Entire System Server

	Version 3.2.2	Administration

software AG

This document applies to Entire System Server Version 3.2.2 and to all subsequent releases.

Specifications contained herein are subject to change and these changes will be reported in subsequent release notes or new editions.

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Administration Documentation - Overview

This documentation covers the following topics:

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Operator Commands	Describes the operator commands that can be entered on the operator console to control and display Entire System Server activities.
Common Entire System Server Features	Provides information on common diagnostic features such as command logging and how to create trace data in the Entire System Server. In addition, Write-to-Spool for Natural, providing access to sequential files through the Entire System Server, Dynamic Server Management, zap reports and ending Entire System Server are explained.
z/OS and OS/390 Considerations	Describes z/OS and OS/390 access method modules, accounting, the Common JES Interface, security considerations and the setting up of RACF Security for operator commands.
VSE/ESA Considerations	Lists VSE/ESA POWER, maintenance and security considerations.
BS2000/OSD Considerations	Provides information on how to start/end and run Entire System Server on BS2000/OSD. Moreover, the Library Concept, aspects of running System Automation Tools on BS2000/OSD and BS2000/OSD Security, SECOS and UCON Interface considerations are dealt with.

Introduction

This document covers the following topics:

- Installation Jobs
- Prerequisites
- Using System Maintenance Aid

Installation Jobs

The installation of Software AG products is performed by installation jobs. These jobs are either created manually or generated by System Maintenance Aid (SMA).

For each step of the installation procedure described in the following sections, the job number of a job performing the respective task is indicated. This job number refers to an installation job generated by SMA.

If you are not using SMA, an example installation job of the same number is provided in the job library on the Entire System Server installation tape; you must adapt this example job to your requirements.

Note:
The job numbers on the tape are preceded by a product code (for example, NPRI061).

Prerequisites

Before you can install the Entire System Server, the following Software AG products must already be installed at your site:

- Natural version 2.3.4 or above;
- Adabas version 6.2 or above.

As of Natural 2.3.4, the Entire System Server Interface (ESX) is no longer a separate product but part of Natural (and included on the Natural installation tape). See Installing the Entire System Server Interface in the Natural Installation Guide for Mainframes.

- Entire Net-work 5.4.1 (optional, for multi-CPU support).
- Predict 3.2 or above (optional).

The Entire System Server services are available in any Natural environment that runs any or a combination of the following operating systems: S OS/390 version 2.4 or above;

- VSE/ESA 1.4.4 or above;
- BS2000/OSD V2 or above.

Using System Maintenance Aid

For information on using Software AGŸs System Maintenance Aid (SMA) for the installation process, refer to the **System Maintenance Aid documentation**.

Multi-User Mode

To terminate an Entire System Server node

- Issue the console command

```
/INTR <tsn>,ADAEND
```

where <*tsn*> is the TSN assigned to the main task.

This will automatically end all tasks belonging to that Entire System Server node.

The UCON interface task is not terminated by this because it may still be used by another node. It can however be terminated via the console command

```
/BCLOSE <application-name>
```

where <application-name> is the name which was assigned in the JCL of the UCON interface task. See also Step 8: Edit the Entire System Server Start Jobs of the installation of BS2000/OSD.

Using the Entire System Server

This section describes how you can use the Entire System Server.

It covers the following topics:

- General
- Multiple Entire System Server Node Support
- Entire System Server in Single-User Mode

General

When the Entire System Server is installed, the following macro statement is appended to the NATPARM module:

```
NTDB PROCESS,148.
```

The value **148** in this statement is the target node that Natural will use to identify calls to the Entire System Server (the Entire System Server is delivered with a default target node number of 148. It can be changed during the installation process, see Installation Step 3). All Natural statements that use DDMs with DBID 148 are handled as Entire System Server calls. This means that all Entire System Server DDMs must be cataloged with the DBID value that matches the target value used in the NTDB statement.

The target node specified in the NTDB statement is a **logical** target ID. You are not limited to using only an Entire System Server node with the **physical** target ID of 148. You can use any available value for each Entire System Server node you install and they are all accessible from the same Natural. Natural uses the logical target node of 148 simply to recognize a particular statement as being an Entire System Server statement. The NODE field in each Entire System Server view is used to direct the call to the desired physical Entire System Server target. Of course, if the NODE field is not used in a particular call, Natural will direct the call to a node with the same physical target ID as the logical target ID.

It is recommended that users adopt the practice of always including the NODE field in all of their Entire System Server calls. This enables them to easily access additional nodes in future without having to modify existing programs.

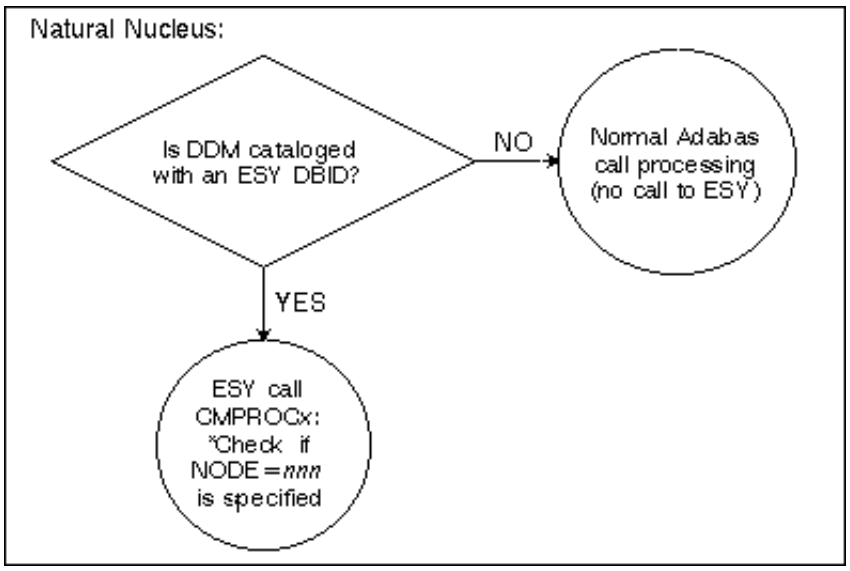
The following sequence illustrates how Natural statements are directed at Entire System Server. A Natural program may contain the statement:

```
FIND DDM WITH FIELDS
```

where DDM stands for any view and FIELDS for any sequence of fields in that view. The Natural nucleus checks whether the specified DDM is cataloged with the Entire System Server DBID.

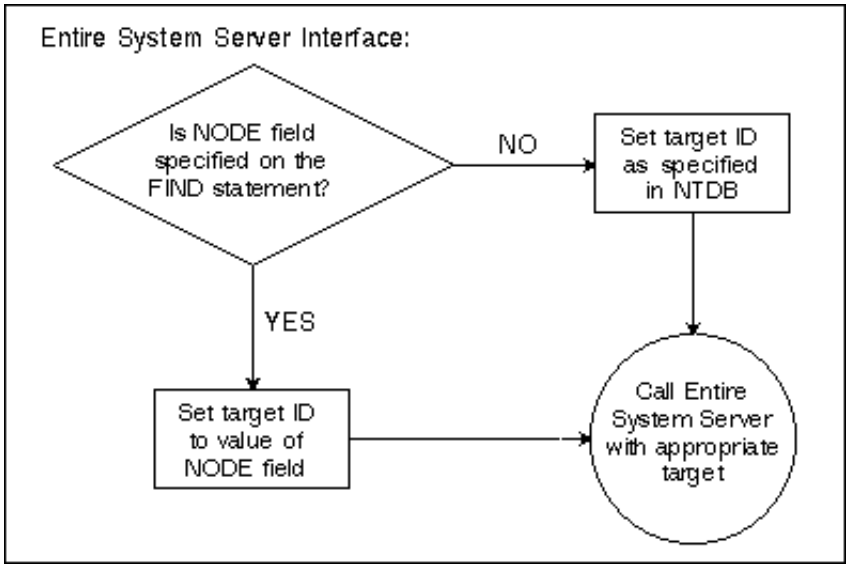
In the following figure, Entire System Server is abbreviated to ESY.

Natural PROGRAM: FIND <DDM> WITH...



If the DDM was cataloged with the Entire System Server DBID, the Entire System Server Interface (ESX) gets control (see Installing the Entire System Server Interface in the Natural Installation Guide for Mainframes). Among other things, it checks whether the NODE field is specified on the FIND statement, and issues a call to the Entire System Server with the appropriate target ID.

This is illustrated by the following figure:



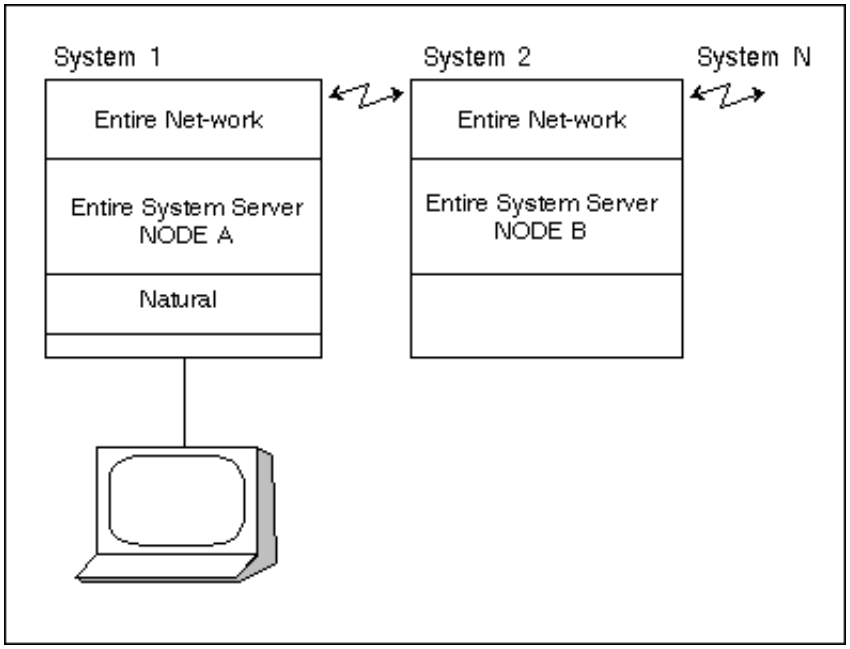
Using the Entire System Server Interface has several advantages:

- It checks the node number specified by the client and sends the request to the corresponding Entire System Server.
- When working with sequences of records, ESX performs a prefetch. This accelerates work considerably.

Multiple Entire System Server Node Support

Entire System Server is usually installed for a multi-user environment. Therefore, it must be able to run in its own partition / address space.

In a multiple-system configuration, it may be desirable to run multiple Entire System Server nodes. By using a Software AG network facility (such as Entire Net-Work), an Entire System Server request can be directed to a remote node. For example: a file can be transmitted from Node **A** to Node **B**; a job can be submitted to a remote node; and the VTOC of a disk in a remote node can be retrieved. The following figure shows the Entire System Server in a multi-system environment:



The following steps are necessary to define an Entire System Server node:

1. Assign a unique DBID (a three-digit number) to the node. (The node DBID must not conflict with any other DBID.)
2. In order to direct an Entire System Server request from a Natural program to a specific node, specify NODE=*nnn* in the appropriate FIND statement. For example, the following statement is executed in node **151**:

```
FIND VTOC WITH VOLSER = 'DISK01' AND NODE = 151
```

   If NODE is not specified, the DBID as specified in the DDM is used.

   Note:
   A Natural program can access multiple nodes. (For example, the program COPYFILE in the online tutorial reads a file from one node, and writes it to another).

Entire System Server in Single-User Mode

Like Adabas, the Entire System Server can also run in single-user mode (for example, under TSO or TIAM or batch). All calls to the default Entire System Server node defined in the DDM are processed in the same address space, using CALL (instead of the Adabas SVC). This reduces CPU consumption and improves response time. Therefore, single-user mode is only available for single-user address-spaces like TSO, batch and TIAM.

All Entire System Server calls directed to the default target node (as defined in the NATPARM module in the NTDB parameter) are resolved locally. However, the Entire System Server calls to other targets are still handled in the normal way (that is, using the Adabas SVC).

In order to allow single user operation, Natural must be linked as described in the section Installing the Entire System Server Interface in the Natural Installation Guide for Mainframes.

The following considerations apply when running in single-user mode. The first time a command is issued to the Entire System Server, its startup parameters are read from the dataset with the link name PARMS (BS2000/OSD) of the startup JCL. Default values will be used for those parameters which are not defined. It is not necessary to LOGON/LOGOFF to the Entire System Server.

BS2000/OSD

Single-user mode is not possible under UTM. If you wish the Entire System Server to behave in the same way with Natural/TIAM as with Natural/UTM, you must not use single-user mode with Natural/TIAM either. Otherwise, calls directed to the default target node (for example: 148) would be handled locally for Natural/TIAM, but using Adabas SVC for Natural/UTM.

Startup Parameters - Overview

This section explains the Entire System Server startup parameters. You must edit this member as part of the installation procedure. This includes customizing parameter values to suit your site, and/or adding any parameters that are specific to add-on systems that use the Entire System Server (for example, Entire Operations, Entire Event Management, Entire Output Management).

Note:
Parameters specific to an add-on system are described in that system's installation manual.

Thereafter, you can modify parameters as required for customization purposes to reflect changing conditions at your site. After each modification of the parameter member, you must restart the Entire System Server to pick up the changes.

This section covers the following topics:

- List of Startup Parameters
- Parameters without Default Value
- Example Parameter Members

List of Startup Parameters

The startup parameters documentation is divided into four parts: A-D | E-M | N-R | S-Z

The parameters are sorted in alphabetical order by their names.

Parameters without Default Value

Unspecified parameters take the default value. The parameters listed below have no default value and **must** be specified:

OS/390, VSE/ESA

- ADA5SVC
- NODE

BS2000/OSD

- JOBSERVER
- NODE

Example Parameter Members

Example parameter members are illustrated below according to operating system.

Note:
Not all possible parameters are listed. Parameters specific to any add-on system can be added (these are described in the relevant system's installation manual). Optional parameters not specified take the default value.

OS/390, VSE/ESA:

```
************************************************************************
  *            Startup Parameters for Entire System Server              *
  ************************************************************************
  *
  *   Identification
  *
  NODE=148
  IDENTIFIER=TEST-SYSTEM
  LOCAL=NO
  FORCE=NO
  ************************************************************************
  *
  *   Interface to spooling system
  *
  SPOOL=JES2                  /* SPOOL=POWR for VSE/ESA
  ************************************************************************
  *
  *   Interface to external security system
  *
  SECURITY=RACF
  AUTOLOG=YES
  ************************************************************************
  *
  *   Interface to Adabas
  *
  ADA5SVC=249
  ************************************************************************
  *
  *   Interface to VTAM
  *
  SPOOLACB=DNOM148S         /* see SYS1.VTAMLST(APPLNA)
  VTAMACB=DNOM148V          /* see SYS1.VTAMLST(APPLNA)
  VTAMQLEN=100
  ************************************************************************
  *
  *   Logging parameters
  *
  LOGGING=NO
  LOGCB=YES
  LOGFB=YES
  LOGRB=YES
  LOGSB=YES
  LOGVB=YES
```



```
************************************************************************
  *
  *   Queue and time parameters
  *
  NCQE=30
  NABS=20
  CDATALEN=200
  *
  TIME=100
  LOOP=30
  NONACT=30
  ************************************************************************
  *
  *   Miscellaneous parameters
  *
  TEMPUNIT=SYSDA
  MSGLEVEL=2
  SMFREC=0
  ************************************************************************
  *
  *   Natural parameters
  *
  NATNUMSUB=6
  NATMOD=NSATT05           /* Natural Monitor Module (OS/390 only)
  *STRTNTP1=STACK=(LOGON SYSSAT SATMON SATMON; /* (for SAT products only)
  *STRTNTP2=SATSTART ESYUSER=SATMON)          /* (for SAT products only)
  *NUMLIBS=300             /* (VSE/ESA only)
  *NUMTASK=10              /* (VSE/ESA only)
  *             END**END**END**END**END**END**END**END**END            *
```

BS2000/OSD


```
********************************************************************
* Startup Parameter NODE 199                                       *
********************************************************************
* JOB... and PRM...-Parameters must contain the complete syntax,   *
* as it is needed for the corresponding parameters of ENTER command. *
*                                                                  *
* Example:                                                         *
* ISP .... JOBSERVER=$SAG.NPR321.JOBS(E.ESYSERV)                   *
* SDF .... JOBSERVER=*LIB-ELEM(LIB=$SAG.NPR321.JOBS,ELEM=E.ESYSERV) *
*                                                                  *
* The value of JOB... cards is appended to command,                *
* ISP .... ENTER                                                   *
* SDF .... ENTER-JOB FROM(FILE=                                    *
*                                                                  *
********************************************************************
*
NODE=199
*
IDENTIFIER=PRODUCTION NODE
*
```

```
* TAPES=NO                     Def.: NO       Tape support
TIME=30                        Def.: 30 SEC   Timeout for user replies
TRACE=PREP                     Def.: PREP     PREP|YES|NO
TRACE-LEN=1024                 Def.: 8 K      Size of TRACE MP
TRACE-SAV=YES                  Def.: YES      Save traces at exit
* UEX4=RESYEXIT                No default     Name ADABAS Exit 4
* VIEWSEC=NONE                 Def.: NONE     View processor exit
*
JOBCONS=*LIBRARY-ELEMENT(LIBRARY=$SAG.NPR321.JOBS,ELEMENT=E.ESYCONS)
JOBEMAIL=*LIBRARY-ELEMENT(LIBRARY=$SAG.NPR321.JOBS,ELEMENT=E.ESYMAIL4)
JOBEVENT=*LIBRARY-ELEMENT(LIBRARY=$SAG.NPR321.JOB8,ELEMENT=E.ESYEVTM)
JOBNATSUB=*LIBRARY-ELEMENT(LIBRARY=$SAG.NPR321.JOBS,ELEMENT=E.SAT)
JOBSERVER=*LIBRARY-ELEMENT(LIBRARY=$SAG.NPR321.JOBS,ELEMENT=E.ESYSERV)
*
PRMCONS=START=*IMMEDIATELY,RESOURCES=*PARAMETERS(CPU-LIMIT=*NO)
PRMEMAIL=START=*IMMEDIATELY,RESOURCES=*PARAMETERS(CPU-LIMIT=*NO)
PRMEVENT=START=*IMMEDIATELY,RESOURCES=*PARAMETERS(CPU-LIMIT=*NO)
PRMNATSUB=START=*IMMEDIATELY,RESOURCES=*PARAMETERS(CPU-LIMIT=*NO)
PRMSERVER=START=*IMMEDIATELY,RESOURCES=*PARAMETERS(CPU-LIMIT=*NO)
*
ACCOUNT-NATSUB=1       *NEW* No default     NATURAL-SUB-TASK Account
AUTOLOG=YES                  Def.: YES      YES|NO
CDATALEN=1024                Def.: 0 K      Size of COMMON-DATA MP
CONACCESS=WRITE              Def.: NONE     Access NONE|READ|WRITE
EVENTLEN=1024                Def.: 0 K      Size of EVENTING MP
FORCE=NO                     Def.: NO       DBID table entry overwrite
IDTNAME=ADABAS5B             Def.: ADABAS5A Name of ADABAS IDT MP
IUBL=12000                   Def.: 8000     MAXLEN of all ADABAS bufs
LANGUAGE=E                   Def.: E        Language code E|G
LOCAL=NO                     Def.: NO       Local node
LOGCB=YES                    Def.: NO       Log ACB of ADABAS
LOGFB=YES                    Def.: NO       Log ADABAS format buffer
LOGGING=NO                   Def.: NO       Activate command logging
LOGRB=YES                    Def.: NO       Log ADABAS record buffer
LOGSB=YES                    Def.: NO       Log ADABAS search buffer
LOGVB=YES                    Def.: NO       Log ADABAS value buffer
LOOP=0                       Def.: 0 SEC    Loop time limit
MSGLEVEL=I                   Def.: I        Message level I|W|E
NABS=20                      Def.: 10       Number attached buffers
NATDYNPAR=FILE               Def.: SYSDTA   FILE|SYSDTA|SYSIPT
NATNUMSUB=20                 Def.: 0        Number NATURAL-SUB-TASKS
NCQE=20                      Def.: 10       Number CMD-QUEUE-ELEMENTS
NONACT=30                    Def.: 60 MIN   User non-activity time
NUMFAT=256                   Def.: 128      Number Fast Access Tables
NUMMAIL=256            *NEW* Def.: 0        Number E-MAIL Entries
NUMTASK=1                    Def.: 4        Number SERVER Tasks
NUMUSER=128                  Def.: 128      10 - 512 USER CBs
PRODUCT=M                    No default     M = LMS
RECALL=NO                    Def.: YES      Recall migrated files
SDF=YES                      Def.: NO       Internal use of SDF CMDs
SECURITY=BS2                 Def.: NONE     User security
SERVER-DYN=YES               Def.: NO       Dynamic SERVER Management
SERVER-MAX=16                Def.: 16       Max # SERVER
SERVER-MIN=1                 Def.: 1        Min # SERVER
SERVER-NONACT=5              Def.: 10 MIN   SERVER non-activity time
SERVER-QUEUE-DEPTH=2         Def.: 5        Depth of SERVER input Q
SHUTDOWN-MAX-DELAY=180       Def:  0 SEC    0 - 600
SMTP-HOST=mailhost     *NEW* No default     SMTP Host (Mail gateway)
SMTP-PORT=25           *NEW* Def.: 25       SMTP Host port number
SPOOL=BS2                    Def.: BS2      BS2|NONE
* STDUSER=                   No default     Default USER-ID ASCII world
* SYNCDB=(063,11177)         Def.: NONE     DBIDs which must be active
* SYNCTIME=5                 Def.: 0 SEC    Wait time before next check
```



```
*--------------------------------------------------------------------*
* NATURAL-SUB-TASK skeleton:                                         *
*--------------------------------------------------------------------*
*
SATSKEL-BEGIN
/.&UID    SET-LOGON-PARAMETERS
/ MODIFY-JOB-OPTIONS  INFORMATION-LEVEL=*MEDIUM, -
/                     OPERATOR-INTERACTION=*YES, -
/                     LOGGING=*PARAMETERS(LISTING=*YES)
/ MODIFY-TEST-OPTIONS DUMP=*YES
/ ASSIGN-SYSDTA       TO=*SYSCMD
/ ASSIGN-SYSLST       TO=L.&UID.&TSN.&CTR
/ SHOW-JOB-STATUS     JOB-IDENTIFICATION=*OWN
/ ADD-FILE-LINK       LINK-NAME=BLSLIB00, -
/                     FILE-NAME=&NPRLIB
/ ADD-FILE-LINK       LINK-NAME=DDLNKPAR, -
/                     FILE-NAME=ADALNK.PARMS
/ ADD-FILE-LINK       LINK-NAME=DDLIB2, -
/                     FILE-NAME=&NPRLIB
/ ADD-FILE-LINK       LINK-NAME=P02, -
/                     FILE-NAME=*DUMMY
/ SKIP-COMMANDS       TO-LABEL=&DYNPAR
*
* NATURAL DYNPAR = FILE
*
/.FILE                SET-JOB-STEP
/ MODIFY-JOB-SWITCHES ON=(4,5)
/ START-PROGRAM       FROM-FILE=$EDT
&PARMS
@W '#TMP.&UID.&TSN.&CTR' O
@HALT
/ SET-JOB-STEP
/ MODIFY-JOB-SWITCHES OFF=(4,5)
/ ADD-FILE-LINK       LINK-NAME=CMPRMIN, -
/                     FILE-NAME=#TMP.&UID.&TSN.&CTR
/ MODIFY-JOB-SWITCHES ON=2
/ START-PROGRAM       FROM-FILE=&NATBAT
/ SET-JOB-STEP
/ MODIFY-JOB-SWITCHES OFF=2
/ SKIP-COMMANDS       TO-LABEL=END
*
* NATURAL DYNPAR = SYSDTA
*
/.SYSDTA              SET-JOB-STEP
/ MODIFY-JOB-SWITCHES ON=2
/ START-PROGRAM       FROM-FILE=&NATBAT
&PARMS
/ SET-JOB-STEP
/ MODIFY-JOB-SWITCHES OFF=2
/ SKIP-COMMANDS       TO-LABEL=END
*
* NATURAL DYNPAR = SYSIPT
*
/.SYSIPT              SET-JOB-STEP
/ ASSIGN-SYSIPT       TO=*SYSCMD
/ MODIFY-JOB-SWITCHES ON=2
/ START-PROGRAM       FROM-FILE=&NATBAT
&PARMS
/EOF
/ SET-JOB-STEP
/ MODIFY-JOB-SWITCHES OFF=2
/ SKIP-COMMANDS       TO-LABEL=END
*
/.END                 SET-JOB-STEP
/ ASSIGN-SYSLST       TO=*PRIMARY
/ PRINT-FILE          FILE-NAME=L.&UID.&TSN.&CTR, -
/                     DEVICE-NAME=DRGW1, -
/                     SPOOLOUT-NAME=&UID
/ EXIT-JOB            MODE=*NORMAL,SYSTEM-OUTPUT=*NONE
SATSKEL-END
*
* < end of params>
```


Startup Parameters A-D

The startup parameter descriptions are listed in alphabetical order by their names. This part covers the range **A-D**.

Note:
Elements in italics (e.g. *name*) denotes a variable that must be replaced by a real value, for example, a name.

ACCOUNT-NATSUB

Operating System	Type	Default	Maximum Value Length
BS2000/OSD	Optional	There is no default.	8 bytes

The ACCOUNT-NATSUB value specifies an account number used for all Natural subtasks running under control of the Entire System Server. **Do not** specify any user information in startup parameter PRMNATSUB, if ACCOUNT-NATSUB is supplied.

ADA5SVC

Operating System	Type	Default
OS/390, VSE/ESA	Required.	There is no default.

The Adabas SVC number to be used. The Adabas SVC is used to perform various internal functions, including communication between the Natural program and the Entire System Server nucleus in multi-user mode.

Note:
This parameter is also valid for all Adabas versions.

ADAVERS

Operating System	Type	Default
OS/390, VSE/ESA	Optional	5

Version number of Adabas.

Note:
This parameter has to be set to 5, even if any other Adabas version is installed.

AUTOLOG

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	YES

Specifies automatic logon to the Entire System Server at the start of the Natural session. Possible options:

Option	Explanation
YES	No password check is done as part of the Entire System Server logon, as long as the specified user ID matches the internal Natural user ID. An implicit logon is performed if the first user request is not a logon call.
NO	No logon to the Entire System Server is performed at the start of the Natural session, but note that if an external security system is installed, a logon to the Entire System Server including user ID and password is always required.

The usage of the AUTOLOG parameter depends on the network environment. If there is no Net-Work installed, the autolog feature should be used to avoid additional logon procedures if the password check has already been done as part of the TP or Natural logon.

In a Net-Work environment, the usage of AUTOLOG depends on the defined Net-Work nodes. If only mainframes are connected, we recommend using the autolog feature. In environments with PCs connected to Net-Work, Entire System Server should run without autolog (AUTOLOG=NO).

CDATALEN

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	0

The maximum size (in K bytes) of the common data pool. A value greater than 0 must be specified if the view COMMON-DATA is to be used.

COMPLETE

Operating System	Type	Default
OS/390, VSE/ESA	Optional	NO

Specifies whether COM-PLETE is installed on the system.

CONACCESS

Operating System	Type	Default
BS2000/OSD	Optional	NONE

Specifies the access capability of the Entire System Server node to the Console Task. Possible options:

Option	Explanation
NONE	Default. Console Task will not be activated. The view CONSOLE can, therefore, only be used for the functions WTO and WTOR.
READ	Console Task will be activated if the parameter JOBCONS is specified. All retrieval functions of the view CONSOLE can be used.
WRITE	Same as for READ option, but operator commands can also be issued by using the view CONSOLE.

'WRITE' access can be restricted to certain users and commands, using the exit USERCSEC. For more information, see the subsection BS2000/OSD Security Considerations in the Section BS2000/OSD Considerations of the Entire System Server Administration Documentation.

CONSNAME

Operating System	Type	Default
OS/390, VSE/ESA	Optional	is the string ESY*nnnnn*, where *nnnnn* is the node number of this Entire System Server.

This parameter indicates the name for your logical console in an MCS environment. If you have 2 different Entire System Servers running on the same SYSPLEX system with the same node number, you may choose your own name for your console in this case.

CONSTAB

Operating System	Type	Default
OS/390, VSE/ESA	Optional	1000 messages.

nnn is the number of messages to be kept. This parameter has been valid since MVS/ESA 5.1. and VSE/ESA 2.1. A wraparound table for OS/390 or VSE/ESA console messages is generated. The number of slots for this table can be defined here.

CONSTAB=0 will switch off the reading of console messages which is done in the background.

DEFNATUSER

Operating System	Type	Default
OS/390	Optional	There is no default.

This parameter indicates a default OS/390 Natural user which can be used to run Natural in Entire System Server's address space (for example: NCL, NOM, NOP).

DYNAMPOOL

Operating System	Type	Default
VSE/ESA	Optional	There is no default.

This parameter indicates the name of the CA-Dynam/D 'virtual' volume.

Startup Parameters E-M

The startup parameter descriptions are listed in alphabetical order by their names. This part covers the range **E-M**.

Note:
Elements in italics (e.g. *name*) denotes a variable that must be replaced by a real value, for example, a name.

EDIT-TIMEOUT

Operating System	Type	Default
OS/390	Optional	600 (=10 hours)

An EDIT session using Natural ISPF will stay active *nnn* minutes for Entire System Server, until it erases all resources for this user. You should adjust this value to timeout values for your TP system (COM-PLETE, CICS, TSO, etc.).

ESYTRACE

Operating System	Type	Default
OS/390, VSE/ESA	Optional	NO

This parameter allows you to switch on the old internal tracing facility of Entire System Server. It should only be used upon request of Software AG support staff.

In the JCL of Entire System Server, the following new card is required:

```
//ESYTRACE DD SYSOUT=X for OS/390
```

Note:
In VSE/ESA, ESYTRACE output is written to SYSLST.

EVENTLEN

Operating System	Type	Default
BS2000/OSD	Optional	0

Size of Eventing memory pool in Kbytes. If the view EVENTING is to be used, you must specify a value of 3 or greater.

FILETABLE

Operating System	Type	Default
VSE/ESA	Optional	DYNAMIC

Defines whether files not specified in STD, PARSTD, TEMP or CLASSSTD labels at Entire System Server initialization time can later be accessed. Possible options:

Option	Explanation
DYNAMIC	Default. Files can be accessed.
STATIC	Files cannot be accessed. File ID table is frozen.

FORCE

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	NO

Allows or disallows DBID table entry overwrite. Meaning of the options:

Option	Explanation
YES	Only required when the DBID table entry is not deleted after an abnormal termination. Note that overwriting an existing entry prevents any further communication with the overwritten node. Use FORCE=YES only when you are absolutely sure that no target node with that node ID is active.
NO	Protects the node table entry from being overwritten.

IDENTIFIER

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	There is no default.

String to identify the node. Maximum length is 50 bytes. This string can be retrieved from the field NODE-ID in the view SYSTEM-INFO.

Using this identifier, you can see the machine on which this Entire System Server is running in an Entire Net-work environment.

IDTNAME

Operating System	Type	Default
BS2000/OSD	Optional	ADABAS5A for Adabas 5.1, ADABAS5B for Adabas 5.2 and above.

If an ID table name is specified with the appropriate ADARUN parameter for your Entire Net-work or Adabas and Natural, the same name must be specified here.

IUBL

Operating System	Type	Default
OS/390	Optional	32767
VSE/ESA, BS2000/OSD	Optional	16384

Maximum length of the buffer that can be passed from the caller to the Entire System Server.

Note:
When using the remote PDSE program object-copying feature under OS/390, we recommend not reducing this value, otherwise NAT3152 or ADABAS response code 152 errors may occur.

JOBCONS

Operating System	Type	Default	Maximum Value Length
BS2000/OSD	Optional	There is no default.	120 bytes

Specifies the location of the job control to start the Console Task. For details, see the subsection BS2000/OSD UCON Interface in the Section BS2000/OSD Considerations of the Entire System Server Administration Documentation.
Possible options:

Option	Explanation
filename	Enter job is saved as file. The startup parameter SDF is omitted or set to NO to use ISP format or set to YES to use SDF format.
library(element)	Enter job is saved as LMS element. The startup parameter SDF is omitted or set to NO to use ISP format.
*LIBRARY-ELEMENT(LIBRARY=*library*,* ELEMENT=*element)*	Enter job is saved as LMS element. The startup parameter SDF is set to YES.

JOBEMAIL

Operating System	Type	Default	Maximum Value Length
BS2000/OSD	Optional	There is no default.	120 bytes

Specifies the location of the job control to start the E-Mail Manager Task.

For more information about E-Mail administration, see the subsection Run E-Mail Client in Common Entire System Server Features in the Entire System Server Administration Documentation.

Possible options:

Option	Explanation
filename	Enter job is saved as file. The startup parameter SDF is omitted or set to NO to use ISP format or set to YES to use SDF format.
library(element)	Enter job is saved as LMS element. The startup parameter SDF is omitted or set to NO to use ISP format.
*LIBRARY-ELEMENT(LIBRARY=*library*, ELEMENT=*element)*	Enter job is saved as LMS element. The startup parameter SDF is set to YES.

JOBEVENT

Operating System	Type	Default	Maximum Value Length
BS2000/OSD	Optional	There is no default.	120 bytes

Specifies the location of the job control to start the Eventing Task. The view EVENTING is only available if this task is running. Possible options:

Option	Explanation
filename	Enter job is saved as file. The startup parameter SDF is omitted or set to NO to use ISP format or set to YES to use SDF format.
library(element)	Enter job is saved as LMS element. The startup parameter SDF is omitted or set to NO to use ISP format.
*LIBRARY-ELEMENT(LIBRARY=*library*, ELEMENT=*element)*	Enter job is saved as LMS element. The startup parameter SDF is set to YES.

JOBNATSUB

Operating System	Type	Default	Maximum Value Length
BS2000/OSD	Optional	There is no default.	120 bytes

Specifies the location of the job control to start the initial task for Natural subtasks. Possible options:

Option	Explanation
filename	Enter job is saved as file. The startup parameter SDF is omitted or set to NO to use ISP format or set to YES to use SDF format.
library(element)	Enter job is saved as LMS element. The startup parameter SDF is omitted or set to NO to use ISP format.
*LIBRARY-ELEMENT(LIBRARY=*library*, ELEMENT=*element)*	Enter job is saved as LMS element. The startup parameter SDF is set to YES.

For more information about Natural subtasks, see the Section Aspects of Running System Automation Tools in Entire System Server on BS2000/OSD of the Entire System Server Administration Documentation.

JOBSERVER

Operating System	Type	Default	Maximum Value Length
BS2000/OSD	Required	There is no default.	120 bytes

needs at least one Server Task to handle user requests. If this parameter is omitted, the Entire System Server terminates with an error message. Possible options:

Option	Explanation
filename	Enter job is saved as file. The startup parameter SDF is omitted or set to NO to use ISP format or set to YES to use SDF format.
library(element)	Enter job is saved as LMS element. The startup parameter SDF is omitted or set to NO to use ISP format.
*LIBRARY-ELEMENT(LIBRARY=*library*, ELEMENT=*element)*	Enter job is saved as LMS element. The startup parameter SDF is set to YES.

LANGUAGE

Operating System	Type	Default
BS2000/OSD	Optional	E

Specifies the language for console messages. Possible options:

Option	Explanation
E	Default. Console messages appear in English.
G	Console messages appear in German.

LOCAL

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	NO

Specifies whether the node (specified by the NODE parameter) is accessible in a network from remote nodes.

Option	Explanation
YES	Node is accessible locally only (not from remote nodes).
NO	Node is accessible globally.

LOGCB

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	NO

Specifies Adabas control block logging.

The value can be changed dynamically by using an operator command,
e.g., /F taskname,LOGCB=YES (on OS/390).
See the subsection Operator Commands.
See also the subsection Command Logging in the Section Common Entire System Server Features of the Entire System Server Administration Documentation. Possible options:

Option	Explanation
YES	Adabas control block is logged.
NO	Adabas control block is not logged.

LOGFB

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	NO

Specifies format buffer logging.

The value can be changed dynamically by using an operator command,
e.g., /F taskname,LOGFB=YES (on OS/390).
See the section Operator Commands in the Entire System Server User's Guide. See also the subsection Command Logging in the Section Common Entire System Server Features of the Entire System Server Administration Documentation.
Possible options:

Option	Explanation
YES	Format buffer is logged.
NO	Format buffer is not logged.

LOGGING

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	NO

Specifies command logging.

The value can be changed dynamically by using an operator command,
e.g., /F taskname,LOGGING=YES (on OS/390). See the section Operator Commands in the Entire System Server User's Guide. See also the subsection Command Logging in the Section Common Entire System Server Features of the Entire System Server Administration Documentation.
This allows logging of data for a certain amount of time only and without restarting Entire System Server.
Possible options:

Option	Explanation
YES	Command logging is activated.
NO	No command logging.

LOGRB

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	NO

Specifies record buffer logging.

The value can be changed dynamically by using an operator command,
e.g., /F taskname,LOGRB=YES (on OS/390).
See the section Operator Commands in the Entire System Server User's Guide. See also the subsection Command Logging in the Section Common Entire System Server Features of the Entire System Server Administration Documentation.
Possible options:

Option	Explanation
YES	Record buffer is logged.
NO	Record buffer is not logged.

LOGSB

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	NO

Specifies search buffer logging.

The value can be changed dynamically by using an operator command,
e.g., /F taskname,LOGSB=YES (on OS/390).
See the section Operator Commands in the Entire System Server User's Guide. See also the subsection Command Logging in the Section Common Entire System Server Features of the Entire System Server Administration Documentation.
Possible options:

Option	Explanation
YES	Search buffer is logged.
NO	Search buffer is not logged.

LOGVB

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	NO

Specifies value buffer logging.

The value can be changed dynamically by using an operator command,
e.g., /F taskname,LOGVB=YES (on OS/390).
See the section Operator Commands in the Entire System Server User's Guide. See also the subsection Command Logging in the Section Common Entire System Server Features of the Entire System Server Administration Documentation.
Possible options:

Option	Explanation
YES	Value buffer is logged.
NO	Value buffer is not logged.

LOOP

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	0

Determines the amount of CPU time (in seconds) which can be used by Entire System Server servers. The default value of zero (0) means there is no limit and no CPU time is recorded for display using the NATPROC-USER view.

We recommend setting this parameter to 200 to allow CPU times to be collected without interfering with long-running programs. If you receive the 5537 time limit error, you can increase this value.

MSGLEVEL

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	I

Specifies which message is to be written to the system messages protocol. Possible options:

Option	Explanation
E | 3	Error. Available in BS2000/OSD only. Only error messages are written. Information and warnings are suppressed.
W | 2	Warning. Suppresses the logging of startup parameters, as well as the messages indicating a user non-activity time-out.
I | 1	Info. All messages are written.

Note: The values E, W, I are currently supported under BS2000/OSD only.

Startup Parameters N-R

The startup parameter descriptions are listed in alphabetical order by their names. This part covers the range **N-R**.

Note:
Elements in italics (e.g. *name*) denotes a variable that must be replaced by a real value, for example, a name.

NABS

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	10

The number of attached buffers to be used. An attached buffer is an internal buffer used for interregion communication. An attached buffer pool will be allocated of a size equal to the value specified here multiplied by 4112.

NATDYNPAR

Operating System	Type	Default
BS2000/OSD	Optional	SYSDTA

On BS2000/OSD, Natural subtasking is starting a batch task running a Natural nucleus. The Natural batch driver can be configured to read dynamic startup parameters from FILE, SYSIPT or SYSDTA. The NATDYNPAR value must be set to the same value as the parameter DYNPAR in the NAMBS2 macro of your Natural batch driver to read the dynamic parameters for the Natural subtask from the correct input unit.

Please use the new Natural subtask skeletons to benefit from this startup setting. Possible values:

Value	Explanation
FILE	Dynamic parameters are read from a sequential file temporarily created in the Natural subtask JCL skeleton. It will be assigned with a FILE command by using the LINK name CMPRMIN.
SYSDTA	Dynamic parameters are read from SYSDTA.
SYSIPT	Dynamic parameters are read from SYSIPT. Please check your environment if data input by means of the system file SYSIPT is supported.

For more information about Natural subtasks, see the subsection Aspects of Running System Automation Tools in Entire System Server on BS2000/OSD in the Section BS2000/OSD Considerations of the Entire System Server Administration Documentation.

NATMOD

Operating System	Type	Default
OS/390, VSE/ESA	Optional	There is no default name.

Name of the linked Natural used for subtasking. Refer to the Entire System Server Installation Documentation for details on how to create this module.

NATNUMSUB

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	0

Number of Natural subtasks.

NATSYSOUT

Operating System	Type	Default
OS/390	Optional	Z

This parameter indicates a SYSOUT class to which the output of Natural subtasks running in Entire System Server's address space can be written (for example: NCL, NOM, NOP).

NCQE

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	10

The number of command queue elements to be established. This value determines the maximum number of Entire System Server commands which can be queued and/or be in progress at any one time when the Entire System Server is in use. Each Entire System Server command is assigned a command queue element. This element is released when the user has received the results of the command or when the user has been timed out. 192 bytes are required for each command queue element.

NODE

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Required	There is no default. *n* must be a value greater than or equal to 1 and less than or equal to 65535.

The Entire System Server DBID. It must be unique for each Entire System Server node.
If you set the parameter LOCAL=YES, you can use the same node number for different installations of Entire System Server in an Entire Net-Work environment.

NONACT

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	60

The non-activity time (in minutes). If a user has not issued a request to the Entire System Server during this time interval, the user is logged off, and the resources of the user will be freed.

NONACT=0 is rejected as invalid parameter value.

NUMFAT

Operating System	Type	Default
BS2000/OSD	Optional	128

Number of Fast Access Tables (minimum 0, maximum 256, size per table 8K). These tables are used for READ-FILE requests to cache the number of records per block for SAM files. Once a Fast Access Table is created for a SAM file, it improves the performance of accessing this file directly per RECORD-NUMBER.

NUMFAT=0 is used to disable this feature of READ-FILE.

NUMLIBS

Operating System	Type	Default
VSE/ESA	Optional	300

Maximum number of entries in the file ID table.

NUMMAIL

Operating System	Type	Default
BS2000/OSD	Optional	0

Number of E-Mail control and data entries temporarily saved in E-Mail memory pool. This storage is needed for Interprocess Communication between ESYSERV and ESYMAIL tasks of Entire System Server. The size of the E-Mail memory pool is defined by 32 bytes for one control block entry plus 1024 bytes for one data block entry multiplied by the NUMMAIL value. Maximum is 4096 entries.

For more information about E-Mail administration, see the subsection Run E-Mail Client in Common Entire System Server Features in the Entire System Server Administration Documentation.

NUMTASK

Operating System	Type	Default
VSE/ESA, BS2000/OSD	Optional	VSE/ESA: 15, BS2000/OSD: 4

Number of tasks to be started for user requests as part of the Entire System Server initialization.

If Dynamic Server Management is enabled, NUMTASK specifies the number of Server Tasks started during initialization of Entire System Server.

For detailed information, see the Section Dynamic Server Management for Entire System Server in the Section Common Entire System Server Features of the Entire System Server Administration Documentation.

NUMUSER

Operating System	Type	Default
BS2000/OSD	Optional	128

Number of ESY users (minimum 10, maximum 512). This value specifies the maximum number of users working in parallel. Please note that the length of a user session is fixed by the NONACT parameter.

PRMCONS

Operating System	Type	Default	Maximum Value Length
BS2000/OSD	Optional	There is no default.	120 bytes

Parameters for Enter of Console Task. If startup parameter SDF is set to YES, values must be specified in SDF syntax.

PRMEMAIL

Operating System	Type	Default	Maximum Value Length
BS2000/OSD	Optional	There is no default.	120 bytes

Parameter for /ENTER of E-Mail Manager Task. If startup parameter SDF is set to YES, values must be specified in SDF syntax.

PRMEVENT

Operating System	Type	Default	Maximum Value Length
BS2000/OSD	Optional	There is no default.	120 bytes

Parameters for Enter of Eventing Task. If startup parameter SDF is set to YES, values must be specified in SDF syntax.

PRMNATSUB

Operating System	Type	Default	Maximum Value Length
BS2000/OSD	Optional	There is no default.	120 bytes

Parameters for Enter of initial task for Natural subtask. If startup parameter SDF is set to YES, values must be specified in SDF syntax.

PRMSERVER

Operating System	Type	Default	Maximum Value Length
BS2000/OSD	Optional	There is no default.	120 bytes

Parameters for Enter of Server Task(s). If startup parameter SDF is set to YES, values must be specified in SDF syntax.

PRODUCT

Operating System	Type	Default
OS/390, BS2000/OSD	Optional	There is no default.

Name of additional library management systems. You must specify the parameter for each supported subsystem. Possible options:

Option	Explanation
L	CA-Librarian
M	LMS
P	CA-Panvalet

RECALL

Operating System	Type	Default
OS/390, BS2000/OSD	Optional.	YES

Specifies whether migrated datasets can be recalled. Possible options:

Option	Explanation
YES	Default. Migrated datasets can be recalled automatically.
NO	Migrated datasets cannot be recalled automatically.

If you are using Natural ISPF Version 2.1.1 or above, set RECALL=YES.

This parameter is used for products such as IBM’s DFSMShsm or FDR which uses the SVC 109 for migration, or Siemens’ HSMS.

OS/390 only: if RECALL=NO, you must start the recall using the view FILE-MAINTENANCE, FUNCTION=’RECALL’.

Startup Parameters S-Z

The startup parameter descriptions are listed in alphabetical order by their names. This part covers the range **S-Z**.

Note:
Elements in italics (e.g. *name*) denotes a variable that must be replaced by a real value, for example, a name.

SATSKEL-BEGIN

Operating System	Type	Default
BS2000/OSD	Optional	None

This keyword is used without any value. It indicates the beginning of the job control skeleton for the System Automation Tools (Natural subtasks) starting on the next line. As long as the parser does not find SATSKEL-END, it will interpret everything as job control skeleton. See also the SATSKEL-END parameter.

For more information about Natural subtasks, see the subsection Aspects of Running System Automation Tools in Entire System Server in Section BS2000/OSD Considerations of the Entire System Server Administration Documentation.

SATSKEL-END

Operating System	Type	Default
BS2000/OSD	Optional	None

This keyword is used without any value. It indicates the end of the job control skeleton for the System Automation Tools (Natural subtasks). See also the SATSKEL-BEGIN parameter.

For more information about Natural subtasks, see the subsection Aspects of Running System Automation Tools in Entire System Server in the Section BS2000/OSD Considerations of the Entire System Server Administration Documentation.

SDF

Operating System	Type	Default
BS2000/OSD	Optional	NO

Specifies if SDF syntax is to be used for internal commands. If YES is specified, all JCL-related startup parameters must contain SDF syntax. Possible options:

Option	Explanation
YES	SDF syntax is to be used.
NO	Default. ISP syntax is to be used.

SECURITY

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	NONE

The security system in use. The options are:

Option	Explanation
NONE	No security system is used.
BS2	User ID, password are checked against TIAM user ID definitions in BS2000/OSD (TSOSJOIN).
RACF	RACF, ACF2 or TOP-SECRET security is used. For details, see the subsection Setting Up RACF Security for Operator Commands on OS/390 in the Section OS/390 Considerations.
RACX	RACF is installed but no logon is done. Normal security exits are invoked.
USER	Available in BS2000/OSD only: Example exit USERLSEC must be modified to solve security considerations at your site.

SERVER-DYN

Operating System	Type	Default
VSE/ESA, BS2000/OSD	Optional	NO

Specifies if Dynamic Server Management has to be activated. This value can be changed dynamically via operator command.

For more details see the subsection Dynamic Server Management for Entire System Server in the Section Common Entire System Server Features.

Option	Explanation
YES	Dynamic Server Management is enabled at startup time.
NO	Dynamic Server Management is disabled at startup time.

SERVER-MAX

Operating System	Type	Default
BS2000/OSD	Optional	16
VSE/ESA	Optional	n

Specifies the maximum number of SERVER tasks/subtasks running in Entire System Server. This value is considered by the Dynamic Server Management as maximum capacity for a high workload. For more details see the subsection Dynamic Server Management for Entire System Server in the Section Common Entire System Server Features.

For BS2000/OSD, the following rule applies:


```
        1       <= SERVER-MAX <= 16
SERVER-MIN <= NUMTASK      <= SERVER-MAX
```

For VSE/ESA, the following rule applies:

```
        1       <= SERVER-MAX <= n
SERVER-MIN <= NUMTASK      <= SERVER-MAX
```

For VSE/ESA, "n" is calculated as follows:
29 - 1 if VTAMACB=YES - 1 if SPOOLACB=YES - NATNUMSUB.

SERVER-MIN

Operating System	Type	Default
BS2000/OSD	Optional	1
VSE/ESA	Optional	1

Specifies the minimum number of SERVER tasks/subtasks running in Entire System Server. This value is considered by the Dynamic Server Management as minimum capacity for a low workload. For more details see the subsection Dynamic Server Management for Entire System Server in the Section Common Entire System Server Features.

For BS2000/OSD, the following rule applies:

```
        1       <= SERVER-MIN  <= 16
SERVER-MIN <= NUMTASK      <= SERVER-MAX
```

SERVER-NONACT

Operating System	Type	Default
BS2000/OSD	Optional	10
VSE/ESA	Optional	10

SERVER non-activity time (in minutes). This value is considered by the Dynamic Server Management only. If a SERVER has not been dispatched during this time interval, and no active request is assigned to that server, and SERVER-MIN is lower than the number of SERVERs currently active, this Server will be stopped.

This value must be greater than zero.

For more details see the subsection Dynamic Server Management for Entire System Server in the Section Common Entire System Server Features.

SERVER-QUEUE-DEPTH

Operating System	Type	Default
BS2000/OSD	Optional	5
VSE/ESA	Optional	5

SERVER queue depth. This value is considered by the Dynamic Server Management only. If a new request (user command) arrives, and the number of assigned requests to the SERVER with the lowest workload is greater or equal this value, and SERVER-MAX is higher than the number of SERVERs currently active, a new SERVER will be started to handle that request.

This value must be greater than zero.

For more details see the subsection Dynamic Server Management for Entire System Server in the Section Common Entire System Server Features.

Note: This parameter is not currently used under VSE/ESA but will be in a future release.

SHUTDOWN-MAX-DELAY

Operating System	Type	Default
BS2000/OSD	Optional	0
OS/390	Optional	<< tbd >
VSE/ESA	Optional	<< tbd >

Maximum wait time after issuing ESY shutdown until a smooth stop of running Natural subtasks (in seconds) occurs. This value is considered only if Natural subtasks are running at shutdown time.

This value must not be greater than 600 seconds.

For more information about Natural subtasks, see the subsection Aspects of Running System Automation Tools in Entire System Server on BS2000/OSD in the Section BS2000/OSD Considerations.

SMFREC

Operating System	Type	Default
OS/390	Optional	0

The record type of the SMF record to be written when a user logs off. This record contains the number of I/O operations performed, and the amount of CPU consumed by the user. See also the subsection OS/390 Accounting in the Section OS/390 Considerations. Possible options:

Option	Explanation
type	Record type of the SMF record to be written when a user logs off.
0	No SMF records are written.

SMFTIME

Operating System	Type	Default
OS/390, VSE/ESA	Optional	2

Value is in minutes. Under OS/390, controls the interval in which SMF records are written. Under VSE/ESA, controls the interval in which the Dynamic Server Management checks for server non-activity.

SMTP-HOST

Operating System	Type	Default	Maximum Value Length
OS/390, VSE/ESA	Optional	There is no default.	24 bytes
BS2000/OSD	Optional	There is no default.	120 bytes

Specifies the host name used as mail gateway. This is a DNS name. SEND-EMAIL view cannot work without specifying a valid value for this startup parameter. Contact your mail administrator to determine this host name.

For more information about E-Mail administration, see the subsection Run E-Mail Client in Common Entire System Server Features in the Entire System Server Administration Documentation.

SMTP-PORT

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	25

The SMTP port number used on the mail gateway. SEND-EMAIL view cannot work without specifying a valid value for this startup parameter. Contact your mail administrator to determine this port number.

For more information about E-Mail administration, see the subsection Run E-Mail Client in Common Entire System Server Features in the Entire System Server Administration Documentation.

SPOOL

Operating System	Type	Default
OS/390, VSE/ESA	Optional	NONE
BS2000/OSD	Optional	BS2

Specifies the spooling system in use. The possible values are:

Option	Explanation
NONE	No SPOOL interface (default on OS/390, VSE/ESA)
JES2	OS/390 JES2 all versions.
JES3	OS/390 JES3 all versions. See also the subsection OS/390 Common JES Interface in Section OS/390 Considerations.
POWR	POWER (VSE/ESA only)
BS2	BS2000/OSD Spool (BS2000/OSD only)

Note:
The parameter APPLCOPY=COMMON is no longer required with JES 2.

SPOOLACB

Operating System	Type	Default
OS/390, VSE/ESA	Optional	NONE

This parameter must be set if you are using Entire Output Management and want to print from Entire Output Management to a VTAM printer.

Possible options:

Option	Explanation
name	Name of the VTAMACB.
NONE	The Entire Output Management printing facility is not activated

STDUSER

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	There is no default.

System Server who are calling from a non-mainframe Natural (VMS, UNIX, Windows, OS/2).

SUBSYS

Operating System	Type	Default
OS/390, VSE/ESA	Optional	There is no default.

This parameter is used internally and specifies the name of any subsystem. For the value of *name*, see the installation instructions of the relevant subsystem.

SWAP

Operating System	Type	Default
OS/390	Optional	NO

Specifies whether Entire System Server address space is swappable. The default value (NO) is recommended. Possible options:

Option	Explanation
YES	Address space is swappable.
NO	Address space is marked non-swappable during initialization.

SYNCDB

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	NONE (no synchronization)

This parameter synchronizes the start of Entire System Server with databases. You can specify the DBIDs of databases, which **must** be ready if you want to start Entire System Server. This is important for products like NOP, NOM, NCL . *n*, *m*, ..., *k* are DBIDs. If the database **not ready**, there is a wait of *nnn* seconds to synchronize start. See also description of startup parameter SYNCTIME, below.

SYNCTIME

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	0

If you have specified DBIDs with the parameter SYNCDB, the parameter SYNCTIME gives the time in seconds to wait between synchronization retries. If the fifth retry still does not succeed, Entire System Server comes down. If SYNCDB=NONE, SYNCTIME parameter is ignored. See also description of startup parameter SYNCDB, above.

SYSTEMCONS

Operating System	Type	Default
OS/390	Optional	NONE

This parameter indicates the system names where Entire System Server should collect console messages (e.g., SYSTEMCONS=DAEF, DA2F, ABCD). In this case, we collect console messages from the 3 systems indicated.

TAPES

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	NO

Specifies whether your site allows access to mounted tapes from any Natural session.

Option	Explanation
YES	Access to mounted tapes allowed.
NO	Access to mounted tapes not allowed.

TCP-STACK

Operating System	Type	Default	Maximum Value Length
OS/390, VSE/ESA	Optional	There is no default.	8 bytes

This parameter specifies the name of the started task or job in which the TCP/IP protocol stack is running. SEND-EMAIL view cannot work without specifying a valid value for this startup parameter. Contact your network administrator to determine this name.

Note for OS/390:
If an invalid value has been specified as TCP-STACK, the SEND-EMAIL requests produce error message ***ESY5897 Mailer response: errno 1011 in EZASMI INITAPI*** as ERROR-TEXT reporting errno 1011 (EIBMBADTCPNAME).

Note for VSE/ESA:
Currently this value is ignored by the TCP/IP stack products, however it may be required in future releases.

For more information about E-Mail administration, see the subsection Run E-Mail Client in Common Entire System Server Features in the Entire System Server Administration Documentation.

TEMPUNIT

Operating System	Type	Default
OS/390	Optional	VIO

The unit name to be used when an Entire System Server request for allocation of a temporary data set is made (for example, SYSDA).

TIME

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	30

Timeout value for Entire System Server calls in seconds. This parameter is used to prevent a command queue element and attached buffer from being held for a long period for a user who has terminated abnormally.

This parameter is the equivalent to the Adabas CT parameter.

TRACE

Operating System	Type	Default
BS2000/OSD, OS/390, VSE/ESA	Optional	PREP

Specifies how to set up the TRACE environment.

Option	Explanation
NO	TRACE environment is completely deactivated.
PREP	TRACE environment will be initialized, but not started yet.
YES	TRACE environment will be activated at ESY startup.

If the YES or PREP option is specified, the TRACE activity can be manipulated via operator command to start or stop traces dynamically.

For more details, see the subsection Creating Trace Data in the Entire System Server.in the Section Common Entire System Server Features.

TRACE-LEN

Operating System	Type	Default
BS2000/OSD, OS/390, VSE/ESA	Optional	8

Specifies the size of the TRACE memory pool (in Kbytes). This value is considered only if TRACE=YES or TRACE=PREP has been defined.

For more details, see the subsection Creating Trace Data in the Entire System Server in the Section Common Entire System Server Features.

TRACE-SAV

Operating System	Type	Default
BS2000/OSD, OS/390, VSE/ESA	Optional	YES

TRACE-SAV control the TRACE save routine at exit.

Option	Explanation
YES	TRACE data buffers will be saved.
NO	TRACE data buffers will not be saved.

For more details, see the subsection Creating Trace Data in the Entire System Server in the Section Common Entire System Server Features.

UEX4

Operating System	Type	Default
OS/390, VSE/ESA, BS2000/OSD	Optional	There is no default.

Name of user exit. Linkage conventions are compatible with the Adabas USEREXIT4.

VIEWSEC

Operating System	Type	Default
BS2000/OSD	Optional	NONE

The name of the view security exit to limit usage of views to a list of user IDs. A sample exit named USERVSEC is supplied as source member on the installation tape. Possible options:

Option	Explanation
name	Name of the view security exit. Example exit USERVSEC must be modified to solve the security considerations at your site.
NONE	Default. View security exit is not activated.

VSAMLABELS

Operating System	Type	Default
VSE/ESA	Optional	YES

This parameter controls processing of VSAM files at Entire System Server initialization time in combination with the parameter NUMLIBS.

VTAMACB

Operating System	Type	Default
OS/390, VSE/ESA	Optional	NONE

The name of the VTAM application to be used for the VTAM operator interface as it appears in the ACBNAME parameter in the VTAM APPL statement.

Possible options:

Option	Explanation
name	Name of the VTAM application in the ACBNAME parameter.
NONE	The VTAM interface is not activated.

VTAMQLEN

Operating System	Type	Default
OS/390, VSE/ESA	Optional	100

The maximum size (in K bytes) of the in-core queue for pending VTAM messages. If this queue size is reached, the oldest half of the queue is deleted.

Operator Commands

This documentation describes the operator commands that can be entered on the operator console to control and display Entire System Server activities.

This section covers the following topics:

- Command Syntax
- Command Descriptions

Command Syntax

The following command format is required to communicate with the Entire System Server via the operator console. Note that parameters in UPPERCASE must be typed as is. Parameters in *italics* must be substituted with a valid value.

OS/390:

```
F taskname, command parameter
```

where:

taskname	is the name of the Entire System Server started task or job at your installation.
command	is the operator command keyword.
parameter	is a parameter that allows you to issue an operator command for selected items.

VSE/ESA:

```
MSG pt
  replid command parameter
```

where:

pt	is the partition in which the Entire System Server is executing.
replid	is the reply identifier assigned to prompt.
command	is the operator command keyword.
parameter	is a parameter that allows you to issue an operator command for selected items.

BS2000/OSD:

```
/INTR tsn,command parameter
```

where:

tsn	is the task sequence number of the Entire System Server main task (with loaded module ESYMAIN) unless otherwise stated.
command	is the operator command keyword.
parameter	is a parameter that allows you to issue an operator command for selected items.

Command Descriptions

Syntax Conventions

In the syntax diagrams that follow, a parameter enclosed in curly braces **{}** are optional, parameters in *italics* are variables that must be substituted with a real value, for example, a name. If more than one parameter appears, only one may be specified.

In the examples, only the command and parameter keywords are described. You must supply the other command operands as appropriate to the operating system.

ADAEND

Command	Parameter	Operating System
ADAEND		OS/390, BS2000/OSD, VSE/ESA

No more processing takes place. Existing calls to the Entire System Server are allowed to finish, but new calls are rejected. Processing ends after the last call has finished.

If the startup parameter SHUTDOWN-MAX-DELAY is specified as non-zero, the Entire System Server tries to stop any available ESM monitor (EOM, EOR, ...) and waits for the monitors to shut down. New calls are not rejected until SHUTDOWN-MAX-DELAY time is elapsed. If all ESM monitors are stopped in the meantime, the deferred shutdown is not needed any longer and ADAEND will be executed.

CANCEL

Command	Parameter	Operating System
CANCEL	USER=userid ID=sessionid JOB=jobname	OS/390, BS2000/OSD, VSE/ESA

Cancels the specified user in the Entire System Server address space.

Examples:

- To cancel the user ITSME from the Entire System Server subtask XCOM148, enter the following command in the operator console:

  ```
  CANCEL USER=ITSME
  ```

  cancels **all** active sessions with the Entire System Server for user ITSME.
- The following command cancels the one specific session for a user:

  ```
  CANCEL ID=nnnn
  ```


where *nnnn* is the corresponding Entire System Server ID retrievable using the view NATPROC-USERS, or via the operator command:

```
USERS userid
```

- To cancel all users originating from job name ESYSTART, enter the following command:

```
CANCEL JOB=ESYSTART
```

EVENTS

Command	Parameter	Operating System
EVENTS		OS/390, VSE/ESA

The EVENTS command displays the contents of the EVENTING view control blocks on the console. It generally is to be issued at the request of Software AG customer support for problem determination.

FILES

Command	Parameter	Operating System
FILES		BS2000/OSD

The FILES command creates a list of all open files per user in this server task. It is supported in the server tasks (with loaded module ESYSERV), therefore the TSN of the server task has to be used.

Example:

```
/INTR 9083,files    " --> FROM USER TSOS"
ESY4001I 00113 Operator typed in: FILES.
ESY2173I 00113 USER     ESY-ID ACT VIEW DSNAME.
ESY2173I 00113 -------- ------ --- ---- -----------------------------------
ESY2173I 00113 DC1       0004   N     2 :NAT:$DC1.P.NRT313.3932.
ESY2173I 00113 TSOS      0003   N     2 :CIS:$NETWORK.WCP.SRC.
```

If no files are open, the following message is displayed:

```
/INTR 9083,files    " --> FROM USER TSOS"
ESY4001I 00113 Operator typed in: FILES.
ESY2174I 00113 Nothing found for this request.
```

SERVER-DYN

Activates or deactivates dynamic server support.

Command	Parameter	Operating System
SERVER-DYN	YES NO	BS2000/OSD, VSE/ESA

SERVER-MIN

Sets the SERVER-MIN parameter to the specified value. *nn* must not be more than SERVER-MAX.

Command	Parameter	Operating System
SERVER-MIN	nn	BS2000/OSD, VSE/ESA

SERVER-MAX

Sets the SERVER-MAX parameter to the specified value. *nn* must not be less than SERVER-MIN.

Command	Parameter	Operating System
SERVER-MAX	nn	BS2000/OSD, VSE/ESA

SERVERS

Displays information about current server load.

Command	Parameter	Operating System
SERVERS		BS2000/OSD, VSE/ESA

SHUTDOWN

Command	Parameter	Operating System
SHUTDOWN	EOR NOM NCL RPC ALL *	

The operator command SHUTDOWN stops the monitors of Entire System Management (ESM) products.

Using the above syntax, you can shutdown the monitors of Entire Operations (EOR), Entire Output Management (NOM), Entire Event Management (NCL) or all running monitors at a time (ALL or *).

START

Command	Parameter	Operating System
START	ALL	OS/390, VSE/ESA, BS2000/OSD

"START ALL" (re)starts the initial SAT task to run ESM monitors.
Command is rejected if the SAT environment is still active.

Issue command "SHUTDOWN ALL" to stop SAT environment.

TAPES

Command	Parameter	Operating System
TAPES		OS/390

Display tape units allocated to the Entire System Server.

TAPEFREE

Command	Parameter	Operating System
TAPEFREE	ddname ALL	OS/390

Free tape units allocated to the Entire System Server.

Example:

- The following command frees the tape allocated to DDNAME MYTAPE:

```
TAPEFREE MYTAPE
```

- The following command frees all tapes allocated to the Entire System Server session:

```
TAPEFREE ALL
```

USERS

Command	Parameter	Operating System
USERS	userid	OS/390, VSE/ESA, BS2000/OSD

Displays the specified user ID as a message on the console. Without the userid parameter, a list of all users is displayed. You can also specify a prefix followed by an asterisk * to select those user IDs starting with that prefix.

Example:

- The following command displays user ITSME:

```
USERS ITSME
```

- The following command displays all users whose IDs begin with SAG:

```
USERS SAG*
```

VSAM

Command	Parameter	Operating System
VSAM		OS/390

Display open VSAM files.

VSAMFREE

Command	Parameter	Operating System
VSAMFREE	ddname ALL	OS/390

Free VSAM files.

Example:

- The following command frees VSAM file allocated to DDNAME MYFILE:

```
VSAMFREE MYFILE
```

- The following command frees all VSAM files allocated to the Entire System Server session:

```
VSAMFREE ALL
```

XCANCEL

Command	Parameter	Operating System
XCANCEL		OS/390, VSE/ESA, BS2000/OSD

Processing stops immediately and a dump is created. Existing calls to the Entire System Server are not allowed to finish.

XCQES

Command	Parameter	Operating System
XCQES		OS/390, VSE/ESA, BS2000/OSD

The number of Command Queue Elements currently active is displayed. The highest number of currently active CQES is also shown.

XHALT

Command	Parameter	Operating System
XHALT		OS/390, VSE/ESA, BS2000/OSD

New calls to the Entire System Server are temporarily rejected. Processing is resumed with the XSTART operator command (see below).

XPARM

Command	Parameter	Operating System
XPARM		OS/390, VSE/ESA, BS2000/OSD

A set of startup parameters such as node number, maximum number of command queue elements and attached buffers are displayed as console messages.

XSTART

Command	Parameter	Operating System
XSTART		OS/390, VSE/ESA, BS2000/OSD

Processing of calls to the Entire System Server, interrupted with the XHALT command, is resumed.

XSTAT

Command	Parameter	Operating System
XSTAT		OS/390, VSE/ESA, BS2000/OSD

Entire System Server statistics are displayed as console messages.

XSTOP

Command	Parameter	Operating System
XSTOP		OS/390, VSE/ESA, BS2000/OSD

Processing stops immediately. Existing calls to the Entire System Server are not allowed to finish.

XUSER

Command	Parameter	Operating System
XUSER		OS/390, VSE/ESA, BS2000/OSD

The current number of users is displayed as a console message, and the highest number is displayed.

Common Entire System Server Features

This section describes common Entire System Server Features.

It covers the following topics:

- Running System Automation Tools in Entire System Server
- Common Diagnostic Features
- Write-to-Spool for Natural
- Dynamic Server Management for Entire System Server
- Run E-Mail Client
- Zap Reports in Entire System Server
- Ending Entire System Server

Running System Automation Tools in Entire System Server

General

Entire System Server enables the operation of System Automation Tools (e.g., Entire Output Management (EOM), Entire Operations (EOR)) as subtasks in the address space of ESY (OS/390, VSE/ESA) or as pseudo subtasks, i.e., standalone tasks (BS2000/OSD). These System Automation Tools (SAT) are applications on the basis of Natural, which require a Batch-Natural as engine.

SAT products are started by means of ESY startup parameters.

Until now, interaction between ESY and SAT or EOM, EOR, etc. has only been possible on a rudimentary basis, as the operator command SHUTDOWN has been the only command to terminate part or all of the SAT environment.

The configuration of the required Batch-NATURAL task was not very flexible at least under BS2000/OSD.

This section offers an overview of the interfaces between ESY and SAT and deals with the configuration in the overall context.

Activating SAT during Start of Entire System Server

Start of SAT under BS2000/OSD

As Natural subtasks are implemented as separate tasks under BS2000/OSD, the definition of job control instructions is required. The ESY startup parameter JOBNATSUB specifies the location of the SAT-ENTER job. Apart from that, the following can be defined:

- the attributes for the SAT-ENTER job (PRMNATSUB parameter)
- the maximum number of pseudo Natural subtasks (NATNUMSUB parameter)
- and from ESY Version 2.2.2, the input control of dynamic Natural parameters (NATDYNPAR parameter).

The SAT-ENTER job, which is started during the initialization of Entire System Server, reads initialization data and starts the configured SAT products according to the set up definitions.

In general, a distinction must be made between the start of the SAT products via the macros SATSTART TYPE=BATCH and SATSTART TYPE=SUBTASK. To obtain a complete interaction of the SAT products with ESY, the SATP member (see SAT Installation and Customization for details) for the SATSTART macros should always use the TYPE=SUBTASK type. This ensures that both control functions and the Entire System Server shutdown interact with the SAT subproducts. TYPE=BATCH jobs are not known to Entire System Server.

The products started by SAT (e.g., EOM, EOR) run via separate ENTER jobs. In case of SATSTART TYPE=SUBTASK a job-skeleton is used for these ENTER tasks, which in the past had to be part of the ESY module library in object module format. From ESY 3.1.1, this job skeleton is definable as part of the ESY startup file.

Recently Introduced Startup Parameters under BS2000/OSD

- ESY 2.2.2: NATDYNPAR startup parameter for the operation of SAT products

  Customers using SAT know the problems with the interaction between the Batch-Natural and the job skeleton used to generate the ENTER file for the products started by SAT. To keep the configuration as variable as possible, the ESY startup parameter NATDYNPAR was introduced to enable the user to read the dynamic Natural parameters via FILE, SYSDTA or SYSIPT according to the generation of the Batch-Natural driver. This assures that the dynamic parameters are correctly processed by the Batch-Natural.

- ESY 3.1.1: NATURAL-SUB-TASK job skeleton as part of the ESY startup parameter file

  Starting with ESY 3.1.1, the above complicated method is not used any longer, which consisted of delivering the ENTER file job skeleton of the products started by SAT as a DO procedure with integrated assembler source. This DO procedure was executed during installation and generated an object module, which was loaded in the ESY view processor NATURAL-SUB-TASK and which was modified before execution by means of the corresponding parameters. This resulted in an ENTER job, which started an EOM or EOR task.

  Now, the job skeleton is a component of the ESY startup parameter file.

  The jobs P.NSBTSKIS and P.NSBTSKSD are still delivered as ESY source library elements, but they are only included for compatibility reasons.

  The job skeleton can be defined at any location in the ESY startup parameter file, but it must be started using the keyword SATSKEL-BEGIN and terminated with the keyword SATSKEL-END.

  The following abridged example of an ESY startup parameter file shows its use:

```
NODE=113
  TIME=30
  ... more parameters ...
  JOBNATSUB=$NPR.E.SAT.113
  PRMNATSUB=RESOURCES=*PAR(CPU-LIMIT=*NO)
  NATDYNPAR=FILE
  NATNUMSUB=20
  *
  SATSKEL-BEGIN
  /.&UID LOGON
  ... more JCL ...
  / LOGOFF SYS-OUT=DEL
  SATSKEL-END
```

A complete example is part of the delivery files. A comprehensive description is provided in the section Startup Parameters.

Control of SAT during Entire System Server Operation

Starting with ESY 3.1.1, the NATPROC-USERS view contains an extension of the LIST function. If the field FULL-SCAN = YES, the view processor also lists all internal tasks in addition to the ESY users. This simplifies the control of the tasks controlled by ESY.

Activating/Deactivating NATURAL-SUBTASKS (SAT) during Operation

The operator command SHUTDOWN allows communication between ESY and the SAT product specified by using the operand and communicates the termination request. Communication is carried out by using the view processor EVENTING. By using this view, the SAT products obtain all required information, which ESY has passed by using the normal user interface.

New with ESY 3.1.1 is the operator command START ALL to restart SAT. It restarts the entire SAT environment without restarting ESY. First the SAT task is restarted and subsequently all defined SAT products are restarted. START ALL can be used only if the entire SAT environment has been stopped on its own or by operator command SHUTDOWN ALL. These two commands enable the user to have a "yo-yo" or "bounce" during normal operation.

SAT configurations can be corrected and tested while ESY is up and running.

Note that the operator command SHUTDOWN can address individual SAT products via parameters, but that the START command only accepts the ALL parameter.

Deactivating SAT during Entire System Server Stop

Special processing is required for the shutdown of ESY, when the SAT products have been started. The NATURAL-SUB-TASKS must be informed of the imminent termination. This is carried out by means of the view processor EVENTING. Having communicated the termination information, ESY checks the status of the NATURAL-SUBTASKS over short intervals. If they have terminated on their own, shutdown handling in ESY will be continued. In the meantime, user requests are still processed, as if the shutdown command had not been issued.

The Deferred Shutdown mechanism limits the time interval between the command for termination of the Entire System Server and the actual ESY termination. It would be possible, however, that the SAT products may not have accepted the shutdown request for various reasons or that they are busy with termination for an unusual period of time.

To eliminate this problem, the startup parameter SHUTDOWN-MAX-DELAY is available starting with ESY 3.1.1. This parameter limits the Deferred Shutdown to a specified number of seconds. If the time limit is reached, Entire System Server will terminate without properly closing down the SAT tasks.

If this situation occurs, why the SAT products did not stop within the defined time interval must be checked. In this case, Software AG support should be consulted, if necessary. As the monitors implemented in EOM or EOR have wait cycles, SHUTDOWN-MAX-DELAY=180 should be used initially. If all NATURAL-SUB-TASKS are stopped, the ESY termination will be continued immediately.

Common Diagnostic Features

There are two common diagnostic features:

- Command Logging
- Creating Trace Data in Entire System Server

Command Logging

For Adabas and Review users, Entire System Server provides extensive command analysis. This is achieved by setting the appropriate startup parameter. The log information is written to the specified dataset via a CLOG DD or FILE statement (see also the Section Startup Parameters). For further information, refer to the appropriate Adabas and Review documentation.

> **Note:**
> Entire System Server does not provide a User Exit 2 to manage a full CLOG dataset. Therefore, activate CLOG logging only for testing.

Using Review

To use Review, you must allocate a CLOG file and provide it in JCL with Entire System Server's started task. You must use the startup parameters UEX4=RAOSESYX,LOGGING=YES and set all logging parameters to YES to log all Adabas buffers. We recommend using Review 4.1.3.

Creating Trace Data in the Entire System Server

Introduction

Proper error analysis requires the logging of internal product information. Beginning with Version 3.1.1, ESY is able to generate data that can supply additional diagnosis information to Software AG support and development.

The secondary goal of implementation was that the overall behavior of the Entire System Server not be affected by trace and that only a minimal performance impact would occur. Therefore, trace data are recorded in raw format in order to save time. The data formatting itself is carried out in the diagnosis program ESYTRACE, designated explicitly for this purpose.

Trace data include information such as program start and end, return codes of individual functions and events during request processing. This basic level of information will be supplemented in future versions by new trace data points.

The primary function of the trace is to provide information about the operation logic in case of errors. It is not intended as a log of requests during normal operation; the Adabas Command Log provides more detailed information regarding requests and responses.

Trace Preparation

The trace environment of Entire System Server is activated by using startup parameters. This environment consists of a data buffer, in which the trace information is stored in a wrap-around method.

The data buffer size may be configured by using a startup parameter. This buffer is available externally to the ESYTRACE program running in MONITOR-MODE (please see the description of ESYTRACE for more information). Under VSE/ESA, an additional step is required to use the MONITOR mode of ESYTRACE. Please see the Installation for VSE/ESA documentation for further details.

The following startup parameters are part of the Entire System Server trace facility:

- TRACE to determine
  - whether the TRACE is to be activated (YES);
  - whether the TRACE environment shall only be initialized without starting the TRACE procedure (PREP);
  - or whether TRACE is not to be activated (NO)
- TRACE-LEN to set up the TRACE data buffer size
- TRACE-SAV to determine whether the available TRACE data are to be saved in a file, at normal termination of ESY or in case of ABEND.

The general recommendation for the operation of Entire System Server is to define the parameter TRACE=PREP to reserve a trace buffer (default 8K) and to set TRACE-SAV=YES. Then TRACE can be switched on or off at will by way of an operator command.

For TRACE-SAV, definition of a disk file is required. Under OS/390, a TRACE DD statement is required. Under VSE/ESA, a TRACSAV DLBL (preferred) or TLBL is required, and it is assigned to SYS021. The data are fixed length, 288 bytes. Under BS2000/OSD, assignment is via the logical file name TRACE (e.g., under OSD: /SET-FILE-LINK LINK-NAME=TRACE,FILE-NAME=name); the data are written sequentially in variable record format with a length of 4K as a maximum.

The following list supplies information about the file attributes:

Option	Explanation
BS2000/OSD	Size: SPACE=(4,4) Features: BLKSIZE=(STD,2),FCBTYPE=SAM,RECFORM=V
OS/390	DCB attributes of RECFM=FB, LRECL=288
VSE/ESA	SAM (may be VSAM-managed), fixed length 288 bytes

During startup of Entire System Server, the file is opened and checked for validity. If errors occur during this check or during creation of the file buffer, tracing will be deactivated and a corresponding operator message will be issued on the console.

Trace Activation/Deactivation during Operation

If Entire System Server was started by means of TRACE=PREP or TRACE=YES and the initialization was successful, tracing may be switched on or off by operator command during operation. To do this, the commands TRACE=Y or TRACE=N are available. This enables the tracing to be limited to specific circumstances. A trace stopped with TRACE=N can be switched on again at any time by means of TRACE=Y.

Trace Data Evaluation Using the Diagnosis Program ESYTRACE

As mentioned above, trace data is stored unformatted. A separate program, ESYTRACE, is supplied which formats the raw data. It reads these data in the trace buffer during operation or reads the file created by TRACE-SAV=YES, which is written at termination or ABEND of the Entire System Server and which represents a mirror image of the trace data available at the time of termination.

The prepared result data can both be written to a file and/or to SYSPRINT (OS/390), SYSLST (VSE/ESA) or SYSOUT (BS2000/OSD). Output is written to an optional file - TRACEOUT DD (OS/390), TRACOUT (SYS002) DLBL or TLBL (VSE/ESA) or TROUT (BS2000/OSD).

ESYTRACE is controlled by parms, which are passed to it via the PARM parameter of the JCL/JCS EXEC statement (OS/390, VSE/ESA) or RDATA (BS2000/OSD). The following parameters are supported:

- Position parameter 1: NODE-ID of the Entire System Server or -f or --file

  With Online-Trace, the numerical NODE-ID is specified to indicate MONITOR-MODE, whereas -f or --file causes the dataset assigned using the DDNAME TRACEIN (OS/390), TRACIN (SYS001) DLBL or TLBL (VSE/ESA) or logical file name TRIN (BS2000/OSD) to be processed as input (FILE-MODE).

- Keyword parameters:
  - -d | --displ

    The prepared result data are transferred to SYSPRINT (OS/390), SYSLST (VSE/ESA) or SYSOUT (BS2000/OSD).

- -n | --ntrout

  If this parameter is specified, no output file will be generated with the prepared result data using the logical file name TROUT. This key is accepted only if the parameter -d | --displ has also been specified.

- -p | --poll

  This option causes ESYTRACE in the MONITOR-MODE not to terminate the program at the end of the buffer, but to wait for further data in the trace buffer. This enables a running ESY node to be monitored in real time. Under VSE/ESA, additional steps are required before this can be used.

For the format of the optional output file, the following file attributes are required:

Option	Explanation
BS2000/OSD	Size: SPACE=(4,4) Features: BLKSIZE=(STD,2),FCBTYPE=SAM,RECFORM=V
OS/390	LRECL=315, RECFM=FBA
VSE/ESA	LRECL=315

The following parameters are recommended for the two modes:

- parameter list for MONITOR-MODE: "NODE-ID --displ --poll"
- parameter list for FILE-MODE: "--file"

The output file generated is useable only for error analysis by Software AG support. It contains no user data whatsoever other than the USER-ID.

For real-time monitoring of error situations, these steps should be used:

1. Start Entire System Server
2. Start diagnosis program ESYTRACE in MONITOR-MODE with the **--poll** option.

ESYTRACE will format trace data as soon as it is placed in the buffer.

ESYTRACE Diagnosis Program Termination in MONITOR-MODE

When in MONITOR-MODE, ESYTRACE can only be terminated by means of the operator command QUIT. Issue the QUIT command as follows:

Option	Explanation
BS2000/OSD	/INTR tsn,QUIT
OS/390	F stcname,QUIT
VSE/ESA	MSG xx,DATA=QUIT

Write-to-Spool for Natural

(This feature is available under OS/390 and VSE/ESA only.)

- Purpose
- Using the Write-to-Spool Feature
- Additional Notes
- Installation Considerations

Purpose

The Write-to-Spool feature enables Natural users to write reports to the system spool directly. It can be used in any Natural environment (Com-plete, TSO, CICS, Batch, etc.) and uses the Entire System Server view WRITE-SPOOL.

Under OS/390, the SYSOUT is part of the Entire System Server job stream.

Under VSE/ESA, the SYSOUT is spooled to the POWER queue under the job name of the executing Entire System Server nucleus.

From the system pool, users can print their jobs on any local or remote printer, using any software at their site that handles SYSOUT printing.

Important: This feature cannot be used together with **Natural Advanced Facilities**.

Using the Write-to-Spool Feature

To enable this access method, the system spool must be defined as printer in the Natural parameter module (NATPARM) in the following formats:

```
NTPRINT (n),AM=NAF,NAFSIZE=1,....
```

where *n* is a number within the range of defined printers.

Note:
This entry in the NATPARM module must **not** be overwritten dynamically at the start of a Natural session.

Users must define the JES/POWER destination under the OUTPUT class using the DEFINE PRINTER statement in their programs. For example:

```
DEFINE PRINTER (n) OUTPUT 'LOCAL'       /* For printing on local JES/POWER printers
```

or:

```
DEFINE PRINTER (n) OUTPUT 'ANYDEST'    /* For any valid JES/POWER destination name
```

where *n* is the number in the PRINTER entry in the NATPARM module as described above.

Reports can now be written to the system spool using either of the statements:

```
DISPLAY (n), or
  WRITE (n)
```

where *n* is the number in the PRINTER entry in the NATPARM module as described above.

Additional Notes

1. Users can set the output form and number of copies using the FORMS and COPIES clauses of the DEFINE PRINTER statement.
2. The output form can be set using the stroke (/) in the OUTPUT parameter of the DEFINE PRINTER statement. The text before the stroke is taken as the destination code, the text after the stroke is taken to be the form code, for example:


```
DEFINE PRINTER (2) OUTPUT 'DST/FORM'
```

3. Defaults for items such as Entire System Server node, forms and output class are found in the module NATWSPDF. To change these defaults, modify the member accordingly, assemble (and link-edit in OS/390), then relink the Natural nucleus.

Installation Considerations

To enable the Write-to-Spool feature at your site, relink the Natural module as follows:

For OS/390:

```
REPLACE NATPFAM
  INCLUDE NATLIB(nnnnnnn)     An existing Natural nucleus module
  INCLUDE NPRLIB(NATWSP23)    The Write-to-Spool access method for Natural
  INCLUDE NPRLIB(NATWSPDF)    Write-to-Spool defaults
  ENTRY     CMSTART
  NAME      nnnnnnn(R)
```

For VSE/ESA:

```
PHASE nnnnnnn                Name of Natural nucleus
  INCLUDE .......              All the standard INCLUDE statements for your
  .......                      Natural module, except the NAF modules
  INCLUDE NATWSP23             The Write-to-Spool access method for Natural
  INCLUDE NATWSPDF             Write-to-Spool defaults
  ENTRY     CMSTART
```

Important: If you use a shared Natural nucleus, you must link NATWSP23 and NATWSPDF to your shared nucleus.

Dynamic Server Management for Entire System Server

(This feature is available under BS2000/OSD and VSE/ESA only.)

This section covers the following topics:

- Dynamic Server Management Concepts
- Configuring a Dynamic Server Environment
- Activating/Deactivating Dynamic Server Management During Operation
- Controlling Dynamic Server Management During Operation

Dynamic Server Management Concepts

Unlike OS/390, under BS2000/OSD and VSE/ESA, a fixed number of server tasks/subtasks are started in Entire System Server in order to process user requests. Under OS/390, there is a 1:1 relationship between user and subtask, i.e., there is one subtask started for each user.

Use of a fixed number of server tasks/subtasks is due to operating system architecture, as under both BS2000/OSD and VSE/ESA the main Entire System Server task may create only a limited number of tasks/subtasks.

A dispatcher gives user requests to individual servers. The servers use the security profile of the user and process the request accordingly. Under BS2000/OSD, the server with the least load will process the new request. Under VSE/ESA, the first available server will process the request. If none are available, the request will wait until a subtask is free.

However, when using a fixed number of tasks/subtasks, problems may occur. This design cannot adequately react to different workloads. In case of many requests, the servers may not be able to process the requests quickly enough, resulting in delays. Likewise, during idle times Entire System Server cannot release resources.

For this reason, the Dynamic Server Management (DSM) was created. From ESY Version 3.1.1 (BS2000/OSD and VSE/ESA), it enables systems programming staff and operations to dynamically control servers, i.e., to start or stop them as necessary. A minimum number of servers are started during initialization of Entire System Server, which will be automatically increased in case of a large number of user requests up to a definable upper limit. Delays during request processing can thus be avoided to a large degree.

In case of idle times, servers are stopped until a definable lower limit is reached.

The dispatcher mentioned above determines if incoming requests can be processed with the current server configuration, and increases the number of servers if necessary.

A monitor function checks at regular intervals whether too many servers are idle and stops tasks/subtasks as necessary.

Under BS2000/OSD, the most important aid to recognizing bottlenecks is the queue depth as measured by the dispatcher, i.e., how many requests are pending for processing by a server. If this value reaches a definable limit, another server will be started and selected for processing the new request. Under VSE/ESA, new tasks are created when a new request is received and all active servers are busy with other requests (this will change in a future release).

Idle times are measured based on when a server is finished with a user request. If the monitor finds that the idle time exceeds that specified at startup, the server will be terminated.

Configuring a Dynamic Server Environment

For Dynamic Server Management, various new startup parameters are required to explicitly switch on this operating mode and define basic data for its functionality.

Up to now, the startup parameter NUMTASK defined the number of server subtasks for the conventional static operating mode which is still available of course. If the new startup parameters are not used, the dynamic operating mode will remain inactive.

The following startup parameters are available for Dynamic Server Management:

Startup Parameters	Explanation
SERVER-DYN	Defines whether Dynamic Server Management is to be switched on (YES) or off (NO) at initialization. This may be changed via an operator command at any time.
SERVER-MAX	Defines the upper limit of the number of servers. This may be changed via an operator command at any time.
SERVER-MIN	Defines the lower limit of the number of servers. This may be changed via an operator command at any time.
SERVER-NONACT	Fixes the maximum idle time of a server. If the value is reached or exceded, the server will be terminated if SERVER-MIN is smaller than the current number of servers.
SERVER-QUEUE-DEPTH	Fixes the depth of the task queue; if the server with the least load has reached this value, another server will be started if SERVER-MAX is greater than the current number of servers.
SMFTIME	VSE/ESA only - how often the monitor task will check for idle servers.

In dynamic operating mode, the startup parameter NUMTASK is used to define the initial number of servers. The following relationship exists between the parameters for the definition of the initial, upper or lower limit of running server tasks/subtasks:

```
SERVER-MIN <= NUMTASK <= SERVER-MAX
```

The general recommendation for the operation of Entire System Server in dynamic operating mode is to define the parameter SERVER-DYN=YES and to leave all other parameters at their default values. If the default values are not sufficient under BS2000/OSD, we recommend decreasing the value for SERVER-QUEUE-DEPTH or to set it to 1, if necessary, so that there will not be any queues. However, the value of SERVER-MAX may limit the number of new servers started.

Activating/Deactivating Dynamic Server Management during Operation

For simplified Dynamic Server Management administration, the operator command interface was enhanced so that most of the startup parameters can be set dynamically as well.

The values for SERVER-DYN, SERVER-MAX, and SERVER-MIN can be modified.

It is also not required to explicitly prepare the dynamic server environment at the time of initialization of Entire System Server. It may be activated by operator command at any time.

Controlling Dynamic Server Management during Operation

The operator command SERVERS lists the information about the server load to reflect the current state of Dynamic Server Management.

The following output was generated during a test operation under BS2000/OSD:

```
11:21:31 ADAI29 00113   OPER CMD: SERVERS
  11:21:31 XCO0016I 00113 Operator typed in: SERVERS.
  11:21:32 ESY0308I 00113 SERVER  STATUS  VP  CMD   USER   ACT  IDLE   VIEW.
  11:21:32 ESY0308I 00113 ------ -------- --- --- -------- --- ------- ----.
  11:21:32 ESY0308I 00113  2EF8  ACTIVE     2   2 DC1       Y       67    2.
  11:21:32 ESY0308I 00113  2EGK  ACTIVE     2   2 DC1       Y       48    2.
  11:21:32 ESY0308I 00113  2EGL  ACTIVE     0   0 ETB       N       10  190.
```

It indicates that Entire System Server currently operates three server tasks. The servers with the TSN 2EF8 and 2EGK are active, while Server 2EGL has not been used for 10 seconds (for details, see also the Section Operator Commands). The display under VSE/ESA is similar, with the exception of the values under the SERVER column.

The view NATPROC-USERS also returns information about the state of internal tasks - i.e., the server as well - so that server control by means of a program is possible.

VSE/ESA Considerations

Under VSE/ESA, there is a maximum number of 31 subtasks per partition. Since two subtasks are required by Entire System Server, this sets the maximum number of subtasks that can be assigned to both user tasks and NATURAL subtasks to 29. In addition, each concurrent use of the IDCAMS and CATALOG (CATALOG only when requesting information from a VSAM catalog) views requires a subtask, so SERVER-MAX and or NUMTASK may need to be set even lower than the maximum of 29.

Run E-Mail Client

General

SEND-EMAIL view implements a text-based mail client. See View Description of SEND-EMAIL in the Entire System Server User’s Guide for programming aspects and a sample program. The view processor requires additional startup parameters. See the section Startup Parameters of the Entire System Server Administration Documentation for a description of parameters JOBEMAIL, NUMMAIL, PRMEMAIL, SMTP-HOST, SMTP-PORT, TCP-STACK.

Entire System Server creates a TCP/IP connection to the host that is configured as mail gateway. This connection runs in the separate E-Mail Manager Task on BS2000/OSD, in the user tasks on OS/390 or in the server tasks on VSE/ESA. Therefore, a running TCP/IP stack is required and also running Domain Naming Services to resolve the own host name and the host name of the configured mail gateway. Contact your network and your mail administrator to determine if it is possible to establish a TCP/IP connection to the mail gateway.

Requirements on OS/390

SEND-EMAIL view uses the EZASMI macro interface to request services from IBM’s TCP stack.

The Entire System Server Started Task and all users requesting SEND-EMAIL view must be defined as legal Unix System Services users. An error message ***ESY5897 Mailer response: errno 0156 in EZASMI INITAPI*** reporting errno 156 (EMVSINITIAL) is returned as ERROR-TEXT if user does not have appropriate USS authorization.

Requirements on VSE/ESA

SEND-EMAIL view uses the EZASMI macro interface to request services from the TCP stack. The EZASMI interface is supported by both Connectivity Systems, Inc.(including IBM), and Barnard Software, Inc.'s TCP/IP stack services.

When using the CSI or IBM product, be sure that a DEFINE NAME parameter is specified in the stack parameters, otherwise an EDCV002I error message may be issued to the console and an ***ESY5897 Mailer response: errno 2 in EZASMI GETHOST*** will be issued to the caller.

Requirements on BS2000/OSD

E-Mail Manager Task requires the SOCKETS subsystem installed and running on the BS2000/OSD host where Entire System Server node will be started.

If it is not possible to completely initialize the E-Mail Manager Task (ESYMAIL), the task will stop but does not cause a shutdown of Entire System Server. ESYMAIL will report errors on system console and more detailed diagnostics in the SYSLST file. SEND-EMAIL view will be disabled for the current Entire System Server session.

If Entire System Server is properly configured and the startup of ESYMAIL does not detect errors, the E-Mail Manager Task will run and service SEND-EMAIL requests until Entire System Server is stopped again.

ZAP Reports in Entire System Server

Starting with Version 3.1.1, Entire System Server prints a report of all applied zaps at ESY startup. This information is determined during startup and is written to DDNAME SYSPRINT (OS/390), SYSLST (VSE/ESA) or SYSLST01 (BS2000/OSD).

Note for BS2000/OSD:
Each ESY task except the console task generates this ZAP report on SYSLST01. If SYSLST01 is not assigned, no report will be created.

The following sample listing illustrates the report layout. It was created during tests under BS2000/OSD.

OVERVIEW OF APPLIED ZAPS

```
XC41001 XC41002 XC41003 XC41004 XC41005 XC41006 XC41007 XC41008 XC41009
  XC41010 XC41011 XC41012 XC41013 XC41014 XC41015 XC41016 XC41017
```

CSECT Mapping

```
CSECT    EP       DATE       TIME     ZAPS

NPRINIT  01000000 2000-09-18 10:37:33 XC41001 XC41002 XC41003 XC41004 XC41005
                                        XC41006 XC41007 XC41008 XC41009 XC41010
                                        XC41011 XC41012 XC41013 XC41014 XC41015
                                        XC41016 XC41017
  CHKLINK  01000E58 2000-09-18 10:32:30 NONE
  CMDX2    010012A0 2000-09-18 10:32:38 NONE
  GETPARMS 01001878 2000-09-18 10:34:36 NONE
  LOAD2    01003330 2000-09-18 10:34:57 NONE
  NATPCMDL 010038A0 2000-09-18 10:36:15 NONE
  NATPNAT  01004180 2000-09-18 10:36:54 NONE
  NATPREP  01004A08 2000-09-18 10:37:04 NONE
  NATPSRV  010052D0 2000-09-18 10:37:12 NONE
  NATPSUBT 01005FD8 2000-09-18 10:37:21 NONE
  NATPUSR  01006780 2000-09-18 10:37:28 NONE
  NPROPHND 01006A38 2000-09-18 10:37:41 NONE
  SCANECET 010076D8 2000-09-18 10:37:56 NONE
  SYNCADA  01007F00 2000-09-18 10:38:19 NONE
  SYSINFO  01008298 2000-09-18 10:38:26 NONE
  TRACE    010086C0 2000-09-18 10:38:34 NONE
  WTO      01009438 2000-09-18 10:39:02 NONE
  XCOMINIT 01009DF0 2000-09-18 10:39:19 NONE
  XCOMMAIN 0100A3E8 2000-09-18 10:39:28 NONE
  XDBOPER  0100B1F8 2000-09-18 10:47:39 NONE
  XDBPRSTP 0100B4D0 2000-09-18 10:47:54 NONE
  XDBSTOP  0100B758 2000-09-18 10:48:03 NONE
  XDBTIME  0100BCC8 2000-09-18 10:48:14 NONE
  XCOMNUC  0100BFF0 2000-09-18 10:39:38 NONE
  XDBPROC  0100DAB8 2000-09-18 10:47:45 NONE
  ANSWER   0100EA90 2000-09-18 10:32:20 NONE
```

OS/390 and VSE/ESA reports have a similar format.

The first part of the report lists all installed program corrections (OVERVIEW OF APPLIED ZAPS). The second part provides detailed information about the names of the program sections (CSECT), the entry points (EP), the creation date and time (DATE and TIME), and the installed corrections (ZAPS) per program section.

This information may help to get an overview about applied zaps. It is also useful for Software AG support.

Ending Entire System Server

For information on how to terminate Entire System Server, see Section Operator Commands in the Entire System Server Administration Documentation.

For BS2000/OSD, see How to Start/End Entire System Server on BS2000/OSD in Section BS2000/OSD Considerations of the Entire System Server Administration Documentation.

Return Codes Issued by Entire System Server at Termination

On OS/390 and on VSE/ESA

When Entire System Server terminates due to reasons other than an ABEND, a return code is issued. A return code **0** indicates no abnormal incidents occurred during the run. A return code **4** indicates that a subtask ABENDed at some time during the run; check the JES job log for details. A return code **8** indicates that Entire System Server never started due to a bad parameter or other reason; check the JES job log for details.

On BS2000/OSD

At program termination, the Entire System Server components set a return code, which is transferred to a monitoring job variable. The status display for successful execution is C' $T 0000', the status for abnormal termination is C' $A 0008'.

z/OS and OS/390 Considerations

This section describes z/OS and OS/390 considerations.

It covers the following topics:

- z/OS and OS/390 Access Method Modules
- z/OS and OS/390 Accounting
- Common JES Interface for z/OS and OS/390
- z/OS and OS/390 Security Considerations
- Setting Up RACF Security for Operator Commands on z/OS and OS/390
- REVIEW Considerations

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z/OS and OS/390 Access Method Modules

There are two access method modules available under z/OS and OS/390:

- z/OS and OS/390 Access Method Module for CA-Librarian
- z/OS and OS/390 Access Method Module for CA-Panvalet

z/OS and OS/390 Access Method Module for CA-Librarian

If CA-Librarian is available at your site, you can install the CA-Librarian access method module as follows:

1. Set &LIBRMOD in source NATPAML to the name of the CA-Librarian batch module and set &LIBROPT to the default parameters of the batch module. These options can be modified dynamically in the Natural programs using the OPTION field in the views LIB-UPDATE and WRITE-FILE.

   Set &SECALOC in source NATPAML to the number of blocks for secondary allocation. The default of 10 blocks is normally sufficient, but this can be increased if you receive a NAT5995 error while writing CA-Librarian members.

2. Assemble the module NATPAML and link-edit it using the CA-Librarian load library. The link attributes NON-REUSABLE and NON-REENTRANT must be set. The module name must be NATPAML, no alias is necessary. The CA-Librarian MACLIB must precede the Entire System Server source library so that the correct FAIR*nn* CA-Librarian macro is used.
3. Add startup parameter PRODUCT=L to the Entire System Server startup parameters.

When accessing CA-Librarian using Entire System Server views, users must specify the product code **L** in the PRODUCT field.

z/OS and OS/390 Access Method Module for CA-Panvalet

Set &SECALOC in source NATPAMP to the number of blocks for secondary allocation. The default of 10 blocks is normally sufficient, but this can be increased if you receive a NAT5995 error while writing CA-Panvalet members.

z/OS and OS/390 Accounting

The Entire System Server can optionally collect accounting information. This information is available through the view NATPROC-USERS (see also the LOOP startup parameter in the section Startup Parameters).

For z/OS and OS/390 only:

The layout of this user SMF record is as follows:

Location		Length	Format	Contents	
Dec	Hex				
0	0	2	Binary	Length or record.	
2	2	2	-	Reserved.	
4	4	1	Binary	System indicator:	8 - OS/390 or z/OS
5	5	1	Binary	Record type; value is stated in SMFRECORD parameter.	
6	6	4	Binary	Time in 100th of a seconds, record was moved to SMF buffer.	
10	A	4	Packed	Date record was moved to SMF buffer (00YYDDDF).	
14	E	4	Character	SYSID.	
18	12	8	Character	User ID.	
26	1A	4	Binary	CPU used in units of 26ths of a second.	
30	1E	4	Binary	Number of I/Os.	

An SMF record is written:

- if a user logs off him/herself;
- if a user is logged off due to inactivity;
- if SMFTIME parameter was set and this time window popped;
- if Entire System Server terminates.

In all cases, the SMF parameter must be set.

Common JES Interface for z/OS and OS/390

The former JES2 and JES3 interfaces (before release 3.1.1) have been rewritten and integrated into a Common JES Interface, exploiting the MVS subsystem interface functions 79 (SYSOUT API) and 80 (Extended Status).

The Common JES Interface need not be assembled during installation and therefore is distributed only as load module. It supports all JES2 and JES3 releases in service at the time of general availability of the current Entire System Server release. Support for new releases of JES2 and JES3 will be added via problem solutions.

All required security checks are done within the Common JES Interface and the SYSOUT API implementations using the SAF router interface. Therefore the former security exit JESVRACF is no longer required. However, for compatibility reasons, a dummy exit is provided that may be used to perform additional authorization functions.

For JES3 only, earlier releases of Entire System Server required that the Dynamic Support Program (DSP) IATUQJ3 was installed as a USERMOD in JES3 and the DSPDATA file was allocated to both JES3 and Entire System Server. As this type of communication is not used by the Common JES Interface, you may RESTORE the USERMOD and delete the DSPDATA file when you no longer use an earlier release of Entire System Server or Com-plete.

z/OS and OS/390 JES3 Considerations

The restrictions for z/OS and OS/390 JES3 installations as described in the ’Entire System Server Version 3.1.1 Release Notes’ no longer apply. The Common JES Interface now returns spool information from JES3 in the same way as from JES2, which is slightly different from the way spool information was returned from the JES3 interface of NPR22. To ease migration in a JES3 environment, the spool-related view processors will support either a ’compatibility mode’ or a ’consistency mode’. The mode is determined from the value specified for the SPOOL startup parameter. SPOOL=JES3 will set the ’compatibility mode’, the ’consistency mode’ can be requested with SPOOL=JESC.

The differences between the results from the Entire System Server Version 2.2.2 JES3 interface, the ’compatibility mode’ and the ’consistency mode’ for the views SPOOL-QUEUE and SPOOL-FILES can be obtained from the tables below. The ’compatibility mode’ will return the results like the Entire System Server Version 2.2.2 JES3 Interface whenever possible. There may be minor exceptions, e.g. the TIME-ON-READER field is not converted back from local time to UTC.

Applications that wish to exploit the JES3 ’consistency mode’ should consider the following issues:

- The current mode can be obtained from the STARTUP-PARM field of the SYSTEM-INFO view for the SPOOL keyword.
- SPOOL-QUEUE may return multiple entries for the same job, representing different sets of SYSOUT data sets with the same attributes.
- For a set of SYSOUT data sets with the same attributes there is no identifier. To identify the set of SYSOUT data sets, its common attributes must be specified.
- To select jobs by job class, its value must be specified in field JOB-CLASS of view SPOOL-QUEUE.

SPOOL-QUEUE	JES3 Interface Version 2.2.2	'compatibility mode'	'consistency mode'
CARD-COUNT	-	-	X
CLASS [2]	(X)	(X)	X
DATE-ON-READER	-	-	X
DATE-XEQ-START	-	-	X
DATE-XEQ-STOP	-	-	X
DATX-ON-READER [4]	(X)	X	X
DATX-XEQ-START	-	-	X
DATX-XEQ-STOP	-	-	X
DESTINATION	-	-	X
HOLD [1]	(X)	(X)	X
JOB-CLASS	-	-	X
JOB-ID	X	X	X
JOB-NAME	X	X	X
JOB-NUMBER	X	X	X
MESSAGE-CLASS	-	-	X
ORIGIN	X	X	X
PRIORITY	X	X	X
PROGRAMMER-NAME	-	-	X
QUEUE	X	X	X
RECORD-COUNT	-	-	X
SPOOL-UTILIZATION	X	X	X
STATUS	X	X	X
SYSTEM-ID	-	-	X
TIME-ON-READER [4]	(X)	X	X
TIME-XEQ-START	-	-	X
TIME-XEQ-STOP	-	-	X
TIMX-ON-READER [4]	(X)	X	X
TIMX-XEQ-START	-	-	X
TIMX-XEQ-STOP	-	-	X
TYPE [3]	(X)	(X)	X
USER	X	X	X

Notes:

1. The JES3 Interface and the 'compatibility mode' return the HOLD status only for held jobs, not for held output.
2. The JES3 Interface and the 'compatibility mode' always return the job class in field CLASS, there is no

output class returned.

3. The JES3 Interface and the ’compatibility mode’ always return the value ’JOB’ in the TYPE field, even for STC’s and TSU’s.
4. The JES3 Interface returns UTC based values in the TIME-ON-READER fields, in the ’compatibility mode’ and the ’consistency mode’ times are local.

The JES3 Interface and the ’compatibility mode’ return only one entry for a job on the output queue, even when there is output with different attributes.

SPOOL-FILES	JES3 Interface Version 2.2.2	’compatibility mode’	’consistency mode’
BURST	-	-	X
CHARS [1]	X	X	X
CLASS	X	X	X
COMPACT			
COPIES	X	X	X
DATA-SET [4]	X	X	X
DATA-SET-KEY [4]	X	X	X
DDNAME	X	X	X
DESTINATION-NODE			
DESTINATION-REMOTE			
DSNAME [2]	X	X	X
FCB [1]	X	X	X
FLASH	X	X	X
FORM [1]	X	X	X
HOLD	X	X	X
IDENTIFIER [2]	X	X	X
JOB-NAME	X	X	X
JOB-NUMBER	X	X	X
LINECT			
LRECL	X	X	X
PRINT-MODE	-	-	X
PROCNAME	X	X	X
RECFM	X	X	X
RECORD-COUNT	X	X	X
STEPNAME	X	X	X
TRC			
TYPE	X	X	X
UCS	-	-	X
WRITER [3]	X	X	X

1. The JES3 Interface and the ’compatibility mode’ do not return FORM, CHARS and FCB, if the values match the installation defaults.
2. The JES3 Interface and the ’compatibility mode’ return the designated ddname (procstepname.jobstepname.ddname) in fields DSNAME and IDENTIFIER, not the spool data set name.
3. The JES3 Interface and the ’compatibility mode’ return the general type of output (PRT/PUN) in field WRITER for SYSOUT data sets in the Writer Queue.
4. The JES3 Interface returns values in fields DATA-SET and DATA-SET-KEY that may be different from those returned by the ’compatibility mode’ and ’consistency mode.

z/OS and OS/390 Security Considerations

Security Logon

The Entire System Server region accesses datasets and other resources as requested by the Natural user. Therefore, if a security system is installed (identified by the SECURITY startup parameter), the Natural user must identify himself or herself to Entire System Server before any view can be accessed. A logon operation must be performed, specifying the user’s system user ID and password. SECURITY will be called to validate these parameters. If validation is successful, SECURITY will build a control block for the user. This control block will be used for future validations.

If the user attempts to access a view before logging on, Response Code 510 (LOGON REQUIRED) will be returned. However, if the startup parameter AUTOLOG is set to YES, an implicit logon is performed as part of the first user request. A password is only required if the Natural user ID does not match the user ID defined in the SECURITY system.

When a view requests access to resources such as datasets, batch jobs, etc., SECURITY will be called to check whether access is allowed (see the following section). If access is not allowed, the user will receive an appropriate error message.

The Entire System Server online tutorial contains a sample logon program that uses the view NATPROC-LOGON.

The logon operation is not needed if Entire System Server is used in single-user mode.

If no security system interface is requested (SECURITY=NONE), no security check is performed: all logon attempts will be successful. In this case, each attempt to access an object which is protected by security is treated in the same way as defined for the Entire System Server started task.

If ACF2 is installed at your site, you must define Entire System Server as the multi-user address space (using the parameter MUSASS in ACF2).

If TOP-SECRET is installed, the following parameters must be set:

```
FAC (USERS=NAME=PROCESS)
FAC (PROCESS=ACTIVE,NOASUBM)
FAC (PROCESS=NOABEND,AUTHINIT)
FAC (PROCESS=MULTIUSER,WARNPW)
FAC (PROCESS=MODE(FAIL),PGM=NAT
FAC (PROCESS=UIDACID=8,ID=P)
```

Setting Up RACF Security for Operator Commands on z/OS and OS/390

Assemble the distributed source for the OPRVRACF and VTMVRACF exits with conditional assembly variable &RACF set to **0**, in order to generate the RACROUTE code for validating the OPERCMDS resource class. Set the &JESC to your JES command character. The default is the dollar sign ($).

If &RACF is set to 1, the OPERATIONS flag in the ACEE control block will be examined instead of the RACROUTE approach.

REVIEW Considerations

If Review 4.1 and Entire System Server 3.1 (z/OS and OS/390 only) are installed, each of the following steps has to be performed.

For OUTGOING Calls:

Outgoing calls for Entire System Server are Adabas calls from the Entire System Server's address space to any Adabas database or any other Entire System Server.

An Entire Operations Monitor, for instance, is running as a Natural subtask in Entire System Server's address space and should be monitored via REVIEW:

1. Edit ADALNKR from the Adabas source lib and change the value of LRVINFO from 0 to 256 (workarea size for REVIEW).
2. Apply the zap RD41327 if REVIEW 41 is used.
3. Assemble and link with REVIEW:

   ```
   INCLUDE SYSLMOD(ADALNKR)
   INCLUDE REVLIB(RDBLXMVS)
   NAME ADALNKR(R)
   ```

   This load module must be REUS but not RENT.

4. Link the Natural subtask with ADANPR from Entire System Server.
5. Edit Entire System Server's startup parameter module and add the string ADAPRM=ON to the Natural startup parameter, i.e.:

   ```
   STRTNTP1=AUTO=OFF,ADAPRM=ON,STACK=(LOGON SYSSAT NCLMON NCLMON)
   ```

6. Edit Entire System Server's startup parameter module and set the following:

   ```
   UEX4=RAOSEXIT
   ```

For INCOMING Calls:

Incoming calls are Adabas calls from any Natural or non-Natural system to one Entire System Server:

1. Edit Entire System Server's startup parameter module:
   Set all LOGGING parameters to YES (LOGGING; LOGCB; LOGFB; LOGRB; LOGVB; LOGSB).
2. Include a CLOG dataset in the JCL. Attributes for this file are the same as for an Adabas command log file (see your Adabas documentation).
3. Edit Entire System Server's startup parameter module. Set the following:

   ```
   UEX4=RAOSEXIT
   ```


VSE/ESA Considerations

This section describes VSE/ESA considerations.

It covers the following topics:

- VSE/ESA POWER Considerations
- VSE/ESA Maintenance Considerations
- VSE/ESA Security Considerations
- CA-Dynam/D Considerations

VSE/ESA POWER Considerations

Entire System Server as supplied, supports all versions of VSE/ESA/POWER from SP5 onwards. No customization is therefore necessary.

VSE/ESA Maintenance Considerations

Maintenance to Entire System Server objects and phases will be performed using the MSHP utility. Prior to applying maintenance, the Entire System Server must be defined to MSHP as follows:

```
ARCHIVE NPRvrs
  COMPRISES 9001-ESY-00
  RESOLVES 'ENTIRE SYSTEM SERVER Vvrs'
  ARCHIVE 9001-ESY-00-vrs
  RESIDENCE PRODUCT=NPRvrs            -
            PRODUCTION=library.NPRvrs -
            GENERATION=library.NPRvrs
```

where:

vrs refers to the relevant Entire System Server Version, Release and System maintenance level.

Entire System Server zaps will be supplied using the following format:

```
CORRECT 9001-ESY-00-vrs : XC14nnn REVOKABLE
  AFFECTS PHASE=name
  ALTER   offset verify : replace
  RESOLVES 'reason'
```

VSE/ESA Security Considerations

VSE/ESA Security Considerations

Beginning with VSE/ESA 2.4, a SAF security interface is now provided. Either the Basic Security Manager (minimal security, distributed as part of VSE/ESA) or CA-TOP SECRET (a third-party product, additional cost) may be used. Entire System Server has the ability to use SAF for security for users and datasets. However, the routines must be written by the user. Please contact Software AG support for information on writing the exits.

CA-Dynam/D Considerations

When Entire System Server is used in an environment where the CA-Dynam/D product is active, several items must be taken into consideration:

- Use of DYNAMPOOL= value as the VOLSER value is supported only in the FILE-ATTRIBUTES, READ-FILE, LIB-DIRECTORY, LIB-UPDATE, VTOC-UPDATE and WRITE-FILE views under two conditions:
  - when a non-generic data set name is specified;
  - if the data set is defined in the CA-Dynam/D catalog (which is used to look up the real volume serial), whether automatically or manually added.
- Other file views (such as VTOC and FILE-ALLOCATE) are not currently supported.
- Other uses (e.g., generic data set names) are not supported due to the limited amount of data returned by defined CA-Dynam/D interfaces.

BS2000/OSD Considerations

This section describes BS/2000 considerations.

It covers the following topics:

- How to Start/End Entire System Server on BS2000/OSD
- Details for Running Entire System Server on BS2000/OSD
- Aspects of Running System Automation Tools in Entire System Server on BS2000/OSD
- BS2000/OSD Security Considerations
- BS2000/OSD SECOS Considerations
- BS2000/OSD UCON Interface
- BS2000/OSD System Command Interface

How to Start/End Entire System Server on BS2000/OSD

Single-User Mode

All modules required to perform an Entire System Server function are dynamically loaded into the caller's address space at request. You must therefore assign the Entire System Server Module Library to link name DDLIB2 before the Natural session is started.

A startup parameter file should be assigned to link name PARMS. If not, the default values for all startup parameters are used as far as they exist. For example, the parameter PRODUCT has no default and therefore no LMS functions can be performed if no startup parameter file is assigned.

The Entire System Server session is terminated when the Natural session is terminated.

Multi-User Mode

To use Entire System Server in multi-user mode, an Entire System Server node must have been started, that is, the Entire System Server MAIN task must have been started. All other tasks required for an Entire System Server node will then be automatically started by the MAIN task. See also Step 8: Edit the Entire System Server Start Jobs of the Installation for BS2000/OSD.

Shutdown of Entire System Server on BS2000/OSD

There are several ways to terminate an Entire System Server node. The usual method is to issue the console command

```
/INTR <tsn>,ADAEND
```

where <*tsn*> is the TSN assigned to the MAIN task.

This will automatically end all tasks belonging to that Entire System Server node.

The UCON interface task is not terminated by this because it may still be used by another node. It can however be terminated via the console command

```
/BCLOSE <application-name>
```

where <*application-name*> is the name which was assigned in the JCL of the UCON interface task. See also Step 8: Edit the Entire System Server Start Jobs of the Installation for BS2000/OSD.

For information on how to terminate Entire System Server via operator command, see Section Operator Commands in the Entire System Server Administration Documentation.

Another way to terminate an Entire System Server node is to issue FUNCTION= 'XEND' in the view processor NATPROC-USERS.

From Version 3.1.1 of Entire System Server, you can run the program ESYSTOP to shutdown ESY. It must be executed with the same user ID as the Entire System Server, i.e., as user TSOS.

The program ESYSTOP is driven by parameters obtained from SYSDTA. Job name or TSN of the ESY-MAIN task can be specified. The following syntax must be used for the parameters:

```
-J jobname | --JNAME jobname
  -T tsn     | --TSN tsn
```

The parameter --JNAME is recommended for a generic setup of program ESYTRACE.

A sample job is listed in Step 8: Edit the Entire System Server Jobs of the Installation for BS2000/OSD.

Details for Running Entire System Server on BS2000/OSD

- Tasks
- Communication
- Library Concept
- Program Characteristics

Tasks

Entire System Server under BS2000/OSD consists of several tasks.

The MAIN task is started manually by the operator or by a startup script. This main task spawns a number of other tasks according to the definitions in the startup parameter file.

Problems arise, if the JOB-CLASS-LIMIT of the operating system is exhausted.
Entire System Server cannot work properly, if some ESY tasks are still hold in the wait queue. This state must be avoided by appropriate operator interventions.

A TIMER-controlled routine in the MAIN task regularly checks the state of all ESY tasks, e.g., the status of the started server tasks and their workload.

Communication

Communication between the different ESY tasks is established via Eventing and Common Memory Pools. Forward Eventing is used for performance reasons.

The Natural applications and Entire System Server use the Adabas communication for transport of user data and for mutual communication between the different address spaces. The ESY node is addressable like an Adabas nucleus and thus visible via appropriate utilities.

Library Concept

The library concept of Entire System Server under BS2000/OSD has been completely revised for Version 3.1.1.

The modules are link-edited to reduce the ESY startup duration. Apart from that, there is a strict distinction between the delivery library and the user library. While the delivery library contains the original ESY modules only, Customers user exits are kept in the ESY user library.

All ESY startup jobs contain the assignment of the ESY module library via LINK-NAME ’DDLIB2’ and the assignment of a customer-specific ESY user library via LINK-NAME ’BLSLIB00’. This user library is searched for required modules alternatively, if nothing was found in the library assigned via LINK-NAME ’DDLIB2’.

To run different configurations, some modules must be loaded dynamically.

Program Characteristics

From Version 3.1.1, all Entire System Server components run in AMODE 31 (AMODE = addressing mode). This is independent from settings in the job control.

At program termination, the Entire System Server components set a return code, which is transferred to a monitoring job variable.

The status display for successful execution is C’ $T 0000’, the status for abnormal termination is C’ $A 0008’.

Aspects of Running System Automation Tools in Entire System Server on BS2000/OSD

General

Entire System Server enables the operation of System Automation Tools (e.g., Entire Output Management (EOM), Entire Operations (EOR)) as subtasks in the address space of ESY (OS/390, VSE/ESA) or as pseudo subtasks, i.e., standalone tasks (BS2000/OSD). These System Automation Tools (SAT) are applications on the basis of Natural, which require a Batch-Natural as engine.

SAT products are started by means of ESY startup parameters.

This section offers an overview of the interfaces between ESY and SAT and deals with the configuration in the overall context.

Activating SAT during Start of Entire System Server

Start of SAT under BS2000/OSD

As Natural subtasks are implemented as separate tasks under BS2000/OSD, the definition of job control instructions is required. The ESY startup parameter JOBNATSUB specifies the location of the SAT-ENTER job. Apart from that, the following can be defined:

- the attributes for the SAT-ENTER job (PRMNATSUB parameter)
- the maximum number of pseudo Natural subtasks (NATNUMSUB parameter)
- and from ESY Version 2.2.2, the input control of dynamic Natural parameters (NATDYNPAR parameter).

The SAT-ENTER job, which is started during the initialization of Entire System Server, reads initialization data and starts the configured SAT products according to the set up definitions.

In general, a distinction must be made between the start of the SAT products via the macros SATSTART TYPE=BATCH and SATSTART TYPE=SUBTASK. To obtain a complete interaction of the SAT products with ESY, the SATP member (see SAT Installation and Customization for details) for the SATSTART macros should always use the TYPE=SUBTASK type. This ensures that both control functions and the Entire System Server shutdown interact with the SAT subproducts. TYPE=BATCH jobs are not known to Entire System Server.

The products started by SAT (e.g., EOM, EOR) run via separate ENTER jobs. In case of SATSTART TYPE=SUBTASK a job-skeleton is used for these ENTER tasks, which in the past had to be part of the ESY module library in object module format. From ESY 3.1.1, this job skeleton is definable as part of the ESY startup file.

Recently Introduced Startup Parameters under BS2000/OSD

- ESY 2.2.2: NATDYNPAR startup parameter for the operation of SAT products

  The ESY startup parameter NATDYNPAR was introduced to support reading the dynamic Natural parameters from FILE, SYSDTA or SYSIPT according to the definition in the Batch-NATURAL driver. The NATURAL-SUB-TASK skeleton has been changed therefore to handle these different NATDYNPAR settings.

- ESY 3.1.1: NATURAL-SUB-TASK job skeleton as part of the ESY startup parameter file

  The job skeleton must not be converted into object module format any more. It can be defined at any location in the ESY startup parameter file and must be started using the keyword SATSKEL-BEGIN and terminated with the keyword SATSKEL-END.

  The jobs P.NSBTSKIS and P.NSBTSKSD are still delivered as ESY source library elements, but they are only included for compatibility reasons.

  The following abridged example of an ESY startup parameter file illustrates the keyword usage:

```
NODE=113
  TIME=30
  ... more parameters ...
  JOBNATSUB=$NPR.E.SAT.113
  PRMNATSUB=RESOURCES=*PAR(CPU-LIMIT=*NO)
  NATDYNPAR=FILE
  NATNUMSUB=20
  *
  SATSKEL-BEGIN
  /.&UID LOGON
  ... more JCL ...
  / LOGOFF SYS-OUT=DEL
  SATSKEL-END
```

A complete example is part of the delivery files. A comprehensive description is provided in the Section Startup Parameters.

Control of SAT during Entire System Server Operation

Starting with ESY 3.1.1, the enhanced LIST function of view NATPROC-USERS displays all internal tasks in addition to the ESY users, if the new field FULL-SCAN = ’YES’ has been specified. It allows to control ESY tasks with a Natural program.

Activating/Deactivating NATURAL-SUBTASKS (SAT) during ESY Operation

The operator command "SHUTDOWN" stops SAT components. New with ESY 3.1.1 is the operator command "START ALL" to restart SAT without restarting ESY. The SAT mother task will be started again to respawn all configured ESM monitors. "START ALL" may be used only if the entire SAT environment has previously stopped on its own or has been stopped by operator command "SHUTDOWN ALL". Both commands in conjunction allow to "bounce" SAT during normal operation of ESY.

Please note that the operator command SHUTDOWN can address individual SAT products via parameters while the START command only accepts parameter ALL.

Deactivating SAT during Entire System Server Stop

Entire System Server must stop all NATURAL-SUB-TASKS before shutting down. The stop request is published by ESY to all ESM monitors. Having communicated the termination information, ESY checks the status of the NATURAL-SUBTASKS over short time intervals. If they have terminated on their own, shutdown will be continued. In the meantime, user requests are still processed, as if the shutdown command had not been issued.

This procedure is called "Deferred Shutdown".

New startup parameter SHUTDOWN-MAX-DELAY limits the Deferred Shutdown to a specified number of seconds. If the time limit is reached, Entire System Server will terminate without properly closing down the SAT tasks.

If this situation occurs, you must check why the SAT products did not stop within the defined time interval. In this case, Software AG support should be consulted, if necessary.

As the SAT monitors have wait cycles, SHUTDOWN-MAX-DELAY=180 should be used initially. If all NATURAL-SUB-TASKS are stopped, the ESY termination will be continued without further delays.

BS2000/OSD Security Considerations

The Entire System Server tasks access datasets and other resources as requested by the Natural user. To be able to do this for various users, the Entire System Server must run under BS2000/OSD user ID TSOS. Users' access rights are checked by the Entire System Server in order to provide access to BS2000/OSD objects in the same range as if working under TIAM. Therefore, the Natural user must identify himself to Entire System Server before any view can be accessed.

A logon operation must be performed, specifying the user's system user ID and password. If SECURITY=BS2 was specified in startup parameters, user ID and password are checked against the system's user definition file (TSOSJOIN). If this validation is successful, the user ID will from then on be used for future validations until it is changed by another logon operation.

If the user attempts to access a view before logging on, Response Code **510** (LOGON REQUIRED) is returned. However, if the startup parameter AUTOLOG is set to YES, an implicit logon is performed as part of the first user request.

If the Natural user ID (BS2000/OSD logon user ID for batch, or TIAM, *USER for UTM) is not defined in BS2000/OSD, Response Code 510 (LOGON REQUIRED) is returned. For Natural/UTM, TSOS is not allowed as *USER and will be rejected.

The Entire System Server online tutorial contains a sample logon program that uses view NATPROC-LOGON.

The logon operation is not needed if Entire System Server is used in single-user mode.

If SECURITY=USER is specified in the startup parameters, exit USERLSEC is called to check the user ID and password as required at your site, and not against the system's user definition file (TSOSJOIN). For a sample exit USERLSEC, see the supplied Source Library.

If no security system interface is requested (startup parameter SECURITY=NONE), no security check is performed: all logon attempts will be successful. If in this case the Natural user ID is not defined in BS2000/OSD, only functions which do not require a BS2000/OSD user ID are available (such as EVENTING).

BS2000/OSD SECOS Considerations

If the Siemens software product SECOS is installed at your site, please note that the Entire System Server must be authorized to access any object that any of its users should be able to access.

This means that the Entire System Server user ID (TSOS) has to be defined in every access control list (ACL) of those objects. For SECOS V2 it is sufficient to define the program SERVER from the Entire System Server Module Library in any GUARD concerned, if GUARDs are used.

BS2000/OSD UCON Interface

The Entire System Server can run without the UCON interface. However, it is required if you wish to use views SEND-MESSAGE or CONSOLE.

The UCON interface of Entire System Server is activated by a separate task which opens a DCAM application and connects to UCON ($CONSOLE).

To enable the UCON interface task to connect to UCON, an authorization name must be defined for Entire System Server in BS2000/OSD generation and this name must be defined as BS2000/OSD user ID. This user ID, as well as the password defined for it must be specified as parameter of program ESYCONS in the JCL to start the Console Task of Entire System Server. (See also Step 8: Edit the Entire System Server Start Jobs of the installation of BS2000/OSD.)

The user ID must be authorized to issue certain operator commands. ESY does not require operator command authorization keys but the ESM monitors do. Therefore, the user ID must be authorized to issue all operator commands needed by the ESM monitors to support full functionality. For example, Entire Output Management needs the authorization key of operator command /CANCEL-JOB.

The required authorization keys for the UCON user ID are listed in the manuals of the various ESM products.

If your application issues operator commands, the UCON user ID must be authorized by the Administrator to execute that command.

The UCON interface task (also referred to as **console task**) can be shared by all Entire System Server nodes running on the same BS2000/OSD. With startup parameter CONACCESS, use of console functions can be restricted for all users on that node.

If WRITE is specified for CONACCESS, an exit can be used to further restrict use of the OP-CMD function of the CONSOLE view. Whenever the CONSOLE view is called with FUNCTION=OP-CMD, the USERCSEC module in the Entire System Server User Module Library gets control (if it exists). The caller's user ID, as well as the command string, are passed to the exit as input parameters and the exit checks whether the user is authorized to issue the command. If user exit USERCSEC does not exists, all operator commands will be accepted.

For a sample exit USERCSEC, see the supplied Source library. For a description of the CONACCESS parameter, see the section Startup Parameters.

BS2000/OSD System Command Interface

The SYSTEM-COMMAND view allows to issue a BS2000/OSD command in a Natural program. The view passes the data to the macro command language processor and returns the result to the calling Natural application.

An exit must be activated to restrict the use of system commands. Whenever the SYSTEM-COMMAND view is called, the USERSSEC module in the Entire System Server User Module Library gets control (if it exists). The caller’s user ID, as well as the command string, are passed to the exit as input parameters and the exit checks whether the user is authorized to issue the command. If user exit USERSSEC does not exist, view SYSTEM-COMMAND is completely disabled.

