

A. Roadmap "Start/Stop-Problems"

At first analyze the startsap-log-/stopsap-log-file
as user <SIDADM>

→ AP04

Startup problems for the Database ?

- DB-startup-script failed → DB09,DB01,AP14
- is it a general database-problem ? → DB02,DB03,DB04,OS01
- permission-problem ? → DB10,DB22,DB40,DB60, OS06,OS07

Startup problems for the R/3-System ?

- general ask → AP31
- general startup-problems → AP04,NW04,NW09, OS06,OS07
- Instance-problems → AP05,AP13
- instance-profile-problems → AP06
- shared memory-problems → AP06,AP07
- operating-system-problems → OS01,OS02,OS03,OS06
- startsap failed after backup → GP01,DB08,DB09
- startsap failed after machine-breakdown → DB03,DB09
- db-connect fails → AP13,DB06
- Workprocesses died → AP01,AP02,AP05
- additional informations → AP16,AP17

Startup problems for R/3-Application-server ?

- general ask → AP31,Os06
- is the central-system running ? → AP43
- is the database dependent service running → NW07
- cannot connect to central-system-host → NW01
- cannot connect to the database-host → DB06,DB20
- is the services-file correctly maintained → NW03,NW06,Os06
- check the other R/3-startup-problems described above

Shutdown problems for the Database and/or the R/3-System ?

- Cannot stop the database ? → DB03,DB04,OS01,DB23
- Cannot stop the R/3-System ? → OS01,AP23
- Check the dispatcher-process-id (UNIX only) → AP23
- Check the DB activity. Which DB-Mode ? → DB15

B. Roadmap "Runtime-Problems"

At first look at the R/3-System-Log

→ AP08

Database-Problems ?

- general database-problem ? → DB02,DB03,DB06
- space-problem ? → DB04,DB05,OS01,OS05
- check the database-activity → DB02,DB21,DB41,DB61
- a part of the data can't be read → DB24

R/3-Problems ?

- general Problems → AP08,AP11,AP12,AP20
- posting-problems → AP09,AP08,AP10,AP11
- Shortdumps → AP10,AP08
- dieing work-processes → AP01,AP05,AP15
- work-process hangs or loops → AP15,AP19,AP40
- time-limit exeeded → PF03
- no WpBlock received → AP32
- general spool-problem → AP05,AP11,AP19
- printing isn't functional → AP35,AP36,AP37,AP40
- Workbench-Organizer-problem → AP22,AP41
- background-processing-problem → AP38,AP40,AP05,AP11, AP19
- batchinput-problem → AP42
- buffer-synchronization isn't functional → AP21
- problems with the R/3-lock-handler → AP39,AP40,AP11,AP18
- additional actions for troubleshooting → AP16,AP17,AP19
- no work in R/3 possible → DB04,OS01,NW01,NW13

Operating-System-problems ?

- is the system-configuration ok ? → OS02,OS03
- are the OS-disks, -files and directories ok ? → OS01,OS05
- disk-crash
- swap

Network-Problems ?

- general action → NW01,NW17
- connection from frontend to R/3 fails → NW01,NW03,NW05,NW11
NW12,NW14,NW16,NW13
- connection from appli-server to R/3 fails → NW01,NW15
- sapgui sometimes hang → NW15,NW16
- remote-connection to SAP fails (OSS) →
- saprouter-problems →

Common System-problems?

- databackup breakdown or uncomplete → BA01,BA02

C. Roadmap "Performance-Problems"

At first look at the R/3-systemlog and then
analyze by the CCMS-Monitoring-Tools

→ AP08

general performance-problems ?

general ask	→	AP31
general bad performance	→	AP08,PF01,PF12,PF19
general actions	→	NW02,PF08,PF02,PF06
Time-outs	→	AP08,PF03
missing indexes in R/3	→	PF04
Op-System-problems	→	OS04,PF07
network	→	NW05,NW10
processes in status PRIV (SM50)	→	AP24
instance-problem	→	AP24,AP06,AP25
top cpu-processes	→	PF14
R/3-buffer-quality	→	PF02
number work-processes	→	PF15,PF16
spooling and printing slow	→	AP19,AP33,AP34,AP35

long time-using transactions ?

general actions	→	AP08,AP30,PF13,PF18
bad program-performance	→	AP27,AP28,PF20
bad performance at matchcodes	→	PF10,PF11
trace the poor function	→	PF20

poor database-performance ?

general actions	→	PF05,DB01
database-locks	→	DB07
full table-scans	→	PF20
bad database-file-distribution	→	DB11
reorganization	→	DB12
missing indexes on the database	→	PF04
update statistics	→	DB13
wait situations	→	DB14

Check the Application

- AP01** Are the R/3-work-processes at the OS-area running ?
Win-NT: by process-viewer NT-Resource-Kit or Win-NT-Performance-Monitor
UNIX: `ps -ef | grep`
(e.g. "`ps -ef | grep dw.sap`" at UNIX)
- AP02** Is the message-server-process at the OS-area running ?
Win-NT: by process-viewer NT-Resource-Kit or Win-NT-Performance-Monitor
UNIX: `ps -ef | grep`
(e.g. "`ps -ef | grep ms.sap`" at UNIX)
- AP03** Is the gateway-process at the OS-area running ?
Win-NT: by process-viewer NT-Resource-Kit or Win-NT-Performance-Monitor
UNIX: `ps -ef | grep`
(e.g. "`ps -ef | grep gwrdr | grep <SID>`" at UNIX)
- AP04** Check the startsap-log-file in the HOME-Directory of <SIDADM> (UNIX) or at the R/3-work-directory (Win-NT).
- AP05** Check the trace-files `dev_*` and `stderr*` located in the work-Dir.
- AP06** UNIX only: Isn't there enough space for a shared pool ?
Action: Check the trace-files „`dev_...`“ in the Work-Directory for the following message :
"Shmget: Shared Pool Space exhausted. PoolKey =nn"
Action: as **user <SIDADM>** run the following program :
`sapppar check pf=<INSTANCE-PROFIL>`
and analyze the output which pool is too less.
Correct the R/3-Instance-profile.
- AP07** Is the R/3-Instance-profile correct and notwithstanding a shared memory-problem ?
Action: as **user <SIDADM>** run the following program :
"showipc <INSTANCE-NUMBER>," then
"cleanipc <INSTANCE-NUMBER> remove"
- AP08** Check the R/3-Systemlog for error-entries. **Action:** Transaction SM21
- AP09** Use the posting-analyze-function for searching aborts. **Action:** Transaction SM13
- AP10** Use the dump-analyze-function for searching shortdumps. **Action:** Transaction ST22
- AP11** Are all SAP-services running? **Action:** Transaction SM50
- AP12** Use transaction to check your SAP-system. **Action:** Transaction SICK
- AP13** Have all entries in the DEFAULT.PFL-file the correct values ?
- AP14** Has the parameter SAPDBHOST the correct value in the DEFAULT.PFL ?
- AP15** Check the developer-traces. **Action:** Transaction ST11
- AP16** When absolutely necessary for track down the error increase the trace-level to 2 or to 3.
(parameter: `rdisp/TRACE` in the instance-profile with system-restart
or dynamically by **dmon** with the menu-function)
- AP17** In addition you can use the dpmmon-function for tracing the dispatcher:

Action: „dpmon pf=/usr/sap/<SID>/profile/<SID>_<INSTANCE>„

- AP18** Case 1: lock-table too small => increase it in the instance-profile.
Case 2: update follow too far behind and as a result the update tasks cause the lock table to overflow
=> increasing the lock-table only delays an overflow, it cannot be prevented. Increase the throughput of updates.
- AP19** Check the troubleing work-process aimed and dynamicly without.restart of R/3 by using of dpmon. (see **note 13525**)
- AP20** Is the SAP-services belonging this function running? use transaction **SM50**.
- AP21** Check the profile-parameter **rdisp/bufrefmode and rdisp/bufreftime** in the DEFAULT.PFL-file or start Transaction **AL12**.
- AP22** Analyze the Workbench Organizer. Are there incorrect or open transport-orders ?
Action: Transaction **SE09**
- AP23** Check the file **kill.sap** in the work-directory. The entered number must be the process-id of the dispatcher and must exist on the OS-area
- AP24** The new memory-management isn't maintained correctly. The memory is too small.
(see **note 33576**)
- AP25** Check the memory-management by using the following tools as user <SIDADM> :
memlimits
(but first, shutdown the R/3-System and the DB for using this commmand)
esmon -b -c10 pf=<INSTANCE-PROFILE>
- AP26** Check the R/3-buffer-qualities. Action: Transaction **ST02**
- AP27** Check the OS-Activity. Action: Transaction **OS06**
- AP28** Check the workload-summary. Action: Transaction **ST03**
- AP29** Check the actual workload by using the transaction **STAT**.
look for most response-time-, memory-, wait-time-, CPU-time-using programs and analyze them by giving double-click on them.
- AP30** Look for lock-entries in the R/3-System. Action: Transaction **SM12**
- AP31** Is anything changed in the R/3-system, in the database, in the Operating-System or in the Network since the last startup of the R/3-System ?
- AP32** The number of work-process-blocks is too small.
Increase the Instance-parameter **rdisp/wp_ca_blk_no**.
- AP33** Setup the number of spool-processes if necessary. Check wether indexes exist for the spool-tables. (see **note 4361**)
- AP34** The spool-work-process is constantly busy. (see **note 12195**)
- AP35** Printers running at the Frontend-Hardware using **saplpd**:
switch on the **debugging** in the saplpd-window or trace the saplpd. (see **note 41913**)
- AP36** Check the operating-spool-system.

AP37	Analyze the spool-work-process.	See action AP40
AP38	Analyze the background-work-process.	See action AP40
AP39	Analyze the enqueue-process.	See action AP40
AP40	Look whether the process you wish to analyze is running (SM 50) and determine the number of the process. Then look at the <i>dev_w<No.></i> -file in the work-directory belonging this number.	
AP41	Check the <u>WorkBench-Organizer</u> -configuration. <i>SE06 --> Check</i> <i>SE06 --> Configuration</i>	
AP42	Analyze the batchinput-system. <u>Action:</u> Transaction SM35	
AP43	Is the central-system running and you can connect to it ? <u>Action:</u> - <i>R3trans -d</i> or - <i>tp connect <SID></i> as user <SIDADM>.	
AP44	Check the CCMS-Configuration. Are there any Background-WP`s defined ?	
AP45	Check the Background-Processing-Environment. (Transaction SM65 --> Goto --> additional Tests)	
AP46	Check the SAPLICENSE. Is the SAPLICENSE installed and functional ? <u>Action:</u> as user <SIDADM> run program saplicense -check	
AP47	Is the RFC-Connection correctly installed ?(Transaction SM59 --> internal Connection)	

Check the Database

- DB01** Check the startdb-log-file at the home-dir of <SIDADM> (UNIX)
or at the R/3-work-directory (Win-NT) for errors.
- DB02** Are all db-processes at the OS-area running ?
Win-NT: by process-viewer NT-Resource-Kit or
Win-NT-Performance-Monitor
UNIX: **ps -ef | grep**
R/3: **SAPDBA** (see status at the top)
- DB03** Check the database-dependent db-log-file in the file-system or inside R/3 for errors.
ST04 --> goto --> activity --> database log
- DB04** Is there no free space in the db-logging-area ?
- DB05** Is there no free space in the DB-spaces ?
- DB06** Test the database-connect as <SIDADM>:
- **tp getdbinfo <SID>** (directory \usr\sap\trans\bin) or
- **tp connect <SID>** (directory \usr\sap\trans\bin) or
- **R3trans -d** (directory \usr\sap\trans\bin)
- DB07** Check the database for database-locks by the transaction **DB01**.
- DB08** Check the db-running-mode. is the mode still in backup-mode ?
ORACLE: a tablespace is in mode begin-backup ? set end-backup
INFORMIX: database is in quiescent-mode ?
ADABAS: database is in cold-mode ?
- DB09** Try to start and stop the database manually by sapdba or by database-tools
- DB10** Check the correct database-permissions for the <SIDADM>-user.
Action: Start the command : **R3trans -d**
You mustn't get the message **permission denied**.
at NT: in the registry must set **DBA_<SID>_AUTHORIZATION BYPASS**
- DB11** Analyze the database-file-distribution. The most frequently used
datafiles should not be located on the same disks and controllers
- DB12** Check the DB-tables for reorganization. **Action:** **Transaction DB02**
- DB13** How often do you run an update-statistics for the database (Informix and Adabas only) ?
- DB14** Analyze the wait-situations for the database.
- DB15** Is the db activ ? Are there IO's running ? Check the logging-IO's.

ORACLE only

- DB20** Is the ORACLE-Server-process running ?
- DB21** Are the oracle-shadow-processes running ?
- DB22** Check the <SIDADM>-user-permissions as described. (see **note 8001**)

- DB23** DB-processes died. Shutdown immediate fails.
Use shutdown abort to stop the db. Then startup the DB normal.
(The startup might take a long time because a instance-recovery runs)
- DB24** Try to copy the erroneous datafile. If you get an IO-error then a disk-crash occurred.
Otherwise the database has a logic error (corrupt block and so on).
In this case you can repair it by recovering the datafile.

INFORMIX only

- DB40** Check the privileges of the several informix-files as described. (see **note 13124**)

ADABAS only

- DB60** Check wether the XUSER-file exists or an existing .XUSER-file is incorrect.
(see **note 11593** and **note 39439**)
- DB61** check the XUSER-File for the entry „ISOLATION“. (see **note 30122**)

Check General Problems

- GP01** Check the log-file of the database-backup within R/3 (CCMS) or in the Operating-System for errors ?
- GP02** Check the log-file of the log-backup within R/3 (CCMS) or in the Operating-System for errors ?

Check the Network

- NW01** Can you reach your R/3-Application-Hosts ?
Action: ping, FTP, telnet
- NW02** Is the entry **127.0.0.1 localhost** inserted in every **hosts-file** of your R/3-Hardware-Environment?
Can you reach **localhost** on every Hardware-Platform ?
(see **note 2271**)
Action: ping localhost
- NW03** Are the **SAP-R/3-entries** in the **services-file** correct on every R/3-Hardware-Platform belonging to your R/3-Environment ?
(e.g. **sapdp01**, **sapms<SID>**)
NT: \WINNT\SYSTEM32\DRIVERS\ETC\SERVICES
UNIX: /etc/services
- NW04** Is YELLOW-PAGE-Function (**NIS**) running on this system?
Are the entries in the yellow-page maintained? (passwd, services,group)
- NW05** Check the Network-configuration. Is your Network-type supported by SAP ?
Do you have installed the correct version ?
- NW06** ADABAS: the file **services** must have the entry **SQL30 7200/tcp**
ORACLE: the file **services** must have the entry **orasrv 1525/tcp**
INFORMIX: the file **services** must have the entry **sapinf<SID>4100/tcp**
- NW07** ADABAS: the services **xserver** must be running
ORACLE: the services **orasrv** must be running
- NW08** Can you reach your local host ?
Action: ping localhost
(The IP-Address 127.0.0.1 should be returned)
- NW09** <SIDADM> must have the authorization to read the following files:
NT: \WINNT\SYSTEM32\DRIVERS\ETC\SERVICES
UNIX: /etc/services
NT: \WINNT\SYSTEM32\DRIVERS\ETC\hosts
UNIX: /etc/hosts
- NW10** Are you using Frontend-Hardware in different LAN's like the Application-Servers ?
Action: Install a SAPROUTER-Connection between Frontend-Hardware and the Application-Servers. (see **note 16663**)
- NW11** For MS-Windows-Frontend-Hardware:
Test the TCP/IP Installation PC with the following programs:
WINDOWS Sockets: WISOPING.EXE

WINDOWS LAN WorkPlace:
MS LAN Manager:
(see **note 16663**)

WINVPING.EXE
WIMSPING.EXE

NW12

- a. Test the Local Network-Installation at the frontend side:
Action: `\SAPGUI\niping -t`
- b. Test the connection to the R/3-Application-Servers.
Action: `ping, telnet, ftp`
- c. Test the connection to the NIPING on the R/3-server:
Action:
`Run /usr/sap/<sid>/exe/run/niping -s` on the R/3-Servers
`Run \SAPGUI\niping -c -H <R/3-hostname>` on the frontend

(see **note 5752**)

NW13

Check the network. Is it correctly working ?

NW14

Start SAPGUI in Debugging-Mode.

Action:

Insert into **AUTOEXEC.BAT** following line :

SET DPTRACE=2 or 3

Now errors will be traced in the file **DEV_XXXX.TDW**. (see **note 7684**)

NW15

Check the SAPGUI-version. It must be equal or greater than the R/3-System

NW16

Is physical network-Connection available and does it works ?

Action: ping --> the physical network is OK.

telnet --> the TCP/IP-Installation is OK.

Check the Operating-System

- OS01 Is there enough free space in your OS-File-System or directory?
- OS02 UNIX only: Is there enough SWAP-Space ?
 Action: memlimits
 NT only: Is the size of the PAGING-File too small ?)
 Action:
- OS03 Max number of processes reached ?
- OS04 Swapping-rate too big ?
- OS05 Are all file-systems and the directories available ?
- OS06 The user <SIDADM> must have the authorization and the permission
 to read the files: **hosts** and **services** !
- OS07 Is the HOME-Directory of user <SIDADM> available ?
- OS08 STARTUP-Script doesn't work (too old) or missing ?
- OS09 Is the Operating System running in a special mode ?
- OS10 UNIX only: Are the KERNEL-Parameter-settings correct ?
 Check the KERNEL-Parameters.
 (**see CHECKLIST**)
- OS11 Are all file-systems and directories having the right ownership and the right permissions ?
- OS12 Has the STARTUP-Script the right permissions ?
 Are the environment files correct ?
 Are the PATH-paramteres correct ?

Check the Performance

- PF01** Use the CCMS-Monitor for Performance-Analyzing. **Action:** Transaction STUN.
- PF02** Check the R/3-buffer-qualities by the CCMS-monitoring, and do a double click on the buffer you want to analyze. **Action:** Transaction ST02
- PF03** Check the Instance-parameter "*rdisp/max_wprun_time*" and set this parameter if there is no other solution.
- PF04** Look out for missing indices. DB02. **Action:** Transaction DB02
- PF05** Check the Database-activity by the CCMS-monitoring, especially the database-buffer-quality. **Action:** Transaction ST04
- PF06** Check if there are any R/3-buffers overflowing. **Action:** Transaction ST02
- PF07** Check the operating-system-activity. **Action:** Transaction OS06
- PF08** Find out whether the whole system is slow or only a specific function.
- PF09** Check the report for multi-nested SELECTS, for using indices effectively.
Action: Transaction SE38
- PF10** Check whether in the database indexes are missed for thematchcode-fields.
- PF11** Check the sequence of the matchcode-fields.
The sequence shall be ordered to the request frequency.
- PF12** Attend the SAP-recommendations for using of matchcodes. (see **note 35920**)
- PF13** Check whether the whole system is slow or only the activity of one user
- PF14** Analyze the top CPU-using processes.
ST06 --> goto --> current local data --> snapshot --> top CPU
- PF15** Do you need more workprocesses?
There has to be some free or not heavily used workprocesses.
Action: Transaction SM50
- PF16** Do you have too much workprocesses? If there is no usage, then you are wasting memory.
Action: Transaction SM50
- PF17** Attend the special WIN/NT control settings. (see **note 22240**)
- PF18** Is this function always slow or only sporadic ?
- PF19** Are there activated any trace-functions in the R/3-System like authority-trace (**auth/check_value_write_on**) or is the instance-trace-level set higher than 1 (**rdisp/trace**) or are users using the **debugging-function** in the productive system ?
Stop these actions !
- PF20** Activate the SQL-trace for this user or program and repeat the troubleing function. Then analyze the activities, table-requests and response-times.
Action: **system --> utilities --> sqltrace**