

Starting and Stopping EP 6.0 on WebAS 6.40

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Delta EP 6 on 6.20 & EP 6 on 6.40

WebAS 6.40 Startup & Control Framework

Use Cases: Start & Stop EP 6.0 Solution Landscape

What needs to be shutdown or restarted for the following tasks?	Portal Runtime	J2EE Engine	Web-server	DB	TREX	OS	LDAP (U. Pers.)	SAP Backend
Deployment of Portal Application								
Deployment of PRT Patches	S	R						
PRT Parameter Change (VM settings)	R	R						
J2EE Parameter Change	R	R						
Installation of J2EE Patches	S	S						
Installation of Webserver Patches	I	I	S					
Installation of DB Patches	S	S		S				
Installation of TREX Patches	[I]				S			
Installation of LDAP Patches	(I)						S	
EP Offline Backup	S	S	S	S	S			
Datacenter Downtime	S	S	S	S	S	S	S	S

Starting & Stopping EP

- n You start the portal platform including content management by starting the J2EE Engine.
- n The J2EE application IRJ, which represents the portal platform within the J2EE Engine, is automatically started by the J2EE Engine after the initial J2EE startup procedure.
- n **Note:**
During deployment of an EP support package or patch, it might be necessary to stop the irj-application separately in the J2EE deploy service.
- n Please refer to <http://help.sap.com/> for installation and upgrade documentation for service packs or patches!

Delta EP 6 on 6.20 & EP 6 on 6.40

WebAS 6.40 Startup & Control Framework

Delta EP 6.0 on Web AS Java 6.20 and 6.40

	EP 6.0 on Web AS 6.20 JAVA	EP 6.0 on Web AS 6.40 JAVA
Startup Tools	<p>J2EE Startup & Control Framework n startsap or MMC</p> <p>Unixdaemon/ NT-Services</p> <p>Go-Sripts</p> <p>R/3startup service</p>	<p>J2EE Startup & Control Framework n startsap on UNIX n start via MMC n Transaction SMICM for Web AS 6.40 JAVA AddIn Installation</p>
Shutdown Tools	<p>J2EE Startup & Control Framework n stopsap or MMC</p> <p>Unixdaemon -stop</p> <p>Telnet Connection / Console Command "shutdown"</p> <p>Shutdown Tool</p>	<p>J2EE Startup & Control Framework n stopsap on UNIX n start via MMC n Transaction SMICM for Web AS 6.40 JAVA AddIn Installations</p>

Delta EP 6 on 6.20 & EP 6 on 6.40

WebAS 6.40 Startup & Control Framework

WebAS 6.40 Startup Framework – Overview

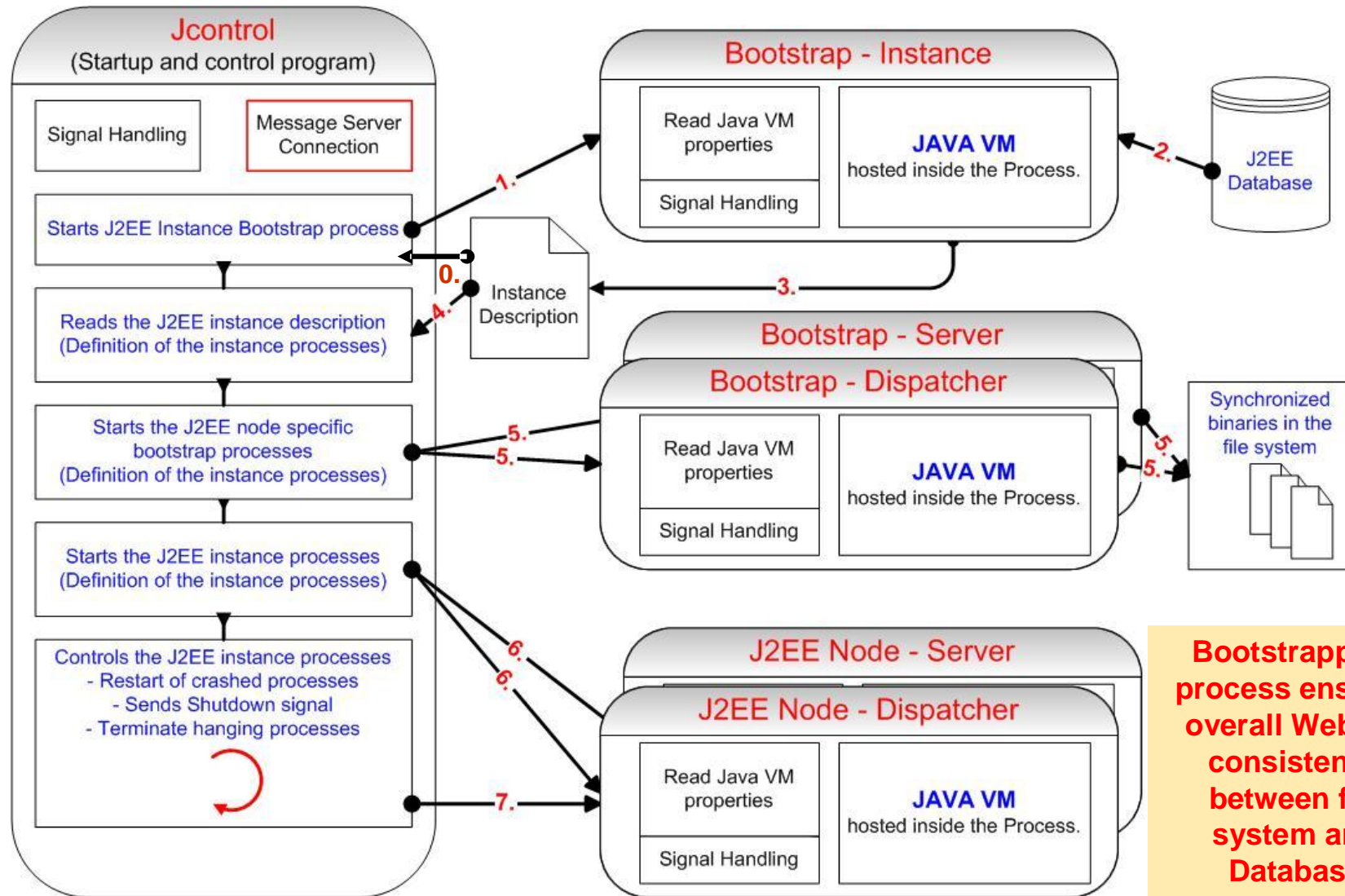
The Web AS Java is started via ...

- n On Windows platforms: SAP MMC**
- n On UNIX platforms: startsap / stopsap scripts**

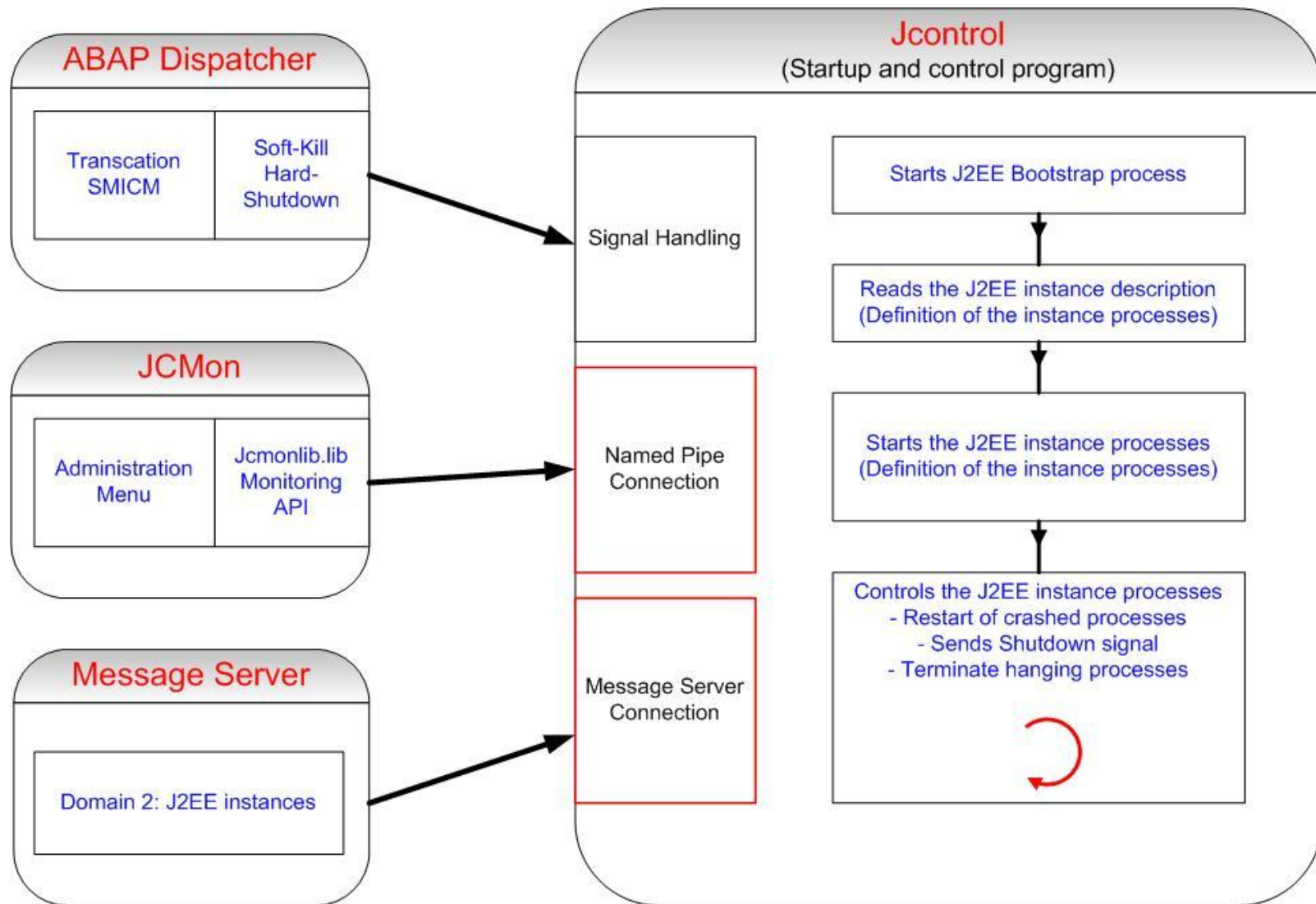
The J2EE Startup and Control Framework

- n ... is an infrastructure, situated between the operating system and the Java VM**
- n ... is used to start, stop, and monitor a Java Instance**
- n ... loads the JVM and restarts processes, which have died/crashed**
- n ... comprises the programs Jcontrol, Jlaunch and Jcmon**

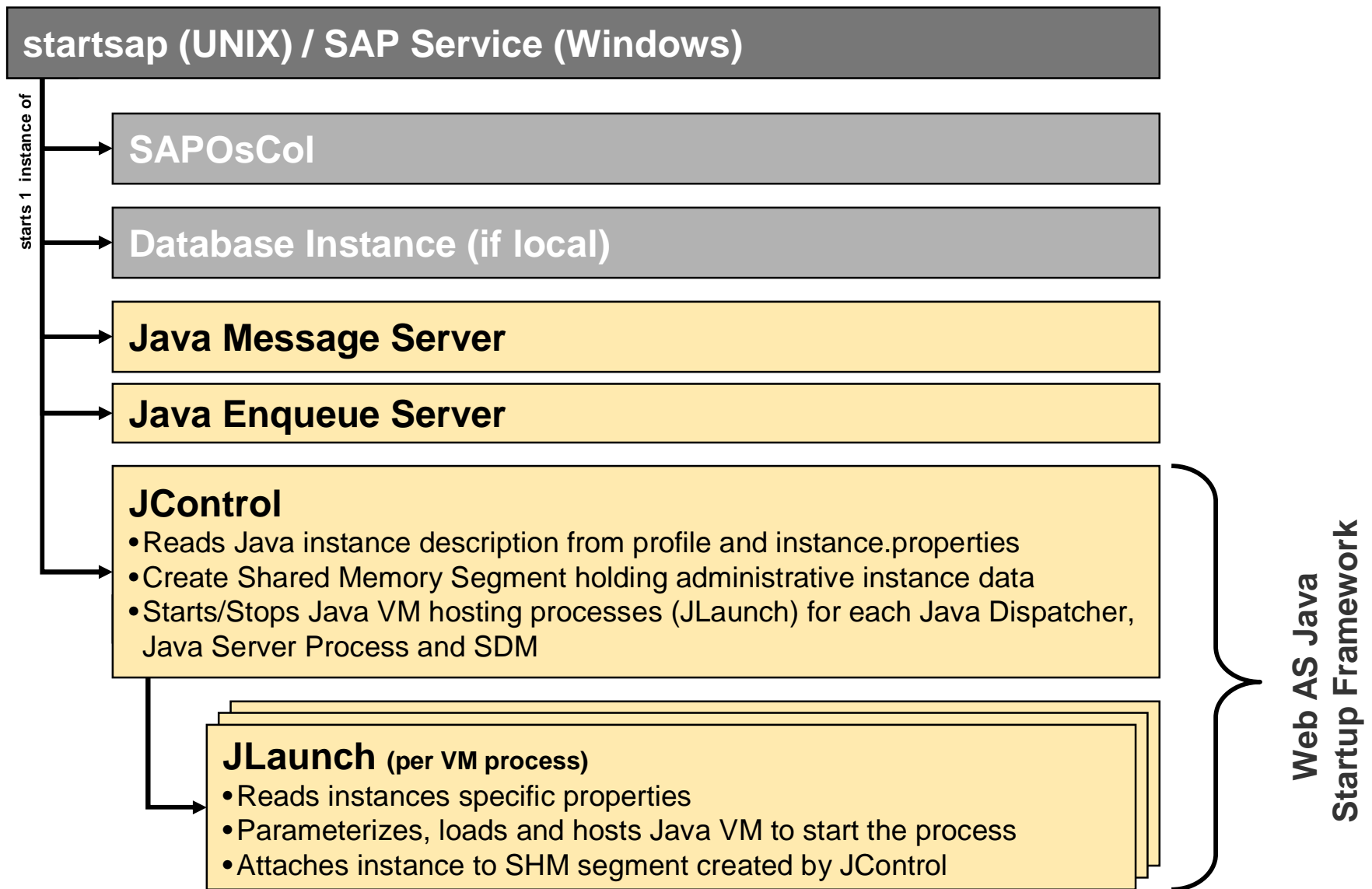
Architecture of Web AS 6.40 JAVA Startup Framework



JControl - Java Instance Controller II



SAP Web AS Java 6.40 - Startup Process in Detail



OS Processes

```

Window Edit Options
bash-2.03$ ps -ef | grep j2eadm
j2eadm 3368 3363 0 00:22:18 ? 0:00 jc.sapJ2E_JC00 pf=/usr/sap/J2E/SYS/profile/J2E_JC00_us5006
j2eadm 3175 1 0 00:08:25 ? 0:00 /usr/sap/J2E/SYS/exe/run/sapstart pf=/usr/sap/J2E/SYS/profile/START_SCS01_us500
j2eadm 3363 1 0 00:22:18 ? 0:00 /usr/sap/J2E/SYS/exe/run/sapstart pf=/usr/sap/J2E/SYS/profile/START_JC00_us5006
j2eadm 3552 2455 0 21:06:28 pts/1 0:00 grep j2eadm
j2eadm 3185 3175 0 00:08:25 ? 0:04 en.sapJ2E_SCS01 pf=/usr/sap/J2E/SYS/profile/J2E_SCS01_us5006
j2eadm 3425 3411 0 00:22:49 pts/1 0:00 /usr/sap/J2E/JC00/igs/bin/igspw_mt -rootdir=/usr/sap/J2E/JC00/igs -no=1 -restar
j2eadm 3184 3175 0 00:08:25 ? 0:01 ms.sapJ2E_SCS01 pf=/usr/sap/J2E/SYS/profile/J2E_SCS01_us5006
j2eadm 3412 3411 0 00:22:48 pts/1 0:00 /usr/sap/J2E/JC00/igs/bin/igsmux_mt -rootdir=/usr/sap/J2E/JC00/igs -restartcoun
j2eadm 3411 1 0 00:22:48 pts/1 0:00 /usr/sap/J2E/JC00/igs/bin/igswd_mt -dir=/usr/sap/J2E/JC00/igs -mode=ALL
j2eadm 3387 3368 0 00:22:45 ? 0:58 /usr/sap/J2E/JC00/j2ee/os_libs/jlaunch pf=/usr/sap/J2E/SYS/profile/J2E_JC00_us5
j2eadm 3424 3411 0 00:22:49 pts/1 0:00 /usr/sap/J2E/JC00/igs/bin/igspw_mt -rootdir=/usr/sap/J2E/JC00/igs -no=0 -restar
j2eadm 2152 14519 0 23:03:33 pts/1 0:00 -csh
j2eadm 2455 2152 0 23:03:42 pts/1 0:00 bash
j2eadm 3388 3368 0 00:22:45 ? 6:55 /usr/sap/J2E/JC00/j2ee/os_libs/jlaunch pf=/usr/sap/J2E/SYS/profile/J2E_JC00_us5
bash-2.03$
  
```

Example of startup of OS processes:

Startup of sapstart (PID 3175) => Reading Start-Profile of SCS-Instance

- ⇒ Starting of Message Server => startsap (PID 3175) is parent (ms.sapJ2E_SCS01= PID 3184)
- ⇒ Starting of Enqueue Server => startsap (PID 3175) is parent (en.sapJ2E_SCS01= PID 3185)

Startup of sapstart (PID 3363) => Reading Start-Profile of JC00-Instance

- ⇒ Starting of jcontrol => startsap (PID 3363) is parent (jc.sapJ2E_JC00 = PID 3368)
- ⇒ Starting of jlaunch => jcontrol (PID 3368) is parent (jlaunch = PID 3387)
- ⇒ Starting of jlaunch => jcontrol (PID 3368) is parent (jlaunch = PID 3388)
- ⇒ Starting of jlaunch => jcontrol (PID 3368) is parent (jlaunch = PID xxxx)

Dispatcher
& Server
SDM is
currently
stopped

Startup of igswd_mt (PID 3411) => Starting the Internet Graphics Server

Important Processes

For the simplest installation (one dispatcher, one server), the following processes must be running :

- n Message Server (msg_server or msg_server.exe)**
- n Enqueue Server (enserver or enserver.exe)**
- n Dispatcher and server process (two jlaunch.exe)**
- n Software Deployment Manager (SDM, jlaunch.exe)**

In Jcmon, all jlaunch processes can be seen.

Using SAPOSCOL* will display all processes started by Jcontrol and Jlaunch in transaction RZ20 of CCMS.

***Supported with SAPJ2EE Engine SP8 (= SAP NetWeaver Support Package Stack 09)**

Tools used during Startup of EP 6.0 on 6.40

```

Window Edit Options
bash-2.03$ pwd
/sapmnt/J2E/exe
bash-2.03$ ls
SAPCAR          icu_license.txt  libicudata.so.26  msclients        scs.lst
cleanipc        jcmn              libicudt20b.so   msg_server       sldreg
dev_sapstart   jcontrol         libicui18n.so.20  msmon            startdb
dsrlib.so       jdbcconnect.jar  libicui18n.so.26  msprot           startj2eedb
enrepserver    jenqulib.jar     libicuuc.so.26   niping           startsap
enserver       jlaunch          libicuuc.so.26   sapccmsr         stopdb
ensmon         jperflib.jar     libjenqulib.so   saposcol         stopj2eedb
icmadmin.SAR   jstartup.jar     libjperflib.so   sappfpar         stopsap
icmbnd         jstartupapi.jar  libsapu16.so     sapstart
icmon          jstartupimpl.jar libsapu16_mt.so  sapwebdisp
bash-2.03$ █
    
```

Executables are stored:

- on UNIX systems:
/sapmnt/<sid>/exe
- on Windows systems:
%userprofile%\sap\<sid>\<instance>\SYS\exe

Examples of executables in /sapmnt/<sid>/exe

startsap	Shell-script to initiate the WebAS JAVA startup
sapstart	Binary – Executable to start the WebAS JAVA
sappfpar	Binary – Executable to check system parameters
startdb/startj2eedb	Shell-script to start an system database

Shell-Script startsap (1)

```
Window Edit Options He
# @(#) $Id: //bc/640-1/src/ins/SAPINST/impl/tpls/ind/ind/startsap#14 $
#
# NAME :
#   startsap
#
# PURPOSE :
#   Start SAP Database and SAP Instances
#
# USAGE: startsap [db|r3|j2ee|ccms|all|check] [<instance>] [<virtual hostname>]
#
#   Specify instance if you have installed multiple
#   instances of the same system on one host.
#   Example: startsap r3 DVEBGMS00 [cic11]
#
#   other optional parameters:
#       check    Check Database and SAP Instance
#       r3 | R3 | j2ee | J2EE Start SAP Instance only
#       db | DB | dB | Db   Start Database only
#       jdb | JDB Start J2EE Database only
#       ALL | all   Start Database and SAP Instance
#
# ENVIRONMENT :
#
#   SAPSYSTEMNAME must be set
#   DB_SID        will be set in startsap
#   JDB_SID       will be set in startsap
#   SAPDBHOST     optional
#   SAPJDBHOST    optional
#   R3S_LOGDIR    optional
#   TRACE         optional
```

Startsap can be used with certain parameters:

- **startsap db**
- **startsap j2ee**
- **startsap ccms**
- **startsap all**
- **startsap check**

Shell-Script startsap (2)

```
Window Edit Options He
#
# FUNCTION: start_instance
#
# PURPOSE: starts the SAP instance
#
start_instance()
{
  if [ "$TRACE" ];then
    echo "##### start start_instance()"
  fi

  if [ -f $EXEDIR/sapstart ];then
    SAPSTART=$EXEDIR/sapstart
  elif [ -f $CTEXEDIR/sapstart ];then
    SAPSTART=$CTEXEDIR/sapstart
  elif [ -f $EXEDIRU/sapstart ];then
    SAPSTART=$EXEDIRU/sapstart
  else
    echo " Startup of Instance failed" | tee -a $LOGFILE
    echo " $EXEDIR/sapstart not found" | tee -a $LOGFILE
  fi
}
```

To start the Java instance, the shellscript is calling the executable sapstart.

Binary sapstart

```
Window Edit Options
bash-2.03$ ps -ef | grep j2eadm
j2eadm 3368 3363 0 00:22:18 ? 0:00 ic sapJ2E_JC00 pf=/usr/sap/J2E/SYS/profile/J2E_JC00_us5006
j2eadm 3175 1 0 00:08:25 ? 0:00 /usr/sap/J2E/SYS/exe/run/sapstart pf=/usr/sap/J2E/SYS/profile/START_SCS01_us5006
j2eadm 3363 1 0 00:22:18 ? 0:00 /usr/sap/J2E/SYS/exe/run/sapstart pf=/usr/sap/J2E/SYS/profile/START_JC00_us5006
j2eadm 3552 2455 0 21:06:28 pts/1 0:00 grep j2eadm
j2eadm 3185 3175 0 00:08:25 ? 0:04 en.sapJ2E_SCS01 pf=/usr/sap/J2E/SYS/profile/J2E_SCS01_us5006
j2eadm 3425 3411 0 00:22:49 pts/1 0:00 /usr/sap/J2E/JC00/igs/bin/igspw_mt -rootdir=/usr/sap/J2E/JC00/igs -no=1 -restar
j2eadm 3184 3175 0 00:08:25 ? 0:01 ms.sapJ2E_SCS01 pf=/usr/sap/J2E/SYS/profile/J2E_SCS01_us5006
j2eadm 3412 3411 0 00:22:48 pts/1 0:00 /usr/sap/J2E/JC00/igs/bin/igsmux_mt -rootdir=/usr/sap/J2E/JC00/igs -restartcoun
j2eadm 3411 1 0 00:22:48 pts/1 0:00 /usr/sap/J2E/JC00/igs/bin/igswd_mt -dir=/usr/sap/J2E/JC00/igs -mode=ALL
j2eadm 3387 3368 0 00:22:45 ? 0:58 /usr/sap/J2E/JC00/j2ee/os_libs/jlaunch pf=/usr/sap/J2E/SYS/profile/J2E_JC00_us5
j2eadm 3424 3411 0 00:22:49 pts/1 0:00 /usr/sap/J2E/JC00/igs/bin/igspw_mt -rootdir=/usr/sap/J2E/JC00/igs -no=0 -restar
j2eadm 2152 14519 0 23:03:33 pts/1 0:00 -csh
j2eadm 2455 2152 0 23:03:42 pts/1 0:00 bash
j2eadm 3388 3368 0 00:22:45 ? 6:55 /usr/sap/J2E/JC00/j2ee/os_libs/jlaunch pf=/usr/sap/J2E/SYS/profile/J2E_JC00_us5
bash-2.03$
```

The binary sapstart is starting the central services instance and the central Java instance by using the start profiles of the J2EE engine.

- ⇒ Check the profiles in folder `/usr/sap/<sid>/SYS/profile/START_SCS01_<host>`
- ⇒ Check the profiles in folder `/usr/sap/<sid>/SYS/profile/START_JC00_<host>`

The sapstart program monitors the programs started by it, but it does not restart them if they have terminated themselves due to unknown reasons.

You can configure sapstart to work as a „watchdog“ for the SCS and JAVA instance processes.

Excuse: Start-Profiles used by binary sapstart

```
Window Edit Options
bash-2.03$ ls -ltr
total 22
-rw-r--r-- 1 j2eadm sapsys 78 Mar 31 2004 DEFAULT.PFL
-rw-r--r-- 1 root other 1009 Apr 2 2004 START_SCS01_us5006.1
-rw-r--r-- 1 j2eadm sapsys 854 Apr 2 2004 START_JC00_us5006
-rw-r--r-- 1 j2eadm sapsys 398 Apr 2 2004 J2E_SCS01_us5006
-rw-r--r-- 1 root other 524 Apr 2 2004 J2E_JC00_us5006.1
-rw-r--r-- 1 j2eadm sapsys 1169 Oct 15 19:49 START_SCS01_us5006
-rw-r--r-- 1 root other 600 Oct 15 19:49 J2E_JC00_us5006.2
-rw-r--r-- 1 j2eadm sapsys 630 Nov 10 00:39 J2E_JC00_us5006
-rw-r--r-- 1 j2eadm sapsys 240 Nov 16 22:04 dev_sapstart
-rw-r--r-- 1 j2eadm sapsys 129 Nov 16 22:3
bash-2.03$
```

Start-Profile START_JC00_<host>

```
#-----
# Global variables
#-----
SAPSYSTEMNAME = J2E
INSTANCE_NAME = JC00
DIR_EXECUTABLE = /usr/sap/J2E/SYS/exe/run
DIR_LIBRARY = /usr/sap/J2E/SYS/exe/run

DIR_OS_LIBS = $(DIR_INSTANCE)/j2ee/os_libs
SETENV_00 = LD_LIBRARY_PATH=$(DIR_OS_LIBS):%(LD_LIBRARY_PATH)
SETENV_01 = SHLIB_PATH=$(DIR_OS_LIBS):%(SHLIB_PATH)
SETENV_02 = LIBPATH=$(DIR_OS_LIBS):%(LIBPATH)
#-----
# Start Java Dispatcher
#-----
_JC = jc.sapJ2E_JC00
Execute_00 = local rm -f $_JC
Execute_01 = local ln -s -f $(DIR_INSTANCE)/j2ee/os_libs/jcontrol $_JC
Start_Program_00 = local $_JC pf=$(DIR_PROFILE)/J2E_JC00_us5006
```

```
#-----
# Global variables
#-----
SAPSYSTEMNAME = J2E
INSTANCE_NAME = SCS01
DIR_EXECUTABLE = /usr/sap/J2E/SYS/exe/run
DIR_LIBRARY = /usr/sap/J2E/SYS/exe/run

SETENV_00 = LD_LIBRARY_PATH=$(DIR_LIBRARY):%(LD_LIBRARY_PATH)
SETENV_01 = SHLIB_PATH=$(DIR_LIBRARY):%(SHLIB_PATH)
SETENV_02 = LIBPATH=$(DIR_LIBRARY):%(LIBPATH)
#-----
# Start SAP messaging service
#-----
_MS = ms.sapJ2E_SCS01
Execute_00 = local rm -f $_MS
Execute_01 = local ln -s -f $(DIR_EXECUTABLE)/msg_server $_MS
Start_Program_00 = local $_MS pf=$(DIR_PROFILE)/J2E_SCS01_us5006
```

Start-Profile START_SCS01_<host>

```
#-----
# Start SAP locking service
#-----
_EN = en.sapJ2E_SCS01
Execute_02 = local rm -f $_EN
Execute_03 = local ln -s -f $(DIR_EXECUTABLE)/enserver $_EN
Start_Program_01 = local $_EN pf=$(DIR_PROFILE)/J2E_SCS01_us5006
```

Configuring sapstart using the start-profile

```
Window Edit Options
bash-2.03$ ls -ltr
total 22
-rw-r--r-- 1 j2eadm sapsys 78 Mar 31 2004 DEFAULT.PFL
-rw-r--r-- 1 root other 1009 Apr 2 2004 START_SCS01_us5006.1
-rw-r--r-- 1 j2eadm sapsys 854 Apr 2 2004 START_JC00_us5006
-rw-r--r-- 1 j2eadm sapsys 398 Apr 2 2004 J2E_SCS01_us5006
-rw-r--r-- 1 root other 524 Apr 2 2004 J2E_JC00_us5006.1
-rw-r--r-- 1 j2eadm sapsys 1169 Oct 15 19:49 START_SCS01_us5006
-rw-r--r-- 1 root other 600 Oct 15 19:49 J2E_JC00_us5006.2
-rw-r--r-- 1 j2eadm sapsys 630 Nov 10 00:39 J2E_JC00_us5006
-rw-r--r-- 1 j2eadm sapsys 240 Nov 16 22:04 dev_sapstart
-rw-r--r-- 1 j2eadm sapsys 129 Nov 16 22:3
bash-2.03$
```

```
-----
# Global variables
#-----
SAPSYSTEMNAME = J2E
INSTANCE_NAME = JC00
DIR_EXECUTABLE = /usr/sap/J2E/SYS/exe/run
DIR_LIBRARY = /usr/sap/J2E/SYS/exe/run

DIR_OS_LIBS = $(DIR_INSTANCE)/j2ee/os_libs
SETENV_00 = LD_LIBRARY_PATH=$(DIR_OS_LIBS):%(LD_LIBRARY_PATH)
SETENV_01 = SHLIB_PATH=$(DIR_OS_LIBS):%(SHLIB_PATH)
SETENV_02 = LIBPATH=$(DIR_OS_LIBS):%(LIBPATH)
#-----
# Start Java Dispatcher
#-----
_JC = jc.sapJ2E_JC00
Execute_00 = local rm -f $_JC
Execute_01 = local ln -s -f $(DIR_INSTANCE)/j2ee/os_libs/icontrl $_JC
Start_Program_00 = local $_JC pf=$(DIR_PROFILE)/J2E_JC00_us5006
```

Edit marked line by replacing or adding the commandline

Restart_Programm_xx=local
<program_name> <program arguments>

Start-Profile START_JC00_<host>

768727: Automatic process restart function in sapstart

729945: Auto-restart function for processes in sapstartsrv

Excuse: Default-Profile and Instance-Profiles

```

Window Edit Options
bash-2.03$ ls -ltr
total 22
-rw-r--r--  1 j2eadm  sapsys      78 Mar 31  2004 DEFAULT.PFL
-rw-r--r--  1 root    other    1009 Apr  2  2004 START_SCS01_us5006.1
-rw-r--r--  1 j2eadm  sapsys   854 Apr  2  2004 START_JC00_us5006
-rw-r--r--  1 j2eadm  sapsys   398 Apr  2  2004 J2E_SCS01_us5006
-rw-r--r--  1 root    other   524 Apr  2  2004 J2E_JC00_us5006.1
-rw-r--r--  1 j2eadm  sapsys  1169 Oct 15 19:49 START_SCS01_us5006
-rw-r--r--  1 root    other   600 Oct 15 19:49 J2E_JC00_us5006.2
-rw-r--r--  1 j2eadm  sapsys   630 Nov 10 00:39 J2E_JC00_us5006
-rw-r--r--  1 j2eadm  sapsys   240 Nov 16 22:04 dev_sapstart
-rw-r--r--  1 j2eadm  sapsys   129 Nov 16 22:31 JdbcCon.log
bash-2.03$
    
```

```

SAPSYSTEMNAME = J2E
j2ee/dbname = POR
j2ee/dbtype = ora
j2ee/dbhost = us5006
    
```

**Profile
DEFAULT.PLF**

```

SAPSYSTEMNAME = J2E
INSTANCE_NAME = SCS01
SAPSYSTEM = 01
DIR_GLOBAL = /sapmnt/J2E/global
DIR_PROFILE = /sapmnt/J2E/profile
DIR_EXECUTABLE = /usr/sap/J2E/SYS/exe/run
rdisp/msserv = 3601
enqueue/table_size = 4096
enqueue/dequeue_wait_answer = FALSE
enqueue/process_location = LOCAL
enqueue/encni/port = 3201
rdisp/enqname = $(rdisp/myname)
enqueue/snapshot_pck_ids = 100
ms/server_port_0 = PROT=HTTP, PORT=8101
    
```

**Instance-Profile
START_SCS01_<host>**

```

SAPSYSTEMNAME = J2E
INSTANCE_NAME = JC00
SAPSYSTEM = 00
DIR_GLOBAL = /sapmnt/J2E/global
DIR_PROFILE = /sapmnt/J2E/profile
DIR_EXECUTABLE = /usr/sap/J2E/SYS/exe/run
enqueue/process_location = REMOTESA
enqueue/serverhost = us5006
enqueue/serverinst = 01
enqueue/encni/port = 3201
jstartup/trimming_properties = off
jstartup/protocol = on
exe/jlaunch = $(DIR_INSTANCE)/j2ee/os_libs/jlaunch
jstartup/instance_properties = $(INSTANCE_PROPERTIES);$(SDM_PROPERTIES)

INSTANCE_PROPERTIES = $(DIR_INSTANCE)/j2ee/cluster/instance.properties
SDM_PROPERTIES = $(DIR_INSTANCE)/SDM/program/config/sdm_jstartup.properties

jstartup/vm/home = /usr/java
    
```

Instance-Profile START_JC00_<host>

Check system variables of your installation?

```
Window Edit Options
bash-2.03$ pwd
/sapmnt/J2E/exe
bash-2.03$ ./sappfpar
Parameter-Name....: SAPGLOBALHOST
./sappfpar=>sapparam(1c): No Profile used.
./sappfpar=>sapparam: SAPSYSTEMNAME neither in Profile nor in Commandline
Result.....: us5006
Parameter-Name....: SAPLOCALHOST
Result.....: us5006
Parameter-Name....: ^C
bash-2.03$
```

sappfpar is a check-tool, which helps you to find out, what system parameters are effective

- ⇒ **On UNIX, go to /sapmnt/<sid>/exe**
- ⇒ **Check system parameters such as**
 - ⇒ **SAPGLOBALHOST – indicates where the SCS Instance is running**
 - ⇒ **SAPLOCALHOST – indicates where the JAVA Instance is running**

Jcontrol - Java Instance Controller

JControl controls J2EE processes ...

- n is the master process of all J2EE worker processes**
- n controls the lifecycle of the J2EE instance**
 - u Restart of crashed processes**
 - u Termination of hanging processes**
 - u Sends shutdown signal to instance processes**
- n responsible for starting the processes in the right order (bootstrapping..)**
- n integration of different processes into one J2EE instance (SDM, ICM, ...)**
- n provides the monitoring information in a shared memory segment**
- n supports SAP profiles to share configurations with the ABAP Stack**

JLaunch - Java Program Launcher

JLaunch has following tasks:

- n to read the program properties**
- n to read the VM properties from the database during startup process**
- n to attach to the administration shared memory segment**
- n to load the shared library of the Java VM**

JCMon - Monitor Program

- n Command line tool
- n Overview about the instance and process state
- n Local administration menu for the local instance and their processes
- n Cluster administration menu for remote operations

```
-----  
SAP System Name   : C11  
SAP System        : 00  
MS Host           : pcj2ee01  
MS Port           : 3601  
Process Count     : 4  
PID of JControl   : 7244  
State of JControl : All processes running  
State inside MS   : All processes running  
Admin URL         :  
-----
```

Status of jlaunch processes:

Starting
Starting Application
Running
Stopping
Stopped

Processes in Windows task manager or on OS level only visible as Jlaunch processes!

Idx	Name	PID	State	Error	Restart
0	server0	5784	Running	0	yes
1	server1	2216	Running	0	yes
2	dispatcher	4748	Running	0	yes
3	SDM	436	Running	0	yes

Troubleshooting and Support

- n **Most relevant information about startup of the different Java processes can be found in the jlaunch traces:**
 - u **dev_server<x> = Trace-file of the jlaunch process**
 - u **std_server<x>.out = output of the JVM**
 - u **jvm_server<x>.out = output of J2EE engine (like error.log and output.log in SAPJ2EE 6.20)**
- n **Trace files and JVM output files are in the work directory of the instance (e.g. /usr/sap/<sid>/>instance>/work)**
- n **Low level process trace in the SAP developer trace files dev_***
- n **All processes are started with the SAP instance profile**
 - u **Single point of management**
 - u **Profile parameters for the startup framework**
 - u **Profile directory /usr/sap/<sid>/SYS/profile**

Developer Trace Files of the Startup Framework

- n **dev_jcontrol** – Trace file of JControl
 - u Detailed property description
 - u Description of the processes started by JControl
- n **dev_bootstrap** – Trace file of the initial bootstrap process
- n **dev_bootstrap_ID....** – Trace file of the node bootstrap process
- n **dev_dispatcher** - Trace file of the J2EE dispatcher node
- n **dev_server<x>** - Trace files of the J2EE server nodes
- n **dev_sdm** – Trace file of the SDM process

Summary: Startup Framework of WebAS 6.40 JAVA

Important features in regards to Technical Infrastructure:

- n Simultaneous and parallel startup of cluster nodes
- n Bootstrapping process in place to ensure consistency between DB and file system
- n Integration of Java Processes into the SAP instance concept
- n Control and Restart functionality of Java processes (Watchdog)
- n Remote Control of all Java instances in the cluster (start, restart, stop, ...)
- n ...