TEMSE - Temse is a temporary sequential objects that are stored at OS (File system) or Database level which is defined by the parameter

rspo/store_location=G or DB

(G Means Global Directory \usr\sap\SID\sys\global)

(DB Means - Database tables TST01 and TST03)

Note:

DIALOGUE - Multiplexing
BTC - Single Process

The Advantages of TEMSE.

TEMSE size is 99000

Refer:

SU22 - (s_spo_act) - To identify the tcode/ Authorization objects

SP01

SU24

The Temse can be stored in database or OS level. Temse remains in the DB/OS unless they are deleted explicitly by SAP standard reports.

TEMSE AT OS OR DB (WHICH ONE IS RECOMMENDED?)

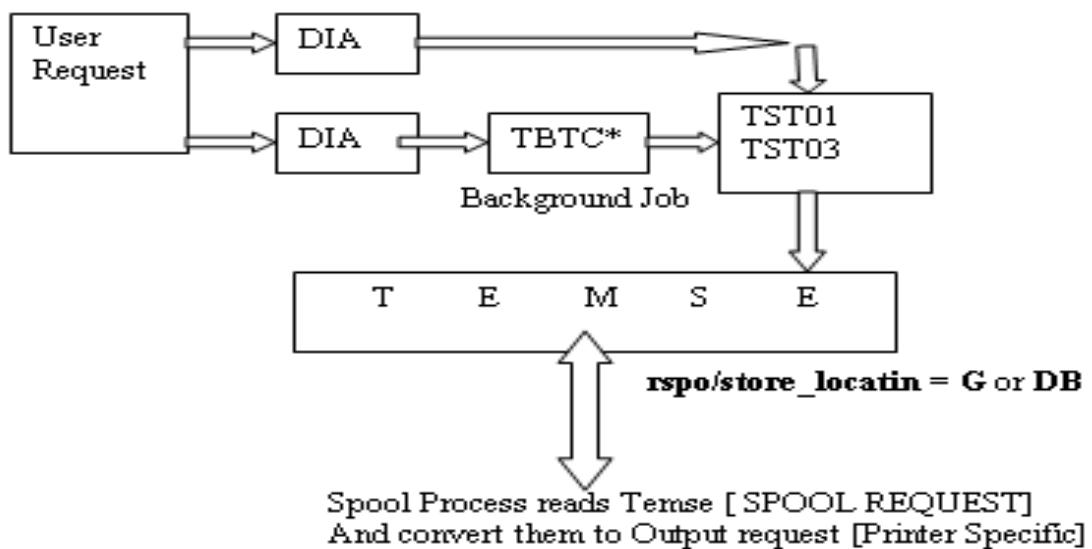
OS [G]

1. It is recommended because the print requests are printed faster than database. i.e., from Global directory requests can be converted to output request at faster rate than database.
2. This is only recommended when the requests are small in nature. (Every day 50-100 Docs) if the size increases the search at file level consumes more time as (No indexes at file system)
3. File system is not backup frequently as Database. File system backup will be weekly, fortnight, monthly whereas database is hourly (Redo Logs) and daily DB Backup. That is Temse is not secured at file system.

DB [DB]

1. Consumes more time than Temse at OS when there are less no of records. but shows the performance by using Indexes when the user grows (Temse can handle 90000 Requests)
2. Backup is a regular activity on database so the Temse is secured. As it is stored in tables.

Temse is a part of Normal Database (TST01 and TST03) no separate memory is required.



DIALOGUE - BTC request - Spool Process
 DIALOGUE - [TST01, TST02] - Spool Process

OUT PUT
REQUEST

FRONT END > Spool process comes at our Desktop

Default setting is **DB**

RZ11 : rsSpo_location
 : rdsp/ btctime

3. The Spool process reads from TST01 and TST03 i.e. the name of the author (USER), Name of the Printer, No of copies are procured from TST01 and Printable data from TST03

Spool Process formats or converts spool requests to output requests i.e. Printer specific format. If the format is performed locally then it is said to be LAN (Local Access Method). If it is performed remotely then it is said to be RAM (Remote access Method)

Spool processes are configured by **rdisp/wp_no_spo** (Rdisp indicates instance specific)
There should be at least 1 one Spool process in the entire system.
We can configure as many as we can depending upon the available resources.
It is also possible to have dedicated instances which will provide only spool processes
PROGRAM[**RSPO1041**] to maintain TEMSE.

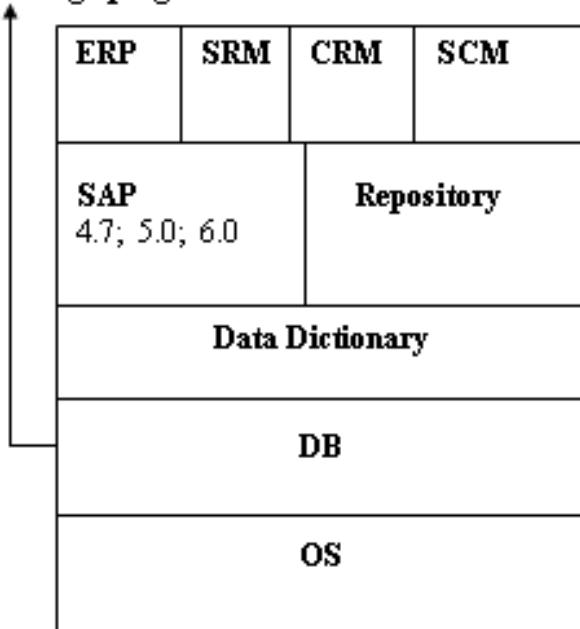
Refer: From SE12

TPFYPROPTY

Flag for changes
Obj_name = parameter Rdisp/time
Type T denotes Dynamic
X - Whether Changeable or not.

SAP System

V1, V2 (Suppliers, Customer (Master Data, Application Data, Transaction Data) through programs



It can be trans, screen, menu, Reports, FM, Programs A to X name space

Tables/ Views/ Index/ Domain Data Element

Tables
DD021 (contains all the SAP tables)

\usr\sap

Note: We should not touch the Repository data of name space 'A' to 'X'.

SE11 > table name : /* (/ is a customer name space)

TADIR is the repository

TSTC - Is the T-Codes with the program name.

Market place > keys & Reqs > Development Name space.

Note: STMS > System > Transport Tool

no_import_all = 0 (No Mass Transportation)

SPOOL MECHANISM

Dialogue - BTC - TBTC* - TS* Tables

Dialogue ----- TS* Tables

Spool process reads from TEMSE and convert spool requests to the output requests (Printer specific requests).

SPOOL ADMINISTRATION

TCODE - SPAD

LPD - Line Print Demon

Drivers are specific to O/S and not to SAP

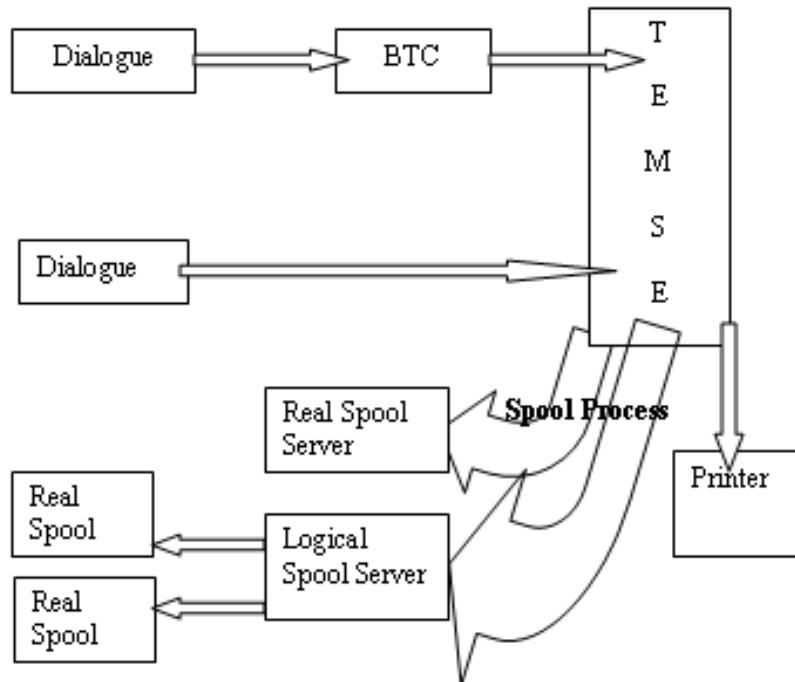
- It is used to define output devices/ Spool servers and access methods

Defining a Spool Server:

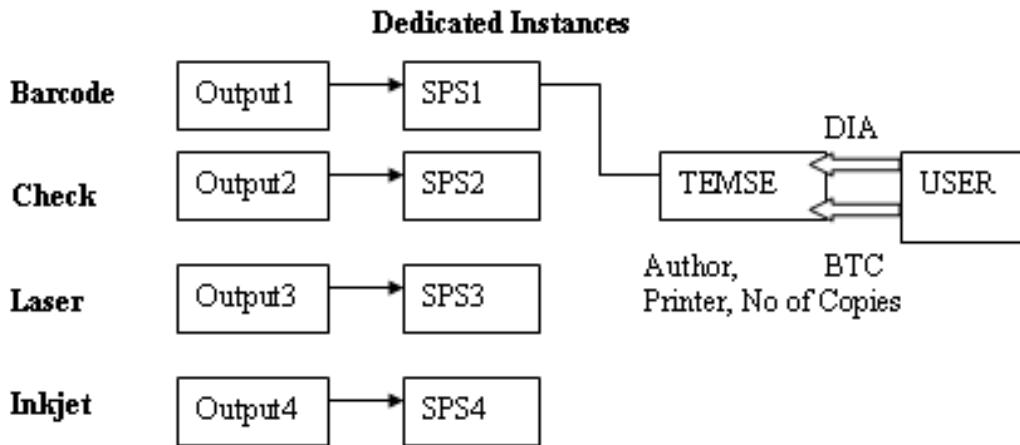
The instance with at least one spool process is referred as spool server. It is also referred as Real spool server. (Existing)

Logical Spool Server.

This is not existing but pointed to a Real spool/ another logical spool server. This is used for load balancing the spools.



Note: We can set up a dedicated instance for spool process.



CONFIGURING THE OUT PUT DEVICE.

1. Execute SPAD
2. Click on the Spool Server - Display then Change
3. Click on create

Server Name: LOGICAL SP1

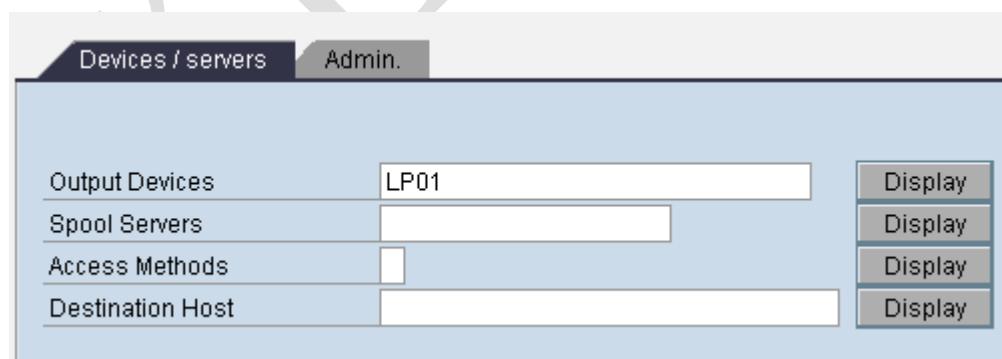
Server Class : Mass Printing

Logical Server: Mapping : lolla28_00

Alt server:

DEFINING OUTPUT DEVICE/ PRINTER

1. Execute SPAD
2. Click on output device



Output Devices	LP01	Display
Spool Servers		Display
Access Methods		Display
Destination Host		Display

3. Click on display
4. Click on change
5. Click on create

Output Device	LP01	Short name	LP01
<input checked="" type="radio"/> Device Attributes <input type="radio"/> Access Method <input type="radio"/> Output Attributes <input type="radio"/> Tray Info			
Device Type	HPLJIID : HP Laserjet 3 series PCL-5		
Spool Server	dewall136 R3I 00		
Server Description			
Host		Real Server	
Device Class	Standard printer		
Authorization Group			
Model			
Location	Beispieldrucker. Mit SPAD anpassen.		
Message			
<input type="checkbox"/> Lock Printer in SAP System			

6. Specify the **Output device name**

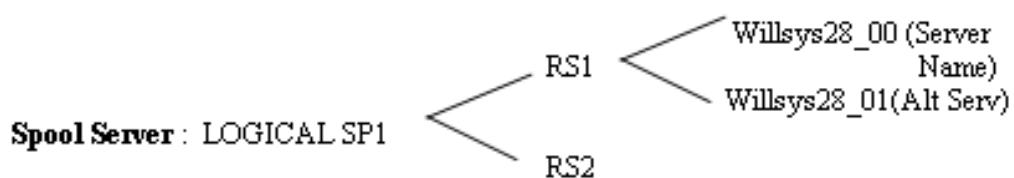
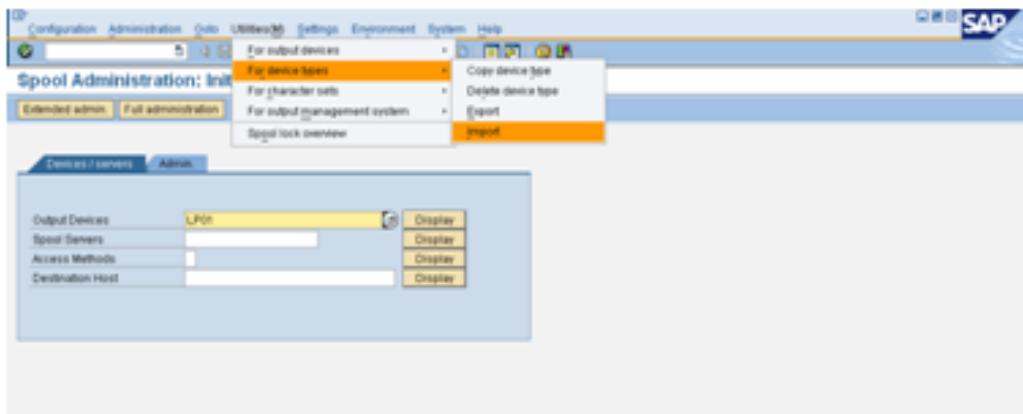
Specify the description : Local Printer

7. **Device type:** HP Model & Manufacturer

Device type specifies that the output device is recognized by SAP. If there is no device type available then select SAPWIN. If required write to SAP and try to get the device type. SAP sends programs in terms of Patches.

SPAD > Utilities > For device types > Import

If the character set is required.



Device Class: (Standard, Fax, Telex etc)

Authorization Group : Specifies the access control methods

Model:2200

Location : 5th floor A wing...

Message : Only used by Pay Roll.

Note:

Dialogue --- TEMSE -- Author, Printer, Number of copies

When printer is defined Spool server (LS/ RS) is assigned

In order to print we need the spool process from the assigned instance to convert the spool request in to the output request.

Spool process uses Access Methods to format the request. (either Local, Front End, Print server...)

ACCESS METHODS

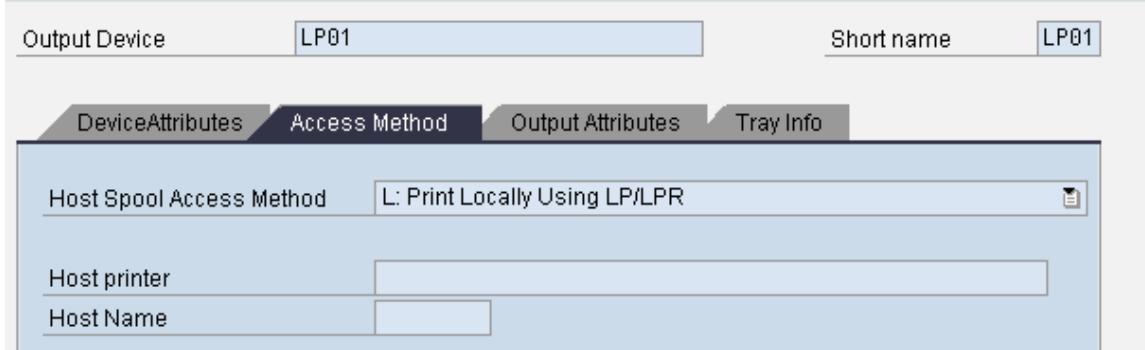
It specifies the process of formatting the spool request to printer specific output request.

LOCAL ACCESS METHOD

The spool work process and the host spool resides in the same machine i.e. the work process transfers the spool request to the spool system locally.

Select **L** for UNIX based system (Local Print Method)

Select **C** for Windows (which uses direct operating system call)



Select **F** for **FRONT END** printing

Spool work process goes to the user desktop and format the request based on the printer that is connected to desktop. This is more expensive, time consuming than any other methods.

Disadvantages: No user can print in the background because the desktop initiation is not possible in the background during off peak hours.

Advantages: Check printing, Sensitive docs, label printing.

Restrict the no of work process that can go into front end mode using the parameter.

rdisp/wp_no_spo_fro_max = 2

i.e. two work processes can be used for front end printing. If this parameter is not used spool congestion occurs.

Specify **I** for Achieving device (Optical Devices, HSM, Jukebox (stores each copy (output doc)) Hierarchical storage machine

REMOTE ACCESS METHODS

The formatting by spool work process is performed on remote system.

Specify **U** for UNIX operating system where formatting is performed on the remote machine (Print server) using Berkeley protocol.

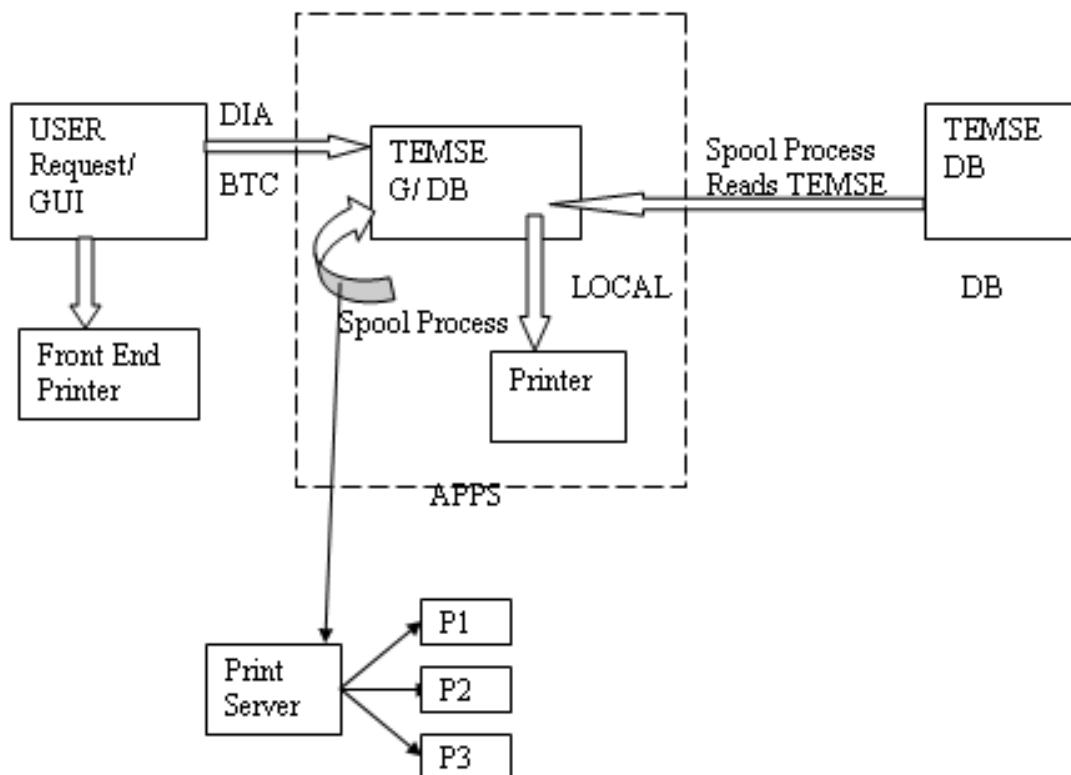
Specify **S** for windows operating system. It will transfer the formatting to remote system using SAP specific protocol **SAPLPD**

For LOCAL & REMOTE > Needs the printer models
 For FRONT END > SAPWIN

When Remote access method is specified we need the following
 HOST Printer:

Destination HOST:

i.e. the printer should be configured on destination HOST. It can be a print server.



Note: Front end cannot be scheduled in the background.

SPOOL MONITORING SP01; SP02

The spool requests are monitored in SP01. users can monitor the requests using SP02.



Note:

Put a check mark [] Do not query host spooler for output requests. If this option is checked, It improves performance. If we need the exact status then uncheck the box.

Output Attributes: Depends upon the company requirements. Tray info is also similar.

The Major advantage of TEMSE is the documents can be displayed even before it is printed.

SP01 is used to monitor the spool requests based on statuses.

1. Status '- Minus' : Indicates not yet sent to the host system (No output requests exist)
The spool process is busy/ congested, if too many requests with this Status indicates need for increasing spool WP.
2. Status '+' : Spool request is being generated (Stored in Spool system)
3. Waiting : Waiting for processing by spool
4. In Process : The spool WP is formatting the output for printing
5. Printing : The host spool is printing the output request. If the SAP spool system does not receive any status information from the host spool, this status displayed for approximately one minute. The system then sets the status to Complete (Competeted or Error)
6. Completed : The output request printed successfully. In systems where the spool system does not receive any information about the host

spool , the system changes to complete as soon as the output request is sent to the host spool.

7. Error : It indicates a server error such as network error. The requests have not printed and remain in the spool system until they are deleted or until they reach their expiration date and are deleted during a reorganization.
1. Printer issues like (Page setting issues, cartridge issues, printer not available) paper out, print server not available) these printer specific issues will be resolved by Network Team/ Print Team.

2. User complain that they could not print documents to a specific printer.

- Check the availability of the printer, if required we can change the printer and reprint the document.

From SP01 --- Select the request -- Use Menu "Spool Request and print directly" or select print with changed parameters.

While changing the parameter we can set the priority between 1 - 10 (1 as High)

3. Spool request cannot be generated

- The TEMSE is full i.e. TEMSE will be full when it reaches 99,000 requests and log is generated in **SM21 (System Log)**

- We need to reorganize the spool requests using the SAP standard reports. (**RSPO1041, RSPO1043, RSPO0041, RSPO0043**). These are used to delete the old spool requests based on selection criteria. In general the spool requests which are older than 14 days will be deleted if standard jobs are scheduled in **SM36** they also checks the consistency of TEMSE periodically.

- We can also use SPAD for reorganization of spool (but the logic is same)

For this

Execute - **SPAD** > Full ADMIN > ADMIN > Delete old spool requests

Or from **SA38** execute the program - **RSPO0041**

Refer SM01 - Transaction Codes [Lock/ Unlock]

Transaction Codes: Lock/Unlock

Lock/Unlock				
Locked	TCode	Program	Scr.	Transaction Text
<input type="checkbox"/>	SU01	SAPMSUU00	1000	User Maintenance
<input type="checkbox"/>	SU01D	SAPMSUU01	1000	User Display
<input type="checkbox"/>	SU01_NAV	SAPMSUU00	1000	User maint. to include in navigation
<input type="checkbox"/>	SU02	SAPMS01C	0113	Maintain Authorization Profiles
<input type="checkbox"/>	SU03	SAPMS01C	0111	Maintain Authorizations
<input type="checkbox"/>	SU05	SAPMS05W	0100	Maintain Internet Users

SP12 - SPOOL TEMSE ADMINISTRATION

It is used to monitor the memory allocated for TEMSE

Note: If we need to forward a spool request select the request in SP01 and forward it to another user where user can print from alternative printer.

SP01 : Spool request > Forward >
 (Client to client) Recipient : DDIC

Use **SBWP** (SAP business work place) to display the request in inbox.

PRINT QUEUES

Note: Should have enough spool work process to format the requests to printer specific requests. Similarly we should have enough output devices to avoid the print queues.

SETTING DEFAULT PRINTER

From **SU01** we can specify default printer to the user but do not check the box "**delete the request after output immediately**" which improves the spool performance.

The printer can be locked during maintenance in **SPAD**

To process the requests sequentially based on serial numbers

Select the option -- [] print sequentially in SPAD from **OP devices attributes** tab.

Print sequentially consumes time to print in the order. If this is unchecked it prints faster but sequence is not maintained.

Dialogue

2 Min / Instance

75 - 150 MB

5 - 10 Users (Refer **ST07**)

Handles request Interactively

Multiplexing

Rdisp/max_wp_runtime = 600

SM50/ SM66

wp_no_dia

DPMON

It initiates update, BTC, spool, Message server and enqueue

BTC

Expensive, long running, time consuming

No time limit

Off peak time

Scheduled to run periodically using variants

Statuses

(Scheduled, Released, ready, active, finished, cancelled)

Job step

Program (SA38), OSCommands (SM49, SM69), External Programs (on Tar. Systems)

TBTC* tables

Standard background jobs

Pause(rdisp/btctime, wp_no_btc=0, btctrans1)

At least 2 for the entire system

SM36; SM37

Operation modes (RZ04, SM63)

RSCOLL - gathers performance into ST03

BTC communicates with enqueue for locking and spool for print.

GATEWAY WORK PROCESS

SMGW

SMGW is used to monitor the gateway process. Gateway is used to communicate between SAP and NON-SAP systems. There will be only 1 gateway/ instance. If required we can also install a standalone gateway on a JAVA engine.

Gateway listens on port '3300'+instance number (3300, 3301,3302 where 01, 02 are the instances).

Gateway provides an interface so that the external system can communicate with SAP system on the specified port.

When RFC's are defined between the systems they use SAP gateway when (ALE, EDI, IDOC are transferring they use gateway)

INSTANCE MANAGEMENT

Instance is managed by using profiles. Profiles will resides in (**usr\sap\<SID>\sys\profiles**)

There are three types of Profiles

1. Default
2. Startup
3. Instance Profile

As part of post installation we import the profiles of Active servers from **RZ10**. The profiles reside at OS level in the directory (**usr\sap\<SID>\sys\profile**). They can be managed/ edited using a notepad. But the consistency is not checked (say for eg. if we modify the instance profile WP DIA=2000 and there is no error message and versions are not maintained under OS level)
DEV_DVEBMGS00_lolladel.

So these profiles are imported into database management for consistency check and version management.

Startup Profile

Startup profile consists of startup parameters like

Starting Database
Starting Message Server
Dispatcher + Work.

Do not modify these parameter under any circumstances on OS level.

Default Profile

It is used to provide global parameters for all the instances, buffer parameters, security parameters (Password, User restrictions), Message server host, enqueue host)

Instance Profile

This is specific to instance configuration such as work process, timeout parameters etc.

Starting Sequence

1. Startup profile is read by the system to start the engine by starting database, message server and dispatcher in Central Instance.
2. Startup profile is read by the system to start the engine by starting (DISP+WORK) on dialogue instance.
3. There will be only one default profile in the entire system which provides global values.
4. Instance specific profile - This is used to set the instance specific parameters.
Eg. How many profiles are available on a system with 10 Dialogue instances.

$$\begin{aligned} \text{Total} &= 11 \text{ (including Central Instance)} \\ 11 \times 2 &\text{ per instance (Start + Instance)} \\ 22 \\ 22 + 1 \text{ (Default Instance)} &= 23 \end{aligned}$$

PROFILE MANAGEMENT

Documentation for profiles are available in RZ10
Profiles resides in the table - TPFYPROPTY

RZ11 is also used to change some parameters dynamically without restarting the system but they will be reset once the system is restarted.

RZ10 changes are permanent

The field type 'T' Specifies the dynamic parameters.

RZ10

There are three types of Administration.

Profile	R3I_DVEBMGS00_DEWALL36	(Instance profile)
Version	4	(Saved, activated)

Edit Profile

Administration data
 Basic maintenance
 Extended maintenance

 Display  Change

1. Administration data

No need to maintain using this option. It only specifies the path of the parameters.

Profile	R3I_DVEBMGS00_DEWALL36
Version	4
Short description	Automatically generated import profile

Administration data

Activation in operating system file

Name /usr/sap/R3I/SYS/profile/R3I_DVEBMGS00_dewall36

Reference server for profile parameter check

Name dewall36_R3I_00 (AIX)

2. Basic Maintenance:

It is used to maintain the profile parameters without any technical names. GUI based using mouse

Profile R3I_DVEBMGS00_DEWALL36
Version 4

General data

System name	R3I
System number	00
Instance name	DVEBMGS00

Buffer and work processes

Buffer sizes for		No.of work processes									
ABAP Programs	450000	KB	<<	<	>	>>	Dialog	16	<<	<	>
Nametab	45266	KB	<<	<	>	>>	Update (V1)	3	<<	<	>
Generic key tables	29297	KB	<<	<	>	>>	Update (V2)	2	<<	<	>
Single key tables	10000	KB	<<	<	>	>>	Enqueue	2	<<	<	>
CUA Information	3000	KB	<<	<	>	>>	Background	3	<<	<	>
Screens	4297	KB	<<	<	>	>>	Spool	1	<<	<	>

3. Extended Maintenance

Used by administrator using parameter names

Specify the input by including new parameters or modify the existing one.

Copy > Save and Activate the profile.

The profile changes are updated at OS level and the existing profile is marked as .BAK and a new profile is created in the profile directory. It will effect only after restarting the Server.

Profiles are changed on SAP recommendation or based on experience. Do not change any of the profiles on trial and error method. System will hang and may not restart.

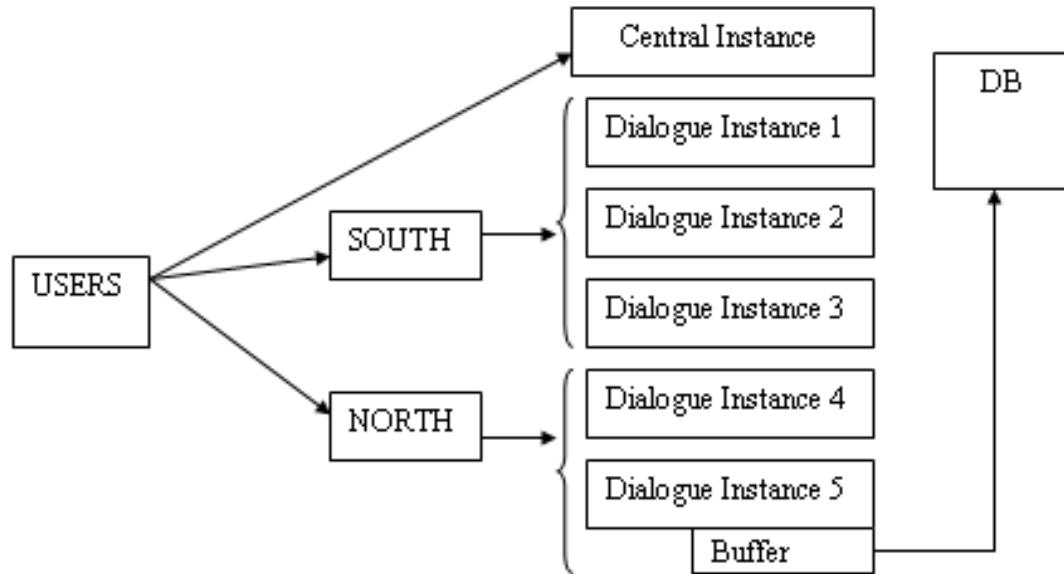
Display Profile 'R3I_DVEBMGS00_DEWALL36' Version

Parameter

05.08.2009 Active parameters

Parameter Name	Parameter value
login/accept_sso2_ticket	1
login/create_sso2_ticket	2
SAPSYSTEMNAME	R3I
SAPSYSTEM	00
INSTANCE_NAME	DVEBMGS00
DIR_CT_RUN	\$(DIR_EXE_ROOT)/run
Login/fails_tosession_end	3
rdisp/keepalive	900

LOGON LOAD BALANCING SMLG

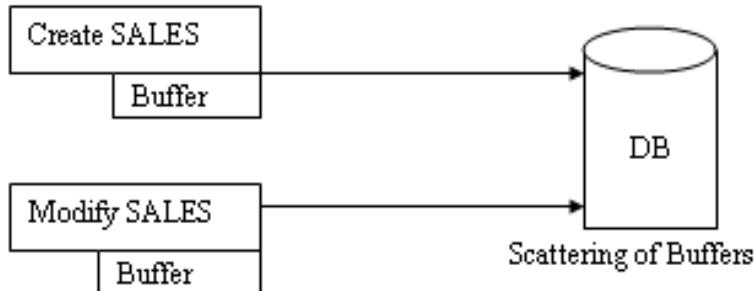


ST07 - Application Monitor: User Distribution
SMLG- Logon groups sapmsg.ini

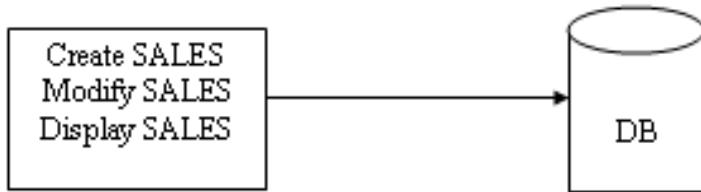
Logon Load Balancing SMLG

It is used to route the requests to the least loaded instance of that group.
 Factors to define LLB.

Identify the components along with users. If the users are logging to different instances the buffers are scattered therefore they are not effectively used.



So for this



* Note: **DDLOG** is the synchronization table

User A A+B =50
User B A+B =75 } Buffer Synchronization

1. Buffers are optimally utilized.
2. Load balancing to avoid long queues
3. Fail over (Logical) (As we are configuring logical system)
Load balancing provides the following logon groups which are defined in SMLG.

SMLG > Define the groups and assign the instances.

Mechanism

1. User uses SAP GUI -group's option to login
2. Saplogon.ini is used to display the available entries
3. User select group and click on logon.
4. When the user select group. It looks for **sapmsg.ini** to identify the message server and etc/services for message server port. **saprouting.ini**, **saprfc.ini**, **sapdoccd.ini** (For library), **saplogon.ini**
5. Message server communicates will all the dispatchers and identifies the least loaded server and mark it as a favorite server in SMLG. The request is routed to the favorite server.
6. The dispatcher process the request normally.

Sapmsg.ini ---- IP Address --- Hostname of the message server
Central instance (but not always)

DATA TRANSFER TECHNIQUES

During the implementation of the legacy system needs to be preserved or used in the current system.

Example: A customer/ company is running business for the past 30 Years. He is maintaining customer details, vendor details, supplier details, employees and salaries, account payables, account receivables and P&L (Profit and Loss). This information is required by the customer in SAP System. So there is need to transfer the legacy system data to SAP system.

Example: Customer implemented SAP but the employees who are old cannot make use of SAP system. They would like to work on the traditional systems. After go live both systems SAP and legacy travel parallel. The data entered in the legacy system i.e. PO's, Invoices, Billing, Shipping are to be transferred periodically(Hourly) bi-hourly(for every 4 hrs) or daily

SO --- PO
 BI ---- INV

Example: Reliance, Hero Honda [B2B Company to Dealers] not B2C [Distributors to customers] they communicate with dealers, suppliers, using SAP. But dealers and suppliers use non-SAP system so it is required to establish communication between SAP and NON SAP systems and perform the data transfer periodically.

ETL - Extract - Transfer - Load

SAP	-	Non SAP
Hero Honda		XML Dealers

RFC: REMOTE FUNCTION CALL

SM59

RFC is used to communicate between SAP systems and SAP to Non-SAP systems using TCP/IP protocol. RFC's are defined in [SM59]. There are 4 types of RFC's

1. Asynchronous RFC
2. Synchronous RFC
3. Transactional RFC
4. Queue RFC

1. **Asynchronous RFC** - (Like a post card). The sending system may or may not receive it. i.e. there is no acknowledgement from the receiving . The transmission is not reliable.

2. **Synchronous RFC** - It is not like ARFC. It gets an acknowledgement from the target system. (like a register post).

If the receiving system is not available the process goes into RFC/ CPIC/ Sleep mode and waits until it is wakened by the target system. Target system/

Receiving system may be busy i.e. all the resources are used up. This is reliable but time consuming and expensive (Client Copy) the job should get finished.

Note: SAP uses CPIC protocol SAP specific (Common Programming Interface for Communication) to communicate between system.

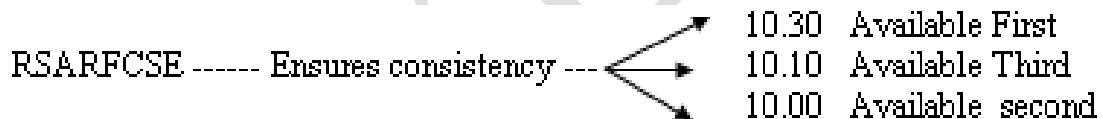
Berkley	UNIX PRINTER
	CPIC SRFC

3. Transactional RFC - TRFC - It is an advanced version of ARFC and SRFC. The request goes to receiving system if it is not handled a Transaction ID is generated by the source system. A program RSARFCSE is scheduled in the background to run for every 60 seconds.

Transaction **SM58** is used for Transactional RFC. It is used to document all the transactional ID's and ensure that they are received by the recipient system. This is consistency and reliable.

Example : Central user administration.

A user is created in the parent client and transferred to the child client when they are available?



4. Queued RFC - It is an advanced version of TRF and ensures that the transaction is committed based on FIFO/ Queue. It ensures transaction consistency of LUW and reliability of data transmission.

SMQ1 - to monitor the outbound queues of a sending system refer SCOTT for FAX...

SMQ2 - Provides interface to monitor Inbound queues.

DEFINING SYSTEMS - SALE

SAP systems consists of more than one client - technically 1000 client can be created in one system. So we need to identify which client is the business client. Previously SAP is client based (A mandatory field while login)

Each client is defined with a logical system name that is defined in **SALE**. (Sap System linking and enabling). Each system is identified by SID, client by 3 digit number. So, Logical system number should be <SID>CLNT<CLNT_Number>

Eg. **DEVCLNT900**

To identify the systems easily by name

1. Goto > SALE > Basic Settings > Logical System
2. Define Logical System (<SID>CLNT009)
3. Assign logical system to the client.

There should be unique SID in the Landscape.

Defining RFC Connection - SM59

1. SM59 - Provide the name of the logical system
2. Select the connection type '3'
3. Description about the connection
4. Technical settings (Host name and Instance No)
5. Logon Security (Client, UID, PWD, Logon Language)
6. Save the connection, Test Connection, Remote logon

Perform three times to add 3 systems.

Central User Administration SCUA

Goto > BD64 or SALE > to define the sending systems and receiving systems

Or

Use the SAP standard moral for that application.

Example: To configure central user administration **SCUA** Tcode is used.

From 000/ Sapuser

Execute **SCUA** / - **model**: lolla > Create

(The logged in system is treated as Sending system)

We need to define recipient/ receiving systems

DEVCLNT001

DEVCLNT000

DELCLNT001

save to configure CUA

Goto back end systems

Try to execute SU01 and create a user. It wont allows us to create because the Receiving systems will become a Child system.

SCUM is performed only in the Parent System

Eg: Consider a Scenario

- Being in parent create an user assigning profile SAP_ALL
- define systems and SAVE
- Stop the other systems
- Execute SM58 (Transactional RFC)

Users are distributed to the child client using TRFC (SM58) and if the client system is not Available the record hangs in SM58 and ensure that is updated in the child client.

To delete: Execute report: RSDELCUA or SCUA select the client and delete.

EDI - Electronic Data Interchange

It is used to communicate between SAP to NON-SAP systems.

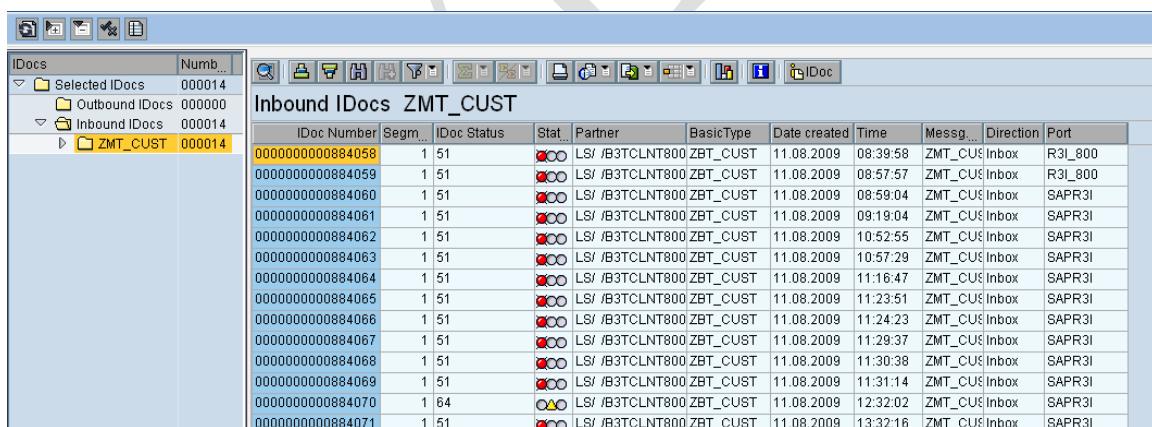
ALE - SAP to SAP only.

IDOCS (Intermediate Documents) are used to transfer the data. It will be in the Understandable format of both sending and receiving systems. SAP - NON SAP.

WE05 is the Tcode to monitor the IDOCS

SCUL to check the logs

WE05 > Status



The screenshot shows the SAP WE05 status screen for Inbound IDocs ZMT_CUST. The table lists various IDoc entries with columns for IDoc Number, Segm., IDoc Status, Stat., Partner, BasicType, Date created, Time, Message, Direction, and Port. Most entries show a status of 'OK' (green circle). Some entries have a yellow warning icon, indicating issues like 'not posted fully' or 'syntax error'.

IDocs	Numb...											
Inbound IDocs ZMT_CUST												
		IDoc Number	Segm...	IDoc Status	Stat...	Partner	BasicType	Date created	Time	Message...	Direction	Port
		00000000000884058	1 51	OK		LS/ /B3TCLNT800 ZBT_CUST	ZBT_CUST	11.08.2009	08:39:58	ZMT_CUS\$Inbox	R3L_800	
		00000000000884059	1 51	OK		LS/ /B3TCLNT800 ZBT_CUST	ZBT_CUST	11.08.2009	08:57:57	ZMT_CUS\$Inbox	R3L_800	
		00000000000884060	1 51	OK		LS/ /B3TCLNT800 ZBT_CUST	ZBT_CUST	11.08.2009	08:59:04	ZMT_CUS\$Inbox	SAPR3I	
		00000000000884061	1 51	OK		LS/ /B3TCLNT800 ZBT_CUST	ZBT_CUST	11.08.2009	09:19:04	ZMT_CUS\$Inbox	SAPR3I	
		00000000000884062	1 51	OK		LS/ /B3TCLNT800 ZBT_CUST	ZBT_CUST	11.08.2009	10:52:55	ZMT_CUS\$Inbox	SAPR3I	
		00000000000884063	1 51	OK		LS/ /B3TCLNT800 ZBT_CUST	ZBT_CUST	11.08.2009	10:57:29	ZMT_CUS\$Inbox	SAPR3I	
		00000000000884064	1 51	OK		LS/ /B3TCLNT800 ZBT_CUST	ZBT_CUST	11.08.2009	11:16:47	ZMT_CUS\$Inbox	SAPR3I	
		00000000000884065	1 51	OK		LS/ /B3TCLNT800 ZBT_CUST	ZBT_CUST	11.08.2009	11:23:51	ZMT_CUS\$Inbox	SAPR3I	
		00000000000884066	1 51	OK		LS/ /B3TCLNT800 ZBT_CUST	ZBT_CUST	11.08.2009	11:24:23	ZMT_CUS\$Inbox	SAPR3I	
		00000000000884067	1 51	OK		LS/ /B3TCLNT800 ZBT_CUST	ZBT_CUST	11.08.2009	11:29:37	ZMT_CUS\$Inbox	SAPR3I	
		00000000000884068	1 51	OK		LS/ /B3TCLNT800 ZBT_CUST	ZBT_CUST	11.08.2009	11:30:38	ZMT_CUS\$Inbox	SAPR3I	
		00000000000884069	1 51	OK		LS/ /B3TCLNT800 ZBT_CUST	ZBT_CUST	11.08.2009	11:31:14	ZMT_CUS\$Inbox	SAPR3I	
		00000000000884070	1 64	OK		LS/ /B3TCLNT800 ZBT_CUST	ZBT_CUST	11.08.2009	12:32:02	ZMT_CUS\$Inbox	SAPR3I	
		00000000000884071	1 51	OK		LS/ /B3TCLNT800 ZBT_CUST	ZBT_CUST	11.08.2009	13:32:16	ZMT_CUS\$Inbox	SAPR3I	

0 to 49

- are the outbound IDOCS

50

and above are the inbound IDOCS

52

- States that the application document not posted fully.

53

- States that the document is posted

02

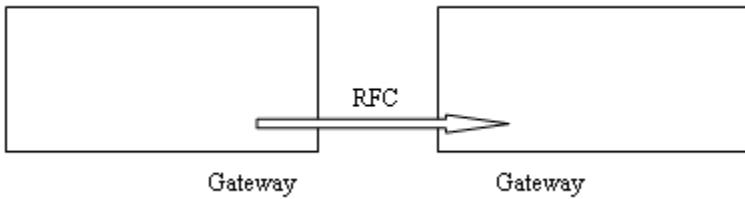
- States that there is error in the port

07

- states there is a syntax error.

Tcode **IDOC** to check the consistency

WE21 to identify the ports for IDOC processing.



SYSTEM MONITORING

Gateway is a port that listens on 3300.

It is used to monitor the health of systems in terms of storage, memory and CPU technically.

Status (Killed, Ended, Free... Instance is down)

But on SAP front we need to monitor the process utilization, pending updates, dead locks, system logs, database logs, system dumps, btc failures, RFC failures, Failed spool requests, work load on the system (Users, Reports, Transactions, Programs)

PROCESS MONITORING SM50 (INSTANCE)/ SM66 (GLOBAL)

Monitor the instance specific processes in SM50 and Global Specific Process overview based on status in SM66.

Monitor the processes with status(reasons) running, hold, stopped, sleep, RFC/CPIC, PRIV.

Identify the user, time, client, Action.

If BTC is running for longer times check whether it is permissible as per the process document.

Dialogue process should not consume more than 1-2 seconds for normal tasks. It will be automatically down (Killed) by system in 600 Seconds. If it is not killed the process might be occupied by dedicated resource and uses heap memory with status PRIV. The process has to complete the job or Heap Memory should exhaust, so that process comes out. We may need to kill the processes with status PRIV using DPMON, Task Manager or Kill -9 Command on UNIX.

If more number goes into PRIV we may need to restart the instance.

Refer: select MANDT, Count (*) as Total from DEV.USR02 group by MANDT.

Note : Rdisp/gui_auto_logout = 900 sec

---- Example ---

User pwd forgotten and all the users are locked if SAP* is deleted. It will be created with Password pass. Do not change the status of users in the USR02 Table.

Select MANDT, BNAME, UGLAG from USR02

128 - Self Locked

64 Administrator Lock never becomes 0

Refer

SM12 - Select Lock Entries

SM13 - Update requests

SM14 - Update program Administration (Deactivate)

SM36 - To define the Back ground Job

SM37 - JOB monitor

SM21 - System Log

ST22 - ABAP Dumps/ Runtime Error

RZ04 - Maintain Operation Modes

SM63 - Display/ Maintain Operation Mode Set

SP01 - Output controller - Spool

Standard Jobs

- RSBTCDEL - Deletes the batch job logs
- RSSNAPDL - Delete Old ABAP Dumps
- RSPO1041 - Delete Old spool logs and files
- RSMO13002- Delete old update request logs
- RSCOLL00 - Collects performance info in Transaction ST03
- RSPO1043 - Spool Reorganization.

DPMON - When the user could not login to the system (Experience Hour glass)

Process the list @ OS Level

DPMON

K

Provide SR. Number

Provide PID.

SM59 - RFC Destination

SM50 - Process Overview

SM51 - Active SAP Servers

SM66 - Global Work Process overview

WE05 - IDOC List

SMQ1 - QRFC (outbound) queue

SMQ2 - QRFC (Inbound) queue
 SM04 - User List.

WORK PROCESS MULTIPLEXING

(Consider Restaurant Activities).

Each user transaction may be served by one or more processes without restricting to the user similarly each work process serve multiple users without restricting the user. (No dialogue process remains ideal)

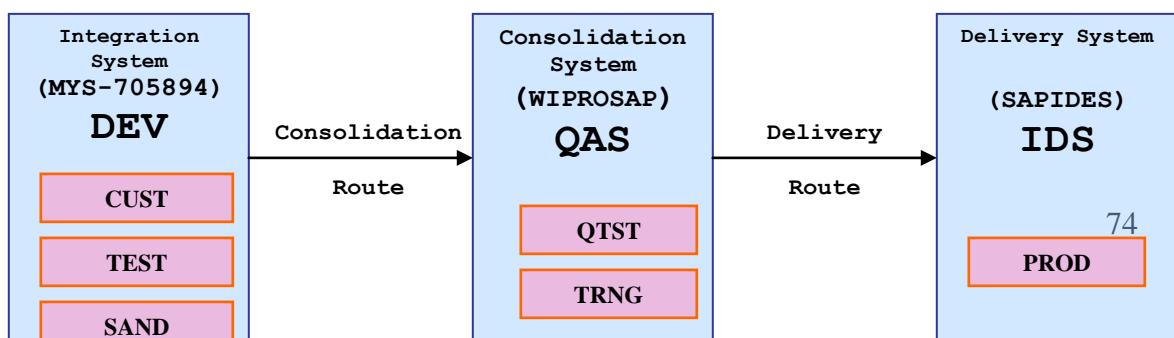
Each process can serve 5 - 10 users and Each SAP transaction consists of multiple (LUW - Logical unit of work) Each LUW contains task which should be completed/ rollback as a group. Each LUW is a commit or rollback (no intermediate stage ... which makes the system inconsistency).

Configuring Transport Domain:

Landscape

Below is the Details for a three system landscape and we want to configure Transport management System.

1. SID: **IDS**, Hostname: **SAPIDES**
2. SID: **QAS**, Hostname: **WIPROSAP**
3. SID: **DEV**, Hostname: **MYS-705894**



Prerequisite

We have to define RFC connection between these three systems (T-Code: SM59)

Analysis

Now we have to decide which one should be our Transport Domain Controller. SAP recommends the transport domain should have following attributes.

- Highly available
- Highly secure &
- Highest possible release

The transport domain controller should normally be configured in a production system or quality assurance system.

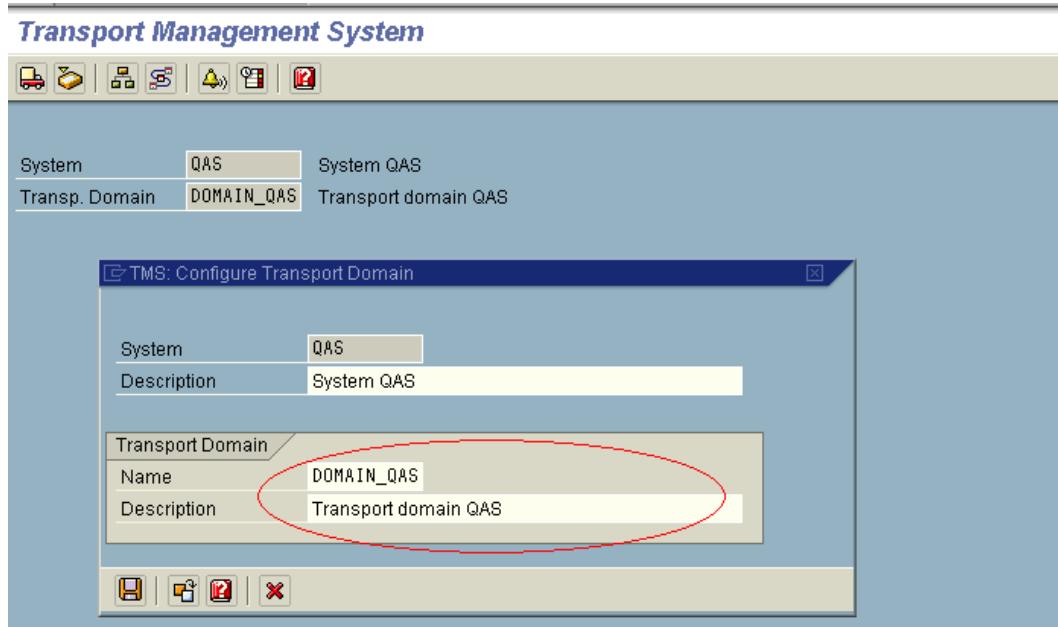
Q: Will the configuration of domain controller affect my system performance?

A: No. Only if the TMS configure changed or if there is error in transport the load in the domain controller increases for some time.

When you have decided which system should be the Domain Controller, proceed with configuration.

Configuration (Domain Controller)

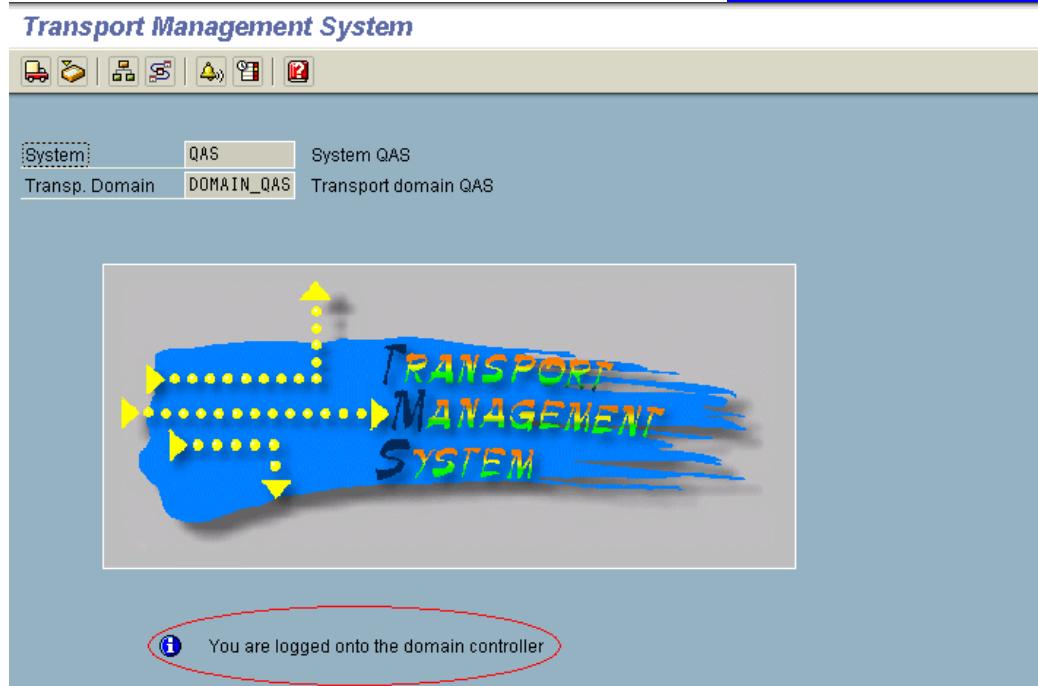
1. Logon to the SAP system (Client: 000; User: SAP*) on which you want to configure the Domain Controller (QAS here).
2. Enter transaction STMS.
3. The following dialog box appears



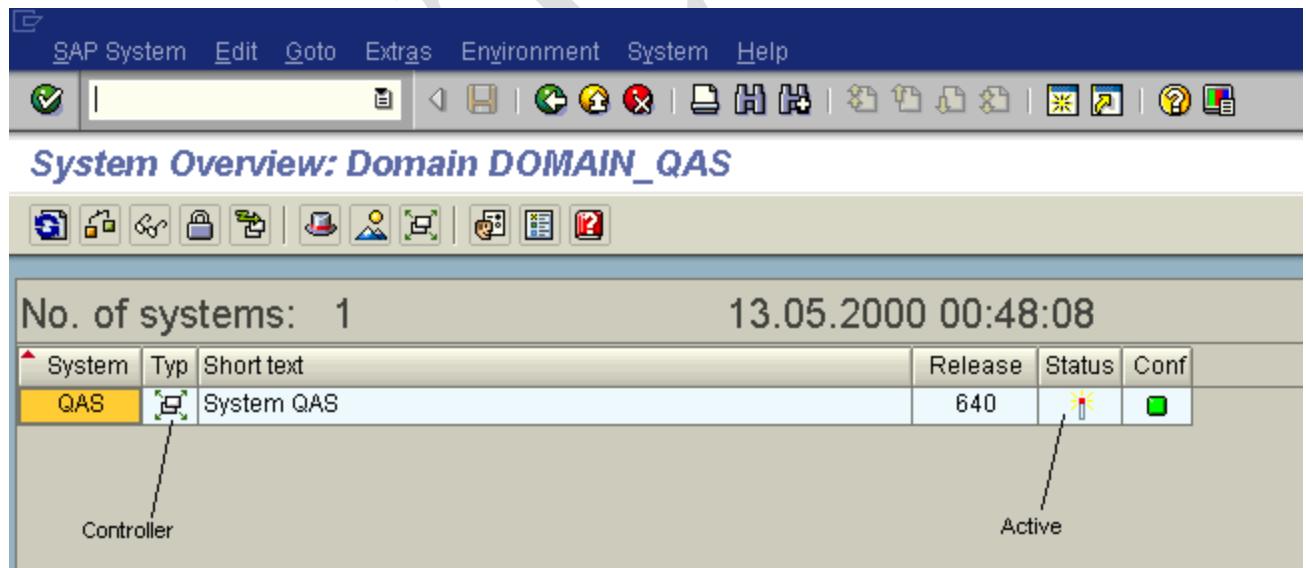
4. Enter the name of Transport Domain Name (Can not contain blank characters) & short description.
5. Now click on save button of the dialog box.

Note: Once saved & other systems are added you cannot change the **DOMAIN NAME** without reconfiguring the entire transport domain.

6. Following is the initial screen of T-Code STMS once the domain controller is configured.



7. Go to menu **Overview > Systems** OR Click on the  icon which is available on standard toolbar then you will get the window which is shown below.



System	Typ	Short text	Release	Status	Conf
QAS		System QAS	640		

8. Automatically the following configurations are updated in SAP System.

- The user TMSADM will be created.
- RFC destinations required for the TMS are generated

- TMS configuration will be stored in the Transport directory.
- Transport Profile for transport control program **tp** is generated.

Now Once the Transport Domain is configured proceed adding other system to the Domain Controller.

Configuration (Inclusion of SAP systems in Transport Domain)

This occurs in two steps

1. Adding the SAP system into the Transport directory.
2. Confirm the system inclusion in the Domain controller.

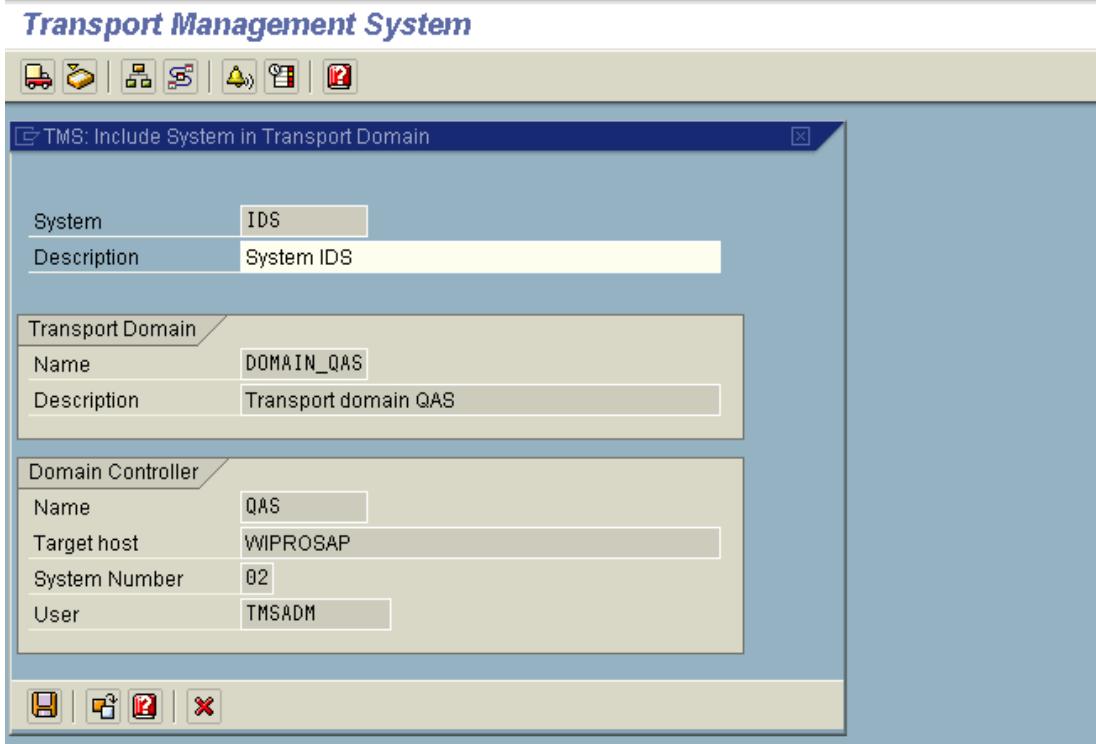
1. Adding the SAP system into the Transport directory

1. Log-on to the system (Client: 000; User: SAP*), the one which you want to add to the transport domain.
2. Call the transaction STMS.

Note: If the SAP Systems have a common transport directory TMS proposes to add the SAP system to the transport domain when you call STMS.

3. The Following Dialog box appears.

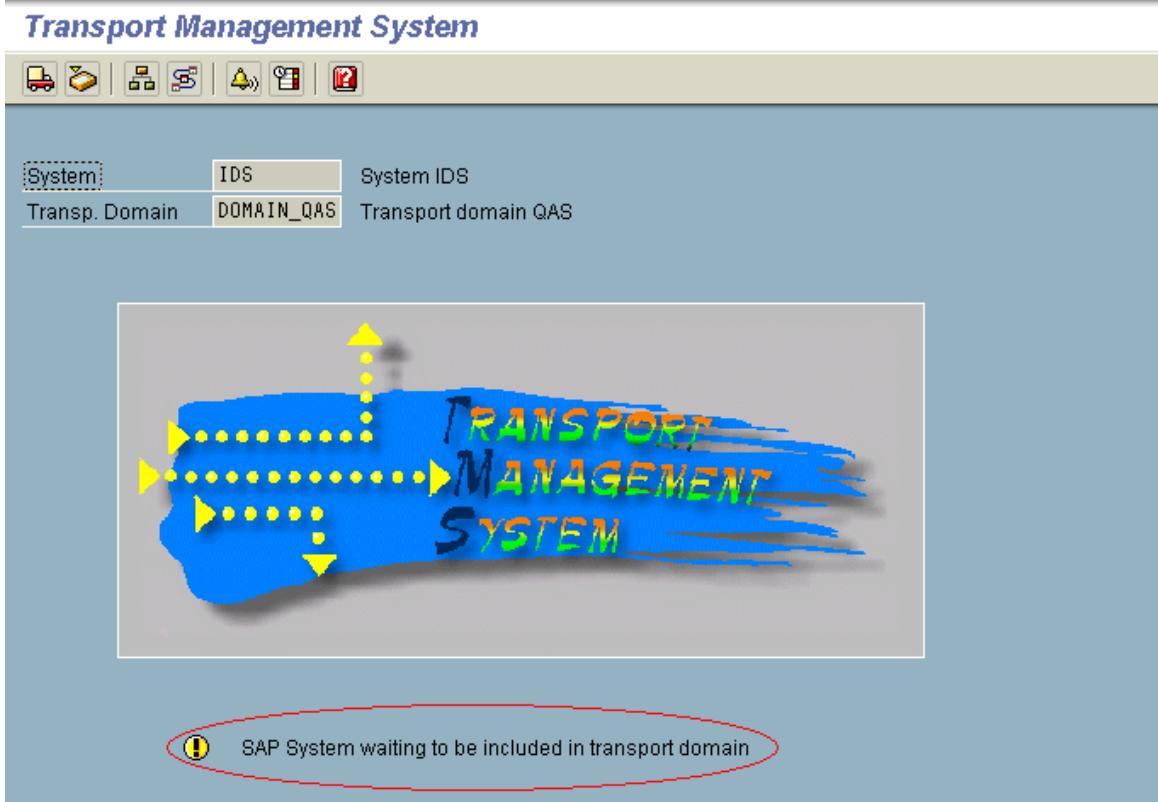
The dialog box *TMS: Include System in Transport Domain* appears, displaying the Transport Domain Name and the address data of the Domain Controller.



4. Click on save. Following are performed automatically.

- Creates the user **TMSADM**.
- Generates RFC destinations required for the TMS.
- Sends the address data to the domain controller.
- Sends the profile parameter for configuring the transport control program to the domain controller

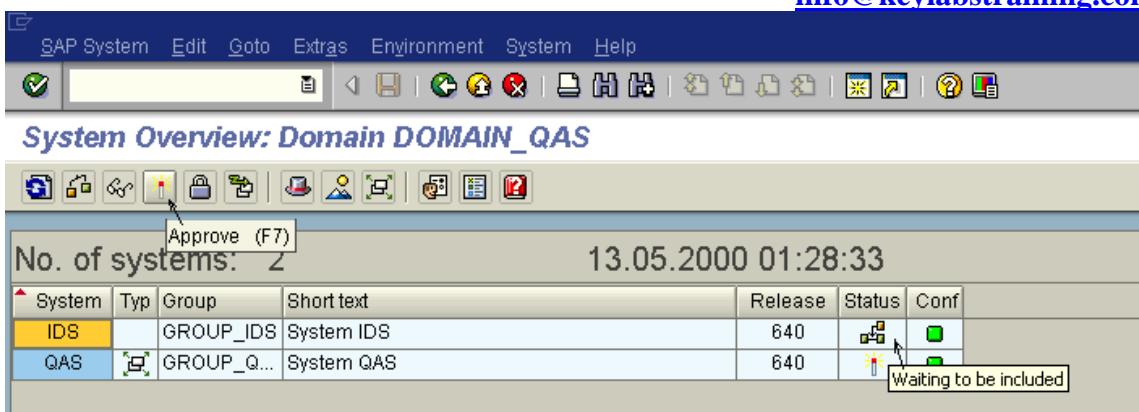
5. The following is the initial screen indicates it's waiting to be included in the transport domain.



Note: For security reasons the domain controller must confirm the inclusion of SAP system.

2. Confirm the system inclusion in the domain controller.

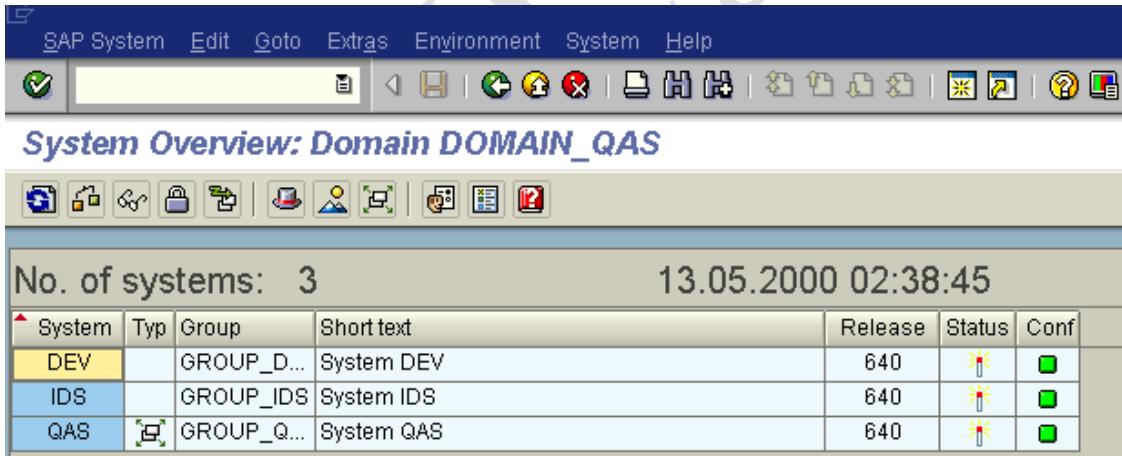
1. Now logon to the domain controller and call the T-Code **STMS**.
2. Goto menu **Overview > Systems** OR Click on  icon which is available on the standard tool bar.
3. The following screen will appear. The column "**Status**" shows it's waiting to be included.



4. Position the cursor on the SAP system. Goto menu **SAP Systems > Approve**

Alternatively you can press **F7** key on keyboard or click on the  icon (Approve button) in standard toolbar to include it in Transport Domain.

Now in the same way you can include the DEV system in transport domain.



When the 2 systems added to Transport domain check the consistency of transport groups.

1. To check this choose menu **Goto > Transport Groups**.
2. It'll display screen: **Display TMS Configuration: Transport Groups**.
3. Choose menu **Configuration > Check Transport Groups**.
4. It'll display a screen similar to the one shown below.

TMS: Check Transport Groups			
Group	GROUP_DEV	GROUP_IDS	GROUP_QAS
System	DEV	IDS	QAS
DEV	■		
IDS		■	
QAS			■

5. Green Color means Group is assigned correctly.
6. Red color means error occurred.

Configuring Transport Routes:

Prerequisite

Before configuring the transport routes all the systems should already be added to the transport domain.

Configuration

We can configure the transport routes in Domain controller only and can distribute & activate in all SAP systems in the transport domain.

Transport route configuration consist of

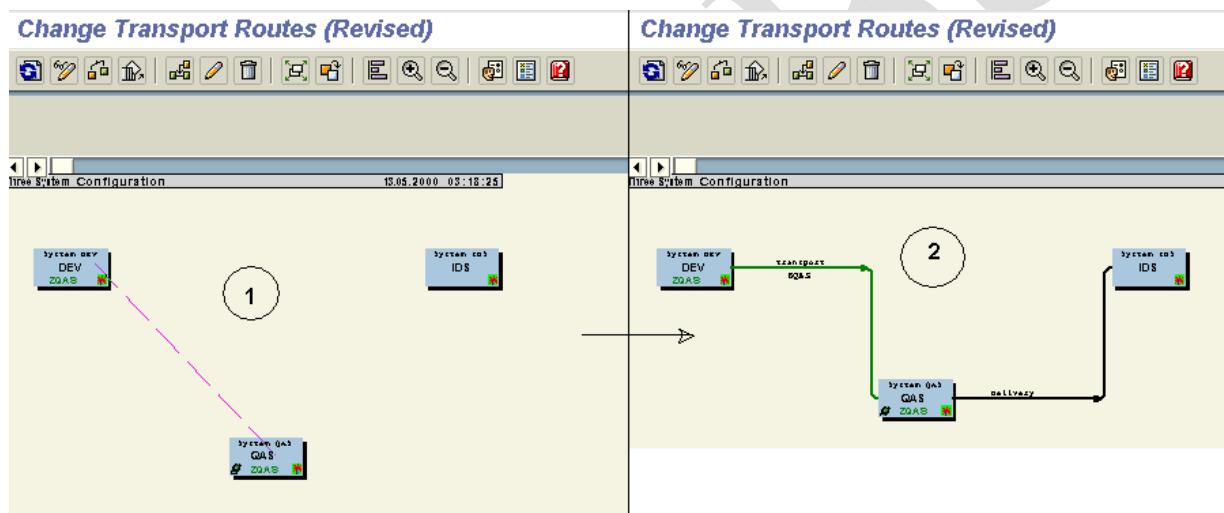
1. System Attributes.
2. Consolidation Routes.
3. Delivery Routes.
4. Target Groups.

SAP provides 2 editors for configuring transport routes.

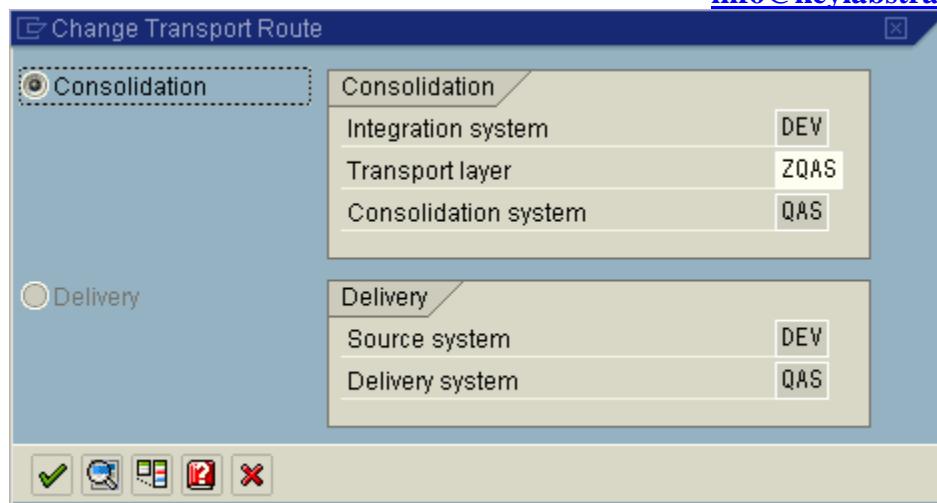
1. Graphical Editor.
2. Hierarchical List Editor.

Steps to Configure Transport Routes:

1. Call STMS in transport domain controller system.
2. Click on  icon which is available on standard toolbar.
3. By default it goes to Hierarchical list editor.
4. Choose menu **Goto > Graphical Editor**.
5. Now you can find the three systems in this graphical editor.
6. Click on  icon which is available on standard toolbar to get edit mode.
7. Click on  icon which is available on standard toolbar to add transport Route.



8. In figure-1 place mouse pointer on **DEV**, Now click and drag to **QAS**. Now one Dialog box will appear which is shown below.



9. Choose **Consolidation** radio button and go to **Transport Layer** option. Now Click on  icon.

10. Figure-2 Shows the complete configuration where you choose the route as Delivery from **QAS** to **IDS**.

10. This ends the configuration of Transport Management System for a three system landscape. By performing requests transportation operation we can check out the functionality.

Creating change request and add objects:

- 1) Logon to client which request should be created.
- 2) Go to SE01 or SE10 or SE11 and press create button.
- 3) Enter the target system it should be released and enter user names to release sub tasks.
- 4) Save it and double click on the request and insert object which is modified.
- 5) Release the sub-task requests directly or background job and now release main request.
- 6) Any change request should release by its owner only.
- 7) All change requests will be stored in the E070 table.
- 8) After releasing change request it will convert to transport request.

Importing transport request:

- 1) Enter to the server which request should be import with admin user.
- 2) Enter in STMS->import button and refresh the screen.

- 3) Enter in the SID which request should be import.
- 4) If the request is in scattered symbol then select the request and press scattered button, so the request will be transfer completely into the queue.
- 5) Select request and press semi-loaded truck symbol to import into the server
- 6) Enter client number in which request should be import and select import option.

Import options:

- 1) Leave the transport request in queue for later import.
- 2) Import transport request again.
- 3) Overwrite originals.
- 4) Overwrite objects in unconfirmed repairs
- 5) Ignore non-permitted transport type.
- 6) Ignore non-permitted table class.

Issues on Transport management:

- 1) SAP and database is not connected-> enter r3trans -d in the windows command prompt.
- 2) RFC errors-> check RFC connection of the servers configured in transport management.
- 3) Data files were not generated-> release the request again.
- 4) TMS inconsistent-> check the transport routes were configured.

What is a client and how many default clients in SAP?

When you log on to an SAP System, you log on to a particular client of this system. Any activities you carry out in the system are always carried out in one client. When you plan your SAP system landscape, you must consider which clients you need for which activities.

In SAP we have three default clients 000, 001 and 066, so these are called as standard clients. These clients are not supposed to be used in development, quality and production environments.

Client 000 is basically used as working client only when you do support pack upgrade or ABAP load generations (SGEN) and implementing additional languages, etc. Otherwise, client 000 should not be used as a working client. The same applies to client 001. But the only exception with 001 is, with Solution Manager, 001 will be your working client. You will do all configurations and obtain support from SAP through this client. With other Systems like BW and CRM, this client (001) will not be a working client. Two standard users (SAP* and DDIC) are defined in the clients 000 and 001. The client 066 is used only for EarlyWatch functions (Monitoring and performance). The user EarlyWatch is delivered in client 066 and is protected using the password SUPPORT. This password needs to be changed for security purposes.

How to create Logical system name?

Enter BD54 and give logical system name as below syntax.

<SID>CLNT<client number>

Give the description of logical system name and save.

Local Client Copy:

Prerequisites:

- Check the source client size by enters TC-SE38 and run report rstablesize and check enough space is available on the target system.
- Lock all the users in the source client.
- Client copy must be started from the target system, so login into the target system using sap* and pass
- Ensure that transport management system is configured and working fine.
- Minimum two background jobs should be available, otherwise pause all background jobs by enter TC-SE38 and run RSBTCTRNS1 report. To reschedule all job back into normal run RSBTCTRNS2 report.
- RDDIMPDP job should be run in background, otherwise run report RDDNEWPP.
- TEMP and TRANS directories should have three times of client size free space.

Procedure:

- 1) Create client by enter transaction code SCC4 and assign logical system name.
- 2) Assign client settings according to the role of the client in landscape.
- 3) Logon in new client with “sap*” user and password “pass”
- 4) If password “pass” is not working then change
login/no_automatic_user_sapstar=0 and restart the application server.
- 5) Enter SCCL for local client copy and give desired profile and source client (sap_all to copy all data from source client, sap_cust to copy customized data, sap_user to copy all users in source client, sap_appl to copy all application data from source etc).
- 6) Schedule as a background job due to it is long running job.
- 7) Logs can be displayed in SCC3.

Remote Client Copy:

- All prerequisites of local client copy with some of the points below.
- RFC connections should be established between the servers.

Procedure:

- 1) Create new client in target system.
- 2) RFC connection should be established from target to source server.
- 3) Logon to new client and enter SCC9 and select client profile and source client.
- 4) Schedule in background.
- 5) Logs can be displayed in SCC3.

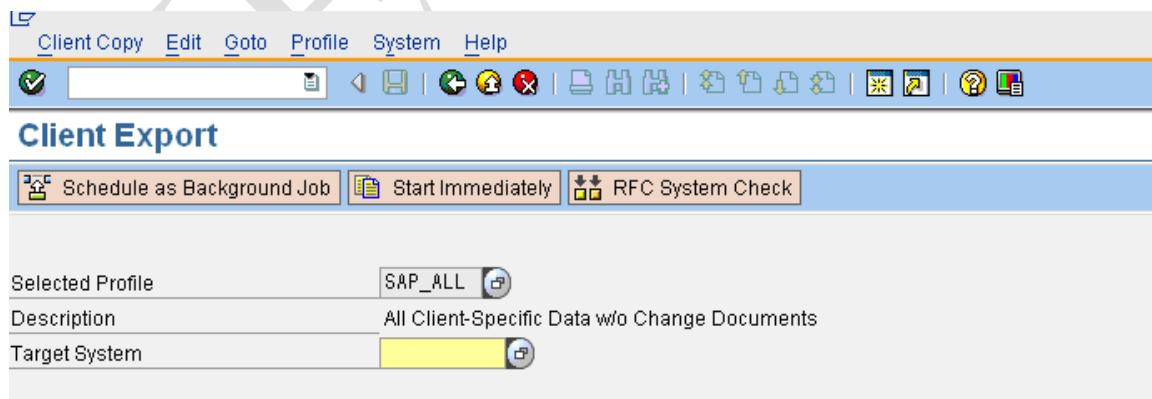
Preparation for Client Export / Import:

Before client refresh, the following points to be followed properly to enable smooth export / import from source system to target system.

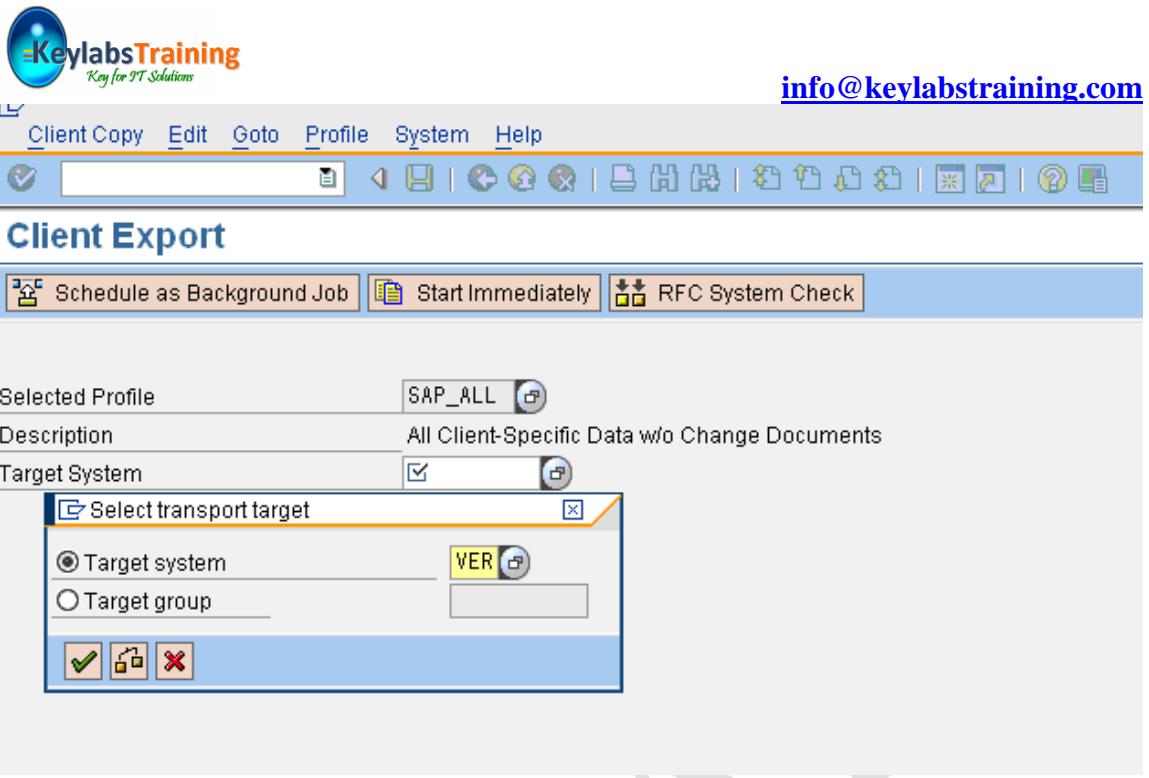
01. Space on USR drive should be minimum 50GB to 100GB on both source as well as target systems. This space is required as the requests which are created during client export will be saved in USR drive. Those requests again would be moved to the target system, hence the same amount of space required on target system.
02. Temporary database size should be minimum 3GB.
03. Space on Target System for Data files should be 600GB.
04. Log file size on target and source system should be more than 50GB. If required, backup of the same to be taken frequently.
05. Parameter PHYS_MEMSIZE should be 70% of the Physical Memory size.
06. During client export and import, suspend the background jobs on both source and target systems.
07. If the system is not on Landscape, TMS needs to be configured on the system.

Client Export:

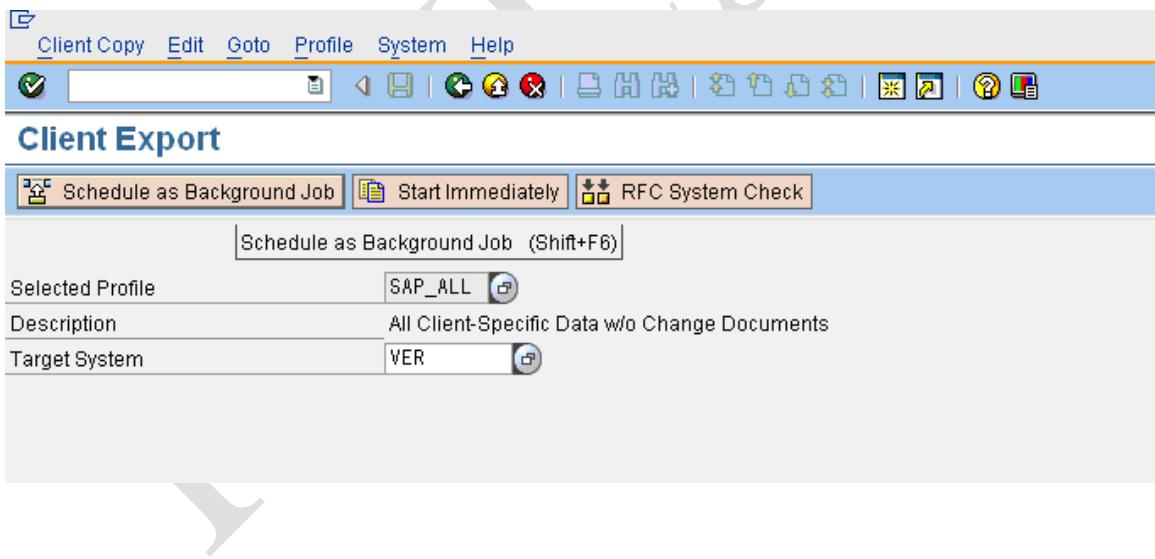
01. Logon to the source client, enter SCC8. Choose the profile for export and click on target system.



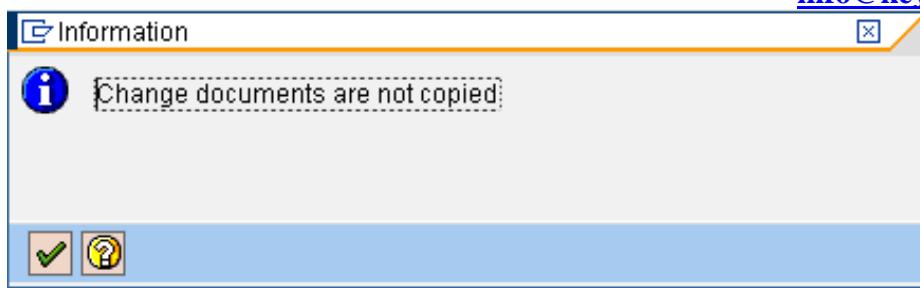
02. Choose the target system in which the export to be imported. This case considered Virtual system as a target system (VIR). Click OK. If the system is on Landscape, then choose the target server SID.



03. Click on Schedule as Background Job.

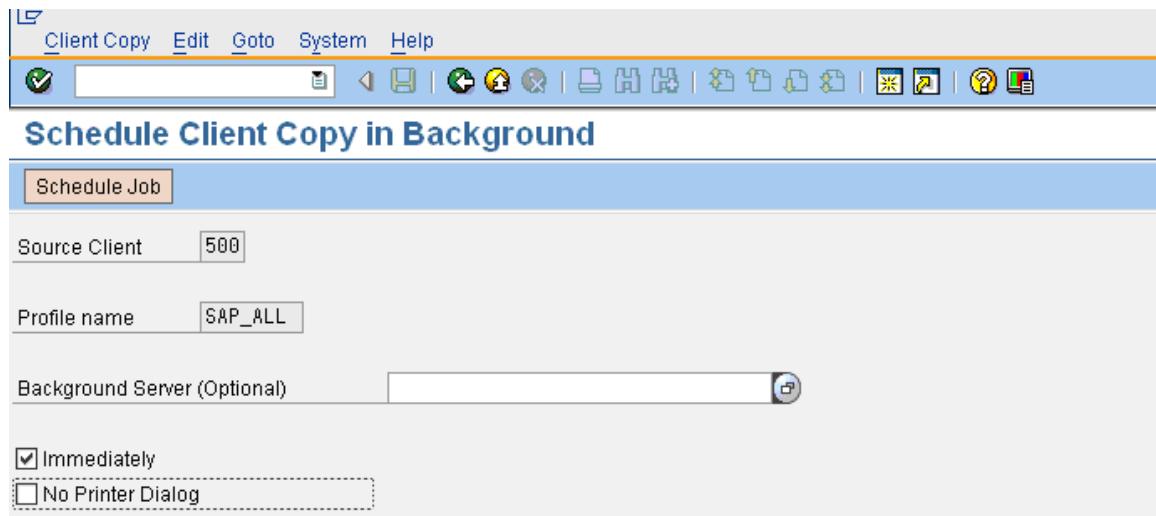


04. Change Documents are not copied from the source system to target system as per profile SAP_ALL. Click on OK.

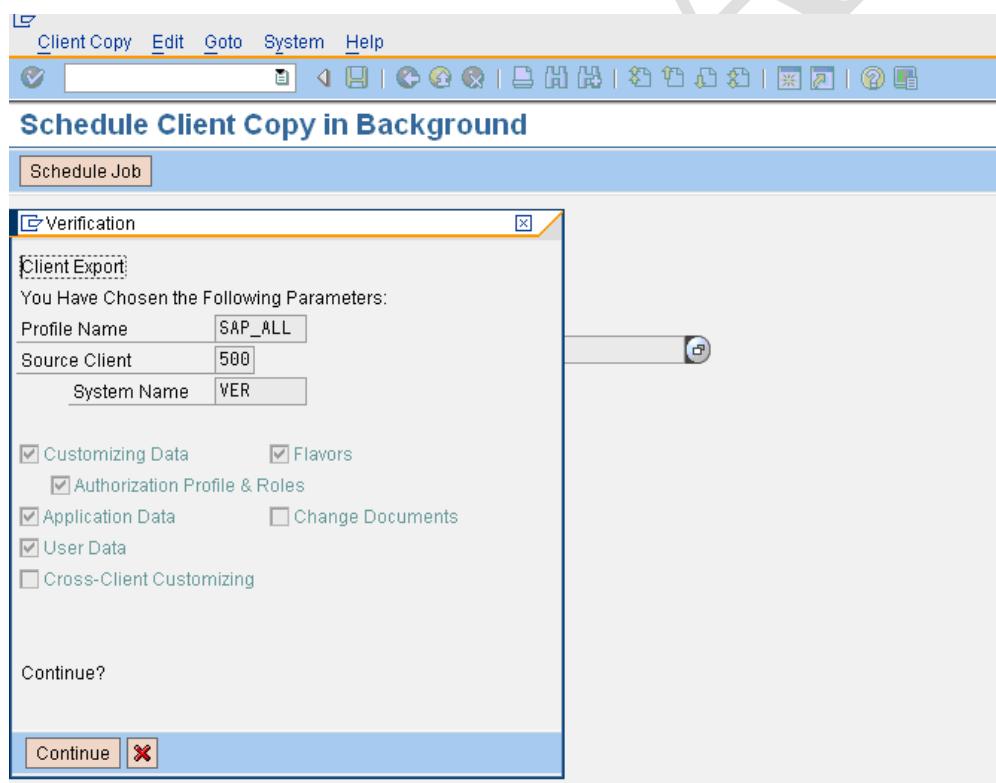


KEYLABS

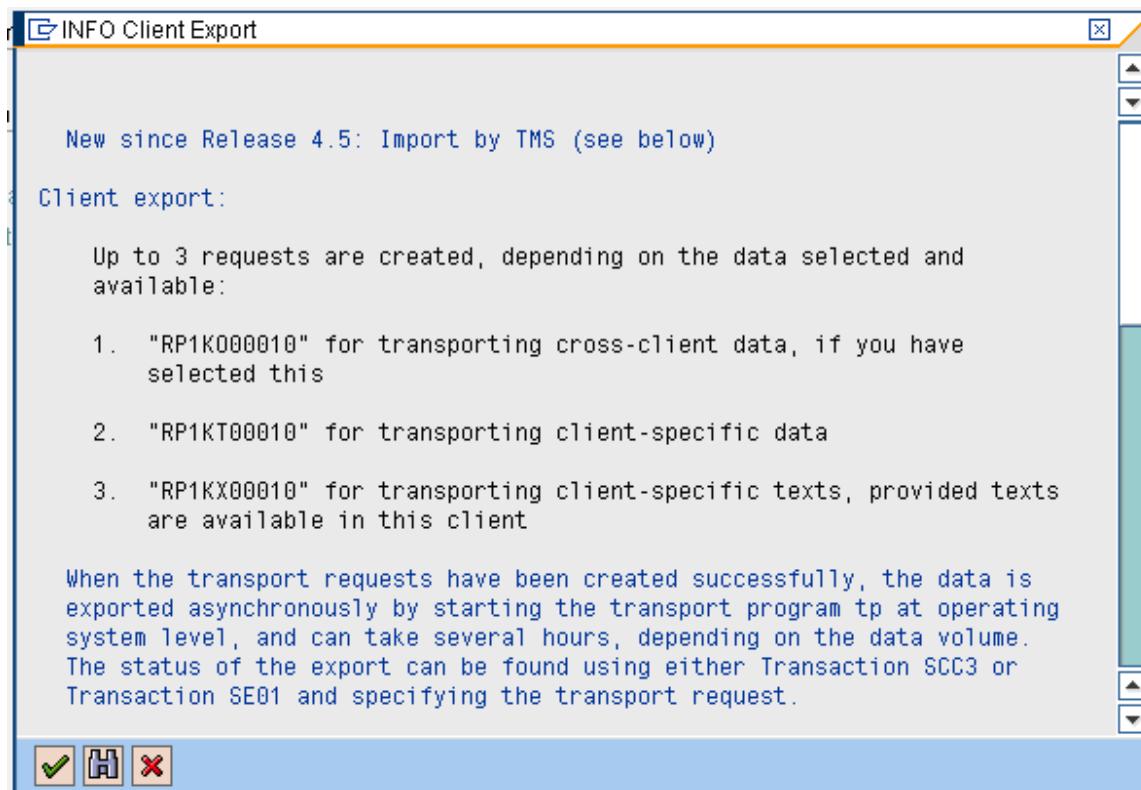
05. Click on “Immediately” and Un click “No Printer Dialog” and schedule Job.



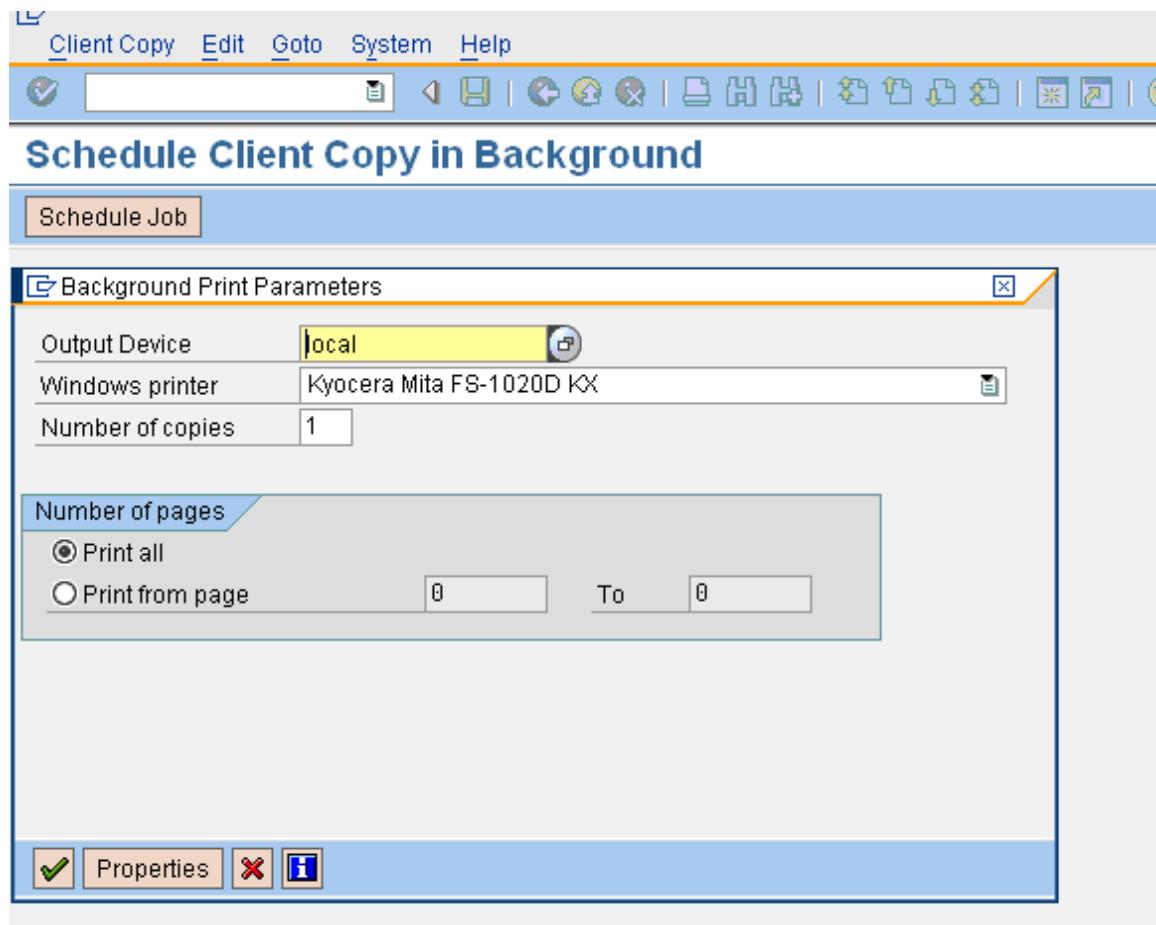
06. Click on Continue.



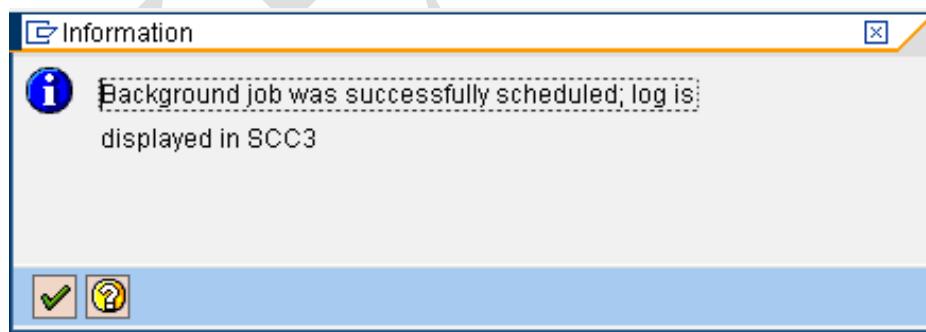
08. The popup which appears will show the requests which are going to be created.



08. Click on OK.

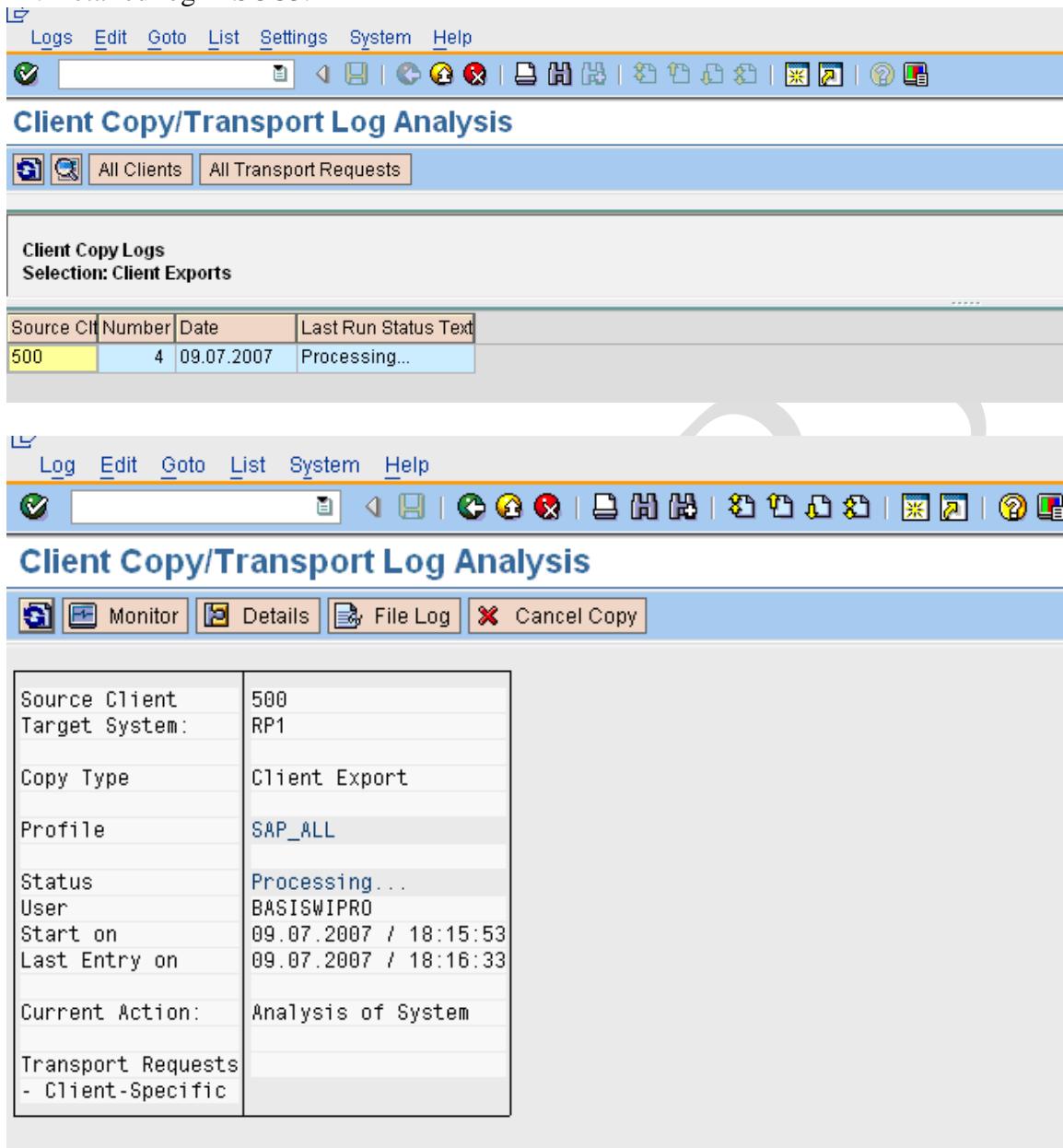


09. The popup screen appears on confirmation for the back ground job.



10. Go to SCC3 and check the log for the same.

11. Detailed log in SCC3.



The screenshot shows the SAP Client Copy/Transport Log Analysis interface. At the top, there is a toolbar with various icons. Below the toolbar, the title "Client Copy/Transport Log Analysis" is displayed. Underneath the title, there are two buttons: "All Clients" and "All Transport Requests". A sub-header "Client Copy Logs" and "Selection: Client Exports" is present. A table displays a single log entry:

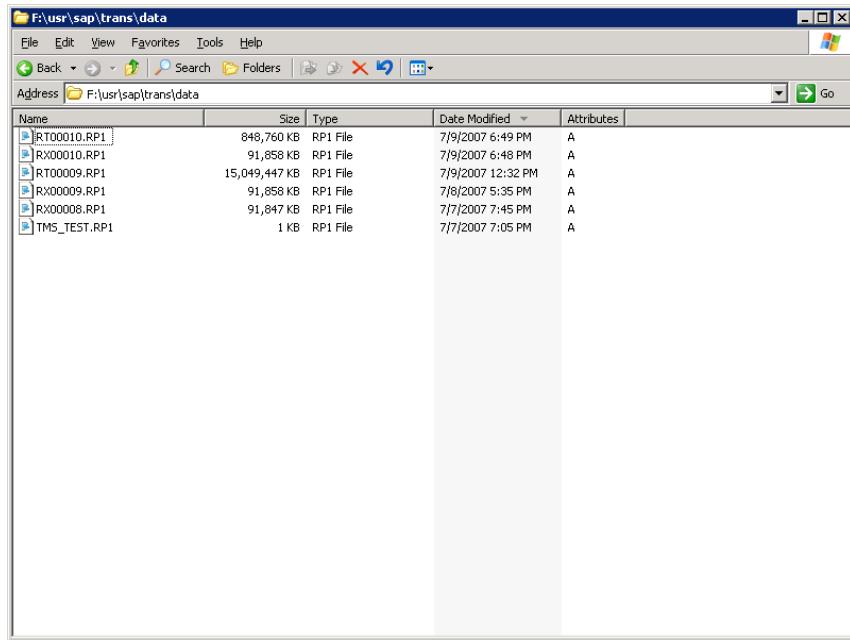
Source Cl	Number	Date	Last Run Status Text
500	4	09.07.2007	Processing...

Below this, another toolbar is shown with icons for Log, Edit, Goto, List, System, Help, and various transport-related functions. The main area is titled "Client Copy/Transport Log Analysis" again. It features a "Monitor" button, a "Details" button, a "File Log" button, and a "Cancel Copy" button. On the left, a detailed log entry is shown in a table:

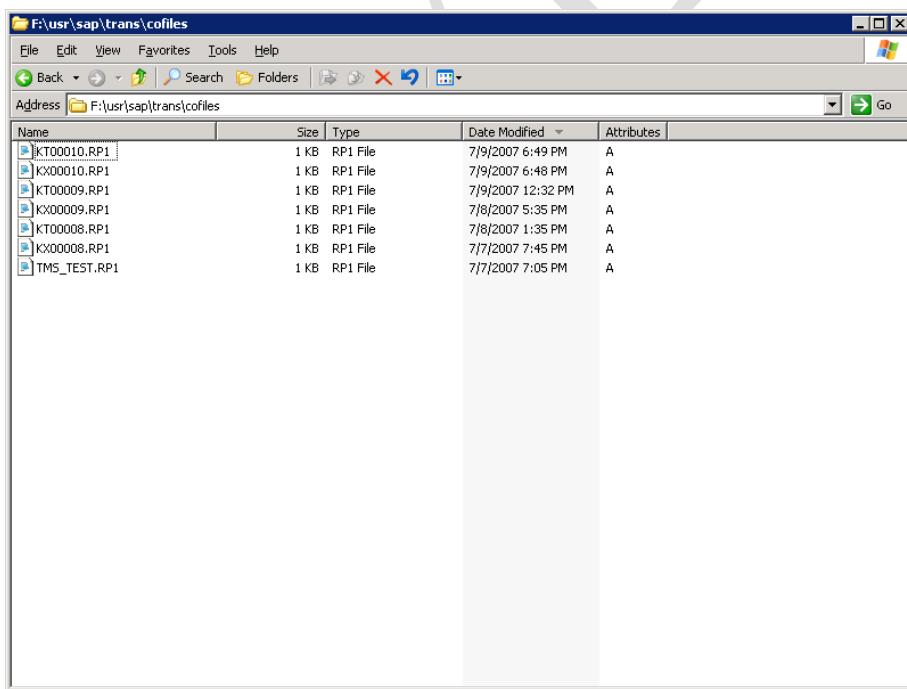
Source Client	500
Target System:	RP1
Copy Type	Client Export
Profile	SAP_ALL
Status	Processing...
User	BASISWIPRO
Start on	09.07.2007 / 18:15:53
Last Entry on	09.07.2007 / 18:16:33
Current Action:	Analysis of System
Transport Requests - Client-Specific	

12. In log, the requests numbers will be shown once the detailed analyzing is thru.

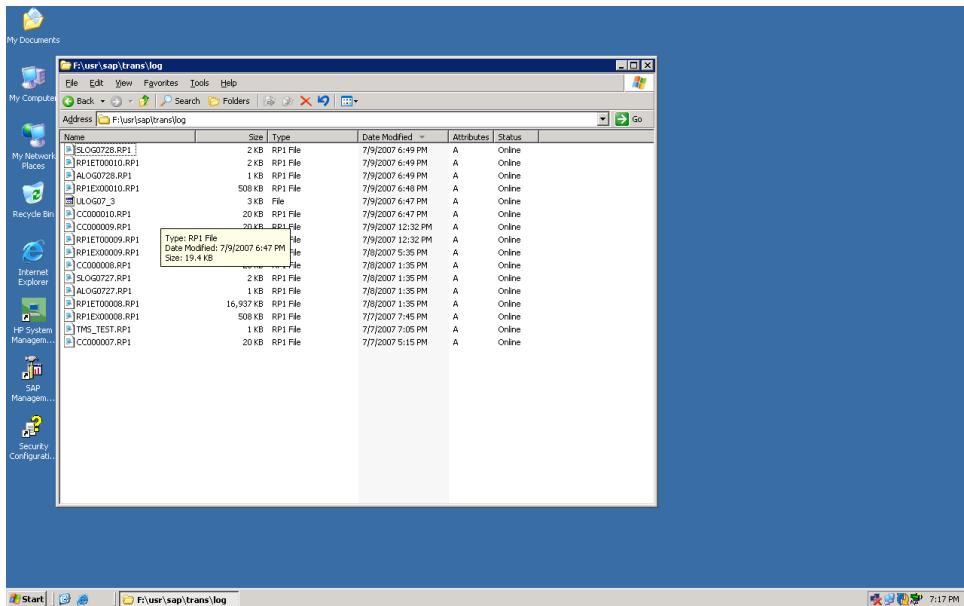
13. RO*, RT* and RX* files would be created in data file. RO* is for cross client, RT* is for client specific data and RX* for forms and Texts. RO* will not be available if we choose the profile SAP_ALL while exporting the data. In the below snapshot you will find only RT* and RX* as the profile chosen for export was SAP_ALL.



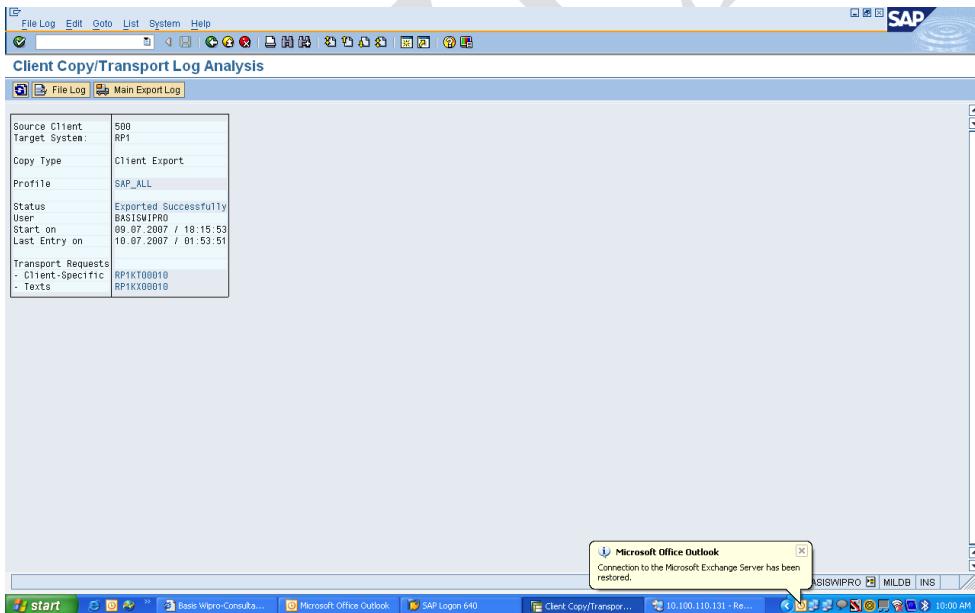
14. KT* and KX* files would be created in data file.



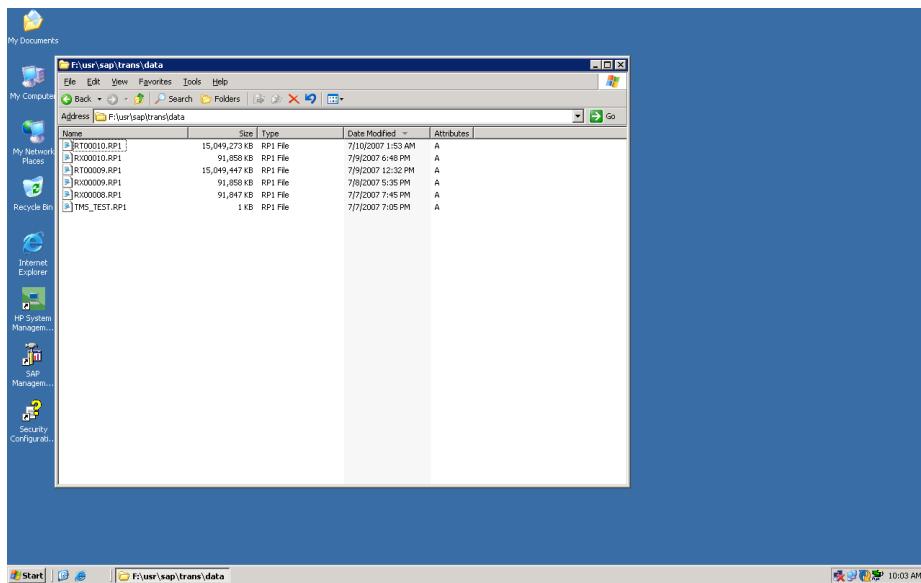
15. Log files can be viewed in .\trans\log folder.



16. Finally the client export will complete as per below snapshot. This case the time taken to Export the data was 7Hrs:30Minutes.



17. The data file size would be 15GB approx.



03. Client Import:

01. Logon to the target system → Execute STMS.
02. Add the requests KT00009 and KX00009 into queue. SID of the source system to be added along with this. Example: RP1KT00009, RP1KX00009. Import should be on sequential basis, i.e. first KT* and KX*. If KO available then KO* must be imported first. Here KO will not be available as the profile chosen is SAP_ALL.

Import Queue: System

Other Requests Add

Activate Inactive Requests Find in Other Groups

Delete Imported Requests

Requests for RQ1: 4993 11.07.2007 14:18:56

Number	Request	Owner	Project	Short Text	St
4962	RD1K913318	SAURABHA		MM: Roles for Creation fo reservation for Mvt. type 202	▲
4963	RD1K913320	AJUS		QM: Adding condition in ZQMR0023 Weekly defect rpt 07.07.07	▲
4964	RD1K913280	UPINDERS		ZDR and ZDRR	▲
4965	RD1K913298	UPINDERS		ZDRM	▲
4966	RD1K913324	ANOOPK		E51 CREATED	▲
4967	RD1K913326	CHAYANJ		SD: Creation of SLOC for RZPL - 6000 WS02	▲
4968	RD1K912850	CHAYANJ		MM : Pricing Conditions	▲
4969	RD1K913332	ANOOPK		MM: Modification in PO rel strategy of Vapi 070707	▲
4970	RD1K913328	AVINASHJ		MM: Creation of New valuation class 3024 & 3025	▲
4971	RD1K913338	SAURABHA		exim : change in import reg. [dharmeshp]	▲
4972	RD1K913340	DHARMESH		mm: create new tax code 2D 4% VAT on 67% of Basic value & 12	▲
4973	RD1K913346	AVINASHJ		MM: ZZL_2IRAP2 RG23A2 07/07/2007	▲
4974	RD1K913308	MANJUSHAI		SD: Created material group 992 as Colorado	▲
4975	RD1K913352	CHAYANJ		S 8000002950: Test Message - For Change Manag	▲
4976	RD1K913360	ASHOKG		MM: ZMMF0013 Item PO text added in Smartform	▲
4977	RD1K913296	MEGHAA		MM: zmmr0117 : inputs added in the selection screen	▲
4978	RD1K913191	MEGHAA		pp : zflic storage loc. extension [dharmeshp, d.04.06.2007]	▲
4979	RD1K912068	DHARMESH		mm : delivery challan [vat, cst, insurance]	▲
4980	RD1K913387	DHARMESH		Added FAGLB03 to Role RFI_GL_BALANCE_T1000/T6000	▲
4981	RD1K913389	NIRANJANV		Role- Display Modified	▲
4982	RD1K913393	DWAIPAYANG		SD: Pricing procedure for "1000 21 10 9 E" for YRET	▲
4983	RD1K913397	CHAYANJ		Query zfifwt024 & Info Group-ZFIE001 Regenerated.	▲
4984	RD1K913399	NIRANJANV		MM: Correction in new Tax Code 2D 070707	▲
4985	RD1K913354	AVINASHJ		MM: Modification in PO rel strategy for Vapi HR 090707	▲
4986	RD1K913401	AVINASHJ		QM: DQM_UD_100-5; MQM_UD	▲
4987	RD1K913403	SANILG		MM: Increase the length of field Add Custom Duty	▲
4988	RD1K913301	MANI SHASHI			▲

03. Enter the request no.

Import Queue: System RQ1

Add Transport Request to Import Queue

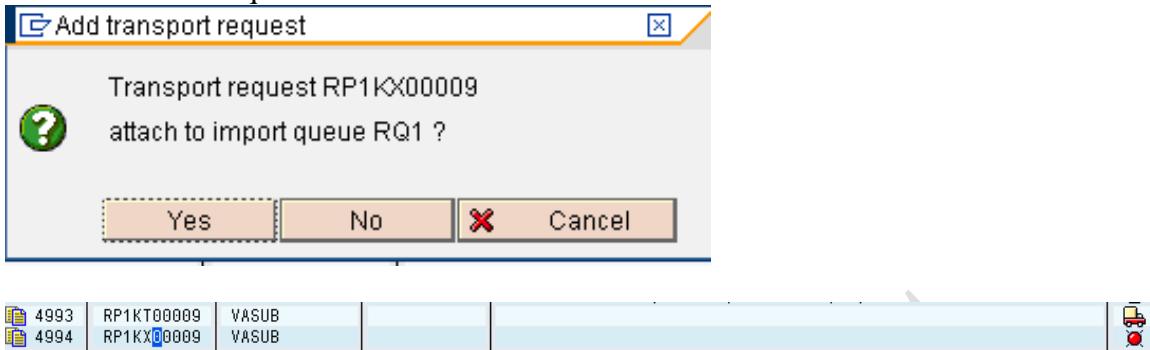
Transp. Request: RP1KX00009
 Import Queue: RQ1 System RQ1
 Import Again:

Requests for RQ1: 4993 11.07.2007 14:18:56

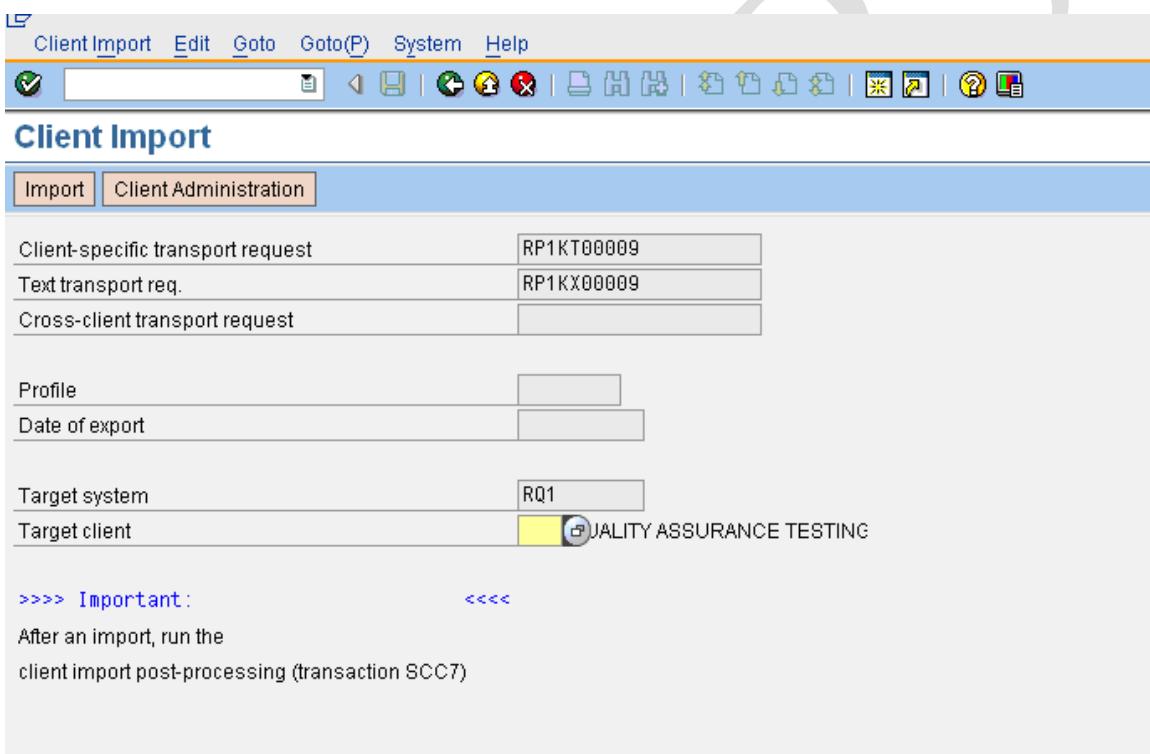
Number	Request	Owner	Project	Short Text	St
4969	RD1K913332	ANOOPK		MM : Pricing Conditions	▲
4970	RD1K913328	AVINASHJ		MM: Modification in PO rel strategy of Vapi 070707	▲
4971	RD1K913338	SAURABHA		MM: Creation of New valuation class 3024 & 3025	▲
4972	RD1K913340	DHARMESH		exim : change in import reg. [dharmeshp]	▲

04. Click on YES.

05. Check the queue



06. Click on “Import Request” and the following screen appears.

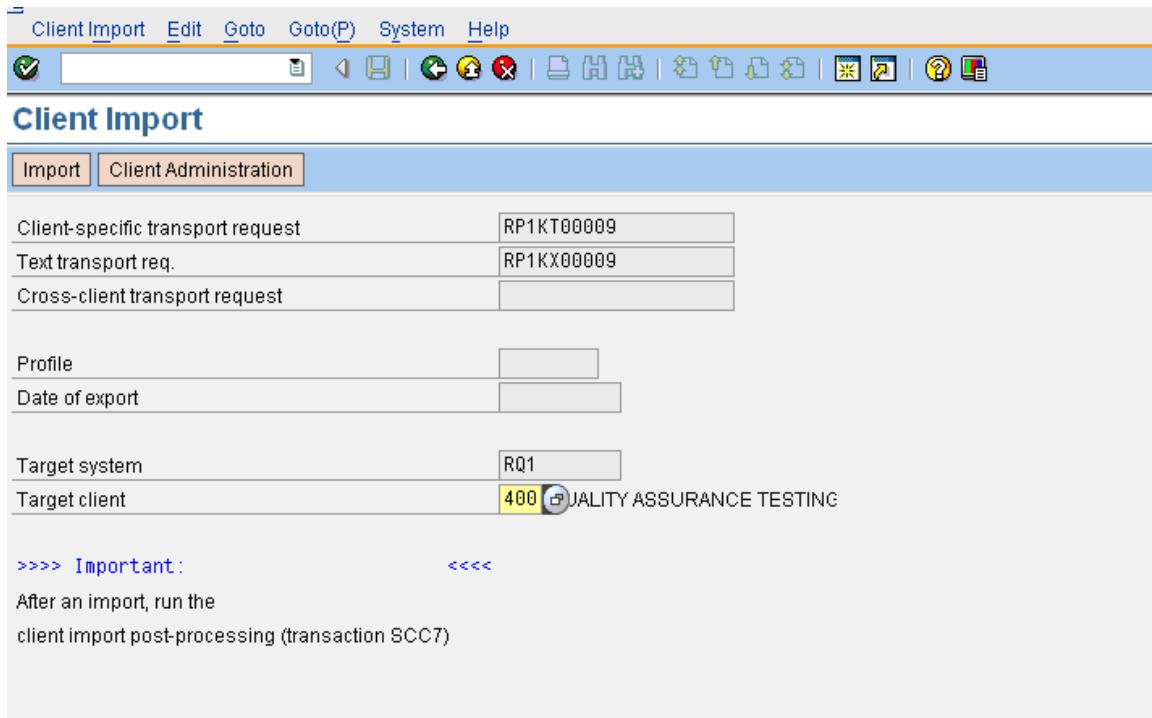


Client Import

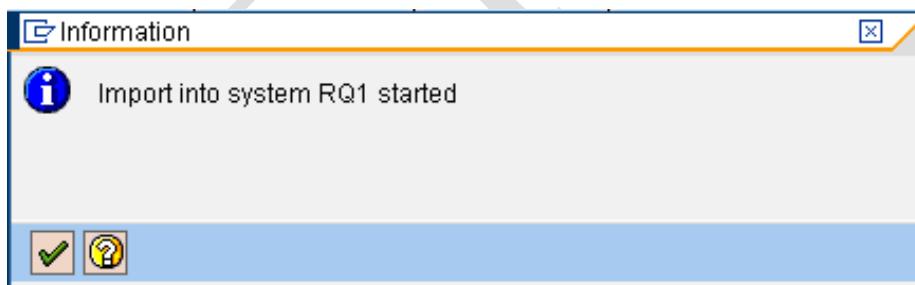
Client-specific transport request	RP1KT00009
Text transport req.	RP1KX00009
Cross-client transport request	
Profile	
Date of export	
Target system	RQ1
Target client	QUALITY ASSURANCE TESTING

>>> Important: <<<
After an import, run the
client import post-processing (transaction SC07)

07. Enter the Target client and click on import.



08. Import will start on the target system now.



09. Monitoring the Import. Enter Transaction Code DB02 and check the db growth. Go to `usr\sap\trans\temp\RP1IT00009.tmp` file to see the current status of Import. Also SLOG file which will give the phase of the import. This file would also give you the import parameters being considered for this import.

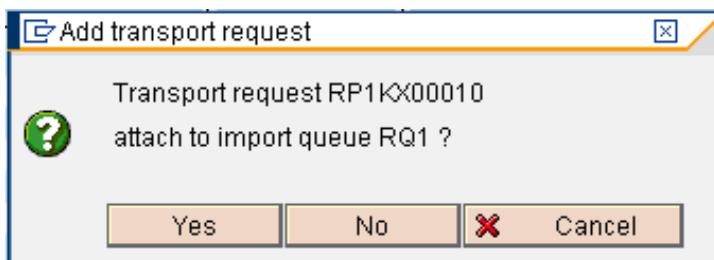
10. Once the first request is imported successfully, and then import the next request.

Add Transport Request to Import Queue

Transp. Request	RP1KX00010	
Import Queue	RQ1	System RQ1
Import Again	<input checked="" type="checkbox"/>	

11. Add the Next request RP1KX* into the queue and start the import.



12. Now the 2nd request starts importing.

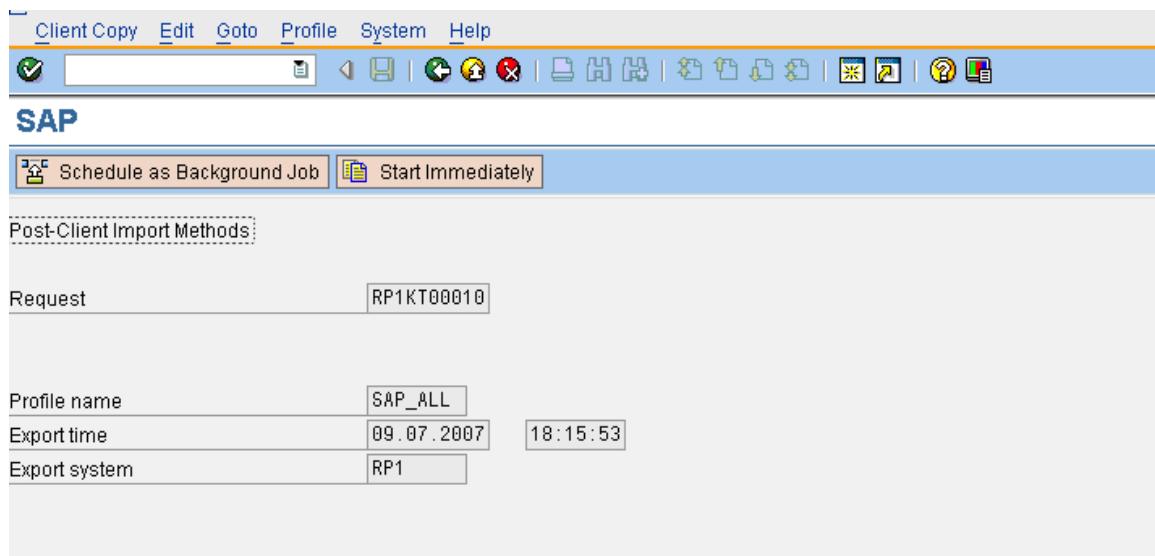
4991	RD1K913410	RATNAKARK		SD: External Material Group for 1000	  
4992	RD1K913412	DHEERAJP			
4993	RP1KT00010	BASISWIPIRO			
4994	RP1KX00010	BASISWIPIRO			

13. Finally the 2nd requests also completes successfully.

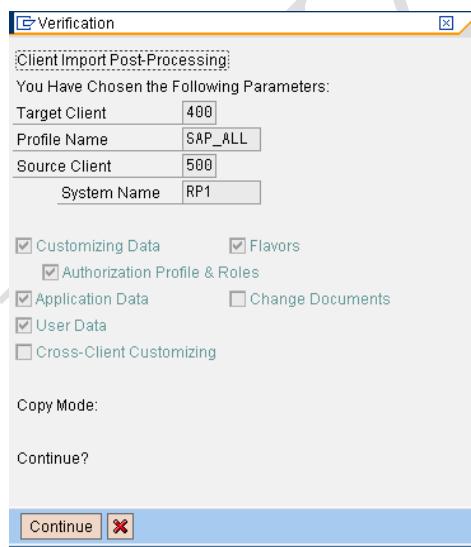
4993	RP1KT00010	BASISWIPIRO		
4994	RP1KX00010	BASISWIPIRO		

Client Import – Post Processing:

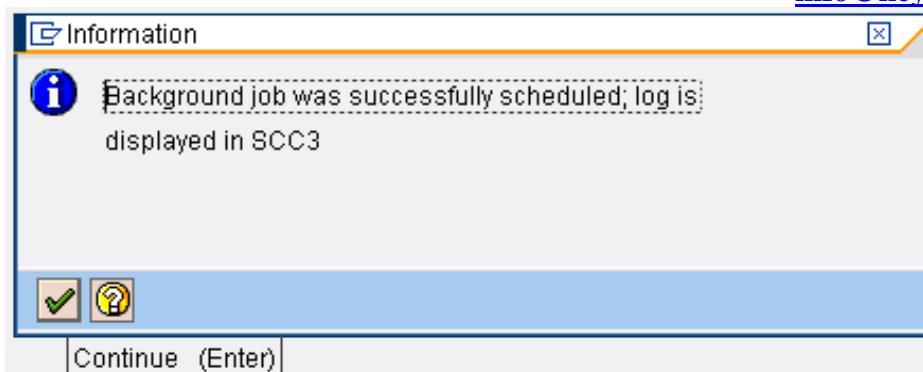
01. Enter the transaction code SCC7 and by default you will see the RP1T* transport appears there for Post Processing activity.



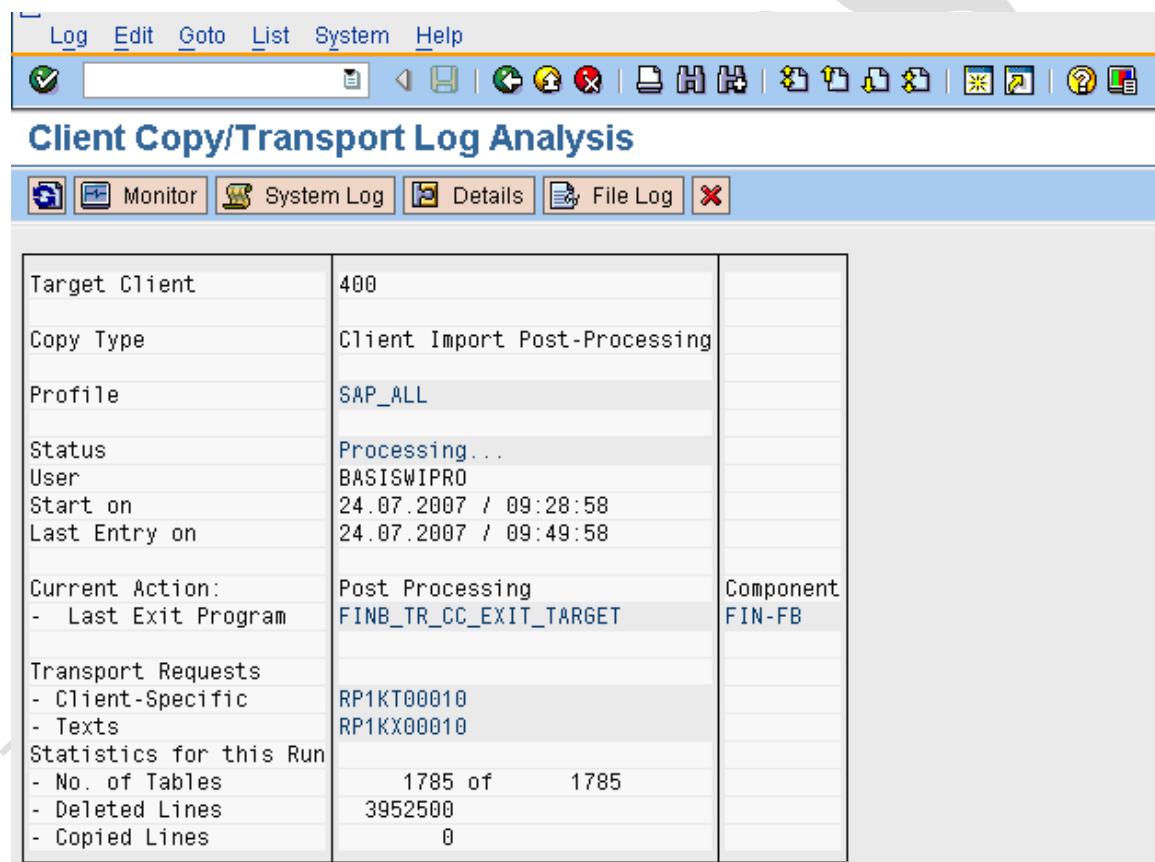
02. Click on the background Job option, then following screen appears.



02. Click on continue, the following screen displays the schedule of this background Job.



03. Check the log in SCC3.



The screenshot shows the SAP Client Copy/Transport Log Analysis interface. The top menu bar includes Log, Edit, Goto, List, System, and Help. Below the menu is a toolbar with various icons. The main title is 'Client Copy/Transport Log Analysis'. A navigation bar at the top of the content area includes icons for Monitor, System Log, Details, File Log, and a close button.

Target Client	400	
Copy Type	Client Import Post-Processing	
Profile	SAP_ALL	
Status	Processing...	
User	BASISWIPRO	
Start on	24.07.2007 / 09:28:58	
Last Entry on	24.07.2007 / 09:49:58	
Current Action:	Post Processing	Component
- Last Exit Program	FINB_TR_CC_EXIT_TARGET	FIN-FB
Transport Requests		
- Client-Specific	RP1KT00010	
- Texts	RP1KX00010	
Statistics for this Run		
- No. of Tables	1785 of 1785	
- Deleted Lines	3952500	
- Copied Lines	0	

04. Once SCC7 complete successfully, DB consistency check to be done, the complete CUA needs to be re-configured, all transport requests which are imported in quality server after production client export needs to be imported again on quality server and background jobs to be checked.

SUPPORT PACKAGES: or Patches / Hot packs / LCP/CRT's

Support packages or support stats provides enhanced functionality, changes to the existing data dictionary elements, repository objects like reports programs, transactions etc.,

Support packages of various types, few of them are:

- 1) Basis support packages -> SAPKB620050
- 2) ABAP support packages -> SAPKA620050
- 3) APL support packages -> SAPKH470050
- 4) HR support packages 2324 -> SAPKE470050

In order to display the current support package level.

- Go to system -> status -> click on Magnifier.
- Then all the package levels will be displayed.

Pre-requisites for support packages:

- There should be 2 Background jobs.
- The latest SPAM/SAINT versions should be applied on the system.
- There should be enough space to hold the support packages in EPS/in
- There should be no aborted packages.
- Support packages should be applied on this sequence of nos. of support packages level.
- Upgrade the Kernel version if required.
- Apply support packages in order of BASIS/ABAP/APPL/HR.
- Technical and functional consultants need to be informed while applying support packages because when the system updating DD elements, repository objects functional and technical objects. Functional and Technical team are the right people to advice whether to keep the existing functionality or move on the current functionality which comes in SP.
- Scheduled down time and inform users.
- Go through composite note thoroughly before applying support packages.
- If the support package is more than 10MB, UNCAR the file using
 - sapcar -xvf <filename>.sar.
 - When we uncar two files are generated with extension .ATT or .PAT.
- When the support pack is aborted and could not be resolved the final remedy is to delete entries in the 2 tables.
- Packages once applied cannot be reverted back.

- If we want to revert, then contact SAP technical support.

APPLYING SUPPORT PACKAGE OR PATCHES

- 1) Go to SPAM (SAP Patch Manager).
- 2) Load packages from the Presentation Server/Application Server.
- 3) Display all the new Support Patches to be applied (Queue).
- 4) Import the Queue or Display in Define Queue.
- 5) Support pack starts upgrading the system and it goes into various phases like TP Connect To DB, DDIC import , DDIC activation ... (all these 27 steps can be found in PAT01) while applying support package, it stops to run the SPDD/SPAU.

SPAD:

This is the transaction which is used to update the data dictionary tables which applying SP. This is the phase where functional consultant assistance is required.

SPAU:

This is the transaction which is used to update the repository objects like programs, reports, functional modules while applying support packages. This is the phase where technical consultants required.

Note: If the objects are changed earlier with the help of SAP notes, Now these notes are parts of the support package which are modifying the system, during this scenario each and every object which was modified earlier with the help of the note are popped on the screen whether to keep the original or change to version.

KERNEL UPGRADE/PATCHES.

Kernel is the heart of SAP system and located in run directory `\usr\sap\<SID>/run`. It consists of various executables which are required for smooth functioning of R/3 system.

Sometimes these executables gets outdated and needs to update from time to time.

The following are the reasons for Kernel Upgrade:

- 1) During OS upgrade, DB upgrade and OS,DB patches.
- 2) It is a pre-requisite to upgrade the kernel to certain level before applying support packages.
- 3) Some of the executables are

Msgserver.exe, dispatcher.exe , sapcar.exe , TP.exe , R/3 trans.

- 4) Kernel upgrade is the process of replacing the existing executables with current executables.

Process of Kernel Upgrade:

- 1) As part of the upgrade, complete Kernel Directory can be replaced or a group of executables or single executable can be placed.

Ex:- While importing transporting request:

- 1) TP gets aborted with an error, TP outdated then replace only TP.
- 2) While uncaring the files SAPCAR may be outdated in this replace only sapcar.
- 3) DB executables like SAPDBA, BRBACKUP, BRARCHIVE, BRRESTORE, BRCONNECT are grouped to be upgraded.

There are 2 types of executables:

- 1) R/3 executable with DB dependence.
- 2) R/3 executable with DB Independent.

- 1) Go to marketplace www.service.sap.com and download the current version of Kernel.
- 2) UNCAR files into a directory called newrun.
- 3) Schedule downtime and inform users.
- 4) Shutdown SAP DB,R/3 , A Servers.
- 5) Stop all the services including saposcol.
- 6) Go to exe directory rename the existing run directory to old run and rename the new run to run directory.
- 7) Start sap, run SICK any problems it will show.

SAP NOTES:

SAP maintains a knowledge base of problems and resolutions which are accessed from marketplace. www.service.sap/notes SAP provides resolutions in the form of a note which is a number. Note can be searched on number [if we know] or we can search with the problem code, error number etc.,

Note provides info. Regarding the problem, as follows:

- 1) Problem
- 2) Pre-requisites.
- 3) Cause of the problem.
- 4) Solution, Corrections, attachments and note may redirect one or more number of notes.

Notes are of 3 types:

- 1) Informative note:

Which consists of details to solve the problem

- 2) Corrective note:

This provides changes to the data directory elements or repository objects.

- 3) Manual Note:

Some of the steps will be present in notes to solve the issue.

If there is a repository changes i.e., program code change can be done using SNOTE. If there are any changes in data dictionary elements or customizing (Keying entries) to provide entries manually in tables which are detailed in attachments.

- ➔ To change repository objects we need ACCESS KEY.
- ➔ While correcting the program SSCR key note required. SAP software change request.

Applying Snote:

- 1) Go to SNOTE.
- 2) Load the NOTE, when we load the note status will be known.
- 3) Implement the NOTE, while implementing the note status is **in process**.
After NOTE is applied it is completed. Once the implementation is **completed**

Before going live R/3 system needs to be tested for its optimal runtime.

SYSTEM MONITORING

SM51
SM50/ SM66
SM13
SM14
SM37
SP01

SM04/ AL08 : Used to identify the number of users logged on to the instance. Identify the users who are consuming more memory and also identify the transactions and identify why it is consuming more time. This TCODE is also used to logoff the user session if required.

AL08

List of All Users Logged On

Refresh 

System R3I Overview of all
Date, Time 12.08.2009 14:06:53 users logged on.

Active Instances	Number of Active Users	Interactive Users	Number of RFC Users
dewall36_R3I_00	6	5	1

1 Destinations with 6 users.

Client	User Name	Terminal	Transaction Code	Time	Ext. Sess.	Int. Sess.
800	SHAWN	HYDDT1S4HH1S		14:06:53	1	1
800	SHAWN	HYDDT1S4HH1S	AL08	14:06:52	1	2
800	DEVELOPER	b1rdxp-mraddera	SE38	14:04:04	1	2
800	TORASKAR	dtpxp-viskumar	SE37	14:06:12	1	2
800	DEVELOPER	HYDDTGWWCB15	SE37	14:04:23	2	5
800	DEVELOPER	b1rdxp-vinabh	SE38	14:03:35	6	14

SM04

User List

Sessions                 

Clien...	User	Terminal	Transaction	Time	Sess.	Type	Megabyte
001	SAPJSF	dewall36.ccss.cappg		14.07.47	1	RFC	1
800	DEVELOPER	b1rdxp-mraddera	SE38	14.04.04	1	GUI	8
800	DEVELOPER	HYDDTGWWCB15	SE38	14.07.42	2	GUI	20
800	DEVELOPER	b1rdxp-vinabh	SE38	14.03.35	6	GUI	68
800	SHAWN	HYDDT1S4HH1S	SM04	14.07.52	1	GUI	7
800	TORASKAR	dtpxp-viskumar	SE37	14.06.12	1	GUI	11

Overview of Sessions

No	Transaction	Time
1	ABAP Editor	14:07:42
2	ABAP Function Modules	14:04:23

End Session 

SM21: System logs specific to the instance. We can also identify the logs of other instances.

System log > Remote system

It is used to display the logs for the following activities.

System Log: Local Analysis of dewall36

[Reread system log](#)

System log entries imported

Selection

From date/time	<input type="text" value="12.08.2009"/> / <input type="text" value="13:00:00"/>
To date/time	<input type="text"/> / <input type="text"/>
User	<input type="text" value="SHAWN"/> <input type="text" value="RAMANATHAN"/>
Transaction code	<input type="text"/> <input type="text"/>
SAP process	<input type="text"/> <input type="text"/>
Process No.	<input type="text"/>
Problem classes	<input type="radio"/> Problems only <input type="radio"/> Problems and warnings <input checked="" type="radio"/> All messages
Further restrictions	<input type="text" value="<none>"/>

Format

No. pages for individual entries	<input type="text" value="150"/>
With statistics	<input type="checkbox"/>
Output to	<input type="text" value="Screen"/> Settings

1. System Startup/ Work process log
 2. All ABAP dumps are documented
 3. When we delete SM12 the locks are logged.
 4. All the database related errors like Space issues, Segment Management, Archive Stuck.
 5. Illegal attempts and user locks
 6. Session Termination due to network failures.
- As a part of monitoring we need to identify the messages with color red.
7. Time out errors
 - Identify the error message from the log and search in the market place.
 8. It displays the logs based on date/time, user, t-code & problem class.

ST22 ABAP DUMPS

When ever a SAP Program (ABAP program) could not be executed due to an error it will be thrown out from the GUI- Screen and a dump is recorded in ST22.

ST22 recovers the following

1. Divide Error 1/0
2. Update (Lags in Memory)

3. Infinite Loops.

1. **TIME_OUT error:** The program requires more time than the time defined in **rdisp/max_wprun_time**

2. Memory related issues with error message PXA, SWAP, PAGE, OUT OF MEMORY. This error requires memory corrections to the parameters.

3. **Program Corrections:** The problem is with SAP standard program for which SAP provides a correction through notes (The correction can be applied through **SNOTE**)

4. **Customer defined programs** ('Y', 'Z') consumes more memory, endless loops, improper select statements etc. The program need to be corrected by the developer.

5. **Enqueue Table Overflow:** SM12

6. **Update Deactivation :** SM14

7. **Database issues** like table space over flow, max-extents reached, archive stuck.

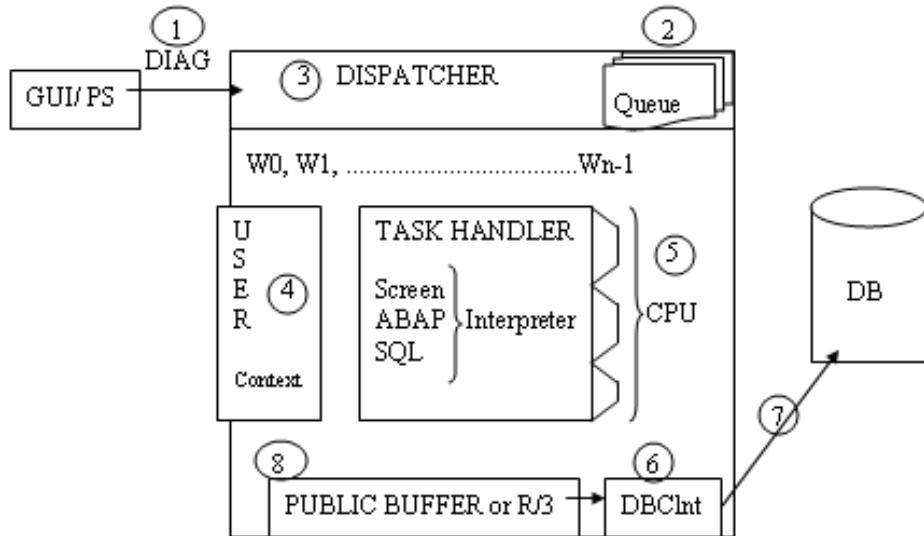
8. **Illegal time:** (Day light savings) - During day light savings the system date and time has to be changed. Stop the AS and change the date if not, the above error occurs.

Note

TSTC - Holds the transaction and the Program name
TSTCT - Holds the description/ text of a T-Code.

PERFORMANCE TUNING

ST02



This complete journey should be completed within 600 Milli seconds on an average or goes up to 600 Seconds Max.

1. Front End Time/ GUI Time : Time taken by the user to reach the dispatcher is called as Front end time. The GUI time should not exceed more than 200 M.Sec. If it exceeds this consider the following.

1. User desktop is slow
2. If this is same with all the users, network might be congested.
3. The user request is expensive (FI and basis will logon to the central instance. Rest of all the users are allowed to login to Dialogue instance)

Note: GUI response time is not considered as a part of the Dialogue response time because the request is not received by the dispatcher.

2. Wait Time: The amount of time the user request sits in the queue. Generally it should not be more than 50 M.Sec or 10% of the response time. If the time exceeds, consider the following.

1. The work process are not sufficient to handle the user requests. (1:5)
2. There are sufficient processes but the existing process are held with expensive request.

Login/disable_multi_gui_login.

3. Roll in Time: The work process copies the Roll in User context into WP task handler. The time taken by the work process to copy the context (Roll In) is referred as Roll in time. Generally it should not be more than 50 M.Sec. If it is more than this consider the following.

1. The user context is heavy to Roll in (User might have more authorizations, parameters)
2. Minimize the authorizations.
4. **Roll Out Time:** The time taken by the work process to copy the information from its local memory to Roll Area/ Roll File/ User context/ Roll buffer and it should not be more than 50 M. Sec.
5. **Roll Wait Time:** During the processing when a dialogue process communicates with RFC's and waiting for the response at this time the user context is copied/ rolled back to
BTC ---- RFC --- Target system.
Roll wait time Sleep

Note: Roll wait time is not considered as a part of response time. If the roll wait time increases consider there is a bottleneck on the RFC communication.

6. **Processing Time:** The time taken by the work process to process the user request using interpreters. The processing time should not be more than 200 M.Sec. If the processing time is more we can consider either ABAP program is expensive, screen is expensive or SQL statements are expensive.
7. **CPU Time:** When the requests are processed using interpreters an amount of CPU is utilized to process the request using CPU resources is referred as CPU time.
As CPU time is included in processing time it is not calculated in the response time.
CPU time should not be more than (40% of the Dialogue response time - Wait time). If CPU time is more consider tuning ABAP Programs Refer to ABAP development team (Also Refer **SE30** ABAP Run time Analysis, **ST05** Performance Analysis)
8. **LG Time:** Load and Generation Time: Time required to load the objects such as source code, GUI info, screen info from the database and generate these objects.
(Refer **LC10** : Live Cache). It should not be more than 200 M.Sec.
Run **SGEN** tcode after patch application, upgrade, new installation or when there is a mass change in the programs.
9. **Enqueue Time:** The time taken by the process to communicate with enqueue for obtaining the lock while updating a record is referred as Enqueue time. Enqueue time should be 5 M.Sec. on a Central instance and 100 M.Sec on a Dialogue instance. If it exceeds more than this time we can consider that the enqueues are not sufficient or Enqueue table overflow. or WP waiting for a lock.
10. **RFC or CPIC Time:** The time taken by the process to communicate with external interfaces is referred as RFC time. It should be as minimal as possible. (Communication

between any BW/ CRM/ SCM system). There wont be any threshold value as it depends on External system.

11. **Database Time:** The time taken by the process to reach the database and process the request. Generally it should not be more than 40% of (Response time - Wait time). It is similar to the CPU time. IF DB Time is more consider the following.

1. The DB statistics job is not scheduled in DB13.
2. The DB resources are stake(CPU and Memory Utilization) i.e. Resource bottle neck on DB.
3. The DB Buffers are not sufficient.
4. Missing indexes in DB02.

12. **Dialogue Response time:** The time taken by the Dialogue process to process the request which includes [Wait time To Roll Out Time]

[Wait time + RI + RO + PI +LG + RFC + DB +ENT]

Note: Team Viewer is the Remote Desktop support Software
BOMGAR.

Φ Indicates - Average Time

Indicates - Total Time

WORK LOAD ANALYSIS

ST03

ST03 It is used to calculate the work load analysis. Select Expert Mode to identify the expensive programs, transactions, reports and users.

While calculating the average consider the number of dialogue steps of the transaction user. If the response time is more and dialogue steps of fewer 1 or 2 then the average response time could not be worked out. The response time should be worked out only when there are at least 10,000 dialogue steps.

MEMORY

Physical Memory: The memory that is available or the memory that is configured on the instance using the parameter PHYS_MEMSIZE.

* PHYS_MEMSIZE: This parameter restricts the usage of memory by that instance.

Virtual Memory: The physical memory and SWAP memory/ Paging Memory on the disk

The physical memory will not be sufficient to provide the users for temporary work area/ Calculations/ so a part of the disk which is configured for SWAP is used.

On UNIX during installation assign at least 20GB of SWAP. On windows assign at least 3*RAM size/ 20 GB which ever is higher.

Shared Memory: The memory that is used by all the applications (OS, DB, R/3)

Extended Memory: The memory that is used by SAP work processes is referred as Extended Memory.

Local Memory: The memory that is assigned to work process is referred as Local Memory

Roll Memory/ Roll Buffer: The memory that is used by work process to store the user context information is referred as Roll memory.

Private/ Heap Memory: The memory that is used by work process exclusively by restricting itself.

MEMORY ALLOCATION

1. User submits the request.
2. Dispatcher assigns the WP
3. WP requires memory to Roll -In the user context.
4. WP gets memory from local memory which is defined in the parameter **ztta/roll_area**. It gets only a part of it which is defined by parameter **ztta/roll_first** (20KB)
5. If the allocated memory is not sufficient then it gets allocated from Extended memory **ztta/roll_extension**.
6. If that is also not sufficient then it uses the remaining ROLL Area.
7. If that is also not sufficient then it uses HEAP/ PRIVATE Memory and the WP goes into PRIVATE Mode.
8. Heap memory is defined by the parameter

Abap/heaplimit=4GB

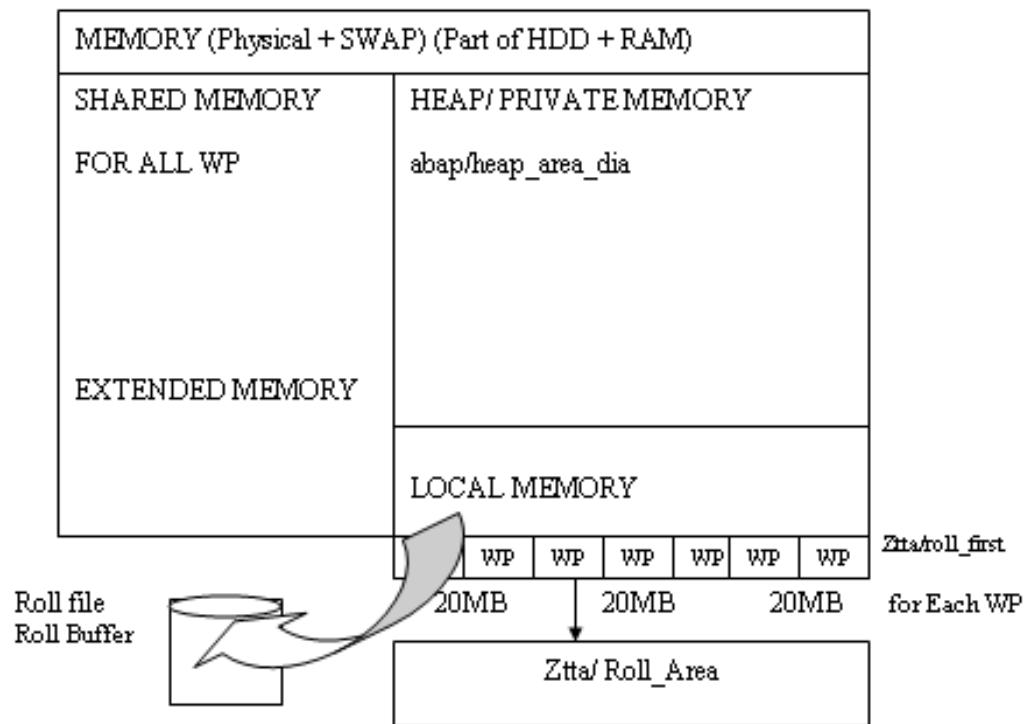
Abap/heap_area_dia

Transaction ST02 provides the memory utilization

9. Each dialogue uses **abap/heap_area_dia** and non dia uses **abap/heap_area_nondia** both process should not exceed **abap/heap_area_total**.

Memory : RAM is the first Memory. Out of this we don't want to allow SAP to utilize the whole memory.

Virtual Memory: Pagefile.sys



User ---> Dispatcher ---> WP ---> Rolls Its Memory

Requires Memory to Roll In to the Task Handler

Ztta/roll_first - 20KB

Extended Memory is used by all the Work Processes.

20 KB ztta/roll_first through ztta/roll_area

Extended Memory ztta/roll_extension : 512 MB

Come back to local Memory

If all the memory is consumed it cant come back so goes to the Heap/ Private Memory.

CASE STUDY

We have configured 20 WP in the Instance and we know pretty well that each user request consumes a minimum of 25MB of Memory

WP	MEMORY Roll_first	4GB Roll_extn	8GB Roll_Area	STATUS Heap
1	20KB	512MB	19.980MB	2GB
2	20KB	512MB	19.980MB	2GB
.				PRI
.				PRI
8				

9	20KB	0MB	19.980MB	5MB	PRIV
---	------	-----	----------	-----	------

Rdisp/max_priv_time

When the process uses Heap Memory it is used in Heap/ Private mode. The processes which are in PRIV Mode cannot be timed out by

Rdisp/max_wprun_time

Rdisp/max_priv_time

So configure so that the process is timed out after this time (600 Seconds/ 10 Minutes) when the work process goes into PRIV mode it will not listen to rdisp/max_wprun_time=600sec. It will be released only after the task completion or Memory is exhausted(ABAP/heap_area_dia)/ timed out by rdisp/max_priv_time. This situation is referred as Hour Glass Mode or WP Congestion. At this situation we can use **DPMON** or **SM04** to terminate the user session. If not kill the process at OS level based on PID.

Q. The user complains that he could not login to the system - Hour Glass Mode?

- A. 1. WP into PRIV Mode
- 2. ARCHIVE STUCK (The user could not update any record and results in hour glass mode)

BUFFERS ST02

The frequently used content and less frequently modified is eligible for buffering. Company Name, GUI, screens, calendars, table definitions, programs etc are eligible for buffering.

Data such as Exchange Rates, Transactional Data(PO, Sales Order, Invoice, Billing) are not eligible for buffering.

Buffering is specific to instance. Each buffered element is stored in the memory of the instance in terms of **Directories** and **Space**.

Eg. Programs can be stored up to 150000 KB, 150 MB in 37,500 directories. If the directories/ size is full then **Buffer Swaps** occurs in **ST02**.

When SWAP occurs the content needs to be fetched again from Database which increases the response time.

RAISING A REQUEST TO SAP FOR A SAP ROUTER

From the Market Place **www.service.sap.com**

- > click on SAP Support Portal.
- > From Help and Support Tab
- > click on **Report a Product Error**

From Here Provide

Customer : Company Name
Installation :
System ID : JOD

Next >

Search Term : SAP Router
Or Go with Message
Select the system & select the component

Raise a request as follows:

Dear SAP,

We have installed solution manager and 3 ERP systems in the landscape. Before we start implementation we would like to establish connecting with SAP using SAP Router.

Name of the Server : JOMLSOLMAN
IP Address : 213.210.213.197

(This is where our SAPRouter is going to be configured)

We are using dedicated public IP Address

SID : JOS
INSTANCE NO : 00

Please send us certificate details.

{ Open the connectivity, How many hours it needs to be opened; Provide Userid and password/ Client }

Provide your name

R. Shunmugam
Phone No:

Hit SEND

Note: from Market Place > My Profile > Maintain Single Sign on Certificate > Specify Password.

From Market place > Check the email.

SAP : 213.210.213.197

JOLSOLMAN

194.39.131.34

Earlier from the Back End system say for eg: SOLMAN system

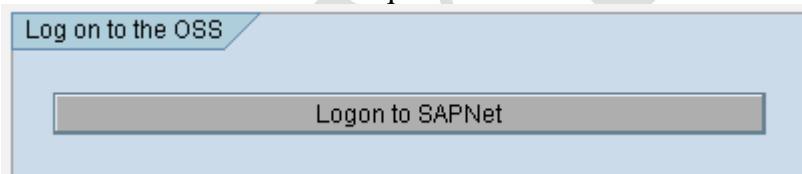
001/ DDIC > Login to the SOLMAN system

Discontinued from 2006 -

TCODE > OSS1 (Online SAP Service)
 From Menu Parameter > Technical Settings
 Hit Change
 SAPRouter at SAP

Note: Instance 98 (Is for SOLMAN Diagnostic Tool), 99(SAP Router)

All kind of services can be acquired from OSS1



Over the web using DIAG protocol. (It is discontinued)

4 systems in the landscape

SAP Router is a software program which is used to restrict access to customer systems using the table SAPROUTTAB.

SAPROUTTAB is a text file with no extension in the router directory with prefix P, D and S (Permit, Deny and Secure sometimes)

STEPS TO CONFIGURE SAP ROUTER

1. Create a directory with name saprouter in usr\sap\directory.

usr\sap\saprouter

Ensure that the folder has full (Read + Write permissions)

Note

SAPRouter is an executable in the kernel directory (usr\sap\SID\sys\exe\uc\NTi386).

Nipping is an executable to ping to the router. This two executables needs to be copied to the router directory. However we can also download from market place.

On Windows> Check whether the SAPRouter service is running or not to make sure whether the SAPRouter is already configured or not.

2. From Market Place > My Company App Components

Look for **SAPROUTER700**

Windows server X64

Click on Add to download basket.

3. Login as <SID>ADM

4. Create a sub directory E:\usr\sap\saprouter

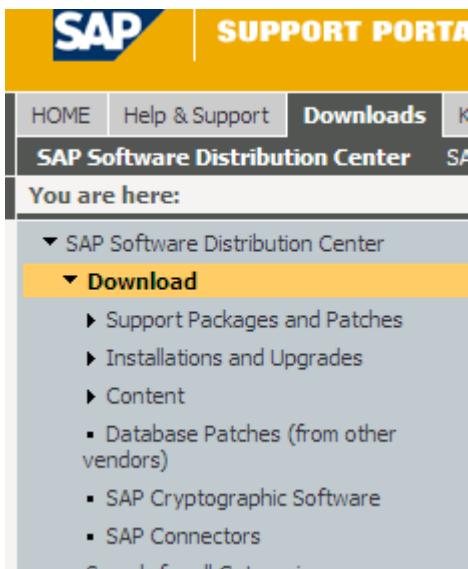
5. From Command Prompt

Change directory to trans as it is holding the downloaded files

E:\usr\sap\trans> **sapcar -xvf saprouter_12_100004305.sar**

6. copy the two uncared files in to the saprouter directory.

7. From market place click on Download Area > SAP Cryptographic Software .sar file.



The screenshot shows the SAP Support Portal interface. At the top, there's a yellow header bar with the SAP logo and the text "SUPPORT PORTAL". Below the header, there's a navigation bar with links for "HOME", "Help & Support", "Downloads", and "Knowledge". The "Downloads" link is highlighted. Under "Downloads", there's a sub-menu for "SAP Software Distribution Center". The "Download" option is selected and expanded, showing a list of download categories: "Support Packages and Patches", "Installations and Upgrades", "Content", "Database Patches (from other vendors)", "SAP Cryptographic Software", and "SAP Connectors".

It depends on OS

We can download either CAR or SAR file

<input type="checkbox"/>		SAR	SAP Cryptographic Library Microsoft Windows 2003 for x86_64
<input type="checkbox"/>		CAR	SAP Cryptographic Library Microsoft Windows 2003 for x86_64

Paste the file in `usr\sap\saprouter`

sapcar -xvf 90000114.car

Note: Download Manager > Configuration
 > SUSERID and PWD

8. Create a service called **SAPRouter** service.

From Command Prompt > Saprouter>
ntscmgr install SAPRouter -b E:\usr\sap\saprouter\saprouter.exe - p "JOSADM"
 It will create a service.

JOS is the SID

9. Define a file SAPROUTTAB

Create a file **SAPROUTTAB** in the saprouter dir with out any extension

10. SNC (Secured Network Connection Needs to be added)

For this

Goto > www.service.sap.com/SAPROUTER-SNCADD

Apply

Copy [Shows the Distinguished Name] > Hit Continue

11. Define the Environment Variable.

My Comp > Properties > Advanced>

Variable : **SECUDIR**

Path: **E:\usr\sap\saprouter**

Variable :**SNC_LIB**

Path: **E:\sur\sap\saprouter\nt-X86_64\sapcrypto.dll**

Sapcrypt.dll to encrypt and decrypt the messages.

12. Generating certificate from Customers End (SOLMAN System)

Use the command

Sapgenpse.exe will be in nt-X86_64 so goto

Saprouter> CD nt-X86_64

Saprouter\nt-X86_64>

sapgenpse get_pse -v -r certreq -p local.pse "Paste the distinguished name"

Prompts for PIN : any password

Twice

Sapgenpse - SAP Generic Personal Security Encryption

13. Work file **certreq** in \nt-X86_64

Open with notepad

And copy from BEGIN to END

Paste in the **STEP 10** in the text box and hit Continue

Click on request certificate

It generates a text with BEGIN to END.

Now copy from BEGIN to END from SAP that site/ Screen

Paste it in a notepad file(without extension) with file name **secret** in the folder nt-X86_64

14. Importing the Certificate

Nt-X86_64> **sapgenpse import_own_cert -c secret -p local.pse**

15. being in nt-X86_64 > **sapgenpse seelogin -p local.pse -o JOSADM**

Will create a file **cred_v2**

16. SAPROUTTAB > open with notepad

> copy the whole content (from already configured system)

> provide> SAP IP

> Our IP.

17. TO check the Distinguished name

Sapgenpse get_my_name -v -n issuer

18. Router as Service

Services.msc > saprouter

From Logon Tab

Select This Account : JOSADM

Apply

To Uninstall

Ntscmgr install saprouter -b E:\.....

SAPSRI3 - 14

SAPSRI2 - 9

SAPSRI1 - 6

19. Execute SM59

SAPOSS > Change

IP Address of SAPRouter at Customer Side

And also change at SAP Side Router String

Goto Market Place

Download service connection

Maintain Data > System Data

SOLMAN

Production System

Goto DB Server

Hostname > SOLMAN

IP Address : 124.12.124.19

OS : NT/ INtel

Version : Win2003

DB Release : 9.2.0.8.0

Router String:> H/220.227.194.202/s/3299

Create New Connection RFC Connection

Logon Security

E1

001

SCO4013677

AISUSER tcode

SAP ROUTER

Theory

1. Maintain our systems in the Market Place
2. SAP able to connect and we need to provide authentication
3. SAP Router provides the authorization and we need to provide the authentication.

The password will be visible [].

SAP router side will restrict the user.

Market place > connect to SAP

- > R/3 Support
- > Open connection

Take out the access from SCC4, SE38, SA38...

SAP Router is an executable which is used to restrict the access to the customer systems over the network. It works like a firewall/ proxy to permit and deny the access to the SAP systems.

It needs to be configure before implementation Part of SAP.

RMMAIN tcode only in SOLMAN

- Implementation Road Map > Technical Infrastructure Planning
 - > Order for Remote Connection to SAP

Project Preparation Phase.

SAP Router

1. Create message to SAP along with your SAP Router [Hostname], IP Address and Customer Number (SAP Router need not to be installed on Solution Manager /DEV/QAS/ PRD. It can be installed on any desktop, but it is advised to install on SOLMAN system to ensure that it is monitored periodically.

Cust Number : When we buy SAP we will be provided with the customer number.

.SAR - SAP Archive

.CAR - Compressed Archive

Kernel comes with .SAR only

[Global Host] - DB - Central Instance - Dialogue Instance

Usr\sap

2. SAP responds with Distinguished name.

3. Create SAP Router directory and copy the executables from exe\uc\NTi386 or download from the market place. (www.service.sap.com/swdc) copy only SAPCAR.exe, SAPROUTER.exe and NIPPING.exe
4. Download the Cryptography files from Market place related to OS and bit version (Download *.SAR files)
5. Uncar the files into SAPRouter directory
6. sapgenpse..... executable used to generate the personal security environment.
SAPROUTETAB is a file (without any extension) used to have ACL (Access Control List) S - Secure; P - Permit; D - Deny; K -SNC (Secure network connection)
7. Generate the certificate using distinguished "DN" name with executable SAPGENPSE.
8. Copy and Paste certificate from Begin to End the market place url
[/Saprouter-SNCADD](http://Saprouter-SNCADD)
9. Request a certificate from the market place copy into **srcert**.
10. Import the certificate into router system using SAPGENPSE
11. Start the router using command **saprouter -r -k "DN"**

12. Goto SMP ---- Report Error --- Connect to SAP
Select the system - Maintain System Data -- Download service connector -- Maintain Router details ----- Start service connector -- Open connection by selecting the service---- Specify no of days and hours. Similarly maintain all the other systems in the landscape. Inform SAP to connect to our systems.
13. On each backend system we need to maintain the RFC details in OSS1 Transaction. It will update SAPOSS RFC Connection.

SAPOSS, SAP-OSS, SAPSNODE are created on communicating with the Market Place.

ST02 continuation.

Used to monitor the buffer swaps on the Application Server/ Instance
LRU - Least Recently used.

Buffer swaps occurs when there are no sufficient directories or space. When more swaps occur they are displayed on ST02 in swaps column.

Analysis:

Identify the buffer areas whose swaps/ Database access are more.

BUFFER SWAPS indicate the following

1. No Sufficient space or directories
2. The content is frequently modified
3. Mass transportation of objects
4. The configured buffers are small
5. During the restart and when support packages are applied and when upgrade is performed.

Do not take any decisions based on the readings on a specific day. Analysis has to be carried out if there are at least 10,000 requests.

BUFFER HIT RATIO.

SAP recommends this value to be around 98%

{For every 100 request '2' request goes to database and the remaining should be from the buffers }

Key areas that effect the performance are program buffers, table buffers and Table and Field definitions. Change the program buffer using **ABAP/ buffer_size** to a maximum of 600 MB on 32 bit Machines.

Remaining parameters based on SAP recommendation from RZ11.

TABLE Buffering

SAP stores the content in tables (Every data except start and stop logs is stored in DATABASE, no prog/ no data is available in the file system)

There are four types of Buffering

1. **FULL Buffering**
2. **Generic Buffering**
3. **Single Record Buffering**
4. **No Buffering**

This is maintained for each table SE13 refer **USR02** Table.

1. **Full Buffering:** The tables which are frequently used and rarely modified are eligible for buffering. (Also which are small in size)

Eg: T000 have all the clients and required to create a client copy. (This is fully buffered)

2. **Generic Buffering:** Tables which are relatively large, frequently used, rarely modified using a set of keys (Fields)

Eg: USR02; T001 Company info

3. **Single Record Buffering:** The tables which are large in size, frequently used and rarely modified are buffered using a primary key.

4. **No Buffering:** The tables which are large frequently used, and frequently modified are not eligible for buffering.. VBAK (SALES), EKKO (PURCHASE)

BUFFER SYNCHRONIZATION

When more than one application server is configured then buffers between different instances may not be synchronized. In order to synchronize buffers set the parameter

Rdisp/ buffermode = Send on; exec auto.
Rdisp/ buffertime = 60 Sec.

Mechanism

1. User1 request to APP1 for update Sales order to Rs. 500 @ 10:00:01
2. User2 request to APP2 for update the same sales order to Rs.550 @ 10:00:20
3. User3 request APP1 for display @ 10:00:40

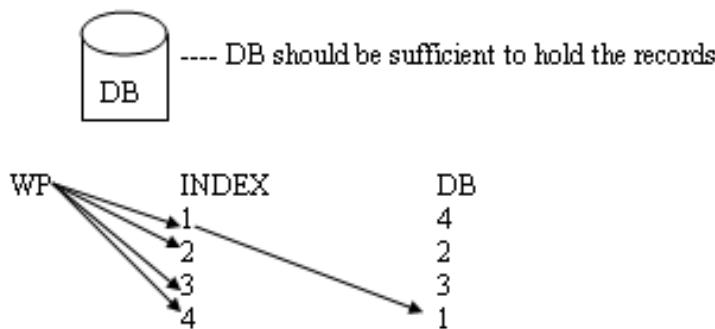
WP will ask DDLOG table to check for recent update within 60 Sec. (DDLOG is a buffer synchronization table).

If there is any change then it will fetch from DB and swap out the buffer. IF there are no updates fetches the same from APP1 Buffer. If the content is requested after 60 Seconds, by that time it will be synchronized between APP1 and APP2.

DDLOG is a synchronization between instances and maintain TIMESTAMP

Note: DB13, DB02, DB buffer.

Refer - All the programs are stored in TADIR,
TSTC, T001, EO70, SE01



All the programs are in Uncompelled mode in TADIR table.
SGEN - Compiles the programs

ST04 DB PERFORMANCE MONITOR

- SQL server performance analysis. It is used to display the database buffer hit ratio. It is recommended that it should not be less than 94% i.e. for every hundred reads only 6 should go to the database.

- Database hit ratio comes down below 94% then consider the following.

1. Frequent updates on the database
2. DB Buffer size is not sufficient to hold the content fetched from the database.

It is calculated by using formulae

$$[\text{Logical reads} - \text{Physical Reads}] / \text{Logical Reads} * 100$$

Logical Reads is the sum of [**Physical reads and Buffer Reads**] (Buffer Gets/ Reads)

FROM ST04

Data Buffer			
Size (kB)	425.984	Logical reads	6.126.297.366
Quality (%)	95,1	Physical reads	299.892.150
Size default pool (kB)	425.984	Physical writes	15.000.244
Size keep pool (kb)	0	Buffer busy waits	260.352
Size others (kb)	0	Buffer wait time (s)	630

Physical Reads: The reads from the database.

If the buffer hit ratio comes down it effects on the DB response time.

Ensure that DB Buffers are configured as per the available memory. Some times complete memory will be dedicated to DB Buffers.

ST06 OSMONITOR

It Fetches the data using service SAPOSCOL and it displays CPU Utilization, Memory Utilization and disk response time.

The CPU idle time should not be less than 30% [For Portal up to 80% to 85%]
 If it is below 30% we can consider the following.

1. The ABAP programs are expensive with multiple conditions and endless loops.
2. The CPU is not sufficient to handle the load because the hardware is not procured as per sizing.

Probably the hardware is procured as per sizing but the number of users grown dynamically (300-600). In this scenario we advice to deploy additional instances.

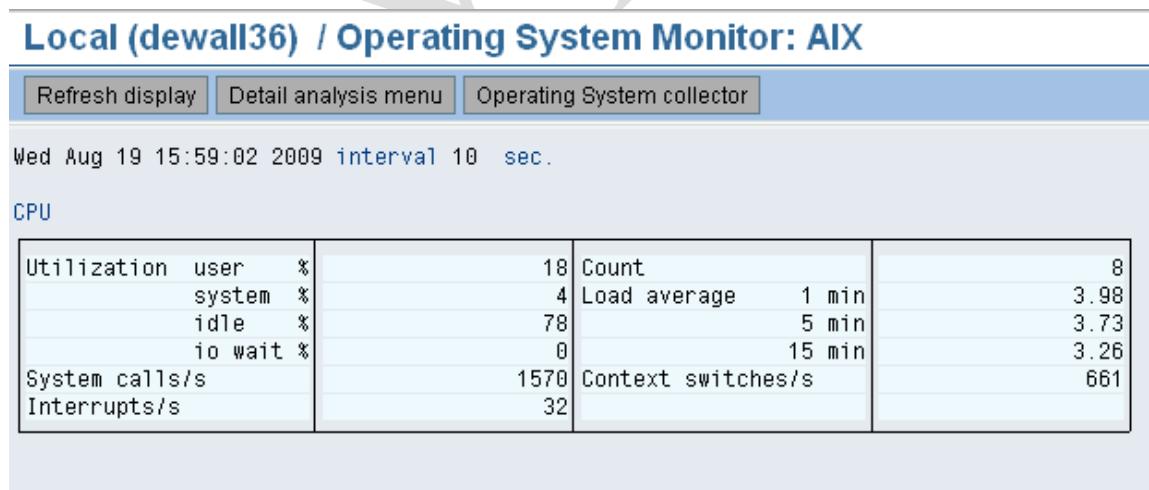
3. If the programs are expensive then refer to development team.

It also displays the memory installed on the machine, Memory available(Free) along with the SWAP space. Ensure that physical memory free is available to handle the user requests. If not memory bottleneck.

It is also used to start and stop SAPOSCOL (during Upgrades)

Note: OSCOL brings the operating system information into ST06. If OSCOL is not started ST06 will be blank.

We can check TOP CPU utilization for the current in the last 24 Hrs.



LAN CHECK BY PING is used to ping to all the systems in the Network/ Landscape.
 If a user complains that he could not connect to the server (Ping to the desktop)

Local (dewall36) / Operating System Monitor: AIX

Operating System collector

Current Data for Selected Server

Snapshot - Current Data

CPU	Memory	Swap	Disk	LAN
FileSys	Top CPU	Monitored Processes		

Previous 24 Hours

CPU	Memory	Swap	Disk	LAN
FileSys	OS Log	HW Info		

Daily Averages - Last 30 Days

Display Within Server	Display Across Servers
-----------------------	------------------------

Additional Functions

System configuration	Parameter Changes	LAN Check by Ping
----------------------	-------------------	-------------------

LAN Check by PING

Presentation Server	Application Server	Database Server	Specific IP Address
---------------------	--------------------	-----------------	---------------------

Active Presentation Srvrs	1
Active Application Srvrs	1
Active Database Srvrs	1

Click on Presentation Server

LAN Check by PING (Presentation Server)

1 x Ping	10 x Ping	Change View	Sort Order								
----------	-----------	-------------	------------	--	--	--	--	--	--	--	--

Server Name	HYDDT1S4HH1S
-------------	--------------

LAN Check by PING (Presentation Server)

Details					
19.08.2009 16:10:11 1 Ping to Presentation Servers from dewall136 (dewall136)					
Servername	Server-IP	Min (ms)	Avg (ms)	Max (ms)	Loss %
HYDDT164HH1S	10.109.13.219	148	148	148	0
		148	148	148	

ST07 Used to identify whether the system is **optimally designed** or not.

Say for Eg: from the below screen.

Users are 9944 and the WP are 27 so each WP serves 5-10 Users so $27 \times 10 = 270$

Here users are including Active and Inactive Users.

Application Monitor: User Distribution

Choose	Sort	SAP buffer	DB accesses	DB memory	Response Time	Quantity structure	History
Database	Name	R3I	SAP Release	700			
Server		dewall136	Time	16:01:22			
System		ORACLE	Date	19.08.2009			
User	9.944		all clients				
Number of servers	1		Work processes	27			
Application		Number of users			Sess.per User	Appl. Server	
		LoggedOn	Active	In WP			
Basis Components		2	2	1	1,00	1	
Total		2	2	1	1,00	1	

Ask the customer to provide the list of Active users.

Each work process serves around 5-10 Users. Calculate the number of Process Vs Users to determine no of Users/ Process.

Based on the number of servers we can also define logon load balancing. It is also used to identify the memory utilized.

This is also used to identify Response time and Buffers Utilization.

AL11 : List the SAP Directories on Application Server.

ST11: It is used to display the work directory. It displays the log files related to work process.

ST01 and ST05

Used to trace the following

- | | | |
|------------------------|---|----------------------------|
| 1. RFC Trace | } | Available in ST01 and ST05 |
| 2. Buffer Trace | | |
| 3. Enqueue Trace | | |
| 4. SQL Trace | | |
| 5. Authorization Trace | } | Only in ST01 |
| 6. Kernel Trace | | |
1. When the RFC/ CPIC time are going beyond threshold value then switch on RFC Trace.
2. When more buffer swaps occurs in the table buffering **ST02**. Switch on Buffer Trace.
3. **Enqueue Trace:** When the enqueue or enqueue wait time is increasing by 5 M.Sec on CI(Central Instance) 100 M.Sec on Dialogue instance (Consider switching enqueue trace)
4. When there are too many expensive SQL Statements which are increasing the database response time in **ST04** then switch on SQL Trace. (Identify those statements in ST04)
Eg. Select * from can be fine tuned by using select single * from with appropriate where conditions.

ST04 > Detailed > Oracle Session > SQL Statements.

5. **Authorization Check:** Whenever user encounters missing authorizations and could not be traced in SU53 can be traced out by switching the trace on User.
6. **Kernel Trace:** Used to identify the consistency of Kernel. It records all the calls that are made to kernel when the trace is ON.

Note: Do not switch on the traces when they are not required. It will populate enormous log files and occupies the complete disk place and system stands still. As a practice switch on the trace and inform the user to run the transaction. Switch Off the trace.

RC=0 (Return Code)

Note: Tuning is not testing we need enormous analysis and data to justify the conclusion.

IMPLEMENTATION OF SAP

Pre-Requisites

1. **Motivation of SAP for an ERP Software**
2. **Landscape Deployment Plan**
3. **Hardware Sizing**
4. **Hardware and Software Order**
5. **Installation of the Software**
6. **Post Installation Steps**
7. **User management**
8. **Router ----- Remote connection to SAP**
9. **Landscape Configuration**
10. **Transport Management**
11. **Testing Strategy**
12. **Go Live Strategy**
13. **Parallel Run**
14. **Go-Live**
15. **Support - Phase**

1. MOTIVATION OF SAP FOR AN ERP

1.1. Customer wanted to deploy an application that suites to his requirements by replacing the existing software due to the following reasons.

1. The existing Hardware is old and the response times are high.
2. The software is out of maintenance with no updates, or with no company (Company Bankrupt/ Merger etc.)
3. The customer could not be competitive in the market due to the legacy methods deployed

B1 - C++

No ABAP, BASIS, NW

4. The existing software is not capable to communicate with other systems
5. The software is not user friendly to take the user inputs.
6. It cannot communicate with print, fax, sms, paging devices.
7. Too many legacy systems, too little integration, manual inputs, monitoring are the various issues with the current software.

Customer enquires in the market and calls for the Auditors to identify the software, hardware and the Implementer.

Delloite, Bearing Point, KPBG, PWC (Price Water Coupons) are the auditors to identify the requirements in the company. They define the pain points of every business user owner and document them.

Example:

- The software should be installed on all the operating systems and databases.
- The GUI should be compatible, user friendly, ergonomically designed, colors, fonts, languages, password change.
- The software should be unicoded language to support all the languages.
- The software should support (Online, Offline, incremental, partial, table level backup)
- The software/ Hardware should support mirroring, RAID, clustering, Disaster Recovery, Restore etc.
- The software should support Mobile devices, Email, Fax, SMS, Pager, PDA etc.

Note: ATP Server - Available to Promise -----> Ware House.

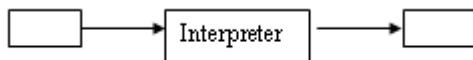
Issue --- Description ---- Possible/ Not Possible/ Customizable/ If customizable Amount of effort.

These requirements list will be floated as RFQ feasibility of software.

**SAP is Strong in Manufacturing, Weak in Retail } Tcode-SFW5(Switch Framework)
SA38 - GETSYSDEF**

- These list will be submitted to Oracle Apps, NAVISION, Hyperion, Peoplesoft, Seibel (CRM) implementing partners.

Note: Toughly Coupled/ Hardly



- Preparatory costs has to be borne by vendors

TDMS - Test Data Migration Server

QAS

PRE PROD

SAND
DEV/ CUST/ GOLDEN
UNIT TESTING
INTEGRATION
PAYROLL/ TDMS
TRAINING
PRE PROD
PROD

}

8

- Customer decides software with the help of feasibility reports and assistance from auditors.

- Customer calls for quotation to implement SAP

This is the first official document released to implement SAP.

- Support partners like IBM, TCS, WIPRO, MAHINDRA submits the proposal. They can also raise questions in the form of **RFI (Request for Information)**

C:\pf\sapinst_instdir\ERP\system\ORA\central\AS

Ensure that there should not be any .bck files while reinstalling the SAP

Refer: sapfans.com; sapconsultant.com; sabasis.com

Auditor gather info from - Business partner owners - Software Vendors.

RFQ - Request for Quotation (Released by customers)

RFI - Request for information

It can contain as follows

1. Module specific questions
 2. Technical questions related to Hardware, Desktops, Routing, Access, VPN, Backup, Disaster, Recovery etc.
 3. Risk and mitigation
-

Incremental

1->2->3->4->5

Cumulative

1->2 3 4 5



1. Project Implementation Methodology
2. Process
3. Company Strengths
4. Financial Background and Share Value
5. Past Projects and experience in that area
6. Average man power experience going to be deployed
7. Case studies and customer references

8. Implementation of solution manager (Provides Roadmap, Business Scenarios, Documentation (Upload, Download) etc.
9. Certifications (CMMI - Capability Maturity Model, SIX SIGMA, Sap Partnership)
10. Challenges in the project, risks and mitigations
11. Assumptions
Based on the above proposal customer and audit team shortlist the two or three software vendors (IBM, TCS, WIPRO etc) - Implementation Partners and call them for Interview (technical discussions) to exhibit their capabilities.

Based on 4th and 7th vendor will be finalized to implement SAP

Note:

External Security

Routing
Switching
Proxy
Firewall

Internal Security

Authenticating Authorized users is Internal Security.

Project Costing:

1. Number of hours required/ No of Man days/ No of Man Months

2. Cost of the	Man hours/	Man Days/	Man Months
Offshore	20-30\$	160-240\$	
Onsite	60-100\$	1000\$	20000\$

3. Project can be a fixed bid let us say 2,00,000 (i.e. @ Million Dollars for completion all inclusive (Fares, accommodation, staff, Replacement, Holidays, vacations, sick etc).

Payment will be released in Parts ---- Project Start 10%, Blue print - 20% Realization - 20%, Final Preparation - 20%, Go-Live - 30%.

4. Let us say the Project Manager is SAP. We need to provide manpower to SAP to implement @ customer site. Eg. SAP Project bidder is SAP for 28 Cores in Singareni Calories ... They out sourced to Seal InfoTech for training and implementation.

5. Critical Tasks are based on Man days/ Man Hours

Example : Disaster Recovery

1. Fixed Bid
2. Time and Material (T&M)
3. Resource Based
4. Activity Based (Try to include Wait time)

The scope of work needs to be defined properly before sign-on. If SOW is not defined properly, it is vendor responsibility.

Risks and mitigations has to be clearly stated in the SOW.

Delay in Software, Hardware requirements from customers are to be documented.

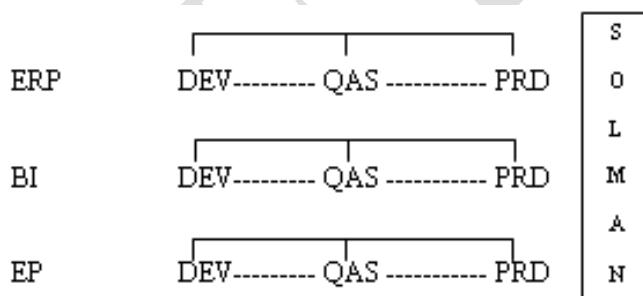
II. LANDSCAPE DEPLOYMENT PLAN

1. RFQ and RFI (Customer and Vendor)
2. RFP (Customer and Vendor)
3. SOW and Project Award (Customer and Vendor)
4. Landscape Deployment..... (Basis Consultant)

Landscape Deployment Plan:

It consists of the number of systems that are going to be deployed in the customer data center. It may serve the customer as an overview of the SAP systems. But exact number of systems will be known only after the Hardware sizing

1 CPU / 2 Parallel Process
 By default 3 Parallel Process.



III. HARDWARE SIZING

It is an exercise carried out by Basis consultant with the help of the customer business process owners, Project Manager and Hardware vendors (IBM, HP, SUN, DELL). It is used to determine the CPU's, Storage (Hard disks) and Memory.

SAP Provides quick sizing toll (<http://service.sap.com/sizing>)

Goto> Sizing tool > Click on Quick sizer

It will be opened on new window

Provide customer number, Provide Project name and create a Project for sizing.

1. Provide Customer details to SAP
(Name of the contact, Email Id, FAX)

2. Platform and communications

3. OS, DB, Mirroring, RAID, CLUSTERING

Standby server or do you need any suggestions.

Note: Legacy database size (get the details from customer what amount of data they are planning to migrate into SAP, Example Customer Database size is 400GB but they want to migrate 250GB into SAP (Customer, Vendor, Supplier, Material, Address, FI Transactions))

High Availability options (Time of Availability)

These are the general details that are required for sizing.

Load On the System:

Users work on the system on various modules

MM - Logistics

SD - Sales

FI - Financial

40% More to the sizing result.

SAP's - SAP Application Benchmark for Performance Standards)

It is calculated in terms of Hardware vendors provide CPU in terms of the CPU's

Eg. IBM P Series generates 800 SAP's/ CPU.

Note:

IBM - DB2 [AIX O/s - DB2 Database]; I Series V5R4 - DB2]

SAP - MAXDB

Oracle

SQL Server - Microsoft

P Series, X Series (I Series V5R4) is the O/s

Clustering (Mechanism : PING PONG)

DD02L - ALL Sap tables will be stored

65,611

SQL>Select bname, mandt from SAPSR3.USR02;

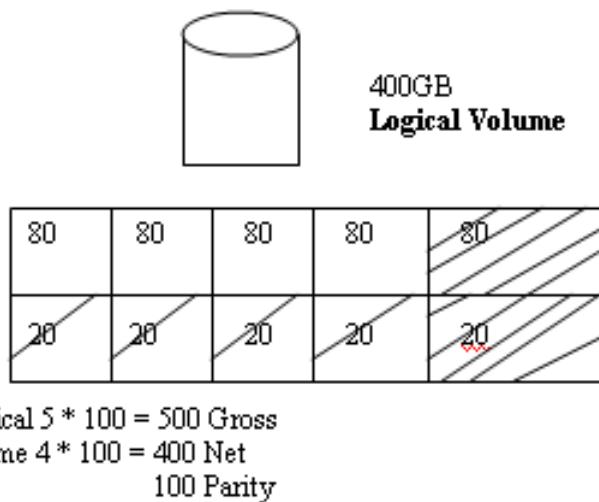
SAPSR3 - Database schema owner

Sizing is performed by quick sizer which is proprietary by quick sizer which is proprietary tool of SAP. Sizing is based on the following.

1. High Availability
2. Type of Users
3. Modules used

1. High Availability

1. RAID1 - Mirroring (1:1) on disk goes down other should take over.
2. RAID5 - (5 Disks---- Util -4; 1 Spare/ Parity)

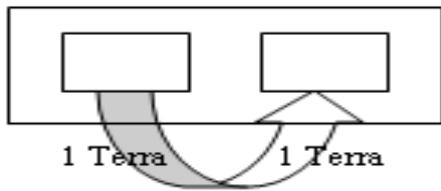


3. SAN - Storage Area Network
4. Backup - SAN
5. If disaster occurs ----- Setup DR Server in a different geographical location
6. If the connectivity fails buy more leased lines from different vendors
7. If the existing server collapses -- due to power cable --- multicable -- UPS -- etc -- Generator

Network Cable --- More than one cable
 CPU's -- Multiple CPUS
 Memory - Hosted on Multiple slots
 DISK - RAID and SAN

8. If the complete system collapses due to hardware failure use clustering -- Two Parallel systems (Used for failover or Load balancing)

Eg. IBM P-Series



Unless unlocked by IBM we cannot make use of the additional Hard Disks

Note: For Upgrade - Sizing
Capacity - Sizing

Module Selection: Select the modules that are going to be implemented like Logistics, Financials, Product life cycle Management (Currently HR is not going to be implemented but, there is a plan to implement in future, If it before three years consider HR in sizing if not.

1. User - 480 Dialogue Steps with the system
- 40 HRS * 60 Mins

1Dialogue Step - $40*60/480 = 5 \text{ Min} = 300 \text{ Sec}$

2. 480 - 4800 Dialogue Steps - 40 Hrs - 30 Sec

3. 480 - 14400 - 40 Hrs - 10 Secs

Eg. Purchase Order / Week - 200 * 10 Dialogue Steps = 2000.

Service Desk >

- 1.Need to activate some services
2. SICF
3. Execute
4. Default Host
 - SAP
 - Public
 - bsp
 - SAP
 - htmlb RT Click > Activate Service

Note: This should be done as Post Installation Steps

SPRO > SAP Solution Manager
 > General Configuration

Activating BC Sets (BC- Business Configuration)

Tcode: scpr20

> From End user system

If any one stuck @ point executing a command SM59 > Help
 > Create Mssg.

Component BC-MID-RFC

Test

Low

Test

-- TKT No: 008000000001

The Strategy is to migrate/ upgrade the hardware for every three years. The sizing is based on

1. High Availability
2. Modules and
3. No of users

Along with legacy database and future growth of users

User	Low	Medium	High
FI	50	250	250
CO	50	250	250

The sizing is also called as T-Shirt sizing which determines your servers as (S, XS, M, L, XL, XXL) Sizing output determines the memory, storage and CPU in terms of Saps'.

SAPS is (SAP APPLICATION BENCHMARK FOR PERFORMANCE STANDARDS)

SAPS are calculated based on Sales module. SAP assumes that a sales order/ Purchase order consumes around 8-12 Dialogue steps. For every 2000 sales documents that are generated per hour requires 100 SAPS.

CPU cannot be arrived directly because the process speed depends upon the hardware vendor. (The hardware vendor determines the CPU Size based on SAPS example an ISeries machine single CPU generates 800 SAPS.

If the sizing output requires 3200 SAPS then we need 4 CPU's.

The Hardware resources are required for the following which needs to be considered while sizing

1. OS
 2. Database
 3. Interfaces (Like Fax, Email, SMS, Pager etc.)
 4. Printers
 5. Third party communication (Batch processing etc)
- So we can consider adding 30-50% to the sizing results.

IV. HARDWARE ORDER

1. Customer calls the RFQ from various vendors to supply hardware.
 - Based on company's stability, consistency, reliability, past experience, case studies, price and support (warranty)...
 - Hardware vendors take 3 weeks to 4 weeks to deliver based on the availability of the hardware.
- HP ships from Singapore, Philippines and Malaysia
IBM ships from US

V. ORDERING SAP SOFTWARE

ISUSER (INDIAN SAP USER FORUM)
ASUSER(AMERICAN SAP USER FORUM)

Communicate with SAP vendor (Channel Partners) and purchase the license.
License is a single user based. i.e. If we buy one license we can access ... ERP, SRM, BI, PI, EP, Solution Manager, MI etc.)

SCM, SRM CRM are charged Separately.

If we buy MYSAP business suite then all comes under one license.
* There is no lock for licensed users in the system. We can buy 100 Users and used for 10,000 Users.
* Every year we need to run USMM and send the report to SAP.

License Cost varies based on Geographical Location
MySAPFI - Oracle Apps
MySAPSCM - Peoplesoft
MySAPCRM - Sieble

Each license cost 2000 USD
Each Developer Cost 4000 USD
After negotiation in Indian Market the Single user cost comes to 40,000 to 1,00,000 depending upon number of users.

For 40,000 we should have atleast 150-200 Users for 10+1 cost 18 Lakhs.

Note:

- | | |
|-----------------|--|
| Heap Memory | - Part of the Physical Memory (RAM Memory) |
| Physical Memory | - RAM |
| Virtual Memory | - Part of the Memory from the Hard disk |

Buffer

Bin - Points to the target system

BIN contains default.pfl

SAP_BC_ADMIN
S_Transports
CTS_Admin

Disp+exe (PING, Etc Entry, Any Kernel upgrade has been done (DEV_DISP.log)

BASIS

- It provides runtime environment for SAP Applications.
- 2.0 is based on two tier which is built on Mainframes.
- 3.0 onwards and upto 3.1I it is based on three tier and web services are provided by using ITS.
- 4.0; 4.5A, 4.5B
- 4.6 A, B, C and D is kernel versions
(Mining, Textile, Chemical, Oil, Utilities, Real Estates, baking, Insurance... etc.)

SAP determined to bring all the components on to a common platform and introduced SAP Web Application Server (WAS)

The first version of WAS is 620 (A direct jump from 4.6D)

On 620 ERP Version is 4.7E
On 620BW version is 3.1C

Owner of the Database

- SAPSR3..... Upto BASIS 4.6C
4.6D is the Kernel Version.
- SAP<SID> from WEBAS 620 to 640

It provides built in ITS to make application server as WEB Application Server.

- SAPSR3 from WEBAS 700

It is a Netweaver (640..... 700.....710.....730).

Next Level of WAS is 640

ERP - ECC 5.0 (ERP2004), ECC6.0 (ERP2005)

BW - 3.5/BI-7.0

SCM - 4.0

CRM - 4.0

2.0, 3.0, 3.1 are BW Versions

2.0, 3.0, APO are SCM Versions

2.0, 3.0, SRM are SRM Versions

XI - 3.0

EP - 6.0

Next level of WAS is 700

ERP - ECC6.0

BW - BI7.0

EP - EP7.0

XI - PI7.0

SRM - 5.0

CRM - 5.0

Install ABAP(CI, DBI), JAVA add on. Install Central System Installation (Select Usage type during Installation)

R/3 Setup is used to install SAP upto Versions Basis 4.6C

SAPINST introduced in WEB Application Server 620-640. Interactive SAPINST is to modify the inputs move front and back to review the inputs introduced in WAS700.

BASIS only Non-Unicode

From SAPWEBAS 640 unicode is introduced.

Run directory is used to host executables of kernel upto 640 where as OS version (NTI386, AMD64, IA64) with UC/ NUC is available in version 700.

OLD: The database table spaces are 27 which ends with D(Data) and I(Index)..[SAPR3] owner.

From 620

The database contains only 6 tablespaces(Physical Location) in 640 owner is SAP<SID>

PSAP<SID>
PSAP<SID>USR
PSAP<SID>REL
SYSTEM
PSAPROLL(PSAPUNDO)
PSAPTEMP

SQL> Select tablespace_name from dba_tablespaces.

The database contains only 8 tablespaces in 700. Owner is SAPSR3 for ABAP engine and SAPSR3DB is for JAVA Engine.

SYSTEM	- Database Related
PSAPUNDO	- For Roll Back
SYSAUX	- From Oracle Log for Administration
PSAPTEMP	- Temp Storage Memory
PSAPSR3	- Component Specific
PSAPSR3700	- Version Specific
PSAPSR3USR	- USER RELATED Info
PSAPSR3DB	- JAVA Specific DB

GUI Versions

46C
46D
620
640
700
710
720

Based on Windows and JAVA

SQL> select username from DBA_USERS;

Database Users (DDIC and SAP* are SAP Users resides in USR02 Table)

SQL> select count(*) from DBA_USERS where owner = 'SAPSR3';
17476

```
SQL> select count(*) from SAPSR3.DD02L;  
65611
```

```
SQL> select count(*) , owner from DBA_USERS group by owner;
```

Eg. [CDCLS] Cluster Table.

DATABASE

It is a storage. It is used to store the data in the hard disk.

We can also store the data in terms of file system like test.txt, test.pdf, test.doc, test.rtf, test.xls, test.ppt, test.pps

Disadvantage of the file system

1. The data is not in the organized format.
2. There are no indexes to search the data.
3. The data does not follow the LUW concept and so it is not consistent and reliable.
4. The version management will be difficult and time consuming to get the required/ identify the file.
5. The backup management and reorganization is not available.

These are the reasons for the evolution of DB.

Database: Used to store the data in the organized format and it has to follow RDBMS rules (Relational Database Management System)

- Data is stored in terms of tables (Tables contain rows and columns). Columns are headers and rows are the data.
- Duplication of data is avoided and uniqueness is obtained by using primary and secondary keys.
- Data search is faster by using indexes (based on Keys)

Eg: As in windows we can create as many folders and subfolders with the same name and the search criteria depends on the search string.

C:\shawn\shawn\shawn.....

- Database has its own structure to manage the data using the database specific binaries and libraries.

Oracle/bin; mssql/bin; db2/bin;
Oracle/lib; mssql/lib; db2/lib;

- Database provides tools for backup management, reorganization, restore and recovery
- Databases follow RDBMS rules to achieve consistency, reliability and transaction LUW.

LUW - LOGIC UNIT OF WORK.

It consists of one or more transactions that are bundled together which can be committed as a group or rollback without any data loss.

RFQ(Approved) - Sales Order

Purchase Req - FI Dept (Approval) - Purchase Order - Tenders (Contractors)

(Eg: Purchase Order, Sales Order, Invoice, GR(Goods Receipt), GI (Goods Issued) AP (Account Payables), AR (Account Receivables)

- Data is normalized and denormalised according to the requirements of the customer.

NORMALIZATION

Process of splitting up the larger tables into smaller tables using primary keys and secondary keys... ERP(ECC6.0), SRM.

Databases are normalized.

DENORMALIZATION

Process of grouping smaller tables into larger tables for having data comprehensively available for analysis and reporting BIW.

[SELECT, INSERT, UPDATE, MODIFY, DELETE]

Scenario

User requests for weekly status report.

1. User submits the request.
2. Request is handled by dispatcher
3. Keeps the request in Queue
4. Based on the available processes requests are served based on FIFO.

5. R/3 Work process handles the user request by interpreting the screen elements, program logic (Insert, Modify, Delete, Update)
6. The response is fetched from buffers if they are accessed earlier
7. If the request is not accessed earlier, the request is converted into Native SQL statements of the respective database.
8. R/3 Work process communicates with database process to get the response.
9. Database work process checks whether the table exists, if table exists then checks for the fields, if the field and table exists, then asks for the optimized path to go to the database table and identify the relevant rows based on keys/ Indexes (Five 5 Secondary Indexes)
10. The data is fetched into Database buffers before the response is sent to R/3 work process.
11. R/3 Work process keeps a copy in the R/3 Buffer and response is sent to user.

UPDATE COMMAND

1. User request for updating a purchase order/ quotation / Invoice
2. The request is received by the dispatcher
3. Dispatcher keeps the request in queue based on FIFO
4. R/3 Work process handles the request and update the document into temporary tables (cannot update the permanent tables because all the LUW's in the transaction has to be completed)
5. In the process of updating it will communicate with enqueue and obtain the lock on the document so that no other user updates it.
6. The update request goes to the database.
7. Database process handles the request and checks whether table, table definitions and execution (Cost based optimizer) path are valid.
8. All the update requests goes to the database and lock the record in the database so that no user update it.
9. Database process keeps a copy of the record in roll back segment PSAPROLL/ PSAPUNDO table space to roll back in case of CRASH/ System Failure.
10. Gets the record to database buffer for modification (No record is modified in the database directly)
11. As the database buffers need to be accessed by user modifications are not performed in DB Buffers instead in log buffers.

- Eg. Consider a pan shop
Customer - Cigarette Paper - Accounts book

Log buffers are a small area around 1Mb - 4 Mb. As the log buffer is small the content is moved in to Redo logs periodically.

Redo logs are duplexed (Mirror logs and Orig Logs) and ensure that the data is updated in the database.

12. The committed data is updated into database
 13. The locks are released and rollback gets invalidated.
- Note: Committed data can be updated or Redo.
14. User gets the response that the record is updated.

ORACLE

Oracle is a database that is used by 2/3rd of SAP Customers. In order to support SAP Customers it is mandatory to know the database management.

Oracle is provided by Oracle Corporation which owns (PeopleSoft, Seibel, JDEdwards, and other small software's to compete with SAP.

Oracle is a proven, well spoken among customers, strong, reliable, consistent, robust database to handle any amount of data in Terra bytes.

Microsoft SQL Server from Microsoft, DB2 from IBM and SAPDB(MAXDB) from SAP shares the remaining 1/3rd of SAP Customers.

Versions

Oracle has versions of database

SAP License is costlier on Oracle than any other combinations.

SAP R/3	4.6C	8.1.7
R/3	4.7 and ECC5.0	9.2.0.2; 9.2.0.4; 9.2.0.6; 9.2.0.7
ECC6.0		10.2.0.2.0; 10.2.0.2.4

Linux - SAPDB (MAXDB) is the cheapest combination.

ORACLE:

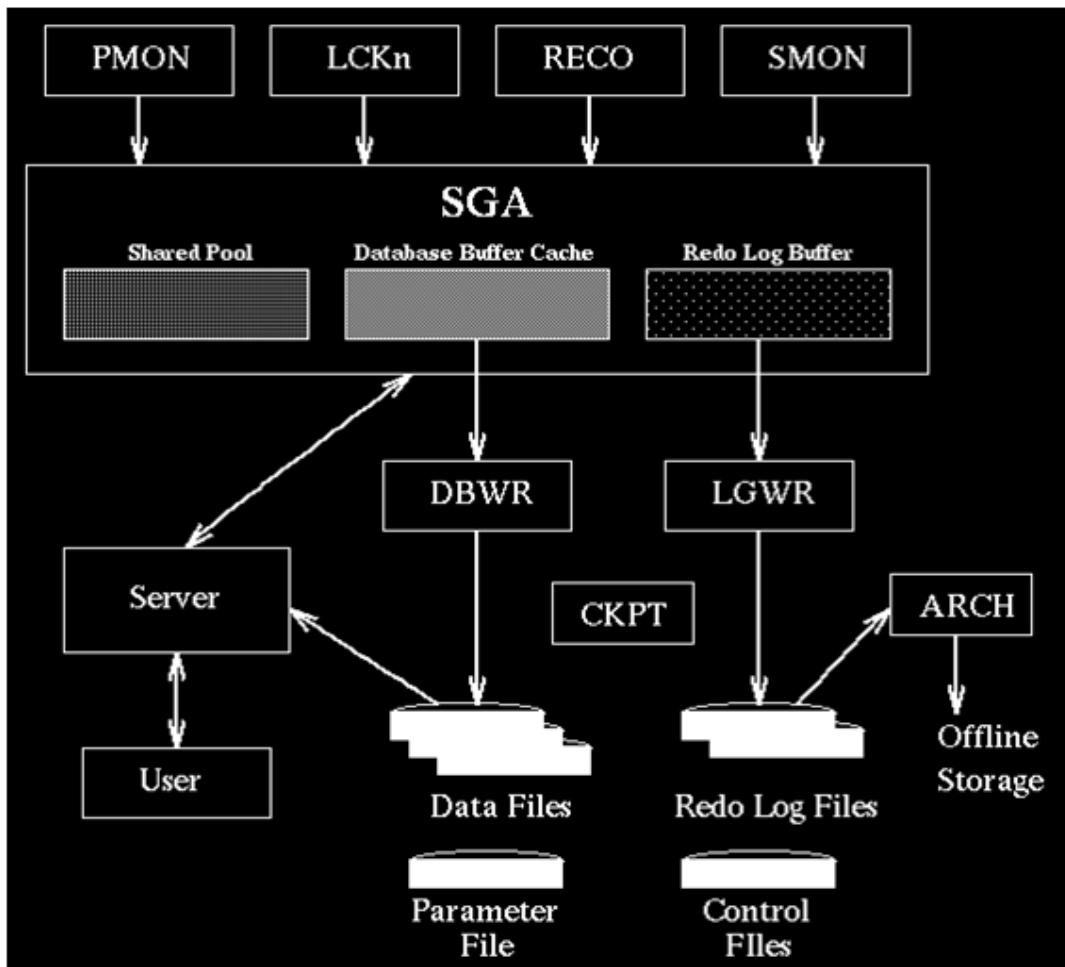
DATABASE

A collection of information that has been systematically organized In form of physical files for easy access and analysis..

A database is a set of files:

1. Control file
2. Redo file.
3. Data file
4. Parameter file

Every running Oracle database is associated with an Oracle instance. When a database is started on a database server , Oracle allocates a memory area called the System Global Area (SGA) and starts one or more Oracle processes. This combination of the SGA and the Oracle processes is called an **Oracle instance**. The memory and processes of an instance manage the associated database's data efficiently and serve the one or multiple users of the Database.



PARAMETER FILE (`init<sid>.ora`)

Oracle uses a parameter file when starting up the database. The pfile is a text file containing the parameters and their values for configuring the database and instance.

The default location is under \$ORACLE_HOME/dbs directory .

The parameter files tell oracle the following when starting up an instance:-

- The name of the database and location of control files.
- The size of the SGA.
- The location of the dump and trace files.
- The parameters to set limits and that affect capacity.

Some of the important parameters are:

- db_block_size
- db_files
- undo_management
- log_buffer
- max_dump_file_size
- db_block_buffers
- shared_pool_size
- log_checkpoint_interval

INIT<SID>.SAP:

The SAP utilities BRBACKUP, BRARCHIVE, and BRRESTORE must be configured before they can be used. To do this you must set the appropriate parameters in initialization profile init<DBSID>.sap. Before using one of the SAP utilities, find out exactly which parameters you have to configure. Changes to parameter values do not take effect until you call the corresponding utility.

InitSID.sap is located in /usr/sap/<SAPSID>/SYS/exe/run/initSID.sap

Important parameters in init<Sid>.sap

- **archive_copy_dir:** This parameter identifies the directory used by BRARCHIVE to back up the offline redo log files to a local disk
- **backup_mode:** This parameter is used by BRBACKUP and BRRESTORE to determine the scope of the backup/restore activity.
- **backup_type:** Identifies the default type of the database backup. This parameter is only used by BRBACKUP

tape_size: Storage size in gigabytes (G), megabytes (M) or kilobytes (K) for the tapes that will be used for backups and for archiving redo log files.

remote_host: this parameter is to specify the name of the remote host, if you want to make a backup to a remote disk

volume_archive: This parameter is used by BRARCHIVE to identify the volume/directory to be used for the archive of the offline redo log files

volume_backup: This parameter is used by BRBACKUP to identify the volume/directory to be used for the backup of the database or non-database files

backup_dev_type: Determines the backup medium that you want to use .It may be a disk, tape etc

Database Buffer Cache:

Is a fairly large memory object that stores the actual data blocks that are retrieved from datafiles by system queries and other data manipulation language commands

The buffers in the cache are organized in two lists:

- The write list and,
- The least recently used (LRU) list.

The **write list** holds dirty buffers – these are buffers that hold that data that has been modified, but the blocks have not been written back to disk.

The **LRU list** holds free buffers, pinned buffers, and dirty buffers that have not yet been moved to the write list. **Free buffers** do not contain any useful data and are available for use. **Pinned buffers** are currently being accessed

Redo Log buffer Cache:

The **Redo Log Buffer** memory object stores images of all changes made to database blocks. As you know, database blocks typically store several table rows of organizational data. This means that if a single column value From one row in a block is changed, the image is stored. Changes include insert, update, delete, create, alter, or drop.

Data dictionary Cache:

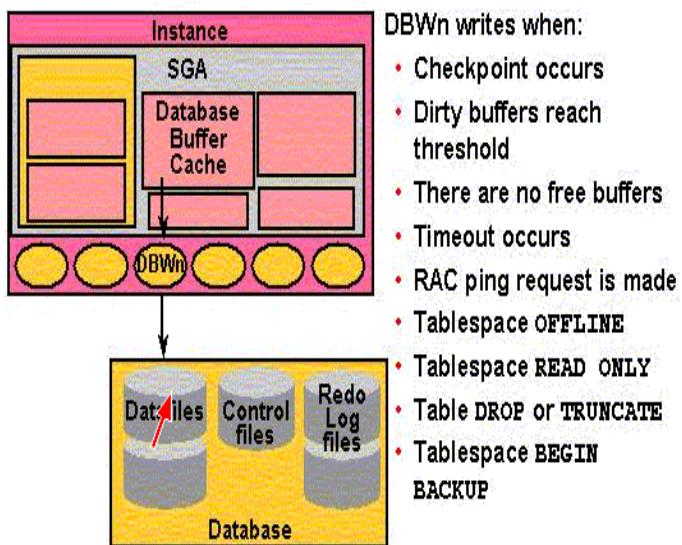
The Data Dictionary Cache is a memory structure that caches data dictionary information that has been recently used. This includes user account information, datafile names, table descriptions, user privileges, and other information.

The database server manages the size of the Data Dictionary Cache internally and the size depends on the size of the Shared Pool in which the Data Dictionary Cache resides. If the size is too small, then the data dictionary tables that reside on disk must be queried often for information and this will slow down performance.

DBWn:

Writes to datafiles when one of these events occurs that is illustrated in the figure below.

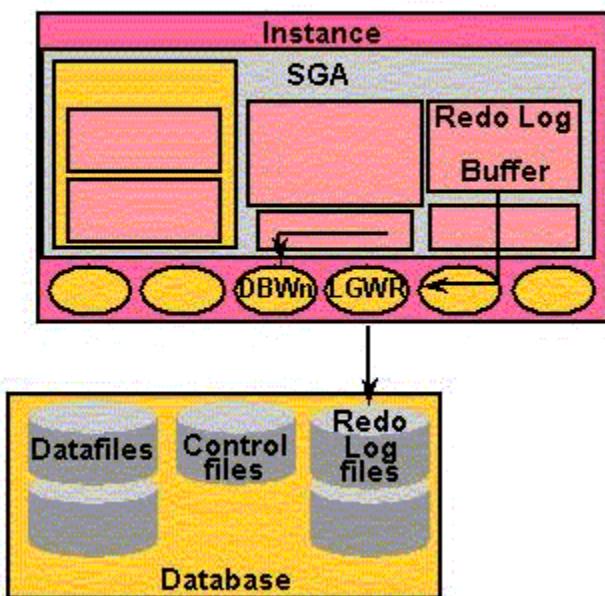
Database Writer (DBWn)



LGWR:

The **Log Writer (LGWR)** writes contents from the Redo Log Buffer to the Redo Log File that is in use. These are sequential writes since the Redo Log Files record database modifications based on the actual time that the modification takes place. LGWR actually writes before the DBWn writes and only confirms that a COMMIT operation has succeeded when the Redo Log Buffer contents are successfully written to disk. LGWR can also call the DBWn to write contents of the Database Buffer Cache to disk. The LGWR writes according to the events illustrated in the figure shown below:

Log Writer (LGWR)



LGWR writes:

- At commit
- When one-third full
- When there is 1 MB of redo
- Every three seconds
- Before DBWn writes

SMON:

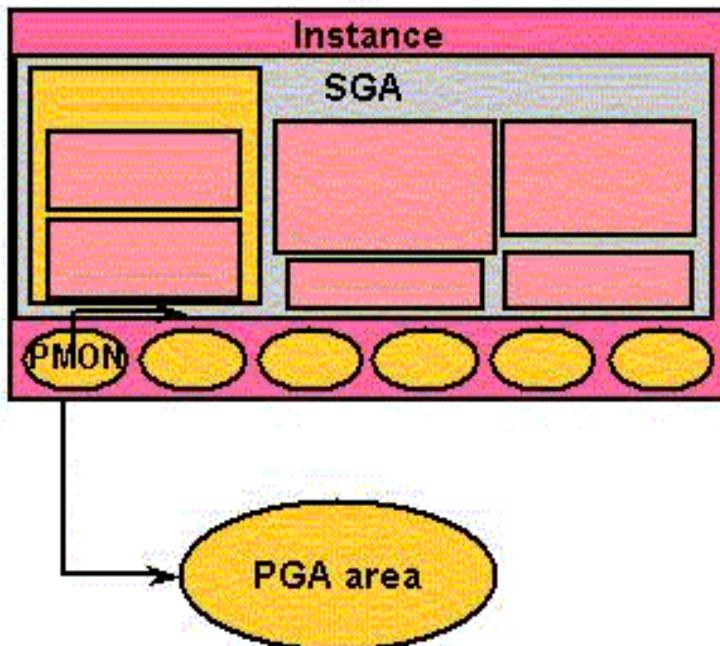
The **System Monitor (SMON)** is responsible for instance recovery by applying entries in the online redo log files to the datafiles. It also performs other activities as outlined in the figure shown below

- If an Oracle Instance fails, all information in memory not written to disk is lost. SMON is responsible for recovering the instance when the database is started up again. It does the following:
 - Rolls forward to recover data that was recorded in a Redo Log File, but that had not yet been recorded to a datafile by DBWn. SMON reads the Redo Log Files and applies the changes to the data blocks. This recovers all transactions that were committed because these were written to the Redo Log Files prior to system failure.
 - Opens the database to allow system users to logon.
 - Rolls back uncommitted transactions.
 - SMON also does limited space management. It combines (coalesces) adjacent areas of free space in the database's datafiles for tablespaces that are dictionary managed.
 - It also deallocates temporary segments to create free space in the datafiles.

PMON

The **Process Monitor (PMON)** is a cleanup type of process that cleans up after failed processes such as the dropping of a user connection due to a network failure or the abend of a user application program. It does the task shown in the figure below:

Process Monitor (PMON)



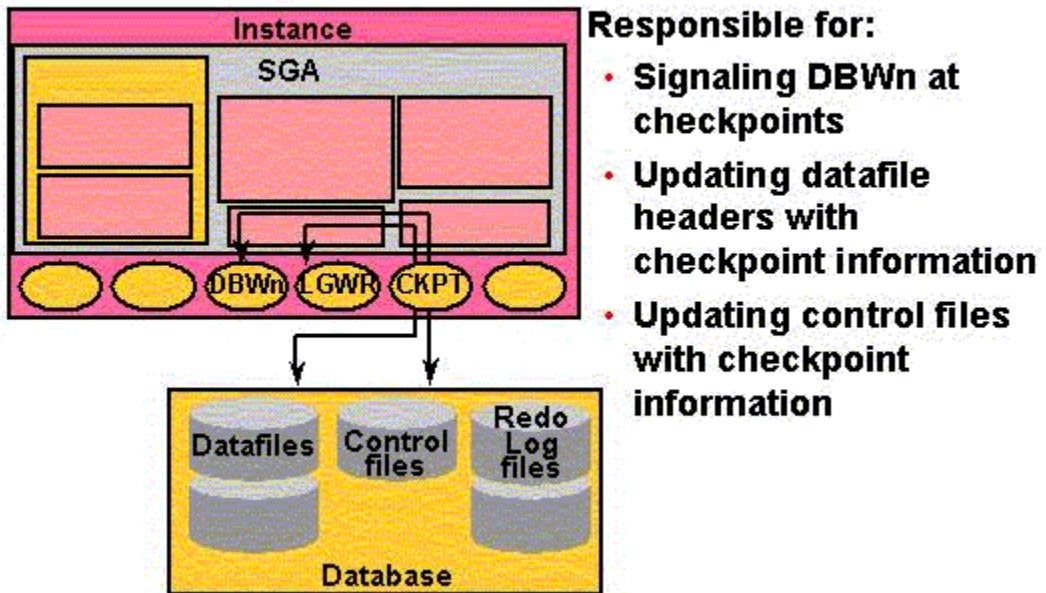
Cleans up after failed processes by:

- **Rolling back the transaction**
- **Releasing locks**
- **Releasing other resources**
- **Restarting dead dispatchers**

CKPT:

The **Checkpoint (CPT)** process writes information to the database control files that identifies the point in time with regard to the **Redo Log Files** where instance recovery is to begin should it be necessary. This is done at a minimum, once every **three seconds**.

Checkpoint (CKPT)



checkpoint records as a starting point for recovery. DBWn will have completed writing all buffers from the Database Buffer Cache to disk prior to the checkpoint, thus those record will not require recovery. This does the following:

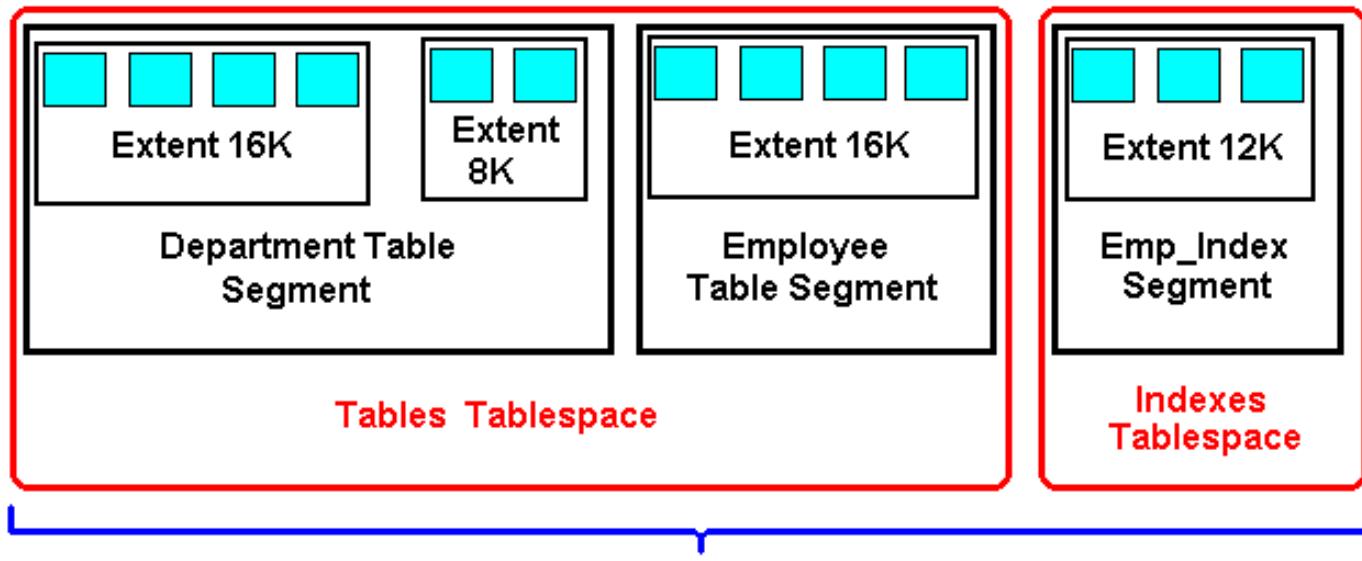
- Ensures modified data blocks in memory are regularly written to disk – CKPT can call the DBWn process in order to ensure this and does so when writing a checkpoint record.
- Reduces Instance Recovery time by minimizing the amount of work needed for recovery since only Redo Log File entries processed since the last checkpoint require recovery.
- Causes all committed data to be written to datafiles during database shutdown.
- If a Redo Log File fills up and a switch is made to a new Redo Log File (this is covered in more detail in a later module), the CKPT process also writes checkpoint information into the headers of the datafiles.
- Checkpoint information written to control files includes the system change number (the SCN is a number stored in the control file and in the headers of the database files that are used to ensure that all files in the system are synchronized), location of which Redo Log File is to be used for recovery, and other information.
- CKPT does not write data blocks or redo blocks to disk – it calls DBWn and LGWR as necessary

Logical Structure:

It is helpful to understand how an Oracle database is organized in terms of a logical structure that is used to organize physical objects.

Data Storage

Database Blocks = 



Database Blocks are allocated to extents as specified in data storage clauses. Each object (table, index, cluster) is allocated a single segment which is comprised of one or more extents. Segments are stored to Tablespaces as determined by the DBA when the object is created. All of the Tablespaces taken together comprise the Database.

Tablespace:

A tablespace is a logical storage facility (a logical container) for storing objects such as tables, indexes, sequences, clusters, and other database objects.

Each tablespace has at least one physical datafile that actually stores the tablespace at the operating system level. A large tablespace may have more than one datafile allocated for storing objects assigned to that tablespace, belongs to only one database.

Tablespaces can be brought online and taken offline for purposes of backup and management, except for the **SYSTEM** tablespace that must always be online. Tablespaces can be in either read-only or read-write status.

Datafile:

Tablespaces are stored in datafiles which are physical disk objects.

A datafile can only store objects for a single tablespace, but a tablespace may have more than one datafile – this happens when a disk drive device fills up and a tablespace needs to be expanded, then it is expanded to a new disk drive.

The DBA can change the size of a datafile to make it smaller or later. The file can also grow in size dynamically as the tablespace grows.

Segment:

When logical storage objects are created within a tablespace, a **segment** is allocated to the object. Obviously a tablespace typically has many segments. A segment cannot span tablespaces but can span datafiles that belong to a single tablespace.

Extent:

Each object has one segment which is a physical collection of **extents**. **Extents** are simply collections of **contiguous disk storage blocks**. A logical storage object such as a table or index always consists of at least one extent – ideally the initial extent allocated to an object will be large enough to store all data that is initially loaded.

As a table or index grows, additional extents are added to the segment.

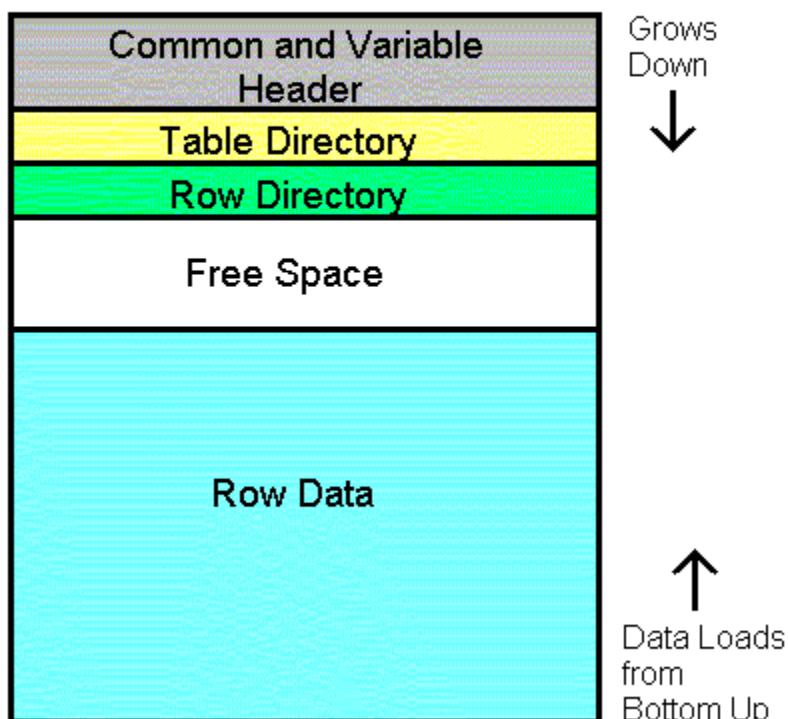
A DBA can add extents to segments in order to tune performance of the system.

An extent cannot span a datafile.

Block:

The Oracle Server manages data at the smallest unit in what is termed a **block** or **data block**. Data are actually stored in blocks.

Database Block



Oracle Database Backup

Three ways of doing database backup:

- Full Offline(Cold) Backup
- Full Online(Hot) Backup - archiving must be on
- Export Utility Backup

Cold backup:

cold backup is taken when database is shutdown normal. The following files should be backed up.

- All Datafiles
- All Control files
- All Online Redo logs
- Init.ora

Hot backup:

Hot backup is taken when database is up and running in Archive log mode. Hot backup Is taken on tablespace by tablespace mechanism .We put the tablespace in Begin backup mode and after finishing the backup you must set it to end backup mode.

Export and import:

Is an oracle utility used to store database data in export format (.dmp) files for later retrieval. These files can be later used to write back into Oracle database via import.

- Exports basic function is to extract the object definition and table data from oracle database and store them in binary format. Three levels of export are:
 - Table level
 - Schema level
 - Database level

Syntax: \$ exp <username/password> parameters

Exports are of three types:

- Incremental Export
- Cumulative Export
- Complete Export

Types of Backups

- **online:** Database backup in online mode, in other words, with the database running.
- **online_cons:** Database backup in online mode. As well as the database files, the offline redo log files generated during the backup are copied to the same volume. You then have a logically consistent dataset available. This backup of the offline redo log files with BRBACKUP runs completely independently of other BRARCHIVE backups.
- **Offline:** Database backup in offline mode, in other words, the database is shut down during backup. When you select this parameter, BRBACKUP checks that no SAP system users are connected to the database. If an SAP System is active,

the database is not shut down and BRBACKUP terminates the process with an error message.

- **offline_force:** Database backup in offline mode, in other words, the database is shut down during backup. BRBACKUP always shuts down the database, even if the SAP System is active.
- **offline_standby:** Data backup of a standby database in offline mode; in other words, the standby database is shut down during the backup. This backup mode is only relevant for the disaster recovery configuration.
- **online_split:** The mirror disks are split and backed up while the database is running. The tablespaces to be backed up are only placed in BACKUP status during the split. This backup mode is only relevant for the ‘split mirror’ configuration
- **offline_split :** The database is only shut down for the mirror disks split. The backup of the mirror disks can take place whilst the database is running. The R/3 System is available during the entire split mirror backup. No transactions can be carried out during the short period of time that the database is shut down. This backup mode is only relevant for the ‘split mirror’ configuration.
- **offline_stop:** Database backup in offline mode without a consequent startup of the database. After its backup the database can be transferred directly into the mount standby status. This type of backup is only relevant in the following case: The productive database is saved and then takes over the role of a standby database. The backup itself becomes a productive system

TAPE MANAGEMENT

Before a backup can be performed, you must initialize the tapes to be used, Set the backup

profile parameters ,Label the tapes

The profile *init<SID>.sap* is used to set the following parameters:

tape_use_count defines how often a tape can be reused.

expir_period defines the length of the backup cycle. To allow the tape to be reused after 28 days,

set this parameter to 28.

backup_dev_type defines the type of backup device used. To perform backups to a local tape

device, enter *tape*. Other options include *pipe* (remote), *tape_auto* (auto loader), *util_file* (backint

interface), and *disk*.

volume_backup defines the tape pool for the database backups

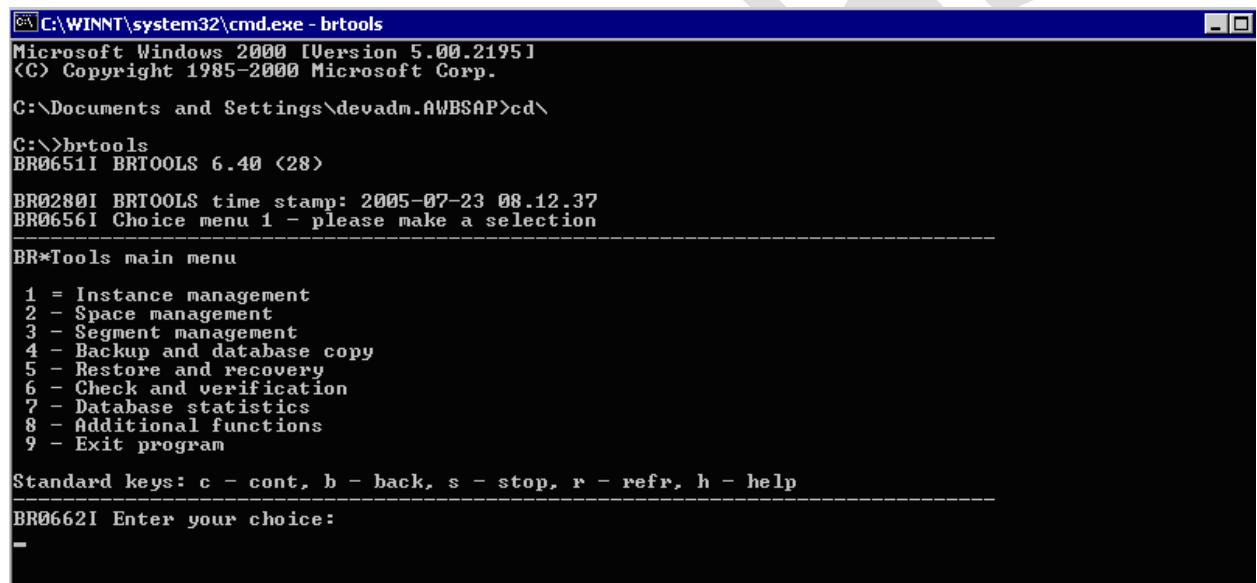
volume_archive defines the tape pool for the offline redo log file backups

When using hardware or software compression, data on tape requires less storage space. The compression factor indicates the degree of compression possible for the backup data. Use SAPDBA to determine which compression ratio to use when backing up your data. This factor depends on the fill level of the database files to be backed up. Because of the changing fill level , you should predetermine the compression rate frequently (at least once per backup cycle).

Administration using BRTOOLS

Starting and Stopping Instance

STEP 1. Start BRTOOLS from command prompt to get the below screen



```
C:\WINNT\system32\cmd.exe - brtools
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.

C:\Documents and Settings\devadm.AWBSAP>cd\
C:\>brtools
BR0651I BRTOOLS 6.40 <28>

BR0280I BRTOOLS time stamp: 2005-07-23 08.12.37
BR0656I Choice menu 1 - please make a selection
-----
BR*Tools main menu

1 - Instance management
2 - Space management
3 - Segment management
4 - Backup and database copy
5 - Restore and recovery
6 - Check and verification
7 - Database statistics
8 - Additional functions
9 - Exit program

Standard keys: c - cont, b - back, s - stop, r - refr, h - help
-----
BR0662I Enter your choice:
-
```

STEP 2. Enter Option 1 to get the below screen where you can perform lots activities on instance

```
BR0662I Enter your choice:  
1  
BR0280I BRTOOLS time stamp: 2005-07-23 08.14.04  
BR0663I Your choice: '1'  
  
BR0280I BRTOOLS time stamp: 2005-07-23 08.14.04  
BR0656I Choice menu 3 - please make a selection  
  
Database instance management  
  
1 - Start up database  
2 - Shut down database  
3 - Alter database instance  
4 - Alter database parameters  
5 - Recreate database  
6 - Show instance status  
7 - Show database parameters  
8 - Reset program status  
  
Standard keys: c - cont, b - back, s - stop, r - refr, h - help  
  
BR0662I Enter your choice:
```

STEP 3. Enter 1 to Start database
Enter 2 to Shutdown database

Switching Archivelog Modes

Follow **STEP 1** and **STEP 2** as above.

STEP 3: Choose 3 and continue

```

BR0662I Enter your choice:
3
BR0280I BRTOOLS time stamp: 2005-07-23 09.36.42
BR0663I Your choice: '3'

BR0280I BRTOOLS time stamp: 2005-07-23 09.36.42
BR0657I Input menu 73 - please check/enter input values
-----  

BRSPACE options for alter database instance
1 - BRSPACE profile <profile> ..... [initDEU.sap]
2 - Database user/password <user> ... [/]
3 ~ Alter database action <action> . []
4 ~ Database instance <instance> ... []
5 - Confirmation mode <confirm> .... [yes]
6 - Message language <language> .... [E]
7 - BRSPACE command line <command> : [-p initDEU.sap -l E -f dbalter]

Standard keys: c - cont, b - back, s - stop, r - refr, h - help
-----  

BR0662I Enter your choice:
c
BR0280I BRTOOLS time stamp: 2005-07-23 09.37.13
BR0663I Your choice: 'c'
BR0259I Program execution will be continued...

```

STEP 4

```

BR1001I BRSPACE 6.40 <28>
BR1002I Start of BRSPACE processing: sdqllicxz.dba 2005-07-23 09.37.27

BR0280I BRSPACE time stamp: 2005-07-23 09.37.35
BR1009I Name of database instance: DEU
BR1010I BRSPACE action ID: sdqllicxz
BR1011I BRSPACE function ID: dba
BR1012I BRSPACE function: dbalter

BR0280I BRSPACE time stamp: 2005-07-23 09.37.35
BR0656I Choice menu 207 - please make a selection
-----  

Alter database instance main menu
1 - Switch redo log file
2 - Force database checkpoint
3 - Set archive log mode
4 - Set noarchive log mode
5 - Show instance status
6 * Exit program
7 - Reset program status

```

**STEP 5 Enter 3 to switch to Archive log mode
 Enter 4 to switch to Non Archive log mode**

Tablespace % fill level

Follow STEP 1
 STEP 2 Enter 2 for Space management

```

Standard keys: c - cont, b - back, s - stop, r - refr, h - help
BR0662I Enter your choice:
2
BR0280I BRTOOLS time stamp: 2005-07-23 09.25.54
BR0663I Your choice: '2'

BR0280I BRTOOLS time stamp: 2005-07-23 09.25.54
BR0656I Choice menu 5 - please make a selection

Database space management

1 - Extend tablespace
2 - Create tablespace
3 - Drop tablespace
4 - Alter tablespace
5 - Alter data file
6 - Move data file
7 - Additional space functions
8 - Reset program status

Standard keys: c - cont, b - back, s - stop, r - refr, h - help

```

STEP 3 Enter 7 to get below options

```

C:\WINNT\system32\cmd.exe - brtools
BR0662I Enter your choice:
7
BR0280I BRTOOLS time stamp: 2005-07-23 09.26.08
BR0663I Your choice: '7'

BR0280I BRTOOLS time stamp: 2005-07-23 09.26.08
BR0656I Choice menu 6 - please make a selection

Additional database space functions

1 - Show tablespaces
2 - Show data files
3 - Show redo log files
4 - Show control files
5 - Show disk volumes

Standard keys: c - cont, b - back, s - stop, r - refr, h - help
BR0662I Enter your choice:

```

STEP 4 Enter 1 to check the tablespace fill level

```

Standard keys: c - cont, b - back, s - stop, r - refr, h - help
BR0662I Enter your choice:
1
BR0280I BRTOOLS time stamp: 2005-07-23 09.26.14
BR0663I Your choice: '1'

BR0280I BRTOOLS time stamp: 2005-07-23 09.26.14
BR0657I Input menu 75 - please check/enter input values

BRSPACE main options for showing database information

1 - BRSPACE profile <profile> ..... [initDEU.sap]
2 - Database user/password <user> ..... [/]
3 # Database instance <instance> ..... []
4 # Database parameter <parameter> ..... []
5 ~ Database tablespace <tablespace> ..... []
6 # Database file <file> ..... []
7 # Database owner <owner> ..... []
8 # Database table <table> ..... []
9 # Database index <index> ..... []

Standard keys: c - cont, b - back, s - stop, r - refr, h - help

```

The below screen displays the list of tablespaces and the % used space

List of database tablespaces							
Pos.	Tablespace Total[KB]	Type Used[%]	Status Free[KB]	ExtMan. ExtSize[KB]	SegMan. FreeExt.	Backup Files/AuExt.	Largest[KB]
80	1 - PSAPBTABD 23670704	DATA 70.15	ONLINE 7066752	DICT 0	MANUAL 14	NO 14/0	2097144:2097136:1407720:1246928:2
	2 - PSAPBTABI 13098944	DATA 66.17	ONLINE 4431080	DICT 0	MANUAL 22	NO 10/0	1945704:1889488:583096:3840:2560
	3 - PSAPCLUD 819200	DATA 81.83	ONLINE 148816	DICT 0	MANUAL 1	NO 1/0	148816:0:0:0:0
	4 - PSAPCLUI 112640	DATA 74.17	ONLINE 29096	DICT 0	MANUAL 1	NO 1/0	29096:0:0:0:0
	5 - PSAAPDICD 1331192	DATA 80.47	ONLINE 260032	DICT 0	MANUAL 2	NO 2/0	138712:121320:0:0:0
	6 - PSAAPDDICI 3121144	DATA 28.07	ONLINE 2245016	DICT 0	MANUAL 2	NO 2/0	2096696:148320:0:0:0
	7 - PSAPOCUD 156664	DATA 25.69	ONLINE 116424	DICT 0	MANUAL 2	NO 2/0	87624:28800:0:0:0
	8 - PSAPOCUI 53248	DATA 40.93	ONLINE 31456	DICT 0	MANUAL 1	NO 1/0	31456:0:0:0:0
	9 - PSAPEL46CD 3384792	DATA 67.62	ONLINE 1095832	DICT 0	MANUAL 6	NO 6/0	863520:109680:66544:35824:17720
	10 - PSAPEL46CI	DATA	ONLINE	DICT	MANUAL	NO	1/0

Adding Datafiles

Follow STEP 1 in Starting and Stopping Instance

Follow STEP 2 in Tablespace % fill level

STEP 3 Enter 1 to get the below screen

```

BR0662I Enter your choice:
1
BR0280I BRTOOLS time stamp: 2005-07-23 08.35.04
BR0663I Your choice: '1'

BR0280I BRTOOLS time stamp: 2005-07-23 08.35.04
BR0657I Input menu 81 - please check/enter input values

BRSPACE options for tablespace extension

1 - BRSPACE profile <profile> ..... [initDEV.sap]
2 - Database user/password <user> ... [/]
3 ~ Tablespace name <tablespace> ... []
4 - Confirmation mode <confirm> .... [yes]
5 - Scrolling line count <scroll> .. [20]
6 - Message language <language> .... [E]
7 - BRSPACE command line <command> . [-p initDEV.sap -s 20 -l E -f tsextend]

Standard keys: c - cont, b - back, s - stop, r - refr, h - help

BR0662I Enter your choice:
3
BR0280I BRTOOLS time stamp: 2005-07-23 08.35.41

```

STEP 4 Enter 3 to give tablespace name

```

BR0280I BRTOOLS time stamp: 2005-07-23 08.35.41
BR0663I Your choice: '3'

BR0280I BRTOOLS time stamp: 2005-07-23 08.35.41
BR0681I Enter string value for "tablespace" []:
psaphtabd
BR0280I BRTOOLS time stamp: 2005-07-23 08.35.49
BR0683I New value for "tablespace": 'psaphtabd'

BR0280I BRTOOLS time stamp: 2005-07-23 08.35.49
BR0657I Input menu 81 - please check/enter input values
-----
BRSPACE options for tablespace extension
1 - BRSPACE profile <profile> ..... [initDEV.sap]
2 - Database user/password <user> .. [/]
3 ~ Tablespace name <tablespace> ... [psaphtabd]
4 - Confirmation mode <confirm> .... [yes]
5 - Scrolling line count <scroll> .. [20]
6 - Message language <language> .... [EN]
7 - BRSPACE command line <command> . [-p initDEV.sap -s 20 -l E -f tsextend -t psaphtabd]

Standard keys: c - cont, b - back, s - stop, r - refr, h - help
-----
BR0662I Enter your choice:
c
BR0280I BRTOOLS time stamp: 2005-07-23 08.37.24

```

The following screens allow to change file size and path

```

Standard keys: c - cont, b - back, s - stop, r - refr, h - help
-----
BR0662I Enter your choice:
c
BR0280I BRTOOLS time stamp: 2005-07-23 08.37.24
BR0663I Your choice: 'c'
BR0259I Program execution will be continued...

BR0291I BRSPACE will be started with options '-p initDEV.sap -s 20 -l E -f tsextend -t psaphtabd'
BR0280I BRTOOLS time stamp: 2005-07-23 08.37.24
BR0670I Enter 'c[ont]' to continue, 'b[ack]' to go back, 's[top]' to abort:
c
BR0280I BRTOOLS time stamp: 2005-07-23 08.37.39
BR0257I Your reply: 'c'
BR0259I Program execution will be continued...
#####
BR1001I BRSPACE 6.40 <28>
BR1002I Start of BRSPACE processing: sdqlldqa.tse 2005-07-23 08.37.40

BR0280I BRSPACE time stamp: 2005-07-23 08.38.01
BR1009I Name of database instance: DEV
BR1010I BRSPACE action ID: sdqlldqa
BR1011I BRSPACE function ID: tse
BR1012I BRSPACE function: tsextend

```

```

BR0280I BRSPACE time stamp: 2005-07-23 08.38.18
BR0657I Input menu 303 - please check/enter input values
Options for extension of tablespace PSAPBTABD <1. file>
1 * Last added file name <lastfile> ..... [H:\ORACLE\DEU\SAPDATA7\BTABD_13\BTABD.DAT13]
2 * Last added file size in MB <lastsize> .. [2048]
3 - New file to be added <file> ..... [H:\oracle\DEU\sapdata7\btabd_14\btabd.data14]
4 # Raw disk / link target <rawlink> ..... []
5 - Size of the new file in MB <size> ..... [2048]
6 - File autoextend mode <autoextend> ..... [no]
7 # Maximum file size in MB <maxsize> ..... []
8 # File increment size in MB <incrsize> .. []
9 - SQL command <command> ..... [alter tablespace PSAPBTABD add datafile 'H:\oracle\DEU\sapdata7\btabd_14\btabd.data14' size 2048M autoextend off]

Standard keys: c - cont, b - back, s - stop, r - refr, h - help
BR0662I Enter your choice:

```

STEP 5 Enter N to start adding data file.

```

:c
BR0280I BRSPACE time stamp: 2005-07-23 08.47.57
BR0663I Your choice: 'c'
BR0259I Program execution will be continued...
BR0280I BRSPACE time stamp: 2005-07-23 08.47.57
BR1091I Next data file can be specified now
BR0675I Do you want to perform this action?
BR0676I Enter 'y[es]/c[ont]' to perform the action, 'n[o]' to skip it, 's[top]' to abort:
n
BR0280I BRSPACE time stamp: 2005-07-23 08.48.34
BR0257I Your reply: 'n'
BR0678I The action will be skipped...
BR0280I BRSPACE time stamp: 2005-07-23 08.48.34
BR0370I Directory E:\oracle\DEU\sapreorg\sdq1ldqa created
BR0280I BRSPACE time stamp: 2005-07-23 08.48.37
BR0319I Control file copy created: E:\oracle\DEU\sapreorg\sdq1ldqa\cntr1DEU.old 8331264
BR0280I BRSPACE time stamp: 2005-07-23 08.48.37
BR0370I Directory H:\oracle\DEU\sapdata7\btabd_14 created
BR0280I BRSPACE time stamp: 2005-07-23 08.48.37
BR1088I Extending tablespace PSAPBTABD...

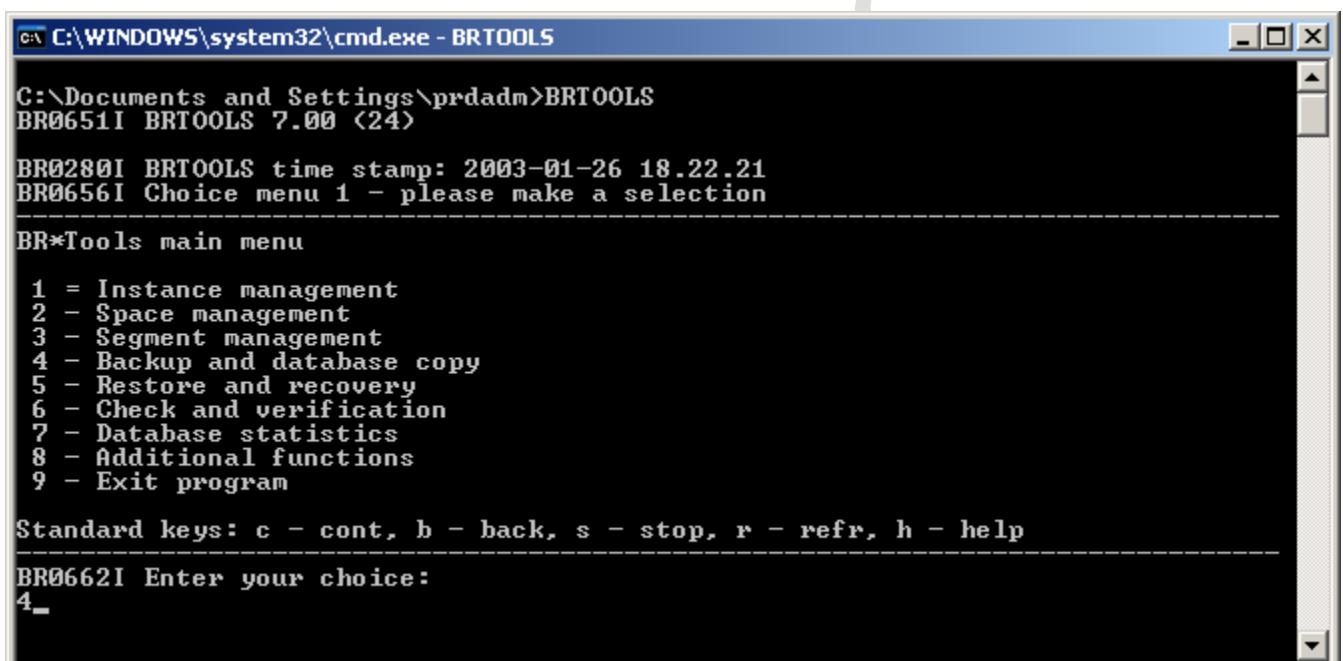
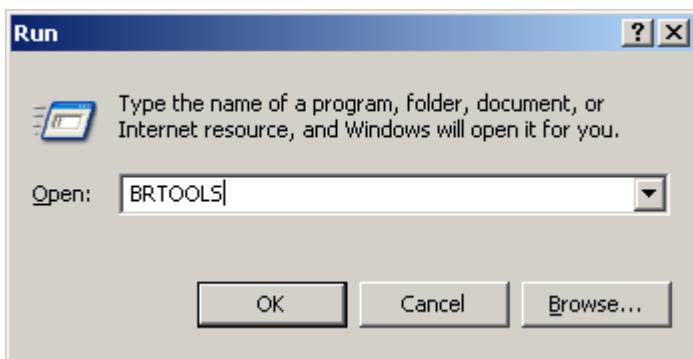
```

DB REFRESH

Activities to be carried on PRD System:

1. Take backup using BRTOOLS :
- Here I have considered Offline Backup (Compression Mode).

Click Start -> Run -> Type BRTOOLS and click OK



```
C:\WINDOWS\system32\cmd.exe - BRTOOLS
C:\Documents and Settings\prdadm>BRTOOLS
BR0651I BRTOOLS 7.00 (24)
BR0280I BRTOOLS time stamp: 2003-01-26 18.22.21
BR0656I Choice menu 1 - please make a selection
-----
BR*Tools main menu
1 - Instance management
2 - Space management
3 - Segment management
4 - Backup and database copy
5 - Restore and recovery
6 - Check and verification
7 - Database statistics
8 - Additional functions
9 - Exit program
Standard keys: c - cont, b - back, s - stop, r - refr, h - help
-----
BR0662I Enter your choice:
4
```

```
C:\WINDOWS\system32\cmd.exe - BRTOOLS
BR0280I BRTOOLS time stamp: 2003-01-26 18.23.24
BR0656I Choice menu 9 - please make a selection
Backup and database copy
1 = Database backup
2 = Archivelog backup
3 = Database copy
4 = Non-database backup
5 = Backup of database disk backup
6 = Verification of database backup
7 = Verification of archivelog backup
8 = Additional functions
9 = Reset program status

Standard keys: c - cont, b - back, s - stop, r - refr, h - help
BR0662I Enter your choice:
1
```

```
C:\WINDOWS\system32\cmd.exe - BRTOOLS
BR0280I BRTOOLS time stamp: 2003-01-26 18.23.44
BR0657I Input menu 15 - please check/enter input values
BRBACKUP main options for backup and database copy
1 - BRBACKUP profile <profile> ..... [initPRD.sap]
2 - Backup device type <device> ..... [disk]
3 # Tape volumes for backup <volume> .. []
4 # BACKINT/Mount profile <parfile> .. []
5 - Database user/password <user> .... [/]
6 - Backup type <type> ..... [offline]
7 # Disk backup for backup <backup> .. [no]
8 # Delete disk backup <delete> ..... [no]
9 ~ Files for backup <mode> ..... [all]

Standard keys: c - cont, b - back, s - stop, r - refr, h - help
BR0662I Enter your choice:
c
```

```
C:\WINDOWS\system32\cmd.exe - BRTOOLS

Additional BRBACKUP options for backup and database copy
1 - Confirmation mode <confirm> ..... [yes]
2 - Query mode <query> ..... [no]
3 - Compression mode <compress> ..... [yes]
4 - Verification mode <verify> ..... [no]
5 - Fill-up previous backups <fillup> ..... [no]
6 - Parallel execution <execute> ..... [0]
7 - Additional output <output> ..... [no]
8 - Message language <language> ..... [E]
9 - BRBACKUP command line <command> ... [-p initPRD.sap -d disk -t offline -m a
11 -k yes -e 0 -l E]

Standard keys: c - cont, b - back, s - stop, r - refr, h - help
BR0662I Enter your choice:
c_
```

```
C:\WINDOWS\system32\cmd.exe - BRTOOLS

1 - Confirmation mode <confirm> ..... [yes]
2 - Query mode <query> ..... [no]
3 - Compression mode <compress> ..... [yes]
4 - Verification mode <verify> ..... [no]
5 - Fill-up previous backups <fillup> ..... [no]
6 - Parallel execution <execute> ..... [0]
7 - Additional output <output> ..... [no]
8 - Message language <language> ..... [E]
9 - BRBACKUP command line <command> ... [-p initPRD.sap -d disk -t offline -m a
11 -k yes -e 0 -l E]

Standard keys: c - cont, b - back, s - stop, r - refr, h - help
BR0662I Enter your choice:
c
BR0280I BRTOOLS time stamp: 2003-01-26 18.25.47
BR0663I Your choice: 'c'
BR0259I Program execution will be continued...
BR0291I BRBACKUP will be started with options '-p initPRD.sap -d disk -t offline
-m all -k yes -e 0 -l E'

BR0280I BRTOOLS time stamp: 2003-01-26 18.25.47
BR0670I Enter 'c[ont]' to continue, 'b[ack]' to go back, 's[top]' to abort:
c
```

```
C:\WINDOWS\system32\cmd.exe - BRTOOLS

BR0051I BRBACKUP 7.00 <24>
BR0051I Start of database backup: bdjvujux.afd 2003-01-26 18.25.55
BR0484I BRBACKUP log file: D:\oracle\PRD\sapbackup\bdjvujux.afd
BR0477I Oracle pfile D:\oracle\PRD\102\database\initPRD.ora created from spfile
D:\oracle\PRD\102\database\spfilePRD.ora
```

```
C:\WINDOWS\system32\cmd.exe - BRTOOLS

BR0280I BRBACKUP time stamp: 2003-01-26 18.26.12
BR0057I Backup of database: PRD
BR0058I BRBACKUP action ID: bdjvujux
BR0059I BRBACKUP function ID: afd
BR0110I Backup mode: ALL
BR0077I Database files for backup:
D:\ORACLE\PRD\ORIGLOGA\LOG_G11M1.DBF
D:\ORACLE\PRD\ORIGLOGB\LOG_G12M1.DBF
D:\ORACLE\PRD\ORIGLOGA\LOG_G13M1.DBF
D:\ORACLE\PRD\ORIGLOGB\LOG_G14M1.DBF
D:\oracle\PRD\origlogA\cntrl\cntlprd.dbf
BR0061I 46 files found for backup, total size 84712.400 MB
BR0143I Backup type: offline
BR0111I Files will be compressed
BR0130I Backup device type: disk
BR0106I Files will be saved on disk in directory: D:\oracle\PRD\sapbackup\bdjvujux
BR0064I Database instance PRD will be shut down now
BR0280I BRBACKUP time stamp: 2003-01-26 18.26.12
BR0256I Enter 'c[ont]' to continue, 's[topl]' to cancel BRBACKUP:
c_
```

The above window denotes that the backup has started and being saved in the location D:\oracle\PRD\sapbackup. Here the backup file name is bdjvujux.afd.

```
C:\WINDOWS\system32\cmd.exe - BRTOOLS
BR0280I BRBACKUP time stamp: 2003-01-26 18.34.02
BR0257I Your reply: 'c'
BR0259I Program execution will be continued...
BR0370I Directory D:\oracle\PRD\sapbackup\bdjvuju created
BR0370I Directory D:\oracle\PRD\sapbackup\PRD created
BR0202I Saving init_ora
BR0203I to D:\oracle\PRD\sapbackup\PRD ...
BR0202I Saving D:\oracle\PRD\102\database\initPRD.sap
BR0203I to D:\oracle\PRD\sapbackup\PRD ...
BR0280I BRBACKUP time stamp: 2003-01-26 18.34.03
BR0198I Profiles saved successfully
BR0280I BRBACKUP time stamp: 2003-01-26 18.34.03
BR0307I Shutting down database instance PRD ...
```

It shuts down the Database Instance as we are taking an Offline Backup.

```
C:\WINDOWS\system32\cmd.exe - BRTOOLS
BR0280I BRBACKUP time stamp: 2003-01-26 18.34.03
BR0198I Profiles saved successfully
BR0280I BRBACKUP time stamp: 2003-01-26 18.34.03
BR0307I Shutting down database instance PRD ...
BR0280I BRBACKUP time stamp: 2003-01-26 18.59.02
BR0308I Shutdown of database instance PRD successful
BR0201I Compressing D:\ORACLE\PRD\SAPDATA1\SR3_1\SR3.DATA1
BR0203I to D:\oracle\PRD\sapbackup\bdjvuju\x\SR3.DATA1.Z ...
#FILE..... D:\ORACLE\PRD\SAPDATA1\SR3_1\SR3.DATA1
#SAVED.... D:\oracle\PRD\sapbackup\bdjvuju\x\SR3.DATA1.Z #1/1 8.9805:1 2335226
16
BR0280I BRBACKUP time stamp: 2003-01-26 19.02.18
BR0063I 1 of 46 files processed - 2000.008 MB of 84712.400 MB done
BR0204I Percentage done: 2.36%, estimated end time: 14:31
BR0001I *
BR0201I Compressing D:\ORACLE\PRD\SAPDATA1\SR3_2\SR3.DATA2
BR0203I to D:\oracle\PRD\sapbackup\bdjvuju\x\SR3.DATA2.Z ...
```

```
C:\WINDOWS\system32\cmd.exe - BRTOOLS

BR0280I BRBACKUP time stamp: 2003-01-26 21.04.02
BR0305I Start and open of database instance PRD successful

BR0202I Saving space_log
BR0203I to D:\oracle\PRD\sapbackup\PRD ...

BR0202I Saving D:\oracle\PRD\sapbackup\bdjvuujux.afd
BR0203I to D:\oracle\PRD\sapbackup\PRD ...

BR0202I Saving D:\oracle\PRD\sapbackup\backPRD.log
BR0203I to D:\oracle\PRD\sapbackup\PRD ...

BR0115I Compression rate for all files 7.7014:1

BR0056I End of database backup: bdjvuujux.afd 2003-01-26 21.04.14
BR0280I BRBACKUP time stamp: 2003-01-26 21.04.17
BR0052I BRBACKUP completed successfully

#####
BR0292I Execution of BRBACKUP finished with return code 0
BR0280I BRTOOLS time stamp: 2003-01-26 21.04.18
BR0256I Enter 'c[ont]' to continue, 's[top]' to cancel BRTOOLS:
c
```

The backup has been completed successfully.

```
C:\WINDOWS\system32\cmd.exe - BRTOOLS

BR0259I Program execution will be continued...

BR0280I BRTOOLS time stamp: 2003-01-27 07.10.23
BR0656I Choice menu 9 – please make a selection

Backup and database copy

1 + Database backup
2 = Archivelog backup
3 - Database copy
4 - Non-database backup
5 - Backup of database disk backup
6 - Verification of database backup
7 - Verification of archivelog backup
8 - Additional functions
9 - Reset program status

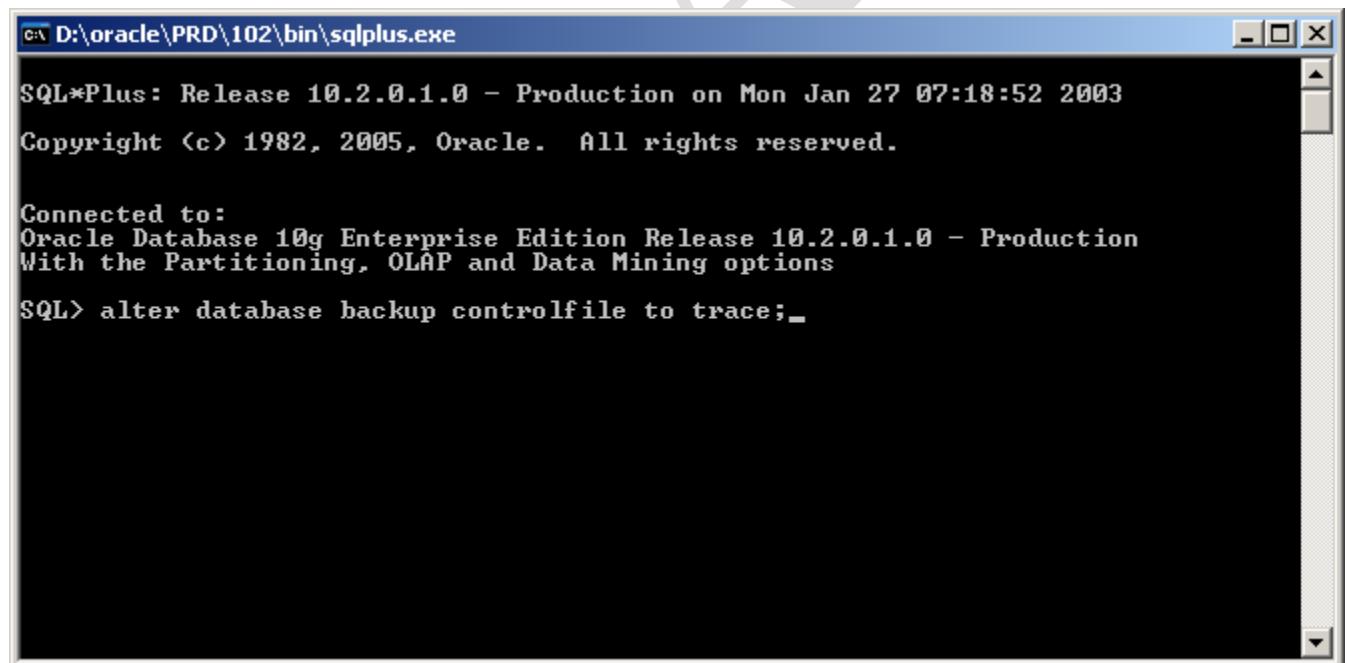
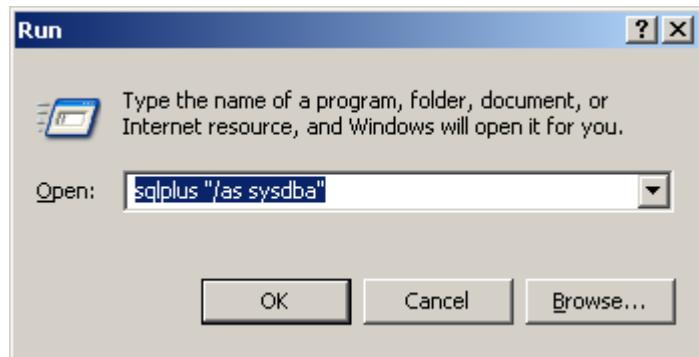
Standard keys: c - cont, b - back, s - stop, r - refr, h - help

BR0662I Enter your choice:
s
BR0280I BRTOOLS time stamp: 2003-01-27 07.10.26
BR0663I Your choice: 's'
BR0679I Do you really want to cancel BRTOOLS? Enter y[es]/n[on]:
y
```

Exit from the BRTOOLS by selecting option s and then select the option y.

2. Create a Control file.

Click Start -> Run -> Type sqlplus "/as sysdba" and click OK.

A screenshot of an Oracle SQL*Plus session window. The title bar says "D:\oracle\PRD\102\bin\sqlplus.exe". The window displays the following text:

```
SQL*Plus: Release 10.2.0.1.0 - Production on Mon Jan 27 07:18:52 2003
Copyright (c) 1982, 2005, Oracle. All rights reserved.

Connected to:
Oracle Database 10g Enterprise Edition Release 10.2.0.1.0 - Production
With the Partitioning, OLAP and Data Mining options

SQL> alter database backup controlfile to trace;_
```

```

D:\oracle\PRD\102\bin\sqlplus.exe

SQL*Plus: Release 10.2.0.1.0 - Production on Mon Jan 27 07:18:52 2003

Copyright (c) 1982, 2005, Oracle. All rights reserved.

Connected to:
Oracle Database 10g Enterprise Edition Release 10.2.0.1.0 - Production
With the Partitioning, OLAP and Data Mining options

SQL> alter database backup controlfile to trace;

Database altered.

SQL> -

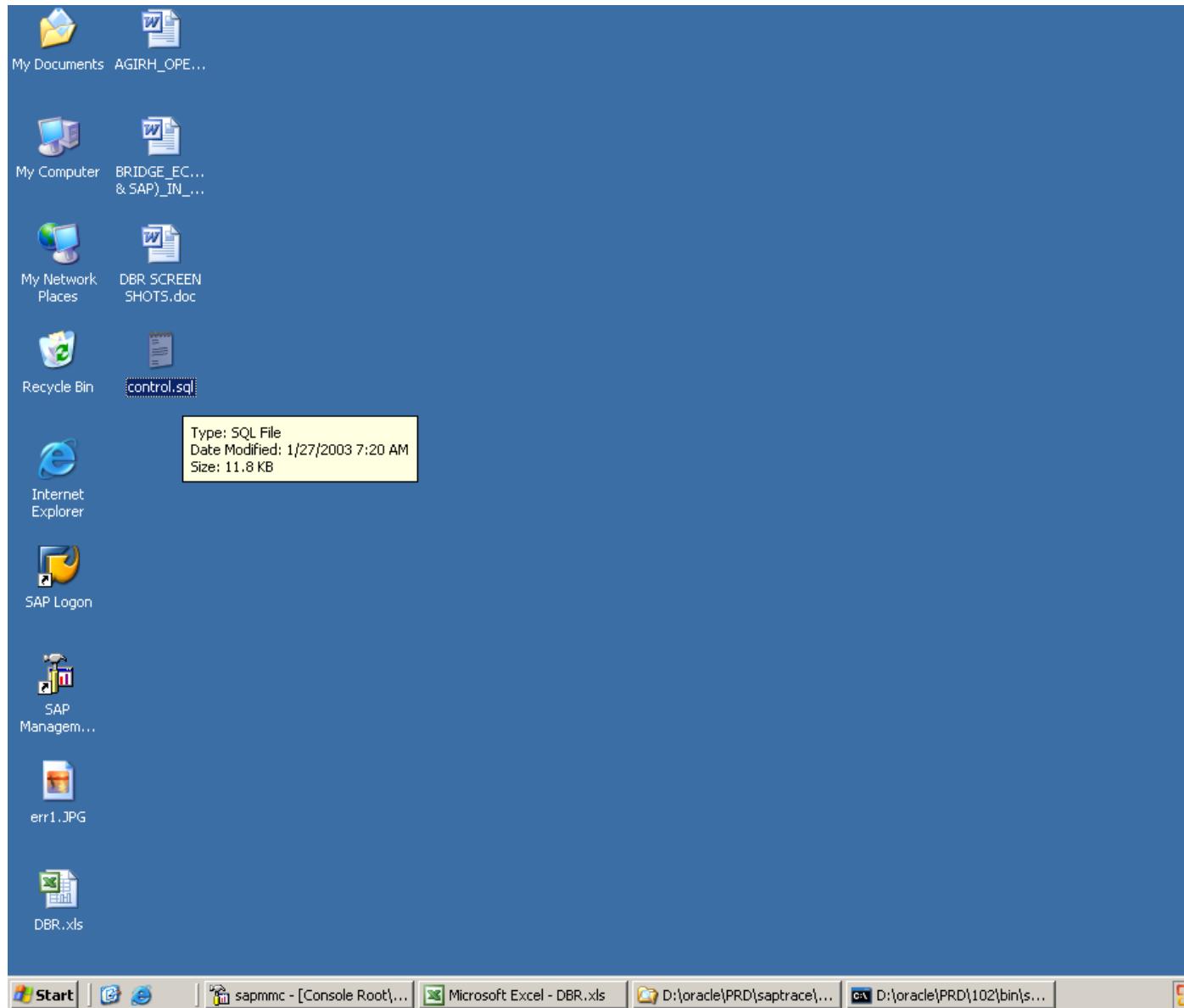
```

You can find the trace file in the following location “D:\oracle\PRD\saptrace\usertrace”. Check the latest file that is generated.

Folders	Name	Size	Type	Date Modified
Desktop	prd_ora_936.trc	12 KB	TRC File	1/27/2003 7:20 AM
My Documents	prd_ora_2012.trc	1 KB	TRC File	1/27/2003 7:16 AM
My Computer	prd_ora_2892.trc	1 KB	TRC File	1/27/2003 7:16 AM
Local Disk (C:)	prd_ora_3068.trc	1 KB	TRC File	1/27/2003 7:16 AM
Local Disk (D:)	prd_ora_3304.trc	1 KB	TRC File	1/27/2003 7:16 AM
antivirus	prd_ora_3588.trc	2 KB	TRC File	1/26/2003 9:04 PM
DUMPS	prd_ora_3644.trc	1 KB	TRC File	1/26/2003 9:03 PM
oracle	prd_ora_548.trc	1 KB	TRC File	1/26/2003 9:03 PM
PRD	prd_ora_2148.trc	1 KB	TRC File	1/26/2003 6:55 PM
102	prd_ora_3172.trc	1,190 KB	TRC File	1/25/2003 12:49 PM
origlogA	prd_ora_2904.trc	451 KB	TRC File	1/25/2003 12:49 PM
origlogB	prd_ora_2196.trc	1,429 KB	TRC File	1/25/2003 11:05 AM
saparch	prd_ora_2384.trc	3,085 KB	TRC File	1/25/2003 10:57 AM
sapbackup	prd_ora_2368.trc	4,014 KB	TRC File	1/25/2003 10:57 AM
sapcheck	prd_ora_2336.trc	957 KB	TRC File	1/25/2003 10:44 AM
sapdata1	prd_ora_3612.trc	3 KB	TRC File	1/25/2003 7:45 AM
sapdata2	prd_ora_3164.trc	1 KB	TRC File	1/25/2003 7:45 AM
sapdata3	prd_ora_3124.trc	1 KB	TRC File	1/25/2003 7:45 AM
sapdata4	prd_ora_2860.trc	3 KB	TRC File	1/24/2003 9:53 AM
sapreorg	prd_ora_2844.trc	3 KB	TRC File	1/24/2003 9:53 AM
saptrace	prd_ora_2788.trc	1 KB	TRC File	1/24/2003 9:53 AM
background	prd_ora_1992.trc	4 KB	TRC File	1/23/2003 4:51 PM
usertrace	prd_ora_3928.trc	2 KB	TRC File	1/23/2003 1:21 PM
ORACLE FILES	prd_ora_3884.trc	1 KB	TRC File	1/23/2003 1:21 PM
SAP_MAT	prd_ora_3476.trc	1 KB	TRC File	1/23/2003 1:21 PM
usr	prd_ora_3968.trc	1 KB	TRC File	1/23/2003 1:20 PM
DVD/CD-RW Drive (E:)				

Type: TRC File Date Modified: 1/27/2003 7:20 AM Size: 11.8 KB 11.8 KB My Computer

Copy that file and paste it onto the Desktop and rename it with control.sql .



Open the control.sql file and perform the following:

- a. Remove the lines present above “STARTUP NOMOUNT” and below “CHARACTER SET UTF8;” and save the file.
- b. Replace <SOURCE SID> with <TARGET SID>. Here it is from PRD to QAS.

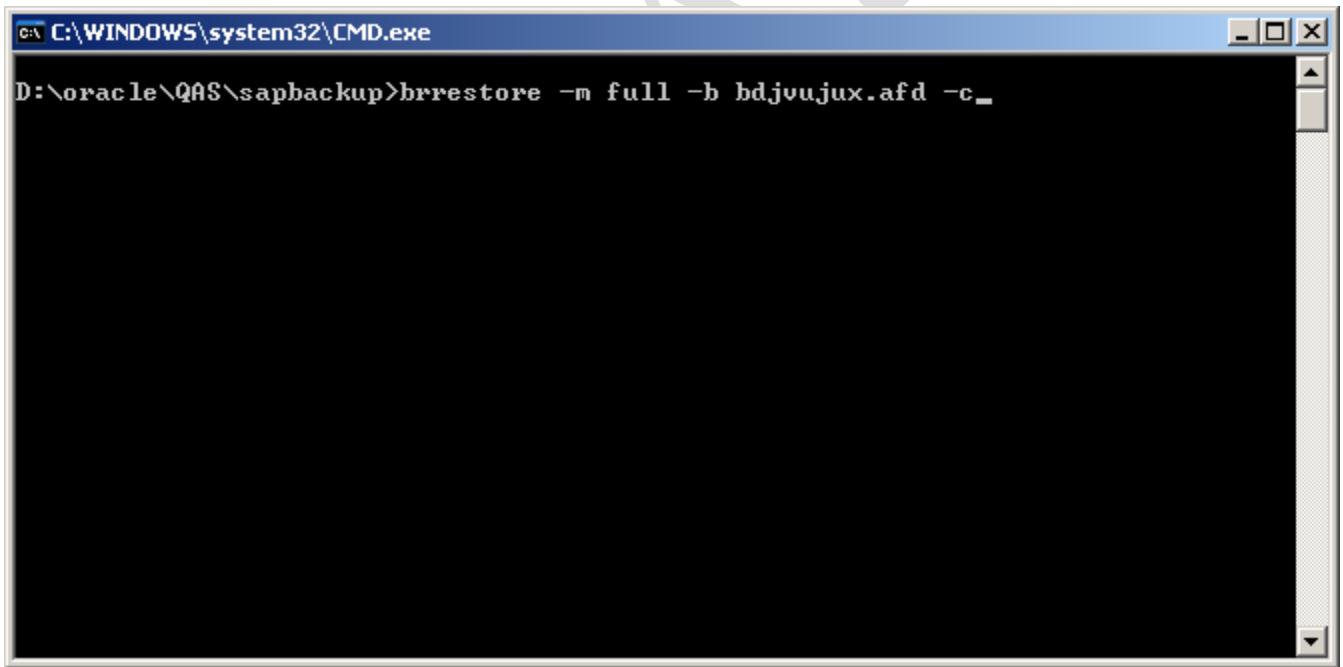
- c. Replace REUSE with SET.
- d. Replace NORESETLOGS with RESETLOGS
- e. Replace ARCHIVELOG with NOARCHIVELOG.

Activities to be carried on NAG System:

1. Goto SE01 and create a Transport Request (Transport of Copies).
2. Specify the objects that you would like to backup from the QAS system, like USR01, USR02, RFCDES, TBDLS etc as per your organization requirements and release the transport request. Ensure that the target system is specified before releasing the TR.
3. The co-file and data files are generated in \usr\sap\trans\cofiles , \usr\sap\trans\data locations. Backup them onto a removable media.
4. **Make screen captures of the following tcodes :**
 - SM59** (RFC destinations)
 - BD54** (logical systems)
 - SPAD** (printers --> could be done by export on flat file).
 - DB13** (export DBA scheduling calendar).
 - SM37** (export name of released jobs with details).
 - AL11** (SAP Directories)
 - WE20** (Partner profile)
 - WE21** (Post IDOCS Processing)
 - SMLG** (Logon Group)
 - RZ12** (RFC Server Group)
 - RZ70** (SLD Configuration)
 - RZ04** (Operation Mode)
 - SM63** (Time Table)
 - SCC4** (Clients Overview)
 - SPAM** (Package level)
5. Stop the SAP Instance, Oracle and Oracle services.
6. Delete the directories on the QAS system
 - ➔ Delete directories sapdata1, 2, 3, 4, 5, 6 (keep the tree structure D:\oracle\QAS).
 - ➔ Delete files redolog and mirrorlog (keep the tree structure)
 - ➔ Delete the three control files oracle (keep the tree structure)
 - ➔ Delete files from the directories sapbackup, sapcheck, sapreorg, saptrace\background, saptrace\usertrace (keep the tree structure).
7. Copy the sapbackup folder from PRD, along with the control.sql file pasted on the Desktop to QAS (\oracle\QAS\sapbackup).

8. Open the .afd /.and backup file (Eg.: bdjvujux.afd) present in sapbackup directory. Replace the PRD with the QAS and save it.
9. Go to |oracle|QAS|sapbackup|xxxx (Eg.: bdjvujux) backup file name folder location. Rename the files with PRD to QAS.

10. Start -> Run -> cmd. Goto the location |oracle|QAS|sapbackup and type :
brrestore -m full -b <filename> -c



The screenshot shows a Windows Command Prompt window titled 'C:\WINDOWS\system32\cmd.exe'. The command line displays the following text:
D:\oracle\QAS\sapbackup>**brrestore -m full -b bdjvujux.afd -c**

```
C:\WINDOWS\system32\cmd.exe - brrestore -m full -b bdjvujux.afd -c

D:\oracle\QAS\sapbackup>brrestore -m full -b bdjvujux.afd -c
BR0401I BRRESTORE 7.00 (24)
BR0405I Start of file restore: rdzurpj.c.rsb 2009-01-29 17.30.16
BR0484I BRRESTORE log file: D:\oracle\QAS\sapbackup\rdzurpj.c.rsb

BR0454W Values of compress/-k are different: current 'no', backup bdjvujux.afd 'yes'
BR0455W Value 'yes' of compress will be used for restore
BR0280I BRRESTORE time stamp: 2009-01-29 17.30.17
BR0256I Enter 'c[ont]' to continue, 's[top]' to cancel BRRESTORE:
c_
```

```
C:\WINDOWS\system32\cmd.exe - brrestore -m full -b bdjvujux.afd -c

BR0280I BRRESTORE time stamp: 2009-01-29 17.32.33
BR0407I Restore of database: QAS
BR0408I BRRESTORE action ID: rdzurpof
BR0409I BRRESTORE function ID: rsb
BR0449I Restore mode: FULL
BR0411I Database files for restore:
D:\ORACLE\QAS\ORIGLOGA\LOG_G11M1.DBF
D:\ORACLE\QAS\MIRRLOGA\LOG_G11M2.DBF
D:\ORACLE\QAS\ORIGLOGB\LOG_G12M1.DBF
D:\ORACLE\QAS\MIRRLOGB\LOG_G12M2.DBF
D:\ORACLE\QAS\ORIGLOGA\LOG_G13M1.DBF
D:\ORACLE\QAS\MIRRLOGA\LOG_G13M2.DBF
D:\ORACLE\QAS\ORIGLOGB\LOG_G14M1.DBF
D:\ORACLE\QAS\MIRRLOGB\LOG_G14M2.DBF
D:\oracle\QAS\origlogA\cntrl\cntl1QAS.dbf
D:\oracle\QAS\origlogB\cntrl\cntl1QAS.dbf
D:\oracle\QAS\sapdata1\cntrl\cntl1QAS.dbf
BR0419I Files will be restored from backup: bdjvujux.afd 2003-01-27 07.55.55
BR0416I 46 files found to restore, total size 84712.400 MB
BR0423I Files will be decompressed
BR0421I Restore device type: disk
BR0420I Files will be restored from directory: D:\oracle\QAS\sapbackup\bdjvujux
BR0280I BRRESTORE time stamp: 2009-01-29 17.32.33
BR0256I Enter 'c[ont]' to continue, 's[top]' to cancel BRRESTORE:
c_
```

```
C:\WINDOWS\system32\cmd.exe - brrestore -m full -b bdjvuju.x.afd -c
BR0280I BRRESTORE time stamp: 2009-01-29 17.32.33
BR0407I Restore of database: QAS
BR0408I BRRESTORE action ID: rdzurpof
BR0409I BRRESTORE function ID: rsb
BR0449I Restore mode: FULL
BR0411I Database files for restore:
D:\ORACLE\QAS\ORIGLOGA\LOG_G11M1.DBF
D:\ORACLE\QAS\MIRRLOGA\LOG_G11M2.DBF
D:\ORACLE\QAS\ORIGLOGB\LOG_G12M1.DBF
D:\ORACLE\QAS\MIRRLOGB\LOG_G12M2.DBF
D:\ORACLE\QAS\ORIGLOGA\LOG_G13M1.DBF
D:\ORACLE\QAS\MIRRLOGA\LOG_G13M2.DBF
D:\ORACLE\QAS\ORIGLOGB\LOG_G14M1.DBF
D:\ORACLE\QAS\MIRRLOGB\LOG_G14M2.DBF
D:\oracle\QAS\origlogA\cntrl\cntl1rQAS.dbf
D:\oracle\QAS\origlogB\cntrl\cntl1rQAS.dbf
D:\oracle\QAS\sapdata1\cntrl\cntl1rQAS.dbf
BR0419I Files will be restored from backup: bdjvuju.x.afd 2003-01-27 07.55.55
BR0416I 46 files found to restore, total size 84712.400 MB
BR0423I Files will be decompressed
BR0421I Restore device type: disk
BR0420I Files will be restored from directory: D:\oracle\QAS\sapbackup\bdjvuju
BR0280I BRRESTORE time stamp: 2009-01-29 17.32.33
BR0256I Enter 'c[ont]' to continue, 's[top]' to cancel BRRESTORE:
c_
```

```
C:\WINDOWS\system32\cmd.exe
BR0001I ****
BR0351I Restoring D:\ORACLE\QAS\MIRRLOGA\LOG_G11M2.DBF
BR0355I from D:\ORACLE\QAS\ORIGLOGA\LOG_G11M1.DBF ...
BR0351I Restoring D:\ORACLE\QAS\MIRRLOGB\LOG_G12M2.DBF
BR0355I from D:\ORACLE\QAS\ORIGLOGB\LOG_G12M1.DBF ...
BR0351I Restoring D:\ORACLE\QAS\MIRRLOGA\LOG_G13M2.DBF
BR0355I from D:\ORACLE\QAS\ORIGLOGA\LOG_G13M1.DBF ...
BR0351I Restoring D:\ORACLE\QAS\MIRRLOGB\LOG_G14M2.DBF
BR0355I from D:\ORACLE\QAS\ORIGLOGB\LOG_G14M1.DBF ...
BR0351I Restoring D:\oracle\QAS\origlogB\cntrl\cntl1rQAS.dbf
BR0355I from D:\oracle\QAS\origlogA\cntrl\cntl1rQAS.dbf ...
BR0351I Restoring D:\oracle\QAS\sapdata1\cntrl\cntl1rQAS.dbf
BR0355I from D:\oracle\QAS\origlogA\cntrl\cntl1rQAS.dbf ...
BR0406I End of file restore: rdzurpof.rsb 2009-01-29 18.10.17
BR0280I BRRESTORE time stamp: 2009-01-29 18.10.17
BR0403I BRRESTORE completed successfully with warnings
D:\oracle\QAS\sapbackup>
```

Backup is restored successfully.

11. Check the presence of the paths for the creation of the control files oracle

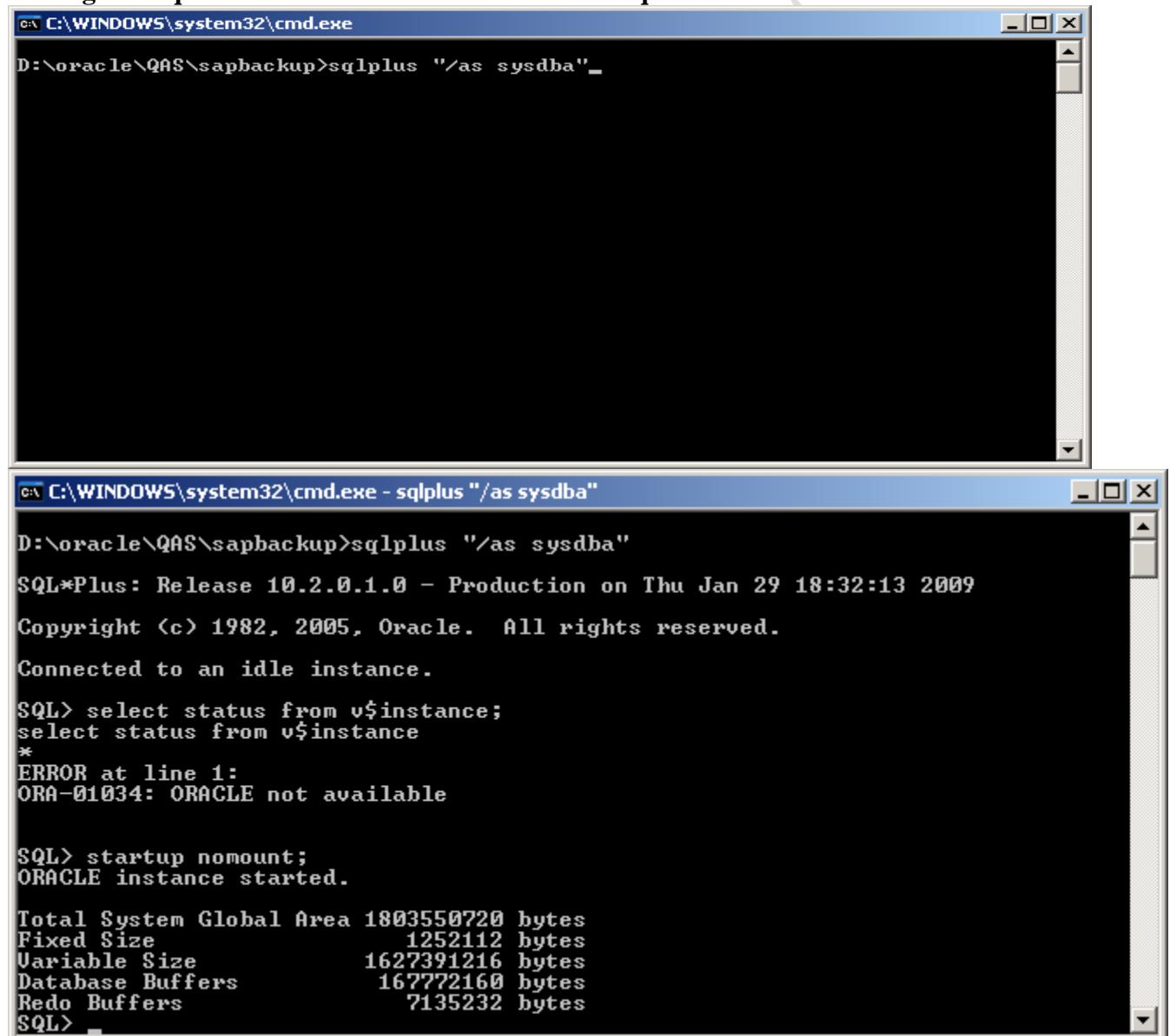
- |oracle|QAS|origloga|cntrl
- |oracle|QAS|origlogb|cntrl
- |oracle|QAS|sapdata1|cntrl

If one of these paths is not present, create it.

12. Start the Oracle services.

OracleQAS102iSQL*Plus	iSQL*Plus ...	Started	Automatic	Local System
OracleQAS102TNSListener		Started	Automatic	Local System
OracleServiceQAS		Started	Automatic	Local System

13. Login to sql from the location where the control.sql file is located.



```
D:\oracle\QAS\sapbackup>sqlplus "/as sysdba"
D:\oracle\QAS\sapbackup>sqlplus "/as sysdba"
SQL*Plus: Release 10.2.0.1.0 - Production on Thu Jan 29 18:32:13 2009
Copyright (c) 1982, 2005, Oracle. All rights reserved.

Connected to an idle instance.

SQL> select status from v$instance;
select status from v$instance
*
ERROR at line 1:
ORA-01034: ORACLE not available

SQL> startup nomount;
ORACLE instance started.

Total System Global Area 1803550720 bytes
Fixed Size          1252112 bytes
Variable Size       1627391216 bytes
Database Buffers   167772160 bytes
Redo Buffers        7135232 bytes
SQL>
```

```
C:\WINDOWS\system32\cmd.exe - sqlplus "/as sysdba"
SQL> @control.sql
ORACLE instance started.

Total System Global Area 1803550720 bytes
Fixed Size           1252112 bytes
Variable Size        1627391216 bytes
Database Buffers     167772160 bytes
Redo Buffers          7135232 bytes

Control file created.

SQL>
```

After the control file is created, the Oracle is in Mounted state.

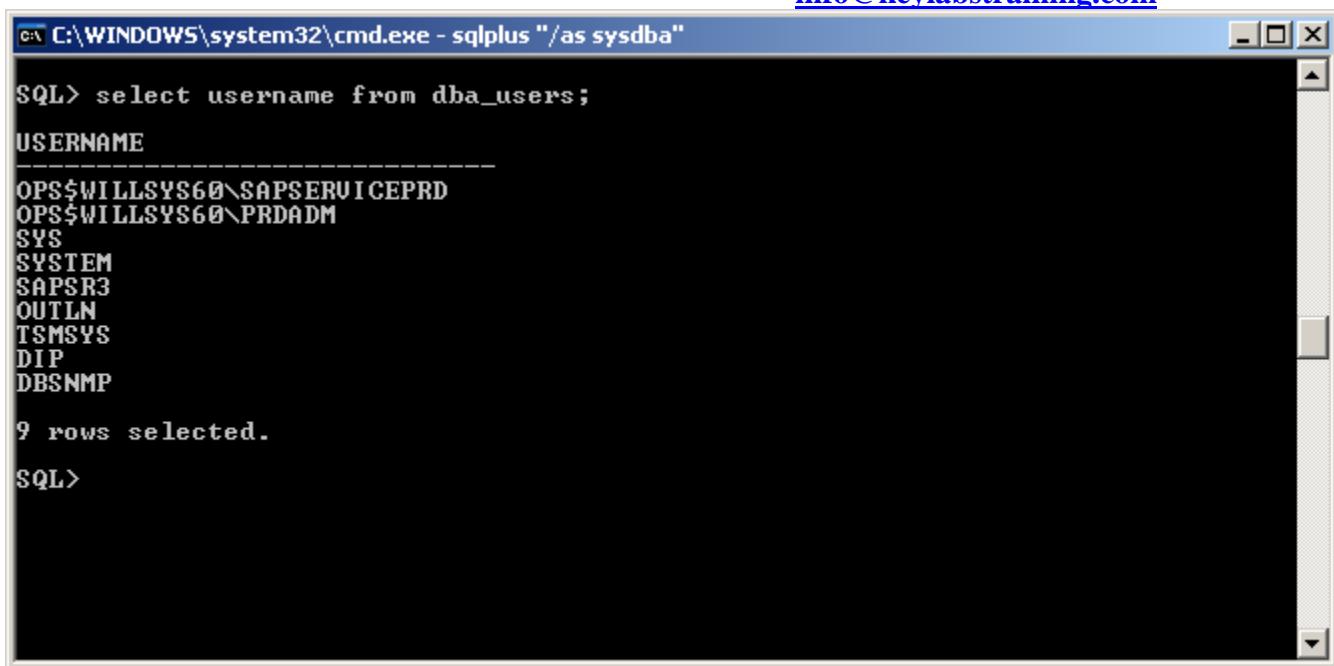
```
C:\WINDOWS\system32\cmd.exe - sqlplus "/as sysdba"
SQL> select status from v$instance;
STATUS
-----
MOUNTED

SQL> alter database open resetlogs;
Database altered.

SQL> select status from v$instance;
STATUS
-----
OPEN

SQL>
```

Now, the database is open status.



```
C:\WINDOWS\system32\cmd.exe - sqlplus "/as sysdba"

SQL> select username from dba_users;

USERNAME
-----
OPS$WILLSYS60\ SAPSERVICEPRD
OPS$WILLSYS60\ PRDADM
SYS
SYSTEM
SAPSR3
OUTLN
TSMSYS
DIP
DBSNMP

9 rows selected.

SQL>
```

You can view the PRD OPS\$ users in the above screen.

Goto location:
Files\sapinst_instdir\ERP\SYSTEM\ORA\CENTRAL\AS.
ORADBUSR.SQL file and paste it in \oracle\QAS\sapbackup\

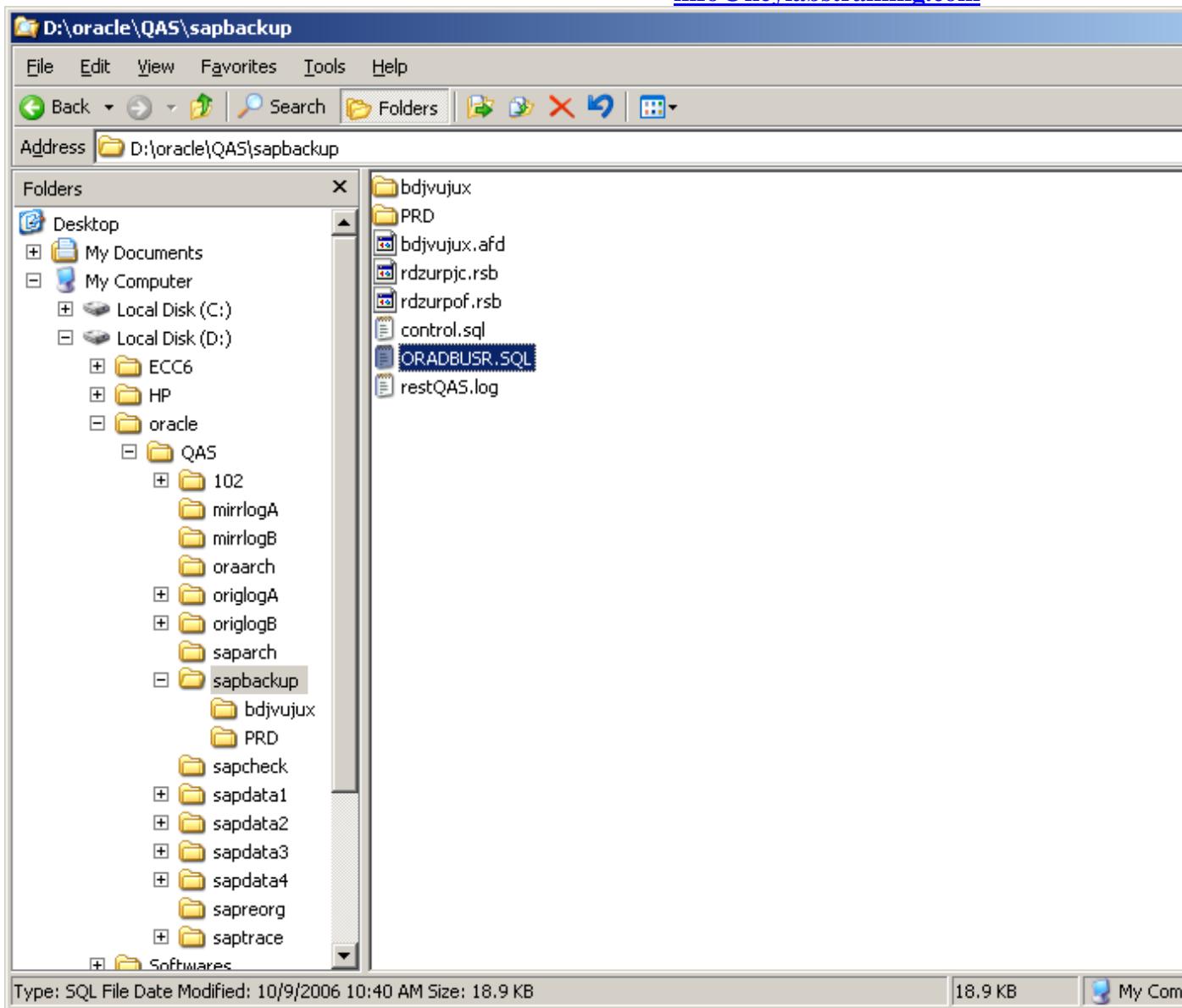
C:\Program
Copy the

C:\Program Files\sapinst_instdir\ERP\SYSTEM\ORA\CENTRAL\AS

Folders	Name	Size	Type	Date Modified
+ Documents and Setting	ora_query3_tmp5_1.res	1 KB	RES File	1/28/2009 9:54 PM
+ j2sdk1.4.2_12	ora_query3_tmp6_1.res	1 KB	RES File	1/28/2009 9:54 PM
- Program Files	INITSID.SAP	21 KB	SAP GUI Shortcut	9/8/2006 10:31 AM
+ Adobe	cocon.sql	1 KB	SQL File	1/28/2009 9:55 PM
+ Common Files	dbms_scheduler.sql	1 KB	SQL File	1/28/2009 9:15 PM
+ ComPlus Application	ddicora.sql	4 KB	SQL File	1/29/2009 7:35 AM
+ InstallShield Install	ORA_CREATE_DBUSR.SQL	5 KB	SQL File	2/9/2006 12:40 PM
+ Internet Explorer	ora_query3_tmp0_1.sql	1 KB	SQL File	1/29/2009 7:49 AM
+ Java	ora_query3_tmp1_1.sql	1 KB	SQL File	1/29/2009 7:49 AM
+ McAfee	ora_query3_tmp2_1.sql	1 KB	SQL File	1/29/2009 7:49 AM
+ Microsoft ActiveSy	ora_query3_tmp3_1.sql	1 KB	SQL File	1/28/2009 9:55 PM
+ Microsoft Office	ora_query3_tmp4_1.sql	1 KB	SQL File	1/28/2009 9:54 PM
+ Microsoft.NET	ora_query3_tmp5_1.sql	1 KB	SQL File	1/28/2009 9:54 PM
+ NetMeeting	ora_query3_tmp6_1.sql	1 KB	SQL File	1/28/2009 9:54 PM
+ Online Services	ora_scr_tmp.sql	1 KB	SQL File	1/29/2009 7:49 AM
+ Oracle	ora_stmt_scr_tmp.sql	1 KB	SQL File	1/29/2009 7:36 AM
+ Outlook Express	ORADBUSR.SQL	19 KB	SQL File	10/9/2006 10:40 AM
+ SAP	ORAPASSWD.SQL	2 KB	SQL File	5/3/2005 10:40 AM
- sapinst_instdir	recompile.sql	1 KB	SQL File	1/28/2009 9:15 PM
+ ERP	SAPDBA_ADDITIONAL.SQL	15 KB	SQL File	2/7/2006 12:40 PM
+ SYSTEM	setarchivelog.sql	1 KB	SQL File	1/29/2009 7:36 AM
+ ORA	brconnect.1.log	4 KB	Text Document	1/29/2009 7:49 AM
+ CE	brconnect.2.log	1 KB	Text Document	1/29/2009 7:49 AM
+ Windows Media Player	brconnect.3.log	1 KB	Text Document	1/29/2009 7:49 AM
	brconnect.4.log	1 KB	Text Document	1/29/2009 7:49 AM
	brconnect.log	8 KB	Text Document	1/29/2009 9:55 AM

Type: SQL File Date Modified: 10/9/2006 10:40 AM Size: 18.9 KB

18.9 KB My Computer



Execute the ORADBUSR.SQL file and provide the inputs as follows:

Enter value for 1: SAPR3

Enter value for 2: NT

Enter value for 3: Target Hostname

Enter value for 4: Target <SID> ie.. QAS

```

C:\WINDOWS\system32\cmd.exe
SQL> @ORADBUSR.SQL
Connected.
Enter value for 1: SAPR3
old  6:  if length('&&1') = 5 then
new  6:  if length('SAPR3') = 5 then
old  7:      if substr(upper('&&1'),1,5) = 'SAPR3' then
new  7:      if substr(upper('SAPR3'),1,5) = 'SAPR3' then
Enter value for 2: NT
old 11:          if upper('&&2') = 'NT' then
new 11:          if upper('NT') = 'NT' then
Enter value for 3: willsys68
old 18:      :sDomain := upper('&&3');
new 18:      :sDomain := upper('willsys68');
Enter value for 4: QAS
old 19:          :sSapSid := upper('&&4');
new 19:          :sSapSid := upper('QAS');
old 21:          :sSapSid := upper('&&3');
new 21:          :sSapSid := upper('willsys68');
old 37:          :sSchema := upper('&&1');
new 37:          :sSchema := upper('SAPR3');
old 39:          if upper('&&2') = 'NT' then
new 39:          if upper('NT') = 'NT' then
old 46:              :sDomain := upper('&&3');
new 46:              :sDomain := upper('willsys68');

```

```

C:\WINDOWS\system32\cmd.exe
old 47:          :sSapSid := upper('&&4');
new 47:          :sSapSid := upper('QAS');
old 49:          :sSapSid := upper('&&3');
new 49:          :sSapSid := upper('willsys68');
using following Parameters:
.
. Oracle Version:           10.2.0.1.0
. Parameter value os_authent_prefix: OPS$ 
. Schema Id:                SR3
. Database User (Schema):   SAPR3
. SAP R/3 Administrator:    OPS$WILLSYS68\QASADM
. SAP R/3 Serviceuser:      OPS$WILLSYS68\SAPSERVICEQAS
. Domain/Host:              WILLSYS68
.

Connected.
Connected.
Disconnected from Oracle Database 10g Enterprise Edition Release 10.2.0.1.0 - Pr
oduction
With the Partitioning, OLAP and Data Mining options

D:\oracle\QAS\sapbackup>

```

Login to SQL and check the users.

```
C:\WINDOWS\system32\cmd.exe - sqlplus "/as sysdba"
With the Partitioning, OLAP and Data Mining options
SQL> select username from dba_users;

USERNAME
-----
OPS$WILLSYS68\SAPSERVICEQAS
OPS$WILLSYS60\SAPSERVICEPRD
OPS$WILLSYS60\PRDADM
OPS$WILLSYS68\QASADM
SYS
SYSTEM
SAPR3
SAPSR3
OUTLN
TSMSYS
DIP

USERNAME
-----
DBSNMP

12 rows selected.

SQL>
```

Drop the Source System users ie.. PRD user's.

```
C:\WINDOWS\system32\cmd.exe - sqlplus "/as sysdba"

D:\oracle\QAS\sapbackup>sqlplus "/as sysdba"

SQL*Plus: Release 10.2.0.1.0 - Production on Thu Jan 29 19:30:04 2009

Copyright (c) 1982, 2005, Oracle. All rights reserved.

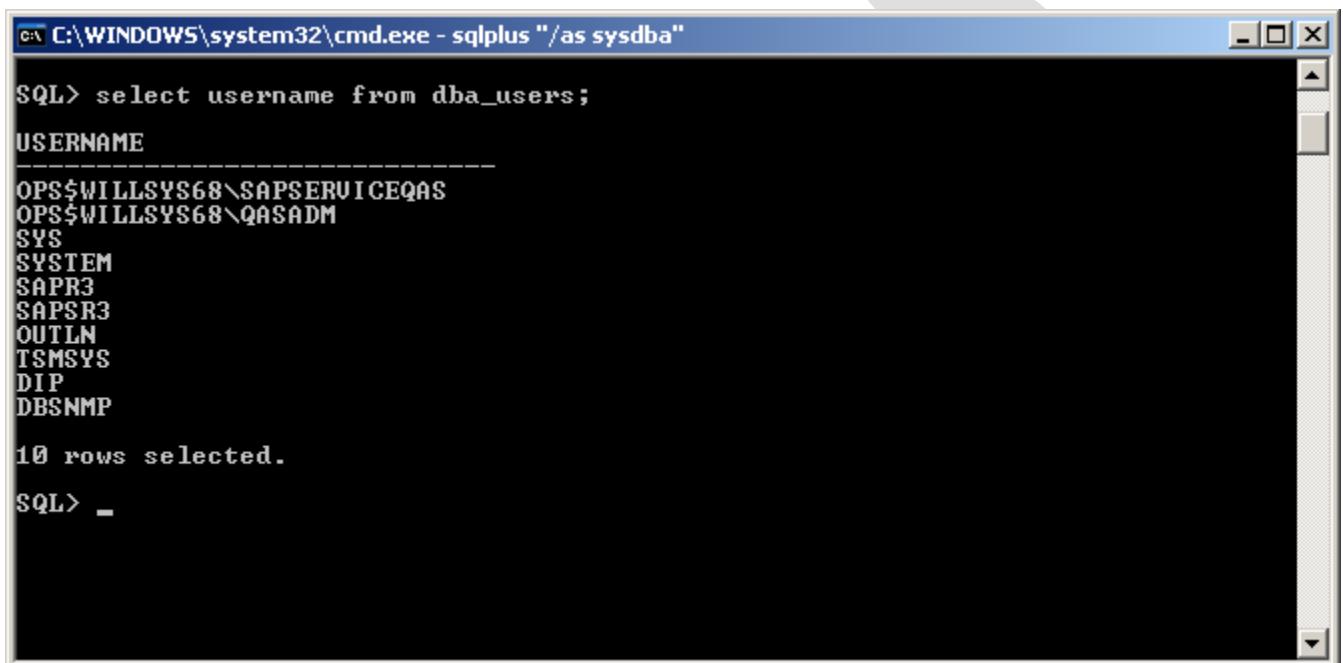
Connected to:
Oracle Database 10g Enterprise Edition Release 10.2.0.1.0 - Production
With the Partitioning, OLAP and Data Mining options

SQL> drop user "OPS$WILLSYS60\SAPSERVICEPRD" cascade;
User dropped.

SQL> drop user "OPS$WILLSYS60\PRDADM" cascade;
User dropped.

SQL> _
```

Below screen displays the list of user's available after dropping PRD user's.



```
C:\WINDOWS\system32\cmd.exe - sqlplus "/as sysdba"

SQL> select username from dba_users;

USERNAME
-----
OPS$WILLSYS68\SAPSERVICEQAS
OPS$WILLSYS68\QASADM
SYS
SYSTEM
SAPR3
SAPSR3
OUTLN
TSMSYS
DIP
DBSNMP

10 rows selected.

SQL> _
```

Provide permissions to the following QAS user's as mentioned in the below screen.

```
C:\WINDOWS\system32\cmd.exe - sqlplus "/as sysdba"

SQL> grant connect,sapdba to "OPS$WILLSYS68\SAPSERVICEQAS";
Grant succeeded.

SQL> grant connect,sapdba to "OPS$WILLSYS68\QASADM";
Grant succeeded.

SQL> grant dba to "OPS$WILLSYS68\QASADM";
Grant succeeded.

SQL> grant dba to "OPS$WILLSYS68\SAPSERVICEQAS";
Grant succeeded.

SQL> select status from v$instance;
STATUS
-----
OPEN
SQL>
```

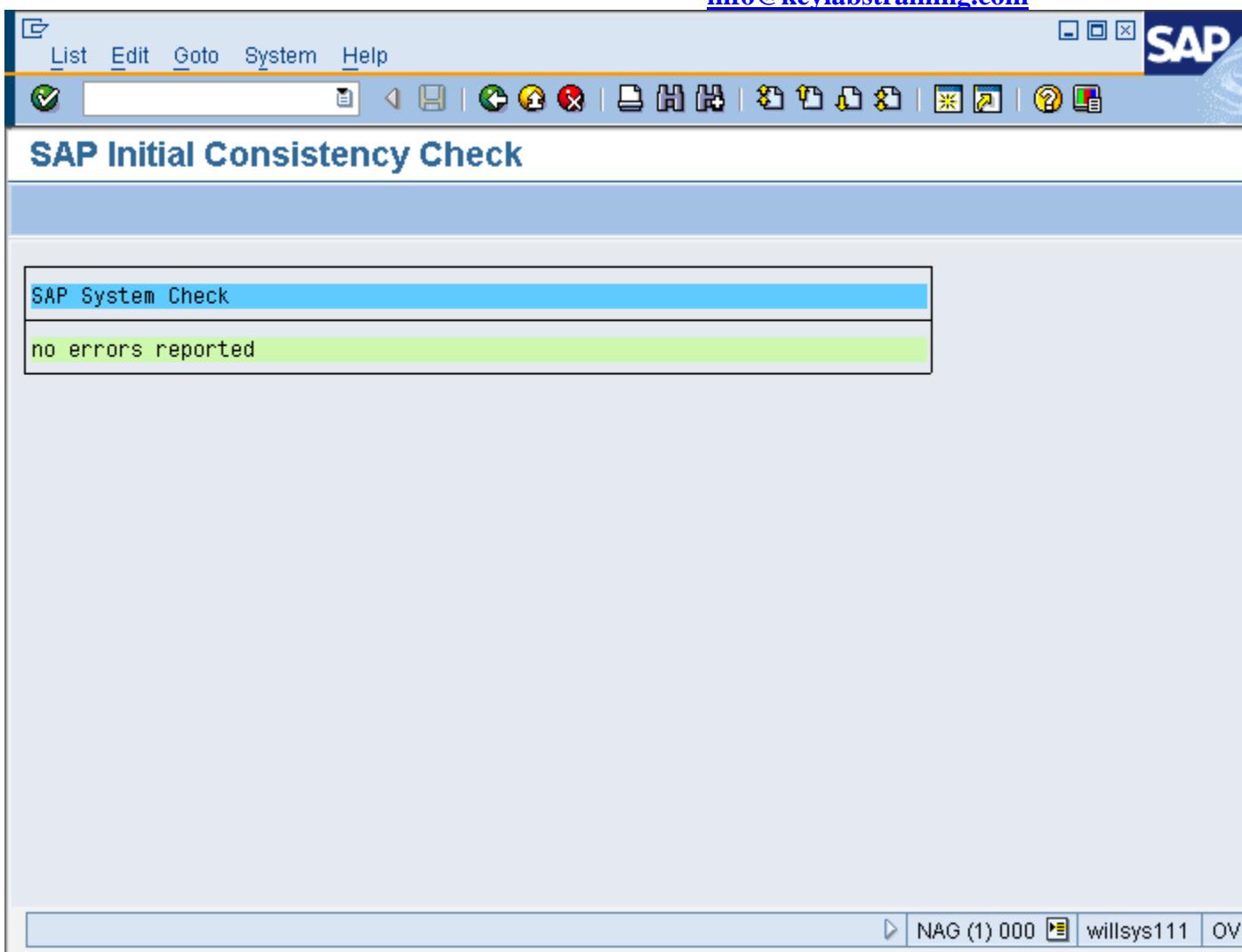
Start the SAP instance or MMC.

Install the License for the QAS system and remove the PRD system license..
saplicense –show (Displays the licenses of both QAS and PRD systems.)
saplicense –delete (Delete the PRD system license).
saplicense –install (Install license for the QAS system).

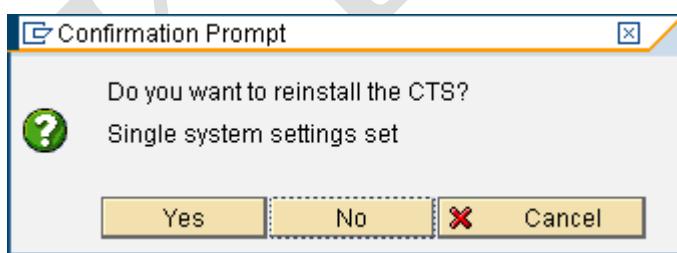
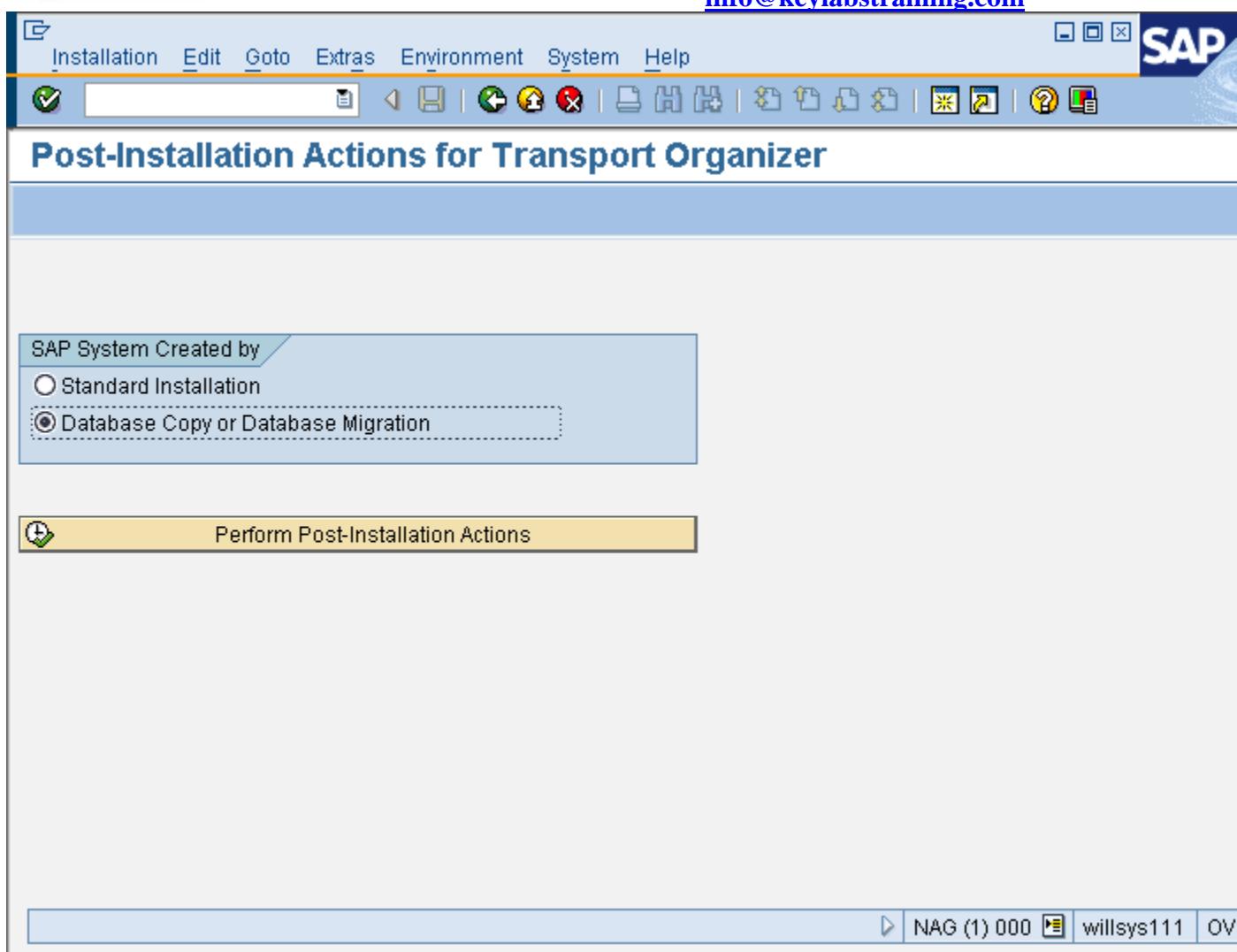
Login through Client - 000 and User – SAP*.

Perform post installation activities as shown below.

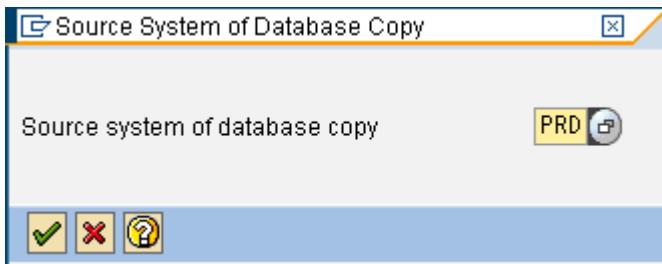
1. SICK



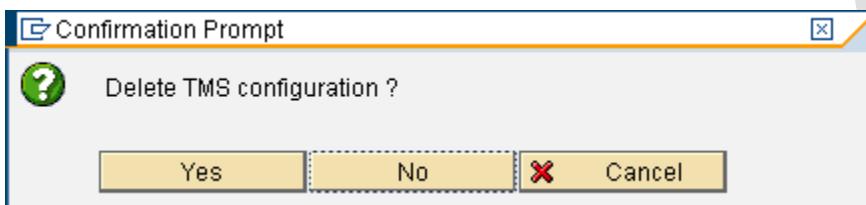
2. SE06 and select “Database copy or Database migration” option. Click Perform Post-Installation Actions.



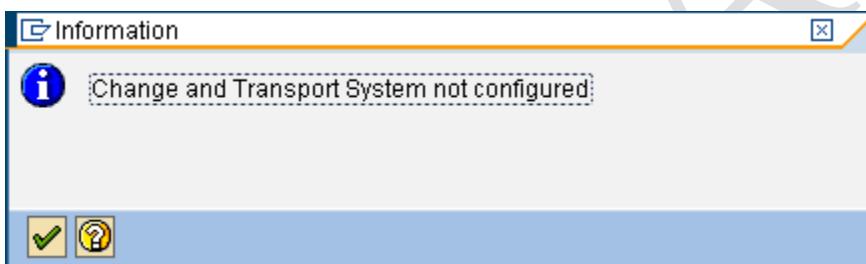
Click Yes.



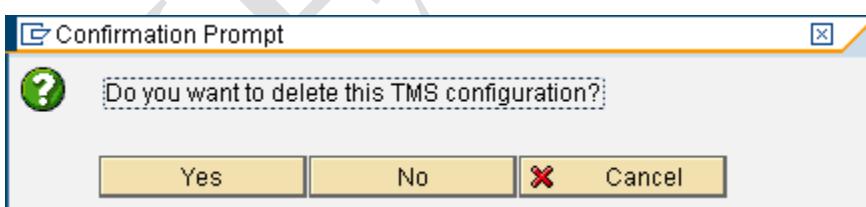
Accept the source system.



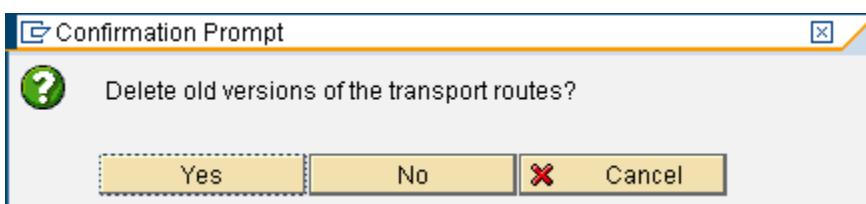
Click Yes.



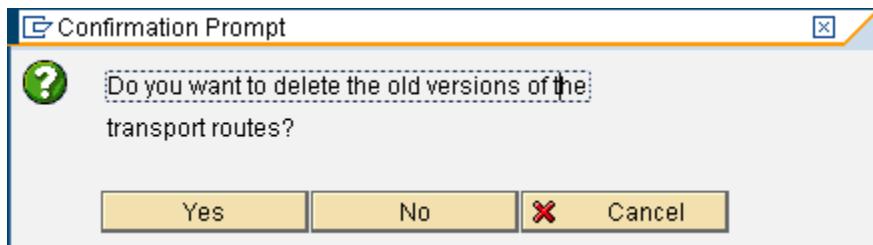
Accept.



Click Yes.

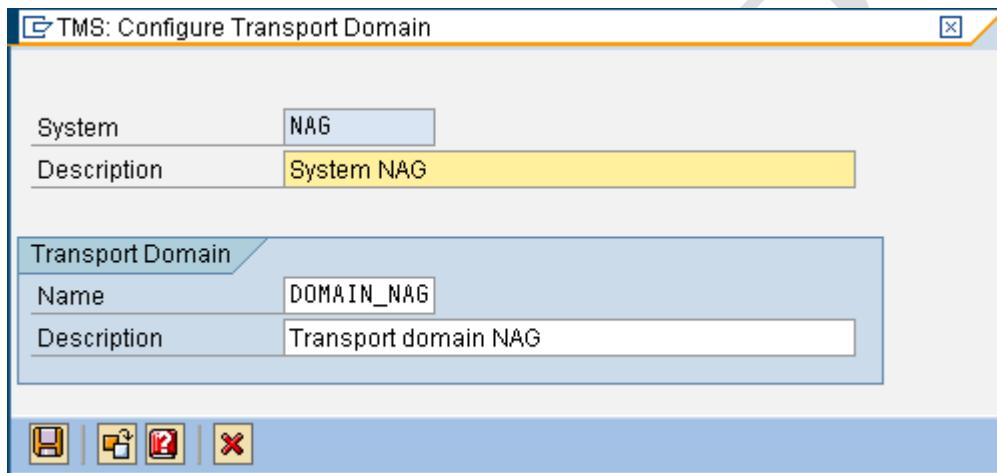


Click Yes.

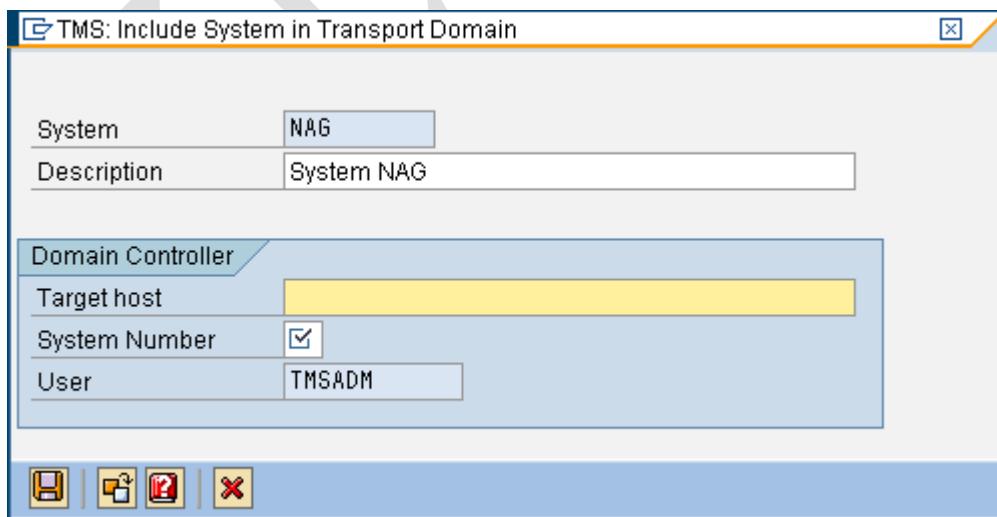


Click Yes.

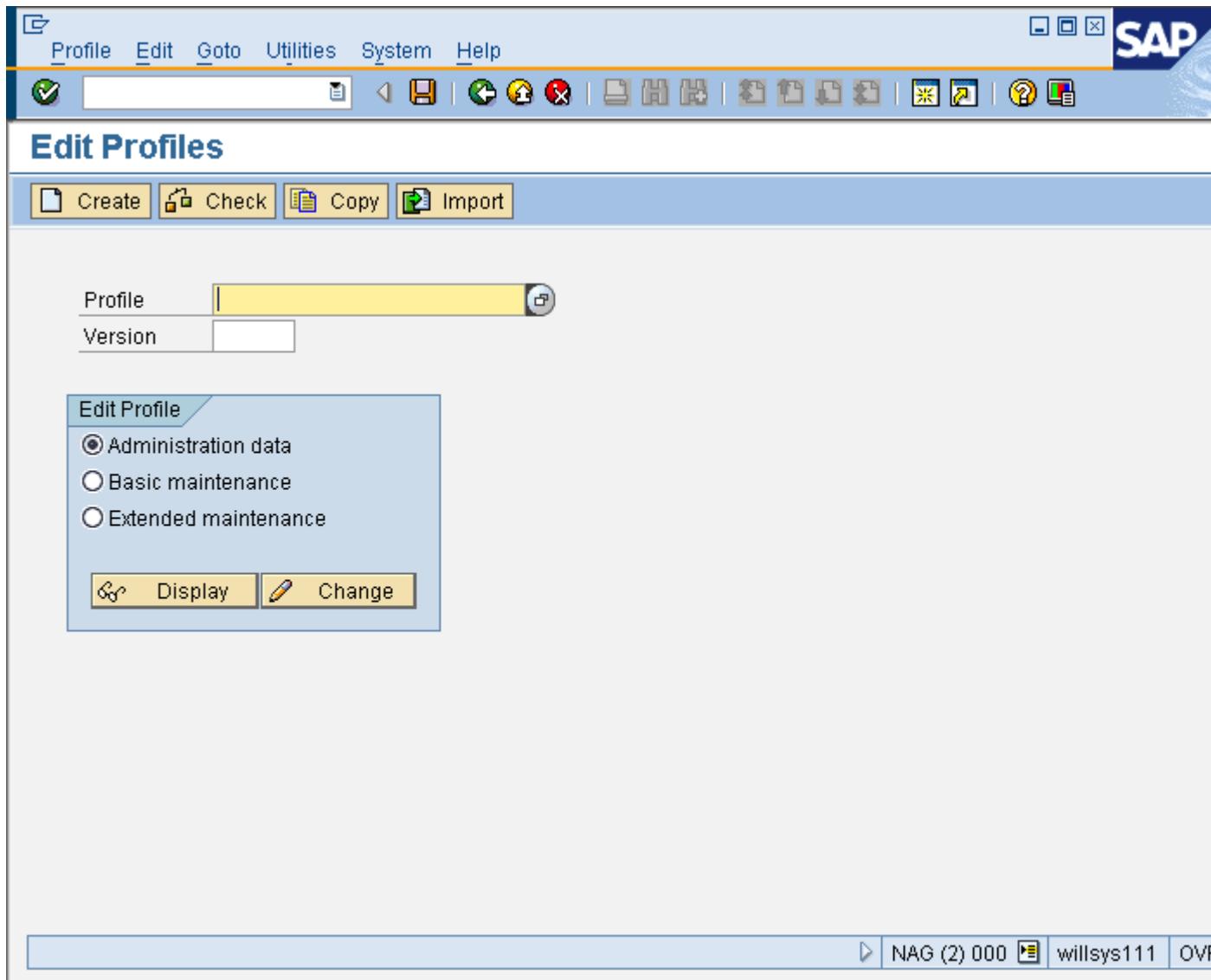
3. Configure STMS. Run TC-STMS.



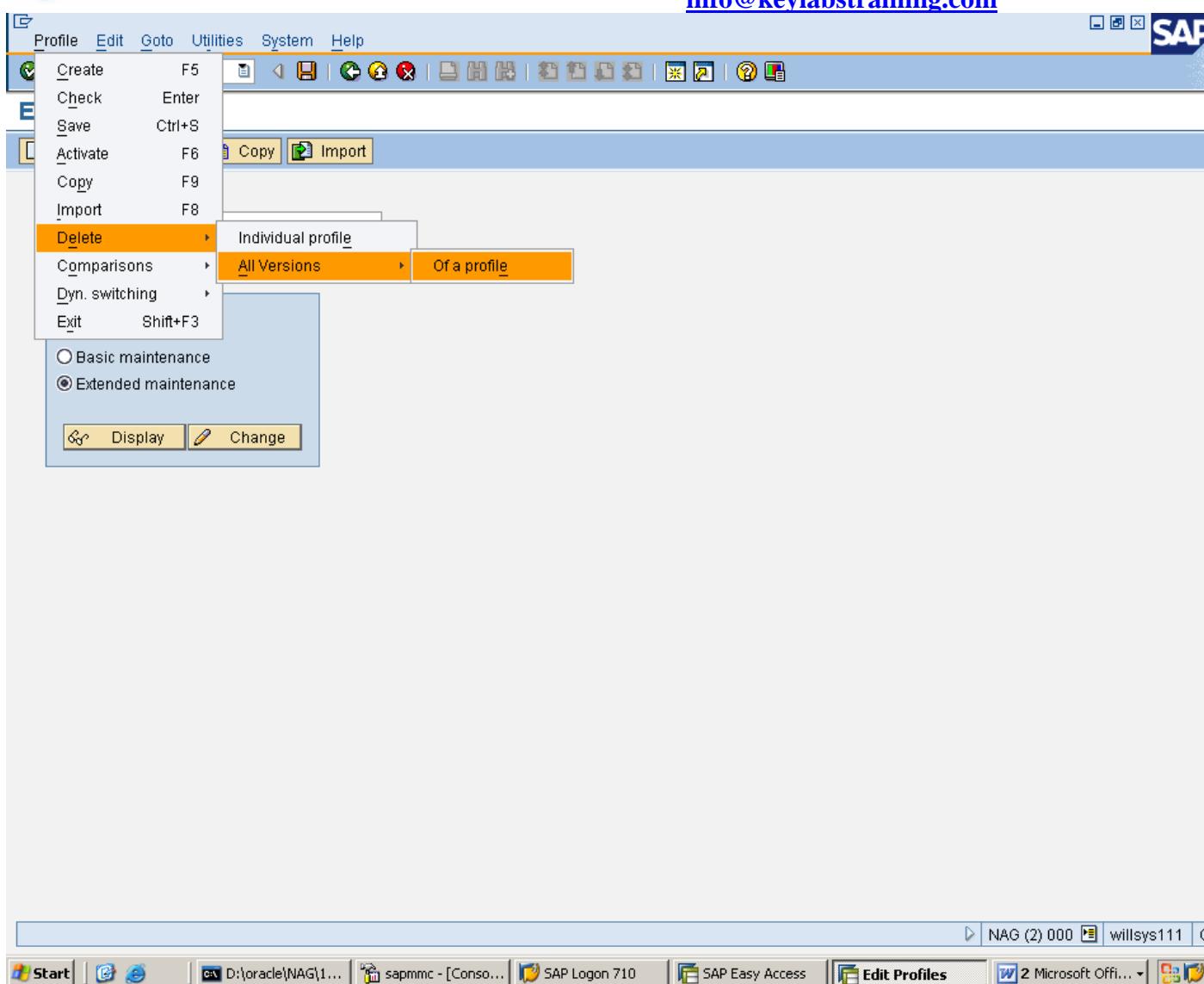
NOTE: Here we are considering the system (NAG) as Domain Controller. If it is a child system, include that system into the Domain Controller as per below screen.



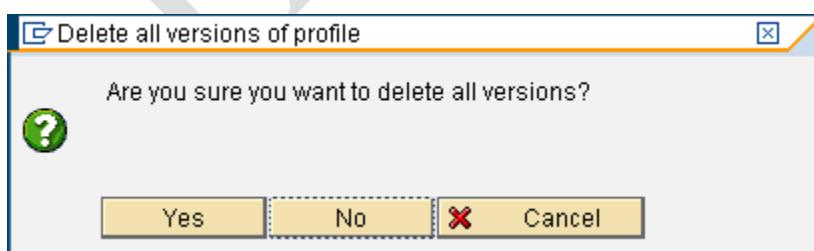
3. Run RZ10



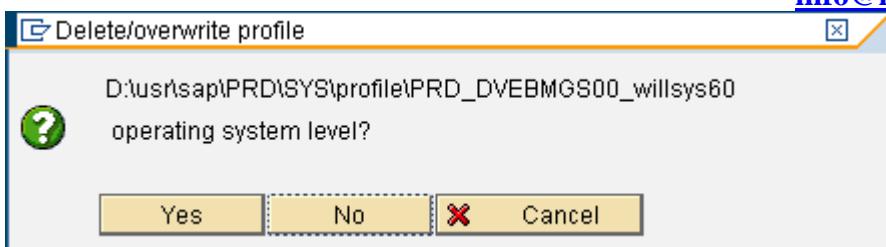
Select extended maintenance and click on Display button



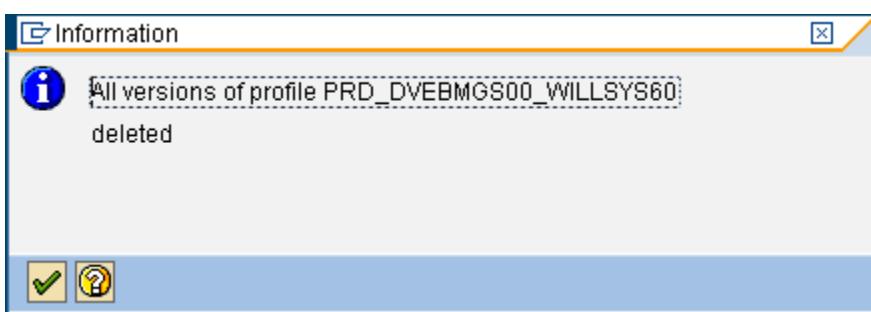
To delete profiles of PRD system. For that follow the below path
Profile -> Delete -> All versions -> Of a profile



Click Yes



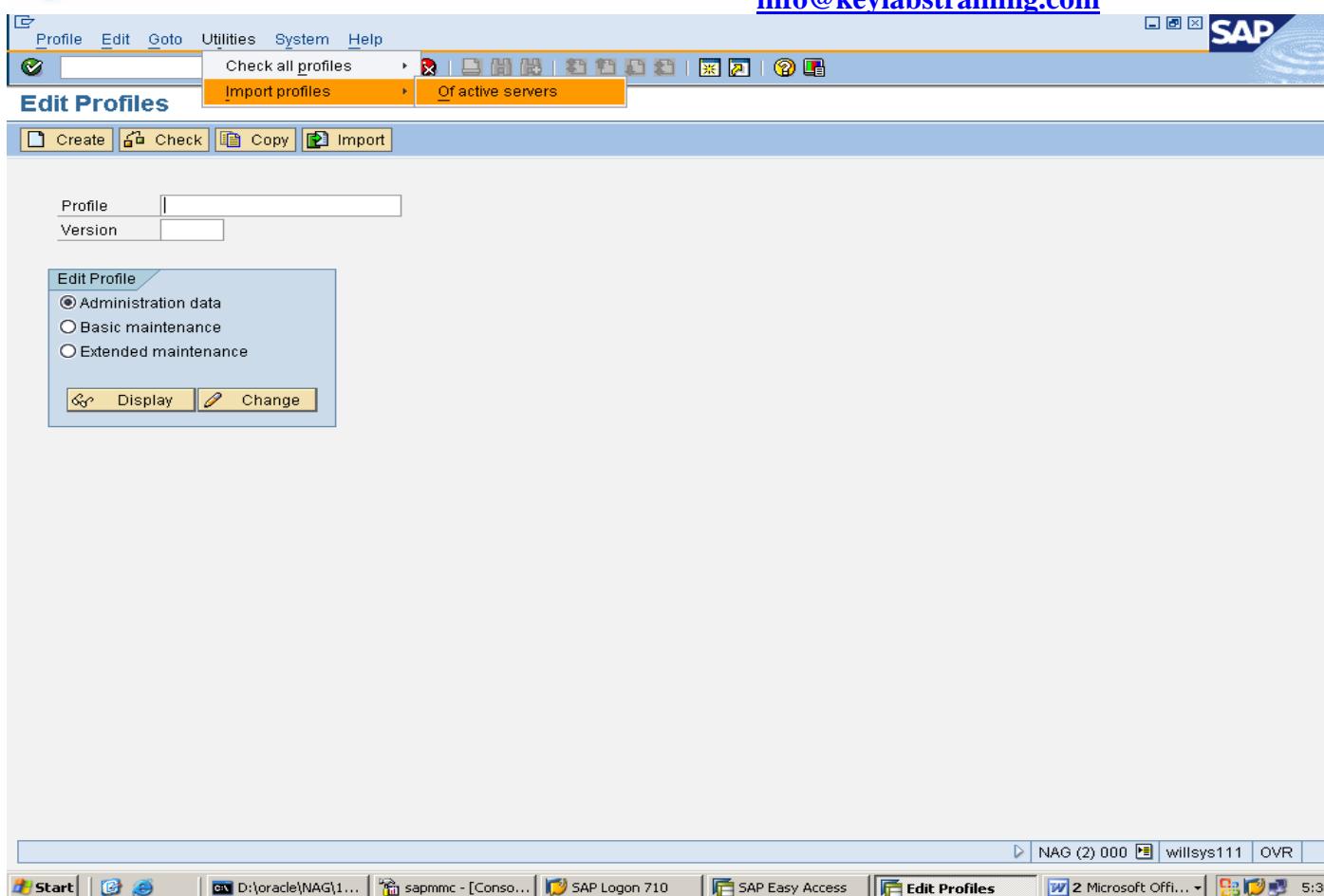
Click No



Click on continue

Similarly delete Start profile and Default profile. As shown above screens.

After deleting all profiles of the PRD system then import profiles of NAG system by using below path.



Go to Utilities -> Import profile -> Of a active servers.

Health check procedure

The Main goals of system monitoring

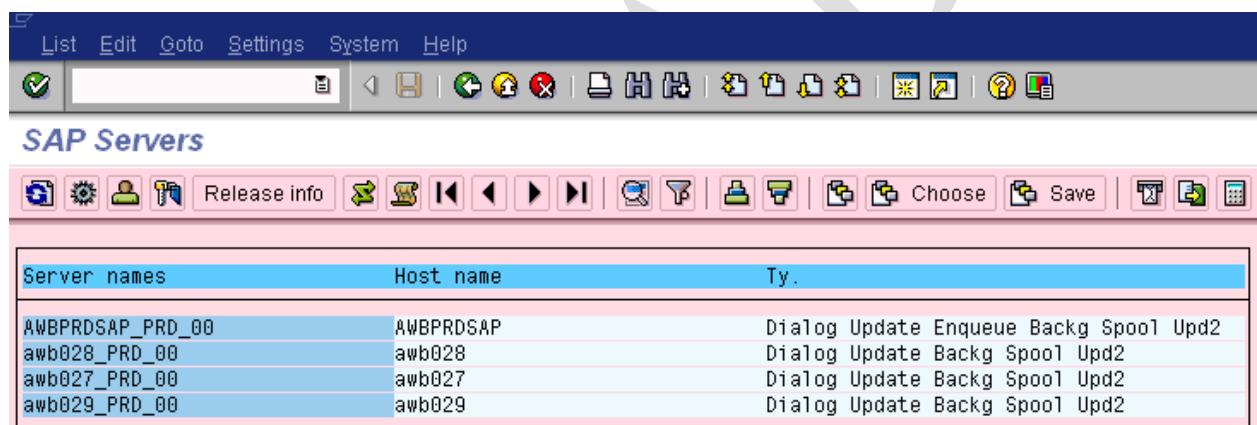
- To keep the system running
- To analyze and correct errors

To make the system run perfectly, monitoring should be done periodically. Monitoring is done using some Transaction Codes.

TRANSACTION CODES

Check for active Application Servers:

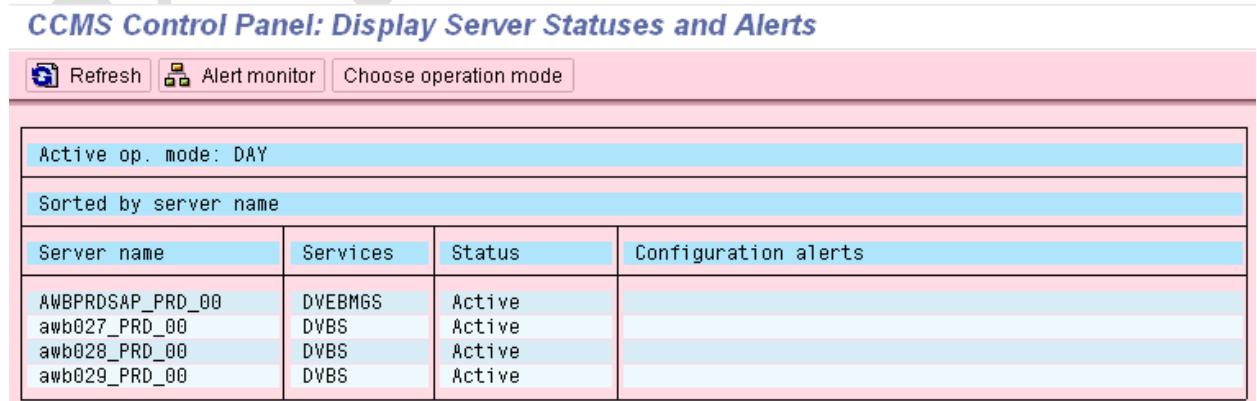
SM51 is the T-Code used to view active application instances/servers . SM51 shows only active servers. So make sure all the instances are up and running. Below is the Screen shot of SM51



SAP Servers		
Server names	Host name	Ty.
AWBPRDSAP_PRD_00	AWBPRDSAP	Dialog Update Enqueue Backg Spool Upd2
awb028_PRD_00	awb028	Dialog Update Backg Spool Upd2
awb027_PRD_00	awb027	Dialog Update Backg Spool Upd2
awb029_PRD_00	awb029	Dialog Update Backg Spool Upd2

To check whether all the instances are active/inactive in the SAP system

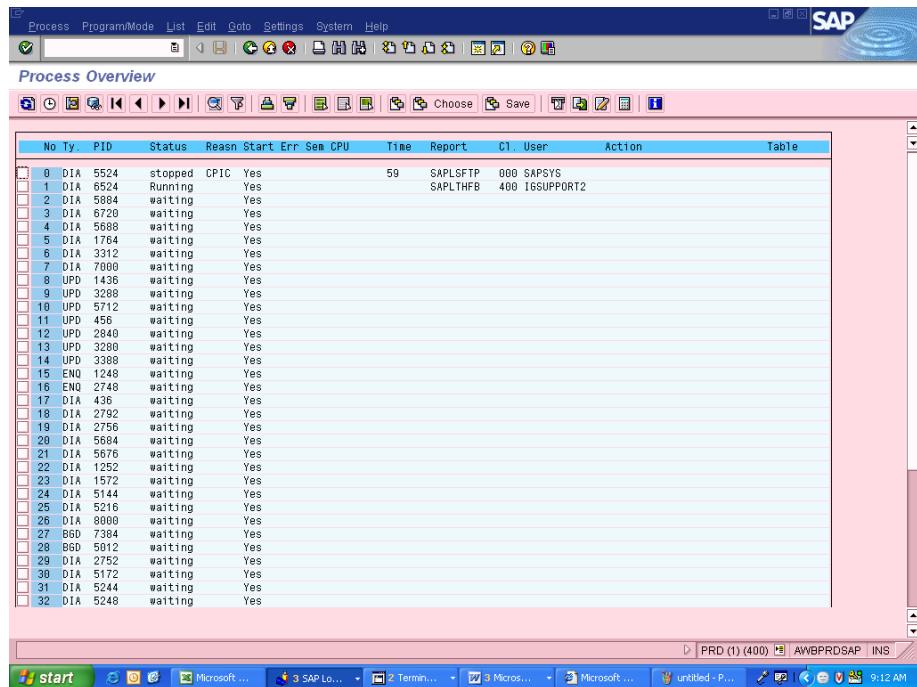
RZ03 T-Code is used . Below is the screen shot



Active op. mode: DAY			
Sorted by server name			
Server name	Services	Status	Configuration alerts
AWBPRDSAP_PRD_00	DVEBMGS	Active	
awb027_PRD_00	DVBS	Active	
awb028_PRD_00	DVBS	Active	
awb029_PRD_00	DVBS	Active	

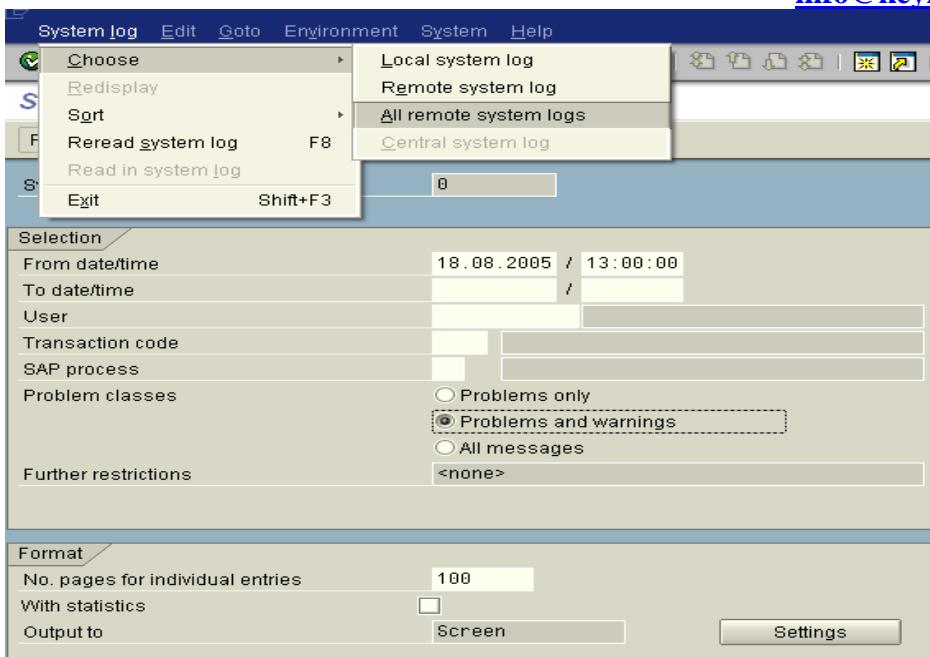
Check for Work Processes status of all Application servers

Run SM51. It displays all active instances/servers. Double click on each of the instance then it displays all the work process and their current status (SM50). If the work processes is in PRIV mode we have to copy and paste it in (SM50).

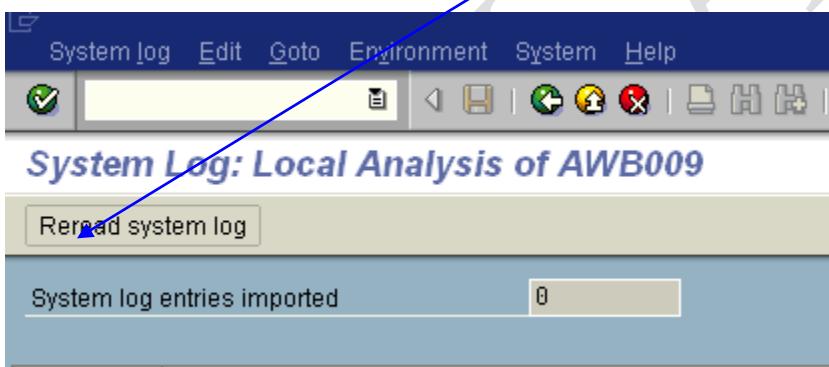


Check for System logs :

SM21 is the T-Code which display system logs. Run SM21 , choose log for all remote application servers and also specify date & time if required.



Then click on Reread system log

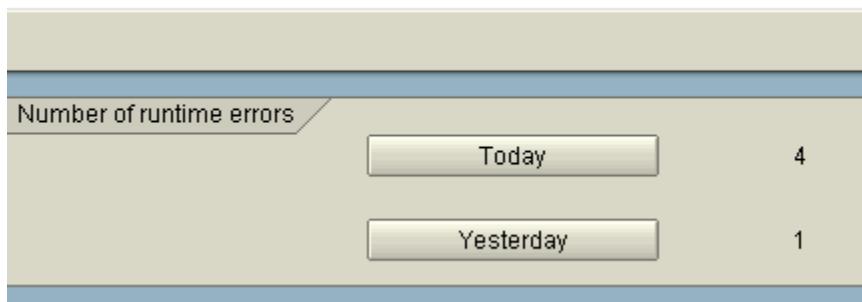


When click reread system log it displays the system logs. System Log stores all messages including problems warnings & information .In this system log we mainly look for errors related to Database listed as ORA-???? Error and update terminate errors. Then copy and paste it in SM21.

Check for ABAP/4 Dumps:

ST22 is the T-Code which displays the ABAP dumps. Run ST22, in ST22 their will be 2 options i.e., TODAY and YESTERDAY. Click on Today option

ABAP runtime errors



It lists out all the ABAP dumps generated for the day. Copy and paste it in ST22 row. If there are more than 20 dumps, shoot a mail to the client.

Runtime errors

Current Date	Time	Host	Name	Cli...	...	Name of runtime error	Exception
18.08.20...	04:47:04	awb031	BWCONFIG2	900	C	MESSAGE_TYPE_X	
18.08.2005	09:53:23	awb031	WARBURTONG	900	C	DBIF_NTAB_TABLE_NOT_FOUND	
18.08.2005	11:23:47	awb031	WESTN	900	C	UNCAUGHT_EXCEPTION	
18.08.2005	11:23:48	awb031	WESTN	900	C	UNCAUGHT_EXCEPTION	

Check for Lock Entries:

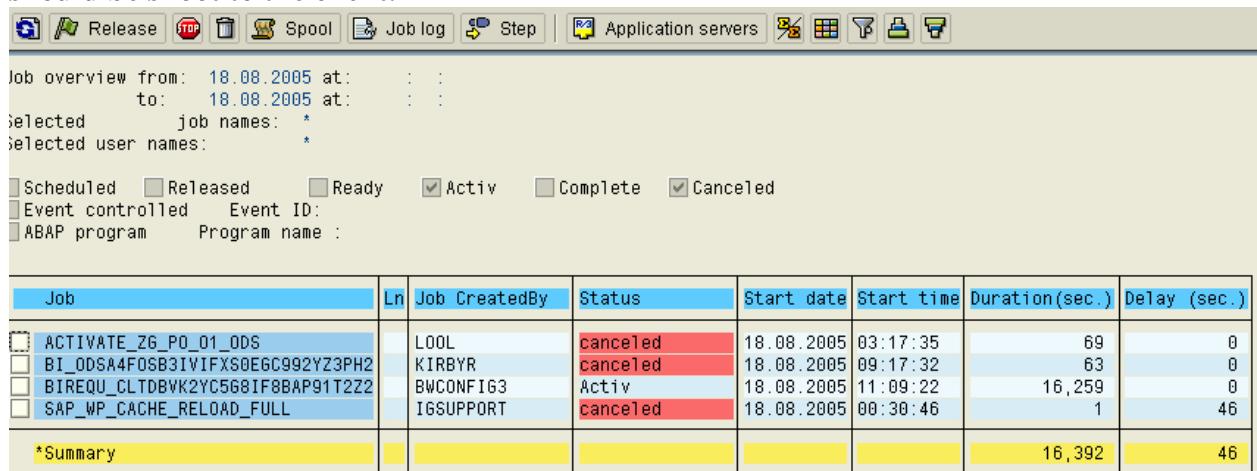
SM12 is the T-Code which displays the lock entries. In SM12 any lock entry which is quite old i.e., active more than 26 hours, has to be copied and pasted in SM12 and also shoot a mail to the client.

Lock Entry List							
Cl.	User	Time	Mode	Table	Lock argument	DATATARGET	EXTRACTDTA
900	BWCONFIG3	11:09:22	S	RSENQ_PROT	Z6_RC_C01		#####
900	BWCONFIG3	11:09:29	S	RSENQ_PROT	Z6_RC_C01	DATATARGET	#####
900	WARBURTONG	15:21:56	S	UPB_PM_GRA	900UPS PFEPM501#####	DATATARGET	#####
900	WARBURTONG	15:21:56	S	UPB_PM_VAR	900UPS PFEPM501##		
900	WARBURTONG	15:21:56	S	UPB_PS_DES	900UPS PFEPM501#####		
900	WARBURTONG	15:21:56	S	UPB_PS_NAM	900UPS PFEPM501		
900	WARBURTONG	15:21:56	S	UPB_PS_PRO	900UPS PFEPM501#####		
900	WARBURTONG	15:21:56	S	UPC_AREA	900ZIFCM01		

Check for Background Job status:

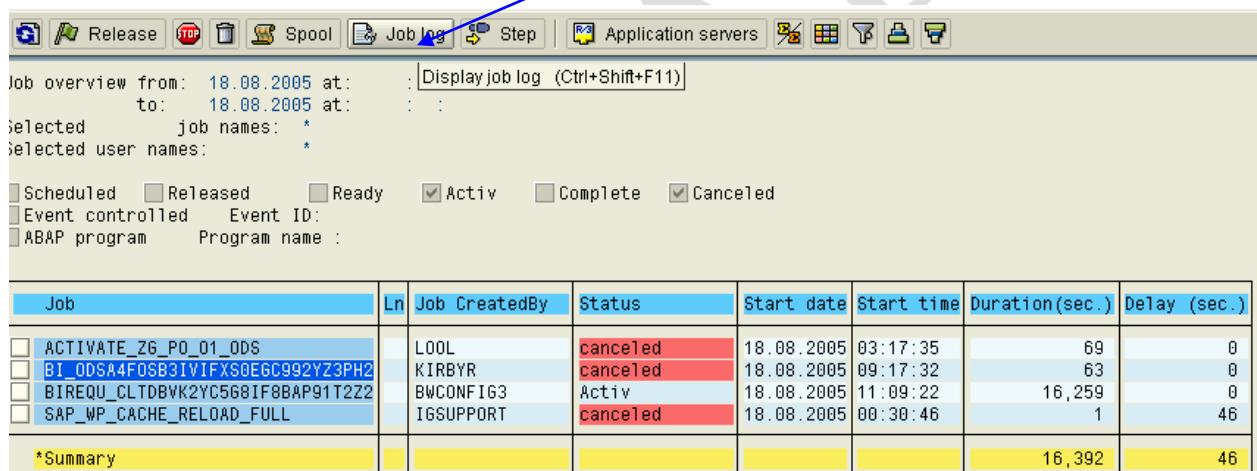
SM37 is the T-Code used for monitoring background job status. Give the server time and execute. If there are any cancelled jobs, we will copy and paste it in SM37 Cancelled jobs and also take the job log of that particular cancelled job and paste it

in SM37 Job Logs. If one particular job is cancelled more than 20 times ,a mail should be shoot to the client.



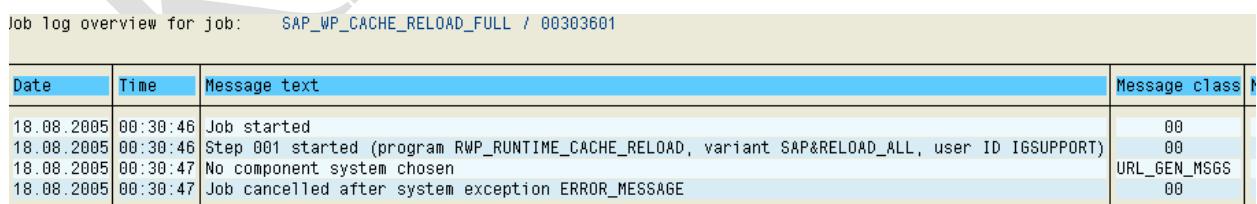
Job	Ln	Job CreatedBy	Status	Start date	Start time	Duration(sec.)	Delay (sec.)
ACTIVATE_ZG_P0_01_ODS		L0OL	cancelled	18.08.2005	03:17:35	69	0
BI_ODSA4F0SB3IVIFXS0E6C992YZ3PH2		KIRBYR	cancelled	18.08.2005	09:17:32	63	0
BIREQU_CLTDBVK2YC568IF8BAP91T2Z2		BWCONFIG3	Activ	18.08.2005	11:09:22	16,259	0
SAP_WP_CACHE_RELOAD_FULL		IGSUPPORT	cancelled	18.08.2005	00:30:46	1	46
*Summary						16,392	46

To check the job log select the job which is cancelled and click on job log



Job	Ln	Job CreatedBy	Status	Start date	Start time	Duration(sec.)	Delay (sec.)
ACTIVATE_ZG_P0_01_ODS		L0OL	cancelled	18.08.2005	03:17:35	69	0
BI_ODSA4F0SB3IVIFXS0E6C992YZ3PH2		KIRBYR	cancelled	18.08.2005	09:17:32	63	0
BIREQU_CLTDBVK2YC568IF8BAP91T2Z2		BWCONFIG3	Activ	18.08.2005	11:09:22	16,259	0
SAP_WP_CACHE_RELOAD_FULL		IGSUPPORT	cancelled	18.08.2005	00:30:46	1	46
*Summary						16,392	46

Below is the job log screen shot

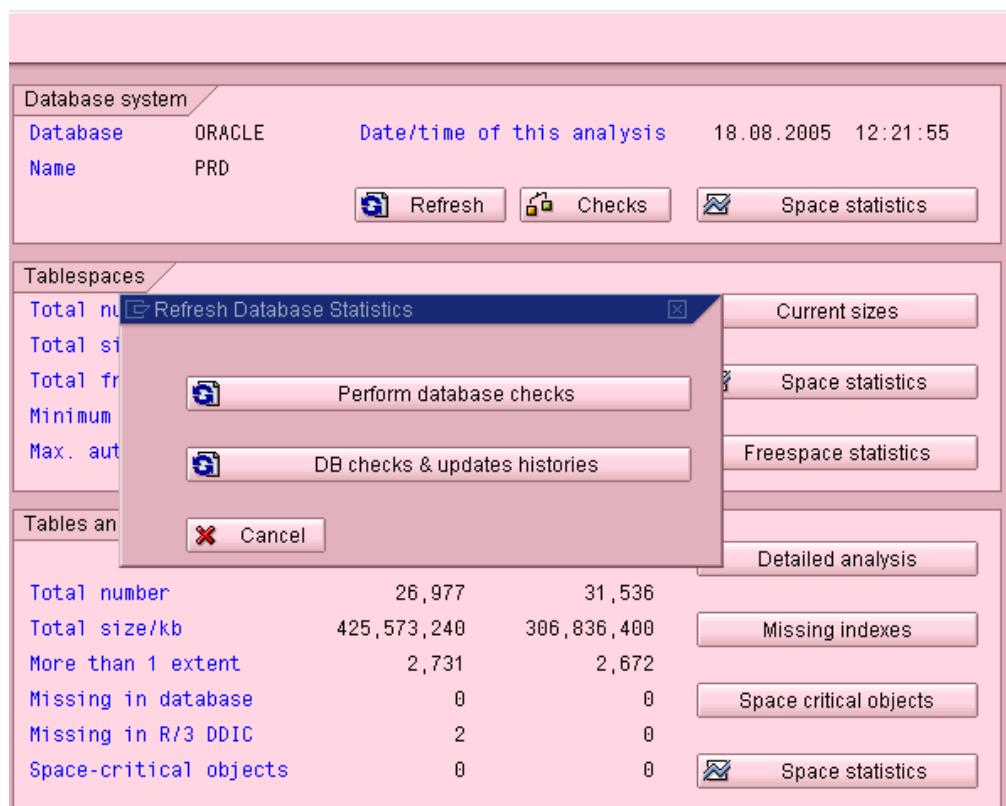


Date	Time	Message text	Message class
18.08.2005	00:30:46	Job started	00
18.08.2005	00:30:46	Step 001 started (program RWP_RUNTIME_CACHE_RELOAD, variant SAP&RELOAD_ALL, user ID IGSUPPORT)	00
18.08.2005	00:30:47	No component system chosen	URL_GEN_MSGS
18.08.2005	00:30:47	Job cancelled after system exception ERROR_MESSAGE	00

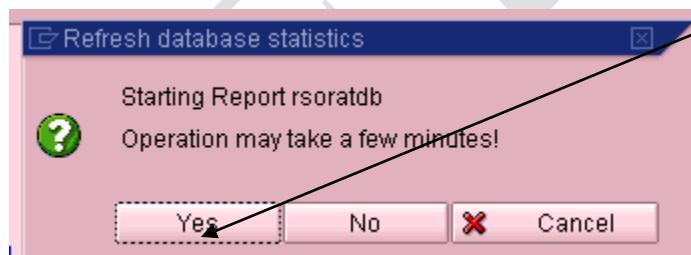
Check for Database growth :

DB02 is the T-Code which displays the Current sizes of all the Tablespace. SAPDBA is the tool used at OS Level to View size of the Table space. Below is the screen shot CLICK on Refresh and then click on DB checks & updates histories

Refresh Database Statistics



Then you will get the below window after the above step .Now click Yes



After refresh, click on current sizes

Database Performance: Tables and Indexes

Database system		Date/time of this analysis		18.08.2005 16:26:25			
Database	ORACLE	Name	PRD				
			Refresh		Checks		Space statistics
Tablespaces		Current sizes					
Total number	27						
Total size/kb	949,488,312						
Total free/kb	203,010,456	21 %					
Minimum free/kb	37,488						
Max. autoextensible/kb	AutoExtend off						
Tables and indexes		Freespace statistics					
Total number	26,977	Indexes	31,536				Detailed analysis
Total size/kb	425,603,968		306,836,400				Missing indexes
More than 1 extent	2,731		2,672				
Missing in database	0		0				Space critical objects
Missing in R/3 DDIC	2		0				
Space-critical objects	0		0				Space statistics

Then it displays the current sizes of all the Tablespace as shown below

Tablespace	Size (kb)	Free (kb)	Used (%)	Tab/Ind	Extents	AutoExt (kb)	Used (\$)	Status
PSAPBTAB1	273,539,328	44,156,896	83	6,463	22,377	0ff	83	ONLINE
PSAPSTAB1	22,410,984	3,939,176	82	9,118	14,289	0ff	82	ONLINE
PSAPCLUD	97,407,984	18,149,120	81	10,36	619	0ff	81	ONLINE
PSAPBTAB0	328,854,912	60,685,264	81	4,604	13,902	0ff	81	ONLINE
PSAPCLUI	18,386,728	3,778,528	79	136	448	0ff	79	ONLINE
PSAPBTABU	6,182,898	1,453,224	76	13,526	17,842	0ff	76	ONLINE
PSAPBTAB0	38,214,648	11,196,216	76	6,966	10,501	0ff	76	ONLINE
PSAPRUSER1	45,947,512	11,496,216	74	4,225	4,588	0ff	74	ONLINE
PSAPUSER10	50,912,096	13,002,976	74	515	3,819	0ff	74	ONLINE
PSAPPOOL1	6,788,268	1,925,872	71	13,768	17,582	0ff	71	ONLINE
PSAPEA6CI	6,144,080	1,972,784	67	309	335	0ff	67	ONLINE
PSAPDOC00ED	124,928,000	43,328	65	89	123	0ff	65	ONLINE
PSAPPROT1	2,048,728	716	65	211	50	0ff	65	ONLINE
PSAPEA6CD	8,811,744	3,013,992	63	225	419	0ff	63	ONLINE
PSAPROLL	22,547,392	9,023,288	60	45	900	0ff	60	ONLINE
PSAPD01D	1,536,088	688,656	55	298	357	0ff	55	ONLINE
PSAPEL46CD	3,096,560	1,402,664	54	12	90	0ff	54	ONLINE
PSAPEL46CI	1,021,480	53,248	48	13	28	0ff	48	ONLINE
PSAPDOC1	2,048,728	1,271,216	37	341	376	0ff	37	ONLINE
PSAPPROTO	2,170,884	1,505,208	30	199	398	0ff	30	ONLINE
PSAPDOCUI	51,280	37,488	26	127	130	0ff	26	ONLINE
PSAPSOURCE1	512,000	395,184	22	117	158	0ff	22	ONLINE

If the Table space has reached near capacity (i.e., above 90%).Mark it in red, but don't send mail. If the Table space has reached (i.e., above 97%).Shoot a mail to the client

DB02 is also of below page, if it is MS SQL and so copy and paste the box values as shown below

System

MSSQL	System RP1	Database RP1
Date/time of this analysis		16.02.2006 08:15:47

Database

DB size (MB)	100.000	Database options
Size used (MB)	56.416	AutoCreateStatistics: On
Free (MB)	43.584	AutoUpdateStatistics: On
Log size (MB)	4.205	Recovery: FULL
Log used (MB)	22	

10 Database file(s) 1 Transaction log file(s)

File name	Size (MB)	Used (MB)	Limit	Growth	Physical file name	Free disk	Filegroup
RP1DATA1	10.000	5632	No limit	60 MB	I:\RP1\DATA1\RP1DATA1.mdf	10.111	PRIMARY
RP1DATA2	10.000	5632	No limit	60 MB	I:\RP1\DATA2\RP1DATA2.ndf	10.111	PRIMARY
RP1DATA3	10.000	5624	No limit	60 MB	I:\RP1\DATA3\RP1DATA3.ndf	10.111	PRIMARY
RP1DATA4	10.000	5648	No limit	60 MB	I:\RP1\DATA4\RP1DATA4.ndf	10.111	PRIMARY
RP1DATA5	10.000	5640	No limit	60 MB	I:\RP1\DATA5\RP1DATA5.ndf	10.111	PRIMARY
RP1DATA6	10.000	5648	No limit	60 MB	I:\RP1\DATA6\RP1DATA6.ndf	10.111	PRIMARY
RP1DATA7	10.000	5648	No limit	60 MB	I:\RP1\DATA7\RP1DATA7.ndf	10.111	PRIMARY
RP1DATA8	10.000	5640	No limit	60 MB	I:\RP1\DATA8\RP1DATA8.ndf	10.111	PRIMARY

Tables, indexes, stored procedures

In system RP1	Tables 37.976	Indexes 44.945	SPs 175.534	Detailed analysis
Total number				Missing indexes
Total size (KB)	42.911.064	11.480.280	N/A	Space statistics
				Checks

Check for Log on Load Balancing:

SMLG is the T-Code for Logon Load Balancing. We check for load distribution, Average Response time and Quality Ratio.

Group list Edit Goto Settings System Help

CCMS: Maintain Logon Groups

Delete assignment Delete Group Remove instance

Logon group	Instance	Status
ALL Users	AWBPRDSAP_PRD_00	●
ALL Users	awb027_PRD_00	●
ALL Users	awb028_PRD_00	●
ALL Users	awb029_PRD_00	●

Now press F5 for Load distribution or click. It displays the below screen, copy and paste only the selected path.

User list Edit Goto Settings System Help

CCMS: Load Distribution

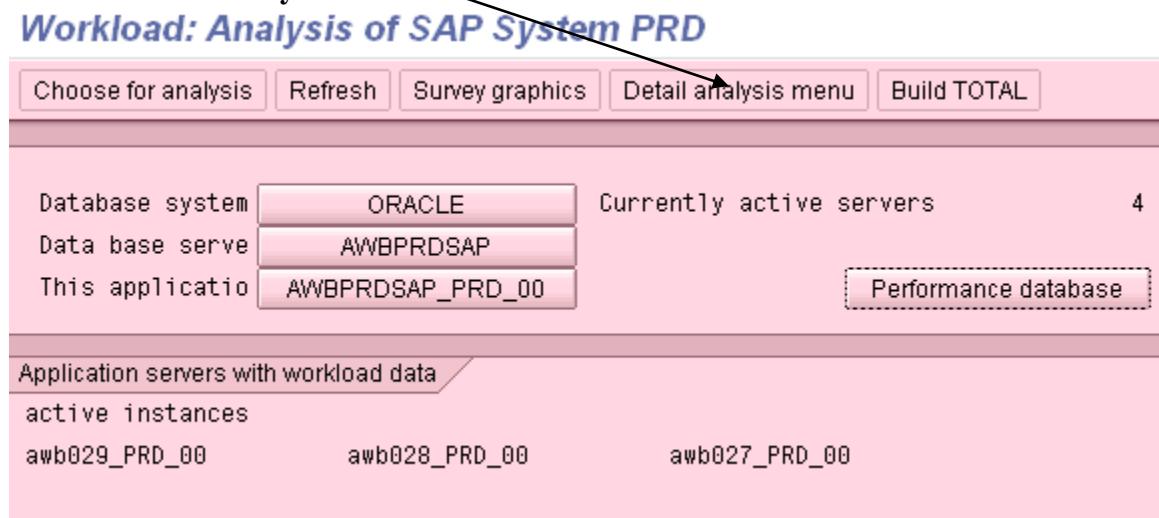
Instance	St	Resp.time(ms)	Thrshd	User	Thrshd	Sample	Quality	Dialog steps
AWBPRDSAP_PRD_00	●	404		4		17:13:39	378	1
awb027_PRD_00	●	171		29		17:13:29	419	13
awb028_PRD_00	●	948		26		17:11:52	19	51
awb029_PRD_00	●	85		30		17:10:05	461	54
* Summary				89				119

Logon group	Current logon instan
ALL Users	awb029_PRD_00
SPACE	awb029_PRD_00

Check Sap System Performance or Average Response time for DIA process:

ST03 is the T-Code used to check system performance. In this we can check the Dialog Response time for each Application instance.

Click on Detail analysis menu

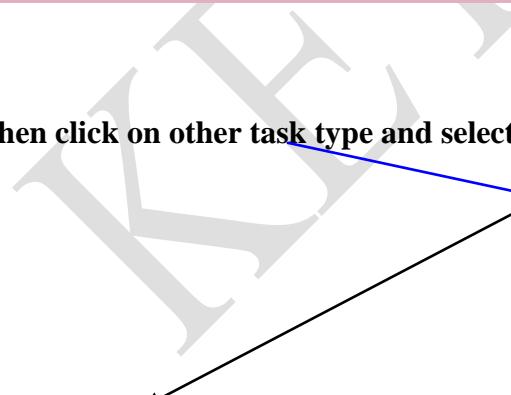


Then click on compare all servers

Workload: Analysis of SAP System PRD



Then click on other task type and select Dialog and press the tick



Workload: Compare all Servers for One Period

		Choose	<<	>>	Sort	Graphics	Prev.period	Next period	Other task type																																																												
Performance of SAP System PRD List creation 18.08.2005 / 17:39:59																																																																					
Analyzed period is Day Th 18.08.2005 Sorted by Server name																																																																					
Sum/average																																																																					
<input type="radio"/> *TOTAL* <input checked="" type="radio"/> Dialog <input type="radio"/> Update <input type="radio"/> Update2 <input type="radio"/> Background <input type="radio"/> RFC <input type="radio"/> CPI-C <input type="radio"/> ALE <input type="radio"/> Spool <input type="radio"/> AutoABAP <input type="radio"/> BufferSync																																																																					
<table border="1"> <thead> <tr> <th>Instance</th> <th>Dialog steps</th> <th>Av.resp. time(ms)</th> <th>Avg CPU time(ms)</th> <th>Avg wait time(ms)</th> <th>Avg load time(ms)</th> <th>Av.DB rq time(ms)</th> <th>Avg DB requests</th> <th>Av. phys DB calls</th> <th>Avg Kbyte requested</th> </tr> </thead> <tbody> <tr> <td>*TOTAL*</td> <td>260,544</td> <td>1,015</td> <td>106</td> <td>3</td> <td>2</td> <td>413</td> <td>271.1</td> <td>116.9</td> <td>117.5</td> </tr> <tr> <td>AWBPRDSA</td> <td>56,308</td> <td>2,155</td> <td>226</td> <td>1</td> <td>3</td> <td>921</td> <td>375.0</td> <td>180.1</td> <td>170.1</td> </tr> <tr> <td>awb027_PRD_00</td> <td>73,175</td> <td>573</td> <td>79</td> <td>4</td> <td>2</td> <td>311</td> <td>258.7</td> <td>79.1</td> <td>98.3</td> </tr> <tr> <td>awb028_PRD_00</td> <td>69,409</td> <td>933</td> <td>77</td> <td>1</td> <td>2</td> <td>282</td> <td>202.1</td> <td>144.5</td> <td>93.6</td> </tr> <tr> <td>awb029_PRD_00</td> <td>61,652</td> <td>593</td> <td>63</td> <td>4</td> <td>2</td> <td>219</td> <td>268.8</td> <td>73.3</td> <td>119.1</td> </tr> </tbody> </table>										Instance	Dialog steps	Av.resp. time(ms)	Avg CPU time(ms)	Avg wait time(ms)	Avg load time(ms)	Av.DB rq time(ms)	Avg DB requests	Av. phys DB calls	Avg Kbyte requested	*TOTAL*	260,544	1,015	106	3	2	413	271.1	116.9	117.5	AWBPRDSA	56,308	2,155	226	1	3	921	375.0	180.1	170.1	awb027_PRD_00	73,175	573	79	4	2	311	258.7	79.1	98.3	awb028_PRD_00	69,409	933	77	1	2	282	202.1	144.5	93.6	awb029_PRD_00	61,652	593	63	4	2	219	268.8	73.3	119.1
Instance	Dialog steps	Av.resp. time(ms)	Avg CPU time(ms)	Avg wait time(ms)	Avg load time(ms)	Av.DB rq time(ms)	Avg DB requests	Av. phys DB calls	Avg Kbyte requested																																																												
TOTAL	260,544	1,015	106	3	2	413	271.1	116.9	117.5																																																												
AWBPRDSA	56,308	2,155	226	1	3	921	375.0	180.1	170.1																																																												
awb027_PRD_00	73,175	573	79	4	2	311	258.7	79.1	98.3																																																												
awb028_PRD_00	69,409	933	77	1	2	282	202.1	144.5	93.6																																																												
awb029_PRD_00	61,652	593	63	4	2	219	268.8	73.3	119.1																																																												
<input checked="" type="checkbox"/> <input type="checkbox"/>																																																																					

Then Copy the below part only means Dialog steps and Average response time and paste it.

Summary of average workload		
Instance	Dialog steps	Av.resp. time(ms)
TOTAL	260,544	1,015
AWBPRDSA_PRD_00	56,308	2,155
awb027_PRD_00	73,175	573
awb028_PRD_00	69,409	933
awb029_PRD_00	61,652	593

Check for Logged on users:

AL08 is the T-Code which displays the users logged on each application instances. Select only Active Instance and No. of Users and paste it.

Current Active Users

System PRD
Day, Time 18.08.2005 17:52:50

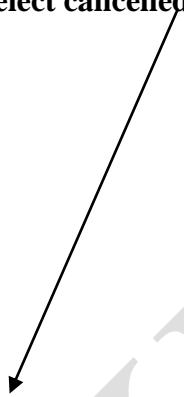
Overview of all
logged on users

Active instance	Number of active users	No. of interact. users	No. of RFC-users
AWBPRDSAP_PRD_00	5	2	3
awb028_PRD_00	7	6	1
awb027_PRD_00	24	23	1
awb029_PRD_00	16	15	1
4 destinations with 52 users			

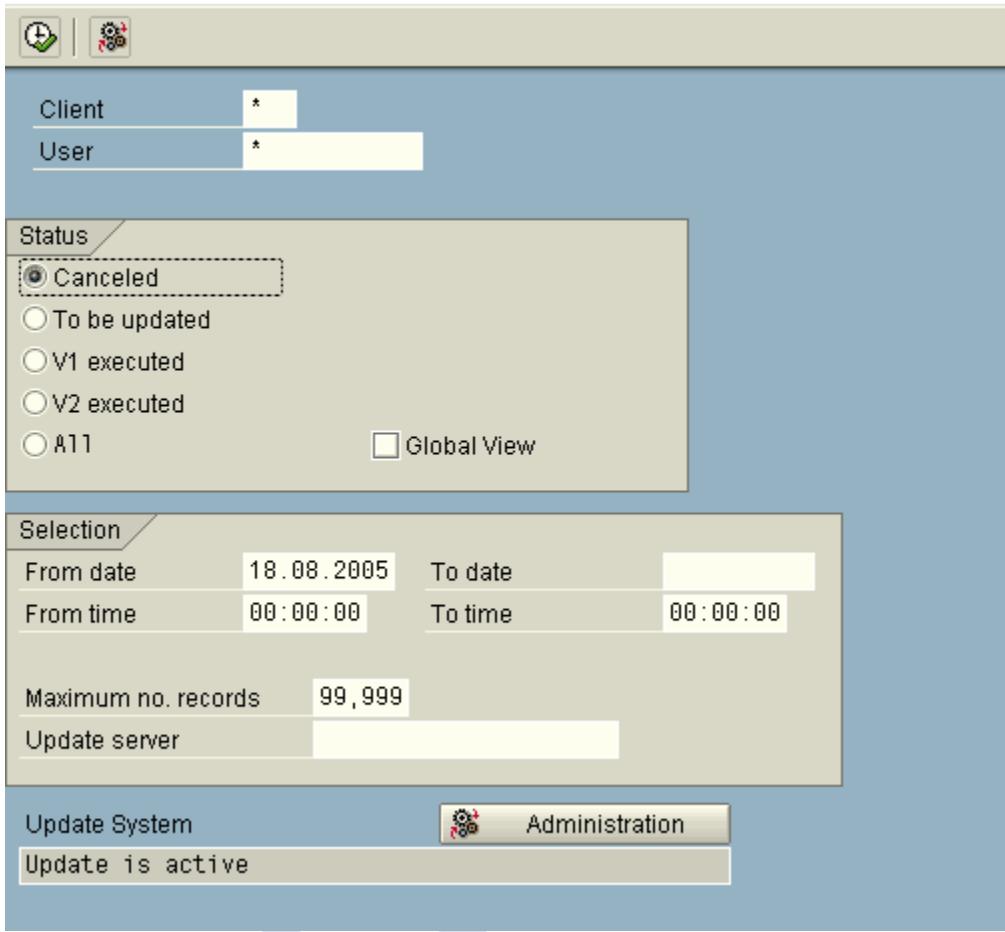
Check for Update Terminated:

SM13 is the T-Code which displays the update records. We mainly look for Terminated Updates. Look at the detailed information of each failed update record.

Select cancelled and execute it

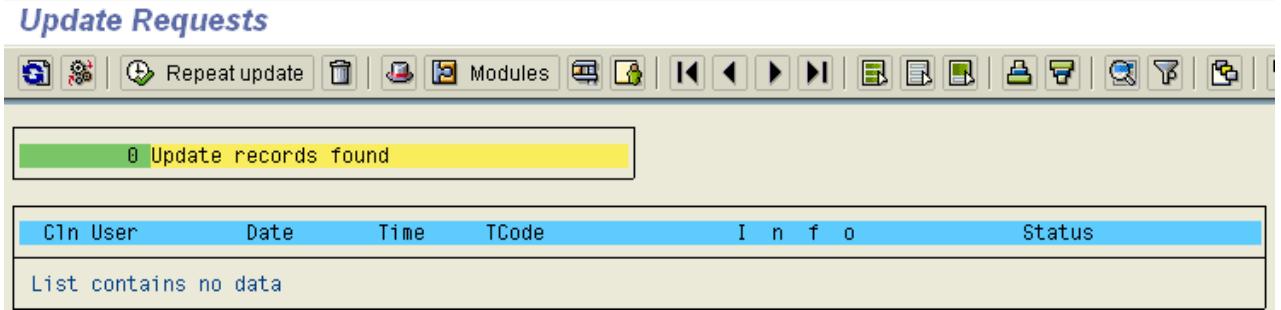


Update Requests: Initial Screen



The screenshot shows the initial screen of the SAP Update Requests application. At the top, there are fields for 'Client' and 'User'. Below these, a 'Status' section is expanded, showing a radio button group with 'Canceled' selected, and other options like 'To be updated', 'V1 executed', 'V2 executed', and 'All'. A 'Global View' checkbox is also present. The main area is titled 'Selection' and contains fields for 'From date' (18.08.2005), 'To date', 'From time' (00:00:00), 'To time', 'Maximum no. records' (99,999), and 'Update server'. At the bottom, there are buttons for 'Update System' and 'Administration', and a message 'Update is active'.

After executing the above step, if there are any cancelled update records copy and paste it and if there are more than 10 update errors shoot a mail to the client.



The screenshot shows the 'Update Requests' list screen. The toolbar includes icons for repeat update, trash, modules, and navigation. A message bar at the top says '0 Update records found'. The main table has columns: CIn, User, Date, Time, TCode, Info, and Status. A message in the table area says 'List contains no data'.

Check for Backup Logs

Go to DB12 .Take the information of successful Backups. Below selected part has to be copied and pasted in DB12 .If the SQL is the server below screen will be appeared.

CCMS Monitoring Tool - DB12 (Backup/Restore Information)

Database Backups

Log Space	(MB)	2.500	SQL Agent Scheduled Jobs
Log Free	(MB)	2.391	SQL Agent Properties
Recovery Interval	Min	0	Backup Device List

Last Successful Backups :

Full R/3 Backup	17 Feb 2006 23:44:38	Backup Size(GB): 298.88
Backup Duration(hh:mm:ss): 03:43:08		
Differential R/3 Backup	16 Feb 2006 23:37:46	
Transaction Log Backup	18 Feb 2006 03:45:01	
Full Master Backup	17 Feb 2006 20:01:37	
Full MSDB Backup	17 Feb 2006 20:01:38	

If Oracle is the server then below screen will be appeared. Go to DB12, Click on Archive directory status as shown below

Backup Logs: Overview for Database PRD

  Recovery report

Database backups

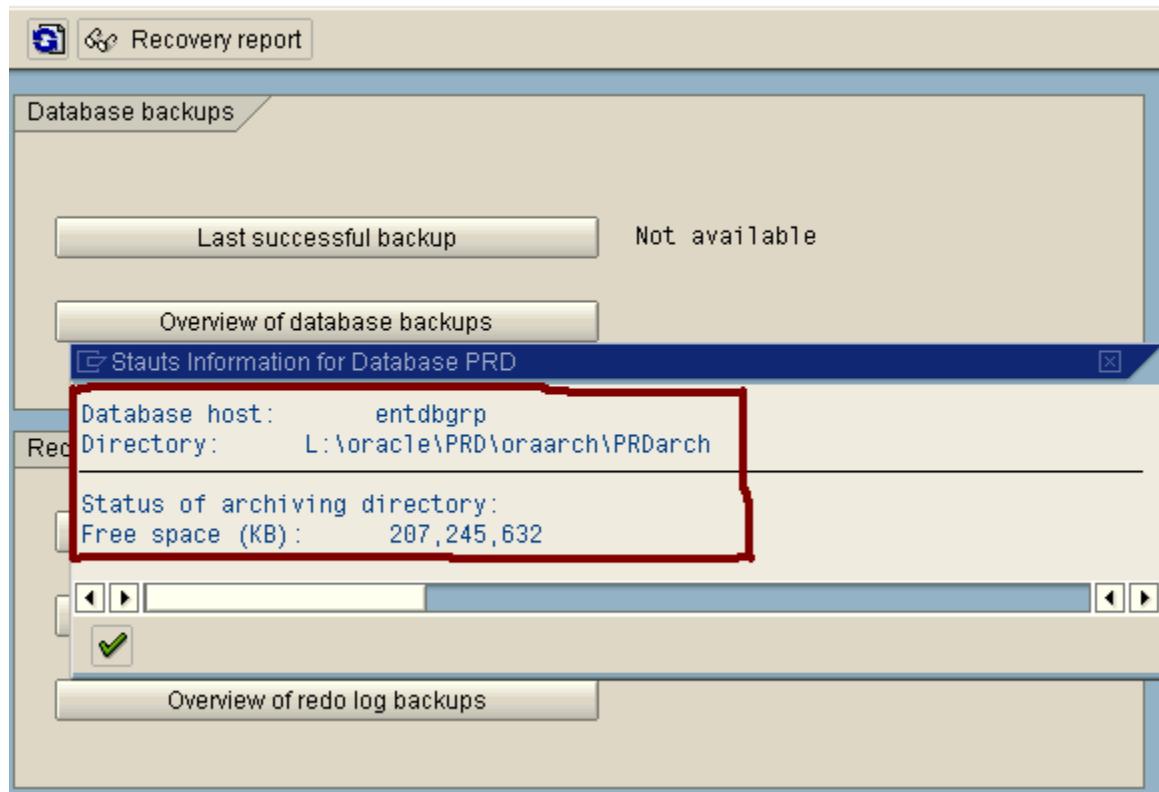
Last successful backup	Not available
Overview of database backups	

Redo log backups

Archiving directory status	Free space (KB) : 207,245,632
Overview of redo log files	Not yet backed up: 0
Overview of redo log backups	

After Clicking Archive directory status, you will get the below window. Copy and Paste the selected part.

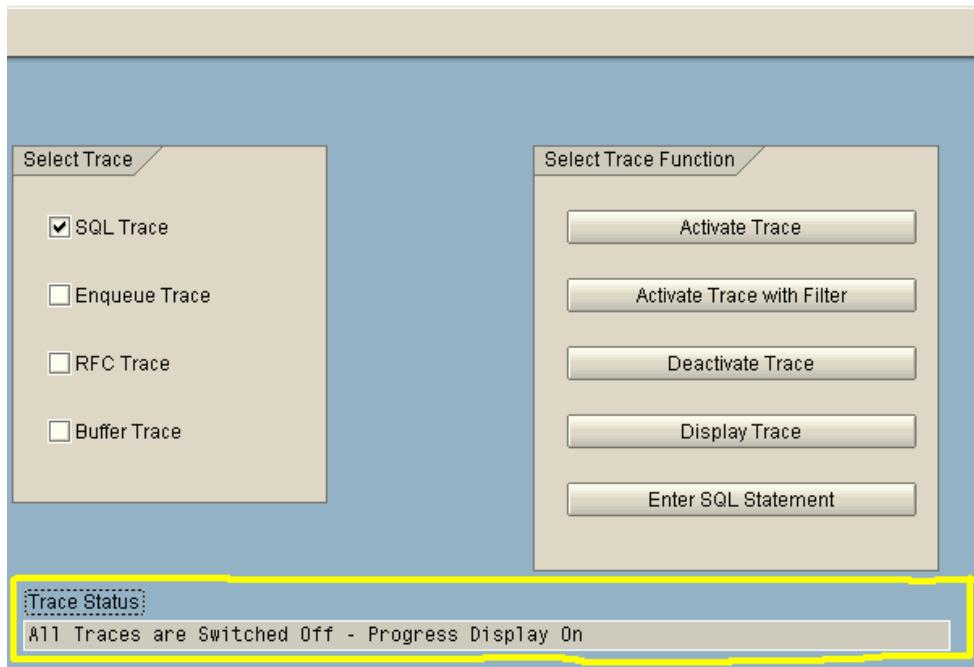
Backup Logs: Overview for Database PRD



Check for Traces

To check the traces, go to ST05. Copy and paste the selected part as shown below

Performance Analysis



Check for Long Running Jobs:

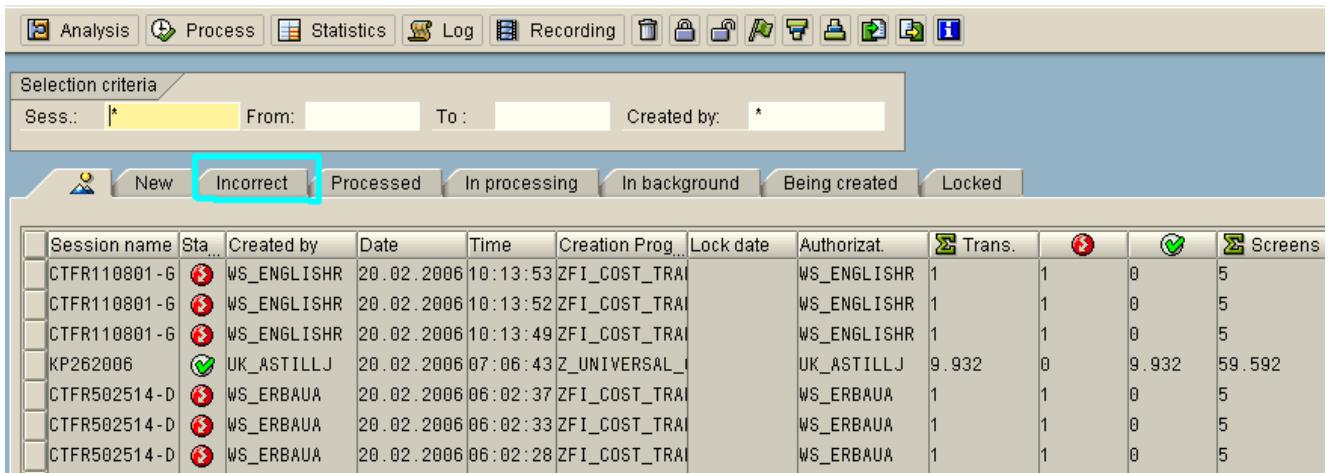
To check for long running jobs, SM66 Transaction code is used. Go To SM66
If there is any job which is running for than 3000 ms, Copy and paste it in SM66.
Also if there is any job running more than 50,000ms in Dialog and job running more than
1, 00,000 ms in Background must be escalated to the client through mail.
Below is the screen shot.

Global Work Process Overview												
		CPU	Debugging	Long <-> short names	Select process	Settings						
Sort: Server												
Server	No	Typ	PID	Status	Reason	Se	Start	Err	CPU	Time	Cli	User
chisap00_WS3_00	4	DIA	3292	running		Yes			11	450	WF-BATCH	
ws00sap3_WS3_00	0	DIA	5304	running		Yes			37401	450	CM_JIANGA	SAPLCJDB

Check for Batch Input Errors:

To check for Batch input Errors, SM35 Transaction Code is used. Run SM35.
Then click on INCORRECT as shown below

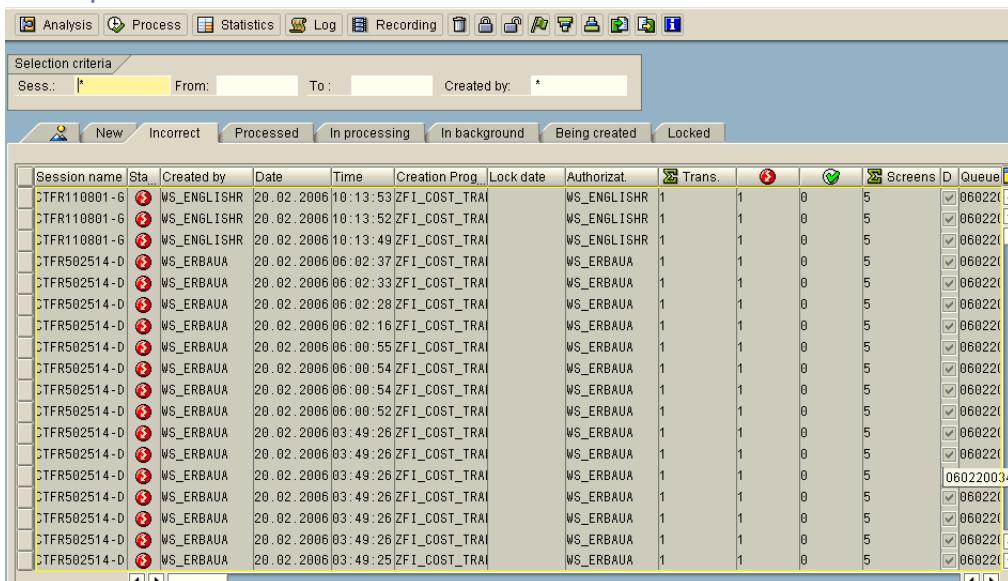
Batch Input: Session Overview



After clicking Incorrect Option, if found Batch Input Errors of that particular date

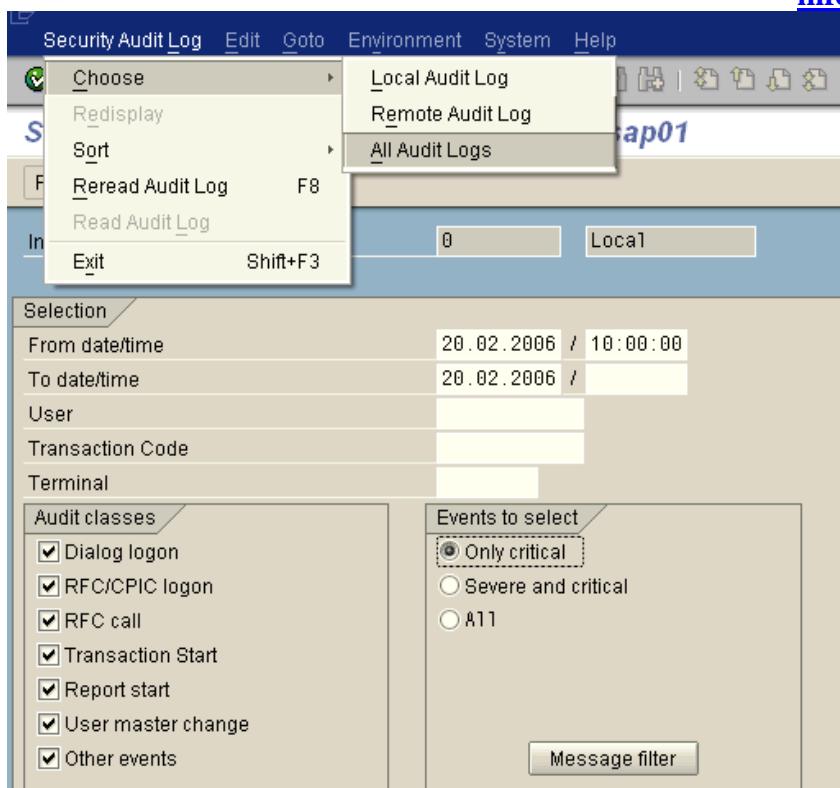
Copy and paste it in SM35.If the errors are more than 20 , mark it RED

Batch Input: Session Overview

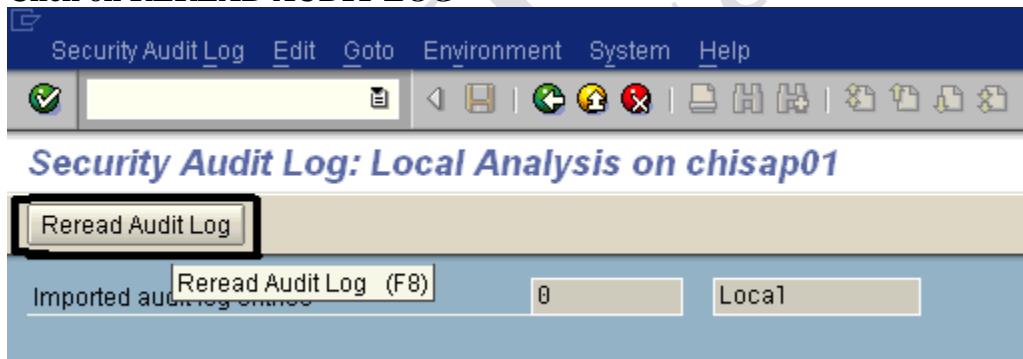


Check for Security Audit Logs:

To check Security Audit Logs, Use SM20 Transaction Code. Run SM20 And select as shown below



Click on REREAD AUDIT LOG



Copy and Paste the User Locked and Users created information, As shown below

Security Audit Log: Remote Analysis for All Instances

Time	Inst.	Cat	No	C1.	User	Transaction Code	Terminal	MNo	Text	Date:
09:11:27	ws00sap2_WS3_00	DIA	02	450	IGASUPPORT	SESSION_MANAGER	iga02076	AU2	Logon Failed (Reason = 1, Type = A)	20.
09:28:48	ws00sap2_WS3_00	DIA	00	450	WS_PANIKKART	SESSION_MANAGER	MINWSW-NXP0469	AU2	Logon Failed (Reason = 1, Type = A)	
09:29:53	chisap00_WS3_00	DIA	01	450	WS_WIDMERE	SESSION_MANAGER	LDNWSW-DXP19P9	AU2	Logon Failed (Reason = 1, Type = A)	
09:46:36	ws00sap3_WS3_00	DIA	01	450	GH_MCBRIDE	SESSION_MANAGER	LDNGOH-DXP19P9	AU2	Logon Failed (Reason = 1, Type = A)	
09:46:56	ws00sap3_WS3_00	DIA	01	450	GH_KINGN	SESSION_MANAGER	LDNGOH-DXP19P9	AU2	Logon Failed (Reason = 1, Type = A)	
09:47:08	ws00sap3_WS3_00	DIA	01	450	GH_MCBRIDE	SESSION_MANAGER	LDNGOH-DXP19P9	AU2	Logon Failed (Reason = 1, Type = A)	
09:47:37	ws00sap3_WS3_00	DIA	01	450	GH_MCBRIDE	SESSION_MANAGER	LDNGOH-DXP19P9	AU2	Logon Failed (Reason = 1, Type = A)	
09:47:46	ws00sap3_WS3_00	DIA	01	450	GH_MCBRIDE	SESSION_MANAGER	LDNGOH-DXP19P9	AUM	User GH_MCBRIDE Locked in Client After Erroneous Password Checks	
09:47:46	ws00sap3_WS3_00	DIA	01	450	GH_MCBRIDE	SESSION_MANAGER	LDNGOH-DXP19P9	AU2	Logon Failed (Reason = 3, Type = A)	
09:48:20	chisap00_WS3_00	DIA	01	450	GH_MCBRIDE	SESSION_MANAGER	LDNGOH-DXP19P9	AU2	Logon Failed (Reason = 2, Type = A)	
09:51:56	chisap00_WS3_00	DIA	02	450	UK_ASTILLJ	SESSION_MANAGER	LDNGIW0617	AU2	Logon Failed (Reason = 1, Type = A)	
09:53:36	ws00sap2_WS3_00	DIA	00	450	WS_POCHEBA	SESSION_MANAGER	PARWSW-LXPFBQJ	AU2	Logon Failed (Reason = 1, Type = A)	
10:21:54	ws00sap3_WS3_00	DIA	01	450	WS_DIGRADEOK	SESSION_MANAGER	MINWSW-NXP0944	AU2	Logon Failed (Reason = 1, Type = A)	
10:23:36	ws00sap3_WS3_00	DIA	02	450	WS_ALVAREM	SESSION_MANAGER	MADWSW-DXP0YYB	AU2	Logon Failed (Reason = 1, Type = A)	
10:23:51	ws00sap3_WS3_00	DIA	02	450	WS_ALVAREM	SESSION_MANAGER	MADWSW-DXP0YYB	AU2	Logon Failed (Reason = 1, Type = A)	
10:29:01	ws00sap3_WS3_00	DIA	01	450	WS_ALVAREM	SESSION_MANAGER	MADWSW-DXP0YYB	AUM	User WS_ALVAREM Locked in Client After Erroneous Password Checks	
10:29:01	ws00sap3_WS3_00	DIA	01	450	WS_ALVAREM	SESSION_MANAGER	MADWSW-DXP0YYB	AU2	Logon Failed (Reason = 3, Type = A)	
10:29:01	ws00sap3_WS3_00	DIA	01	450	WS_ALVAREM	SESSION_MANAGER	MADWSW-DXP0YYB	AU2	Logon Failed (Reason = 3, Type = A)	

Check for Scot Errors:-

Run SCOT transaction code for Scot Errors. Copy and paste the selected as shown below. If the Scot errors are more than 10 escalate to the client through mail

SAPconnect: Administration (system status)							
	Completed	Error	In transit		Duration In transit	Duration Waiting	Duration In transit
			Waiting	In transit			
WS3(450)	143	0	0	2	0	0:00	0:00
FAX Telefax	0	0	0	0	0:00	0:00	0:00
INT	143	0	0	2	0:00	0:00	0:00
SMAIL	0	0	0	0	0:00	0:00	0:00
SMTP	143	0	0	0	0:00	0:00	0:00
X40 X.400	0	0	0	0	0:00	0:00	0:00
RML R/Mail or	0	0	0	0	0:00	0:00	0:00
PAG	0	0	0	0	0:00	0:00	0:00
PRT	0	0	0	0	0:00	0:00	0:00

Check for OS -Logs :

To check for OS logs , ST06 Transaction Code is used.

RUN ST06, copy and paste the selected part as shown below

Local (chisap01) / Operating System Monitor: Windows NT

Mon Feb 20 12:30:49 2006 interval 10 sec.			
CPU			
Utilization	user %	0	Count
	system %	0	CPU utilization 1 min 0,05
	idle %	99	5 min 0,01
	io wait %	0	15 min 0,01
System calls/s		1.889	Context switches/s 871
Interrupts/s		137	
Memory			
Physical mem avail Kb	8.378.752	Physical mem free Kb	1.560.312
Pages in/s	0	Kb paged in/s	0
Pages out/s	84	Kb paged out/s	672
Swap			
Commit charge limit Kb	40.266.768	Maximum swap-space Kb	33.685.504
Commit charge free Kb	27.682.896	Actual swap-space Kb	33.685.504
Disk with highest response time			
Name	0	Response time ms	0
Utilization	1	Queue	0
Avg wait time ms	0	Avg service time ms	0
Kb transferred/s	702	Operations/s	13
Lan (sum)			
Packets in/s	91	Errors in/s	0
Packets out/s	79	Errors out/s	0

Then click on DETAILED ANALYSIS MENU

Local (chisap01) / Operating System Monitor: Windows NT			
Refresh display Detail analysis menu Operating System collector			
Mon Feb 20 12:30:49 2006 in	Detail analysis menu (Shift+F1)		
CPU			

After the above step , click on OS LOGS

Local (chisap01) / Operating System Monitor: Windows NT

Operating System collector

Analyze operating system

Snapshot analysis

CPU	Memory	Swap	Disk	LAN
FileSys	Top CPU	Monitored Processes		

Previous hours

CPU	Memory	Swap	Disk	LAN
FileSys	OS Log	HW Info		

In OS Logs, if there are logs related to DISK, SRV, EVENT LOGS, copy and paste it in ST11 .

Operating System Log

Contents of Operating-System Log

NT Eventlog extract
 Report generated at 12:39:08 20.02.2006

Event:38324

```
Source:EventLog          Type=INFORMATION from CHISAP01
Time:12:00:05 20.02.2006  Event ID=6013      Category:0
Event Message Text:
The system uptime is 181660 seconds.
```

Event:38323

```
Source:Service Control Manager      Type=INFORMATION from CHISAP01
Time:11:47:19 20.02.2006  Event ID=7036      Category:0
Event Message Text:
<couldn't retrieve event message text>
parameters:
WMI Performance Adapter
stopped
```

Check for Sap Buffers:

To check SAP Buffers, ST02 Transaction code is used.

Go to SM51, Double click on Central instance and run STO2. Copy and

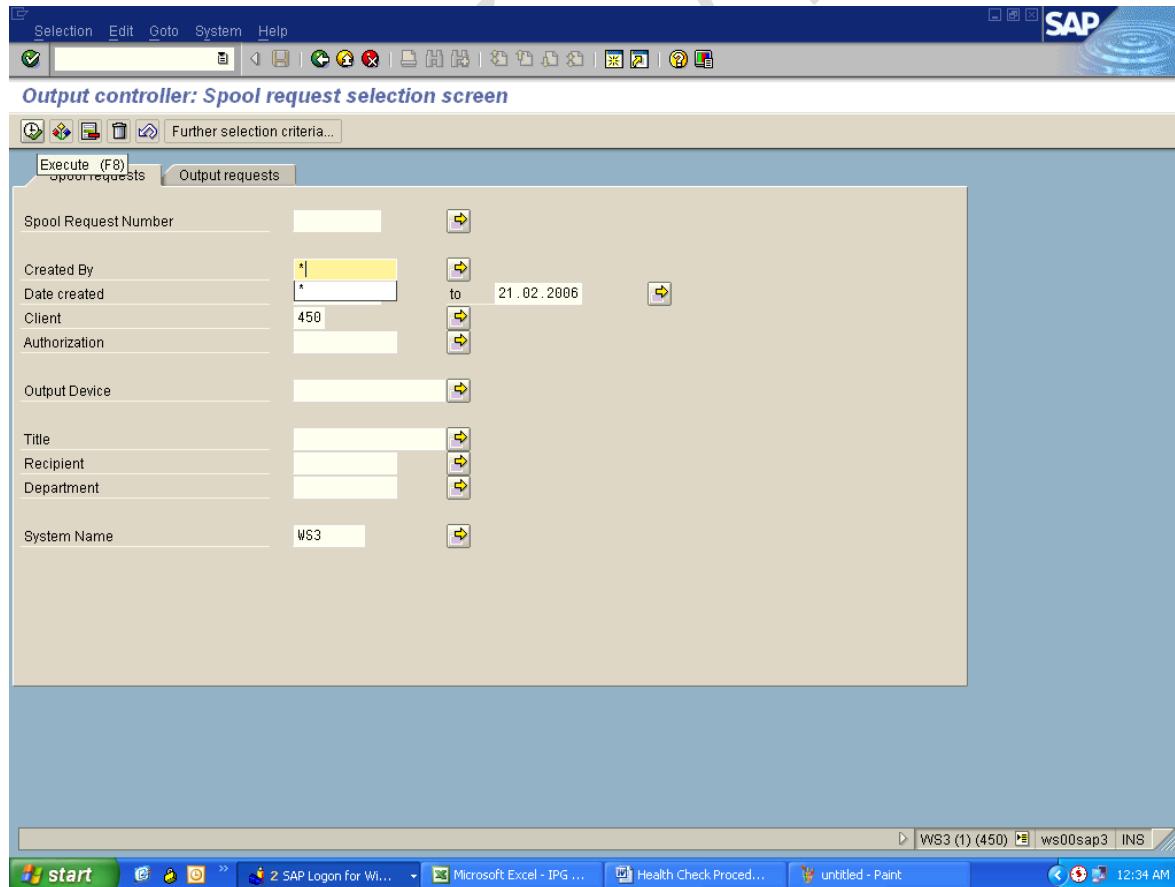
Paste all the values which in RED Color. The same procedure is performed
 For all the Application servers. Below is the screen shot

Buffer		Hitratio [%]	Allocated [kB]	Free space [kB]	Dir. size Entries	Free directory Entries	Swaps	Database accesses
Nametab (NTAB)								
Table definition	99,37	18.987	13.959	81,59	60.000	48.953	81,59	0
Field description	99,57	72.578	6.018	8,60	60.000	49.386	82,31	0
Short NTAB	99,82	3.996	2.850	95,00	15.000	14.438	96,25	0
Initial records	98,94	7.996	2.324	33,20	15.000	5.875	39,17	0
Program								
CUA	99,58	550.000	1.644	0,31	137.500	123.493	89,81	6.479
Screen	99,60	20.000	7.797	46,64	10.000	9.120	91,20	0
Calendar	99,41	35.645	13.082	37,12	4.000	2.772	69,30	0
OTR	100,00	488	313	67,46	300	138	43,33	0
	100,00	4.096	3.438	100,00	2.000	2.000	100,00	0
Tables								
Generic key	99,70	117.188	10.809	10,19	40.000	13.207	33,02	68
Single record	92,79	45.000	13.418	30,20	2.000	1.833	91,65	0
Export/import								
Exp./Imp. SHM	84,89	75.000	40.986	66,24	40.000	33.657	84,14	0
	89,13	4.096	3.335	97,00	2.000	1.999	99,95	0
SAP memory								
	Current use [%]	Current use [kB]	Max. use [kB]	In memory [kB]	On disk [kB]			
Roll area	1,53	4.012	17.472	131.072	131.072			
Paging area	3,95	10.361	67.464	128.000	134.144			
Extended Memory	20,13	421.888	1.627.136	2.096.128				
Heap Memory		0	0					

Check for Spool Errors:

To check for Spool errors, SP01 Transaction code is used.

Run SP01 .Below is the screen shot

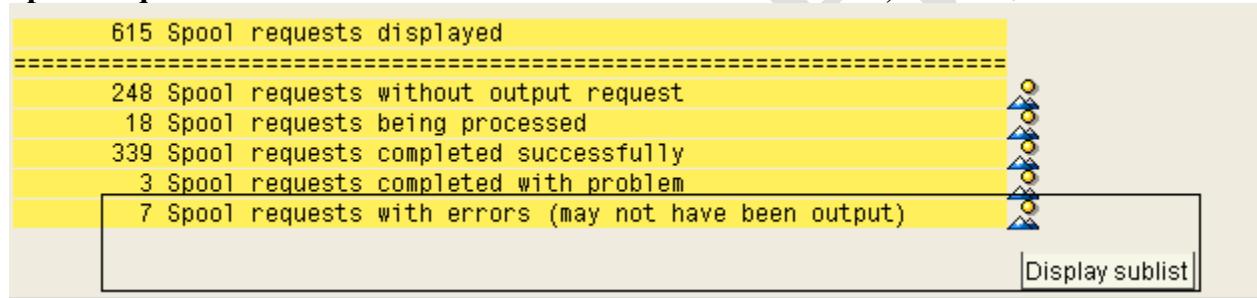


The screenshot shows the SAP SP01 transaction screen. The interface is in English. The main title is "Output controller: Spool request selection screen". At the top, there are buttons for Selection, Edit, Goto, System, Help, and SAP logo. Below the title, there are several input fields and dropdown menus for selecting spool requests. The "Execute (F8)" button is highlighted in yellow. The system name is set to WS3. The bottom status bar shows the system name WS3 (1) (450), the session ws00sap3, and the time 12:34 AM.

After executing, below screen will be displayed. Press Ctrl+Pagedown or Click on the option which shown below



Once you click on last page option, below screen will be displayed .In this the Spool Requests with errors should be selected .As selected below,



After clicking on the above option, below screen will be displayed. Copy and paste the spool errors in SP01 .If there are more than 50 spool errors, then they have to be deleted.

Check for Database Locks:

To check for Database locks, DB01 Transaction code is used. Run DB01, If there are any DB Locks or Lock waits, it displays the list in the page .Copy and pastes it in DB01.

Frequently Used UNIX Commands in SAP

What are the frequently used UNIX commands in SAP?

Top fundamental commands which are commonly used in Unix OS.

1. stopsap/startsap for stopping/starting SAP+ DB, stopsap r3/startsap r3 for stopping/starting R3
2. cdpro for checking the profiles path SAPMNT/<SID>/profile
3. cdexe for checlng the kernel folder

4. find <filename> for checking the file in the present directory
 5. dpmon pf= <Instance profile path>, jcmon pf=<instance profile path>
 6. df -k, bdf for checking all file system usages; df -k ., bdf <directory name> For individual file usages
 7. ls -lrt for listing of files according to the date modified
 8. du -a | sort -k 1n,1 for sorting the files in a recursive manner.
 9. rm < file> for removing file, gzip <file> for zipping the file.
-

1. VI and Gedit is an Editor, just like to write any programme save it and go to command and compile through through GCC -o .cpp
 2. Ps -ef is to check the how many running process and Kill any running process
 3. tar -xvf file name to run the zip folder of file content
 4. mv <present file location> <fresh location> move from one path to another
 5. cp copy from one location to another
 6. pwd check the current directory
-

Check these commands.

su <user ID> to change OS users.

stopsap all -> make sure that the R/3 Instance and Oracle Database stopped

startsap all -> make sure that the R/3 Instance and Oracle Database started

If the Oracle Database is not started, tried using SAPDBA

sapdba

Options a - Startup / Shutdown Database instance

\$ ps -ef | grep dw For checking work process are running or not.

\$ ps -ef | grep ora For checking oracle services are running or not.

Common Basis Transaction Codes

Administration

AL11	: Display SAP Directories
BD54	:Maintain Logical Systems
OSS1	: Logon to Online Service System
SALE	:IMG Application Link Enabling
SARA	:Archive Management
SCC3	:Copy Analysis Log
SCC4	:Client Administration
SCC5	:Client Delete
SCC7	:Client Import Post-Processing
SCC8	:Client Export
SCC9	:Remote client copy
SCCL	:Local Client Copy
SCU0	:Customizing Cross-System Viewer

SICK	:Installation Check
SM01	:Lock Transactions
SM02	:System Messages
SM04	:User Overview
SM12	:Display and Delete Locks
SM13	:Display Update Records
SM14	:Update Program Administration
SM21	:System Log
SM35	:Batch Input Monitoring
SM50	:Work Process Overview
SM51	:List of SAP Servers
SM56	:Number Range Buffer
SM58	:Asynchronous RFC Error Log
SM59	:RFC Destinations (Display/Maintain)
SM66	:System Wide Work Process Overview
SAINT	:SAP Add-on Installation Tool
SPAM	:SAP Patch Manager (SPAM)
SPAU	:Display modified DE objects
SPDD	:Display modified DDIC objects
ST11	:Display Developer Traces
ST22	:ABAP/4 Runtime Error Analysis
SU56	:Analyze User Buffer



Alert Monitoring

AL01	:SAP Alert Monitor
AL02	:Database alert monitor
AL04	:Monitor call distribution
AL05	:Monitor current workload
AL16	:Local Alert Monitor for Operat.Syst.
AL18	:Local File System Monitor
RZ20	:CCMS Monitoring

Configuration

FILE	:Cross-Client File Names/Paths
RZ04	:Maintain Operation Modes and Instances
RZ10	:Maintenance of Profile Parameters
RZ11	:Profile parameter maintenance
SE93	:Maintain Transaction Codes
SM63	:Display/Maintain Operating Mode Sets
SPRO	:Customizing: Initial Screen
SWU3	:Consistency check: Customizing

Database Administration

DB01	:Analyze exclusive lockwaits
DB02	:Analyze tables and indexes

DB12	:DB Backup Monitor
DB13	:DBA Planning Calendar
DB15	:Data Archiving: Database Tables

Jobs

SM36	:Define Background Job
SM37	:Background Job Overview
SM39	:Job Analysis
SM49	:Execute External OS commands
SM62	:Maintain Events
SM64	:Release of an Event
SM65	:Background Processing Analysis Tool
SM69	:maintain External OS Commands

Monitoring

AL08	:Current Active Users
OS01	: LAN check with ping
RZ01	:Job Scheduling Monitor
RZ03	:Presentation, Control SAP Instances
ST01	:System Trace
ST02	:Setups/Tune Buffers
ST04	:Select DB activities
ST05	:Performance trace
ST06	:Operating System Monitor
ST10	:Table call statistics
ST03	:Performance, SAP Statistics, Workload
ST07	:Application monitor
STAT	:Local transaction statistics
STUN	:Performance Monitoring (not available in R/3 4.6x)

Spool

SP01	:Output Controller
SP11	:TemSe directory
SP12	:TemSe Administration
SPAD	:Spool Administration

Transports

SCC1	:Client Copy - Special Selections
SE01	:Transport Organizer
SE06	:Set Up Workbench Organizer
SE07	:CTS Status Display
SE09	:Workbench Organizer
SE10	:Customizing Organizer
SE11	:ABAP/4 Dictionary Maintenance
SE16	:Data Browser
SE80	:Repository Browser
SM30	:Call View Maintenance

KEYLABS

User Administration

PFCG	: Profile Generator (Activity Group Maintenance)
PFUD	:User Master Data Reconciliation
SU01	:User Maintenance
SU01d	:User Display
SU02	:Maintain Authorization Profiles
SU03	: Maintain Authorizations
SU05	:Maintain Internet users
SU10	:User Mass Maintenance
SMLG	:Maintain Logon Group
SUPC	:Profiles for activity groups
SUIM	:Info system Authorizations

Other Transactions

AL22	:Dependent objects display
BAOV	:Add-On Version Information
SA38	:ABAP reporting
SE38	:ABAP Editor
HIER	:Internal Application Component Hierarchy Maintenance
ICON	:Display Icons
WEDI	:IDoc and EDI Basis
WE02	: IDoc display
WE07	: IDoc statistics
WE20	:Partner profiles
WE21	:Port definition
WE46	:IDoc administration
WE47	:Status Maintenance
\$TAB	:Refreshes the table buffers
\$SYNC	:Refreshes all buffers, except the program buffer

SAP BASIS STANDARD REPORTS

BASIS

RSCOLL00	Performance Collector
RSBPCOLL	Collect Values for statistics
RSSNAPDL	Delete ABAP Dumps
RSTRFCER	Delete EXEC LUWs
	Delete old jobs
RSBPSTDE	Delete old job statistics
RSBTCPRIDEL	Reorganization of Print Parameters for Background Jobs
RSPO1041	Delete old Spool Files
Delete XMI	-LOG Files
RSPO1043	Spool Data-Consistency check in Background (SP12)
	Delete Central User Administration
RSBDCREO	Delete Old Batch input Files
SAPconnect:	Start Send Process Fax/Email
RSTBPDEL	Delete Entries in DBTABLOG
RSARFCER	Deletes entries in arfcstate and arfcdata for RFCs (ARFC)
RSTRFCES	Deletes tRFC and qRFC entries (arfcstate, trfcqout)
RSTS0024	Deletes joblogheaders 4m TST01 that are older than jobs in
TBCO	
SBAL_DELETE	deletes application logs (balhdr)
RBDCPCLR	Deletes Obsolete change pointers
RSARFCEX	Retries entries in sm58 that may have failed due to temp conn errors
RSARFCDL	Cleans up log file for sm58 transfers
RSN3_STAT_COLLECTOR-	Non R/3 Stat collector
RSAL_BATCH_TOOL_DISPATCHING	- Job for monitoring
RSN3_AGGR_REORG	Program for Starting the Reorganization Function

DATABASE

View v\$tables	
RSORADJV	Select DBA tables
RSANAORA	Analyze table stats

TMS (Transport Management System)

RDDNEWPP	Schedule DDIC Jobs
RSTMSTIQ	Adjust Queue
TMS_BCI_START_SERVICE	- Automatic import

AS Java Stack most common LOG Files

This blog describes the most commonly looked log and trace files paths and their purpose. I felt it will be handy for Basis Engineers in administering and troubleshooting Java Stack based systems especially for beginners.

This Blog was created to provide comprehensive overview of Java log, trace files paths and their purpose. However this blog cannot cover all potential items as part of AS Java troubleshooting related information. At glance, this blog covers instance, server node, startup framework, bootstrap and etc., logs, trace files.

This is being my first blog appreciate if any suggestion to improve.

Instancelogfiles

Contents... Information about the J2EE instance startup, including parameters such as the startup profile used, the system ID (SID), the instance name, and the startup command used.

Use to analyze... Problems with the startup of the entire J2EE instance. For example, the central and dialog J2EE instances are running on different physical servers and the startup profile is stored on the central J2EE instance. If a J2EE dialog instance cannot access the startup profile on the central J2EE instance due to access restrictions, it would report the permission problem in this log.

Location The log files of may be located under the following folders depending on the type of the instance:

- /usr/sap/<SID>/JC<XX>/work for Java Central instance
- /usr/sap/<SID>/J<XX>/work for Java Central or Dialog instance
- /usr/sap/<SID>/DVEBMGS<XX>/work - for ABAP/Double Stack Central instance
- /usr/sap/<SID>/D<XX>/work - for ABAP/Double Stack Dialog instance

Log files the following log files can be distinguished:

- Files starting with std_ : Log files from the standard output of the processes. In this file you may find the output produced by System.out
- Files starting with jvm_ : The file may contain JVM error messages.
- Files starting with dev_ : The file may contain information about the exit code of the processes.
- stderr2 : Redirect out/err before start of framework
- dev_jstart: Developer trace of the JStart controller

Processes and log files SAPStart service

Content... JStart and all its child processes have different log, trace files and all these files are located in work directory of java instance.

Use to analyze... Contains information about startup process. You can check these files in case of errors and undesired behavior during the startup process.

Location: The logs can be found in these locations:

- /usr/sap/<SID>/JC<XX>/work for Java Central instance
- /usr/sap/<SID>/J<XX>/work for Java Central or Dialog instance
- /usr/sap/<SID>/DVEBMGS<XX>/work - for ABAP/Double Stack Central instance
- /usr/sap/<SID>/D<XX>/work - for ABAP/Double Stack Dialog instance

Log files

sapstart.env: Environmental data

sapstart.log: Log messages from the startup process

sapstart.old: Backup log file from the previous startup

sapstartsrv.log: General logs

Startup framework

Location: The logs can be found in these locations:

- /usr/sap/<SID>/JC<XX>/work for Java Central instance (deprecated)
- /usr/sap/<SID>/J<XX>/work for Java Central or Dialog instance
- /usr/sap/<SID>/DVEBMGS<XX>/work - for ABAP/Double Stack Central instance
- /usr/sap/<SID>/D<XX>/work - for ABAP/Double Stack Dialog instance

Log files

dej_jstart: Log messages containing JStart flow information

dev_jstart.0, dev_jstart.1: Backup log files from the previous startups

dev_*: Log files containing information about the startup of different processes

Example: dev_server0 is log file containing startup flow information about the first server node.

dev_.0, dev_.1: Old startup flow log files for different processes

Bootstrap

Content... Information about files that are synchronized at startup., including the J2EE component JAR files containing the J2EE libraries, services, and applications, and the J2EE component property files. In addition to it, java startup and control framework creates separate log files for each J2EE dispatcher and J2EE server process.

Use to analyze... Problems with bootstrap functionality that results in conditions such as unsynchronized J2EE configuration modifications or outdated java libraries.

Location: The logs can be found in the locations:

- /usr/sap/<SID>/JC<XX>/work for Java Central instance (deprecated)
- /usr/sap/<SID>/J<XX>/work for Java Central or Dialog instance
- /usr/sap/<SID>/DVEBMGS<XX>/work - for ABAP/Double Stack Central instance
- /usr/sap/<SID>/D<XX>/work - for ABAP/Double Stack Dialog instance

Log files

dev_bootstrap: Contains Startup Framework flow entries
dev_bootstrap.0, dev_bootstrap.1: Old files containing Startup Framework flow entries from previous starts
log_bootstrap.log*: Rotating log files of the bootstrap process
std_bootstrap.out: The files contain the redirected output of Java's System.out
std_bootstrap.ou0, std_bootstrap.ou1: Backup logs from previous executions of the bootstrap
jvm_bootstrap.out: The file contains the redirected output of the JVM
jvm_bootstrap.ou0, jvm_bootstrap.ou1: Backup logs from previous executions of the bootstrap

Server

Contents...Information about a particular J2EE server process startup and shutdown. This file contains a list of loaded J2EE of loaded J2EE managers (LogManager, PoolManager, etc.), services and applications. If problem occurs, this log contains a description and reason, the GC statistics, and a J2EE server process thread dump.

Use to analyze...Problems with the startup of a particular J2EE manager or service.

Location: The logs of the Startup Framework and the System.out output can be found in the locations:

The logs of the Startup Framework and the System.out output can be found in these locations:

- /usr/sap/<SID>/JC<XX>/work for Java Central instance
- /usr/sap/<SID>/J<XX>/work for Java Central or Dialog instance
- /usr/sap/<SID>/DVEBMGS<XX>/work - for ABAP/Double Stack Central instance
- /usr/sap/<SID>/D<XX>/work - for ABAP/Double Stack Dialog instance

The logs of the server node are located here:

/usr/sap/<SID>/JC<XX>/j2ee/cluster/server<X>/log - for Java Central instance
/usr/sap/<SID>/J<XX>/j2ee/cluster/server<X>/log for Java Central and Dialog instances
/usr/sap/<SID>/DVEBMGS<XX>/j2ee/cluster/server<X>/log – for Double Stack Central instance
/usr/sap/<SID>/D<XX>/j2ee/cluster/server<X>/log - for Double Stack Dialog instance

Log files

defaultTrace_.trc*: Traces from the server processes, intended for developer's (and

debug) use.

server_.log*: Located in log-server folder. Targeted to system administrators. The file contains entries for serious problems

dev_server.out*: Startup Framework flow logs from the server node startup

dev_server.0, dev_server*.1*: Old startup flow log files for different processes

std_server.out*: System.out output of the server processes

std_server.out0, std_server*.ou1*: Backup logs from previous executions of the server node

jvm_server.out*: The file contains the redirected output of the JVM

jvm_server.ou0, jvm_server*.ou1*: Backup logs from previous executions of the processes

Important periodic jobs

Certain jobs must run periodically in a SAP System production - for example, deleting obsolete jobs or spool objects. If these periodic jobs do not run, system performance may gradually deteriorate. Unfortunately, there is currently no easy-to-use support for such jobs in Basis Customizing. Therefore, the jobs must be scheduled manually. For more information, see SAP Note 16083.

The general procedure is to create a variant of each of the reports mentioned in this list and create a job (e.g. with the name listed here) that contains this report as a job step.

Report	Frequency	Recomm. Notes	Jobname, add.	Short Description
RSBTCDEL	Daily	SAP_REORG_JOBS, RSBTCDEL2 w/ SAP Note 525933		Report RSBTCDEL deletes entries from tables BTC* that contain background job administration data.
RSPO1043	Daily	SAP_REORG_TSP, SAP Note 98065		Report RSPO1043 deletes inconsistent objects in spool tables TSP* that contain spool job admin data
RSBDCREO	Daily	SAP_REORG_BATCHINPUT		Report RSBDCREO deletes entries from BDC* and APQ* tables that contain Batch Input administration data.

Report	Frequency	Recomm. Jobname, add. Notes	Short Description
RSBPSTDE	Monthly	SAP_REORG_JOBSTATISTIC	Report RSBPSTDE deletes entries from tables BTCJSTAT, and deletes by this statistics for background job runtimes.
RSCOLL00	Hourly	SAP_COLLECTOR_FOR_PERFMONITOR, SAP Note 12103	Report RSCOLL00 collects various statistical data for performance monitoring
RSSNAPDL	Daily	SAP_REORG_SNAP	Report RSSNAPDL gradually deletes old short dumps that are not marked for retention from the SNAP table.
RSBPCOLL	Daily	SAP_COLLECTOR_FOR_JOBSTATISTIC	Report RSBPCOLL collects runtime statistics of background jobs which are used e.g. for an SAP Going Live check.
RSBTCPRIDEL	Monthly	SAP_REORG_PRN, SAP Note 307970	Report RSBTCPRIDEL reorganizes print parameters for background jobs that before 4.6A had been deleted by RSBTCDEL
RSAL_BATCH_TOOL_DISPATCHING	Hourly	SAP_REORG_TOOL_DISP	Report RSAL_BATCH_TOOL_DISPATCHING is necessary to start method dispatching for SAP system monitoring in the background
RSXMILOGREORG	Weekly	SAP_REORG_XMI, SAP Note 182963	Report RSXMILOGREORG reorganizes the table TXMilograw which contains log info on the XMI interface.

Report	Frequency	Recomm. Notes	Jobname, add.	Short Description
RSTS0024	Weekly	SAP_REORG_JOB2, Note 666290	SAP	Report RSTS0024 deletes job logs that no longer belong to any job and orphaned jobs after run of RSBTCDEL.

Copyrights © 2011 by Keylabs Training Center

All rights received. No part of this book may be reproduced or utilized in any form or by any means, BASIS or Database, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publishers.

Thank you from keylabstraining.com

CONTACT US

HYDERABAD LOCATION

KEYLABS TRAINING
H.NO:6-3-1090/A
CAMUS CAPRI APARTMENTS
RAJ BAVAN ROAD
LAND MARKS:KATHRIYA HOTEL LANE
SOMAJIGUDA
HYDERABAD-500082
CONTACT US -  +91-9550645679 

BANGALORE LOCATION 1

KEYLABS TRAINING
#1,3RD MAIN,
BASAVA NAGAR,
OPP TO BASAVA NAGAR BUS STOP,
BANGALORE-560037

CONTACT US- +91-8861770545

BANGALORE LOCATION 2

KEYLABS TRAINING
PLOT NO:101,
124, A CROSS,
NANJAREDDY COLONY,
MURUGESHPALYA,
BANGALORE-17