

# Entire System Server

## Administration

Version 3.7.3

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This document applies to Entire System Server Version 3.7.3 and 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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## Document Conventions

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Convention	Description
<b>Bold</b>	Identifies elements on a screen.
Monospace font	Identifies service names and locations in the format <code>folder.subfolder.service</code> , APIs, Java classes, methods, properties.
<i>Italic</i>	Identifies:  Variables for which you must supply values specific to your own situation or environment. New terms the first time they occur in the text. References to other documentation sources.
Monospace font	Identifies:  Text you must type in. Messages displayed by the system. Program code.
{ }	Indicates a set of choices from which you must choose one. Type only the information inside the curly braces. Do not type the { } symbols.
	Separates two mutually exclusive choices in a syntax line. Type one of these choices. Do not type the   symbol.
[ ]	Indicates one or more options. Type only the information inside the square brackets. Do not type the [ ] symbols.
...	Indicates that you can type multiple options of the same type. Type only the information. Do not type the ellipsis (...).

## Online Information and Support

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- Get the latest Software GmbH news and announcements.
- Explore our communities.
- Go to our public GitHub and Docker repositories at <https://github.com/softwareag> and <https://hub.docker.com/publishers/softwareag> and discover additional Software GmbH resources.

## Product Support

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- Download products, updates and fixes.
- Search the Knowledge Center for technical information and tips.
- Subscribe to early warnings and critical alerts.
- Open and update support incidents.
- Add product feature requests.

## Data Protection

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Software AG products provide functionality with respect to processing of personal data according to the EU General Data Protection Regulation (GDPR). Where applicable, appropriate steps are documented in the respective administration documentation.

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# 2 Administration

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This documentation covers the following topics:

<i>Using the Entire System Server</i>	Explains how you can use the Entire System Server.
<i>Startup Parameters</i>	Describes how to customize parameter values to suit your site and how to add any parameters that are specific to add-on systems that use the Entire System Server.
<i>Operator Commands</i>	Describes the operator commands that can be entered on the operator console to control and display Entire System Server activities.
<i>Common Entire System Server Features</i>	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.
<i>z/OS Considerations</i>	Describes z/OS access method modules, accounting, the Common JES Interface, security considerations and the setting up of RACF Security for operator commands.
<i>z/VSE Considerations</i>	Lists VSE/POWER, maintenance and security considerations.
<i>BS2000 Considerations</i>	Provides information on how to start/end and run Entire System Server on BS2000. Moreover, the Library Concept, aspects of running System Automation Tools on BS2000 and BS2000 Security, SECOS and UCON Interface considerations are dealt with.

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# 3 Using the Entire System Server

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- Multiple Entire System Server Node Support ..... 11
- Entire System Server in Single-User Mode ..... 12

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



**Note:** Support for z/VSE is deprecated. Support for BS2000 is also deprecated, except in conjunction with the ESM adapter. Features that are z/VSE and BS2000 specific will be removed from future releases.

## General

---

When the Entire System Server is installed, the following macro statement is appended to the Natural parameter 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*). However, if you use Software AG products such as NSPF, NOP, NOM or NCL it is strongly recommended to use this default (NTDB PROCESS, 148) because these products are cataloged with that value, and expect this also at customer site. 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.

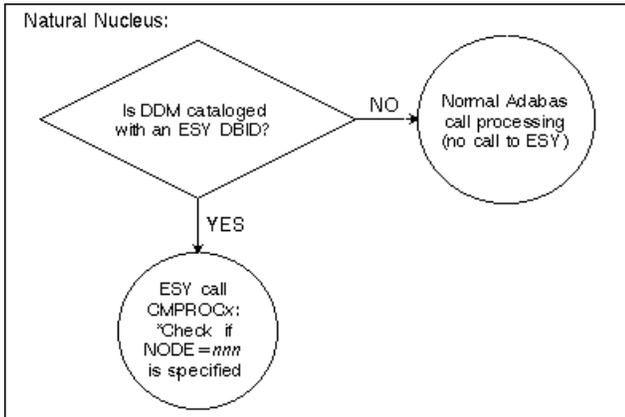
The following sequence illustrates how Natural statements are directed at Entire System Server. A Natural program may contain the statement:

```
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.

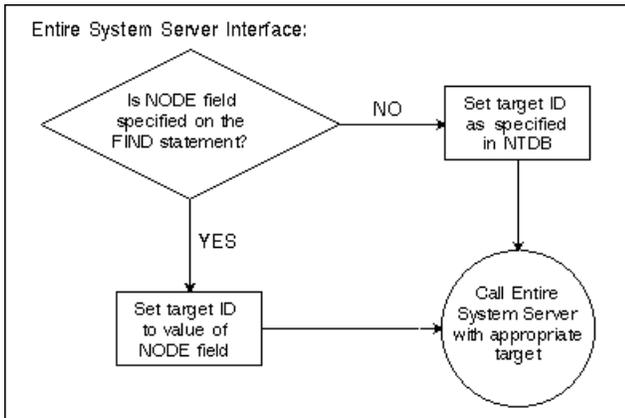
In the following figure, Entire System Server is abbreviated to `ESY`.

**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* documentation 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:



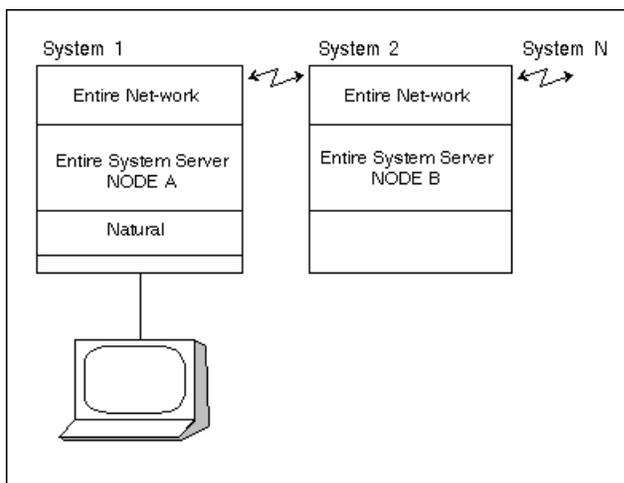
Using the Entire System Server Interface has several advantages:

- 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 NTDB parameter macro in the Natural parameter module) 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)` 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**

Single-user mode is not possible under *openUTM*. 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.

# 4 Startup Parameters

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This section explains the Entire System Server startup parameters.

*Introduction to Startup Parameters*

Explains how to use the startup parameters for customizing the product to suit your site.

*Startup Parameters in Alphabetical Order*

Descriptions of all startup parameters in alphabetical order.



# 5 Introduction to Startup Parameters

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- Example Parameter Members ..... 17

This section explains how to use the Entire System Server startup parameters.



**Note:** Support for z/VSE is deprecated. Support for BS2000 is also deprecated, except in conjunction with the ESM adapter. Features that are z/VSE and BS2000 specific will be removed from future releases.

## Using the 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.

## Parameters without Default Value

---

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

### **z/OS, z/VSE**

- ADA5SVC
- NODE

### **BS2000**

- 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.

In the following examples, the abbreviation *NPRvrs* stands for the current version, release, system maintenance level of the product.

### z/OS, z/VSE:

```

*****
*           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 z/VSE
*****
*
*   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 (z/OS only)
*STRNTNP1=STACK=(LOGON SYSSAT SATMON SATMON; /* (for SAT products only)
*STRNTNP2=SATSTART ESYUSER=SATMON)          /* (for SAT products only)
*NUMLIBS=300            /* (z/VSE only)
*NUMTASK=10            /* (z/VSE only)
*
*                               END**END**END**END**END**END**END**END**END**END

```

## BS2000

```

*****
* 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=$SAG.NPRvrs.JOBS(E.ESYSERV)
* SDF .... JOBSERVER=*LIB-ELEM(LIB=$SAG.NPRvrs.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
*
ACCOUNT-NATSUB=1          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
HOST-CODE-PAGE=EDF03IRV *NEW* No default    Host code page
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
MONITOR-CANCEL=YES      *NEW* Def.: NO     Cancel Natural subtasks
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
NUMCONSMMSG=2048       *NEW* Def.: 1024   Number CONSOLE MSG entries
NUMFAT=256              Def.: 128    Number Fast Access Tables
NUMMAIL=256             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 No default SMTP Host (Mail gateway)
SMTP-PORT=25 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
* 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=$SAG.NPRvrs.JOBS,ELEMENT=E.ESYCONS)
JOBEMAIL=*LIBRARY-ELEMENT(LIBRARY=$SAG.NPRvrs.JOBS,ELEMENT=E.ESYMAIL4)
JOBEVENT=*LIBRARY-ELEMENT(LIBRARY=$SAG.NPRvrs.JOBS,ELEMENT=E.ESYEVTM)
* JOBNATSUB=*LIBRARY-ELEMENT(LIBRARY=$SAG.NPRvrs.JOBS,ELEMENT=E.SAT)
JOBSEVER=*LIBRARY-ELEMENT(LIBRARY=$SAG.NPRvrs.JOBS,ELEMENT=E.ESYSERV)
*
PRMCONS=START=*IMMEDIATELY,RESOURCES=*PARAMETERS(CPU-LIMIT=*NO)
PRMEMAIL=START=*IMMEDIATELY,RESOURCES=*PARAMETERS(CPU-LIMIT=*NO)
PRMEVENT=START=*IMMEDIATELY,RESOURCES=*PARAMETERS(CPU-LIMIT=*NO)
PRMNATSUB=START=*IMMEDIATELY,RESOURCES=*PARAMETERS(CPU-LIMIT=*NO)
PRMSERVER=START=*IMMEDIATELY,RESOURCES=*PARAMETERS(CPU-LIMIT=*NO)
*
*-----*
* NATURAL-SUB-TASK skeleton: *
*-----*
*
SATSKEL-BEGIN
/.&UID SET-LOGON-PARAMETERS
/ MODIFY-JOB-OPTIONS INFORMATION-LEVEL=*MEDIUM, -
/ OPERATOR-INTERACTION=*YES, -
/ LOGGING=*PARAMETERS(LISTING=*YES)
/ MODIFY-TEST-OPTIONS DUMP=*YES
/ ASSIGN-SYSDTA TO=*SYSCMD
/ ASSIGN-SYSLST TO=L.&UID.&TSN.&CTR
/ SHOW-JOB-STATUS JOB-IDENTIFICATION=*OWN
/ ADD-FILE-LINK LINK-NAME=BLSLIB00, -
/ FILE-NAME=&NPRLIB
/ ADD-FILE-LINK LINK-NAME=DDLNKPAR, -
/ FILE-NAME=ADALNK.PARMS
/ ADD-FILE-LINK LINK-NAME=DDLIB2, -
/ FILE-NAME=&NPRLIB
/ ADD-FILE-LINK LINK-NAME=PO2, -
/ FILE-NAME=*DUMMY
/ SKIP-COMMANDS TO-LABEL=&DYNPAR
*
* NATURAL DYNPAR = FILE
*
/ .FILE SET-JOB-STEP
/ MODIFY-JOB-SWITCHES ON=(4,5)
/ START-PROGRAM FROM-FILE=$EDT
&PARMS

```

```

@W '#TMP.&UID.&TSN.&CTR' 0
@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=*NONESATSKEL-END
*
* < end of params >

```



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The startup parameter descriptions are listed in alphabetical order by their names.



**Notes:**

1. Support for z/VSE is deprecated. Support for BS2000 is also deprecated, except in conjunction with the ESM adapter. Features that are z/VSE and BS2000 specific will be removed from future releases.
2. Elements in italics (e.g. *name*) denotes a variable that must be replaced by a real value, for example, a name.

This chapter covers the following startup parameters:

## ACCOUNT-NATSUB

---

Operating System	Type	Default	Maximum Value Length
BS2000	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
z/OS, z/VSE	Required.	None

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.

## APPC-LUNAME

---

Operating System	Type	Default	Maximum Value Length
z/OS	Optional	NPRLU01	8 bytes

The name of the APPC/MVS LU to be used for the transaction program invoked by the SYSTEM-COMMAND view processor to execute TSO/E commands.

## APPC-MODENAME

---

Operating System	Type	Default	Maximum Value Length
z/OS	Optional	APPCHOST	8 bytes

The name of the default logon mode name to be used with the APPC/MVS transaction program invoked by the SYSTEM-COMMAND view processor to execute TSO/E commands.

## APPC-TPNAME

---

Operating System	Type	Default	Maximum Value Length
z/OS	Optional	SAG.NPRvrs.XCOMTP46	64 bytes

The name of the APPC/MVS transaction program to be invoked by the SYSTEM-COMMAND view processor to execute TSO/E commands.

## AUTOLOG

---

Operating System	Type	Default
z/OS, z/VSE, BS2000	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
z/OS, z/VSE, BS2000	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
z/OS, z/VSE	Optional	NO

Specifies whether Com-plete is installed on the system.

## CONACCESS

Operating System	Type	Default
BS2000	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 <code>CONSOLE</code> can, therefore, only be used for the functions <code>WTO</code> and <code>WTOR</code> .
READ	Console Task will be activated if the parameter <code>JOBCONS</code> is specified. All retrieval functions of the view <code>CONSOLE</code> can be used.
WRITE	Same as for <code>READ</code> option, but operator commands can also be issued by using the view <code>CONSOLE</code> .

Write access can be restricted to certain users and commands, using the exit `USERCSEC`. For more information, see [BS2000 Security Considerations](#) in the Section [BS2000 Considerations](#) of the Entire System Server [Administration](#) documentation.

## CONSNAM

Operating System	Type	Default
z/OS, z/VSE	Optional	is the string <code>ESYnnnnn</code> , where <code>nnnnn</code> 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
z/OS, z/VSE	Optional	1000 messages.

`nnn` is the number of messages to be kept. This parameter has been valid since MVS/ESA 5.1. and z/VSE 2.1. A wraparound table for z/OS or z/VSE 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.

## DEFNATSEC

---

Operating System	Type	Default
z/OS	Optional	ADDRSP

This parameter controls if a Natural subtask for an Entire System Management (ESM) product is to run in the security environment of the Entire System Server's address space or in a separate subtask security environment with a RACF protected user ID.

Possible options:

Option	Explanation
ADDRSP	Natural subtasks are run in the security environment of the address space.
TASK	Natural subtasks are run in the security environment of the task with the user ID specified in the DEFNATUSER startup parameter. This user ID must be defined in RACF as a protected user ID.

## DEFNATUSER

---

Operating System	Type	Default
z/OS	Optional	None

This parameter indicates a default z/OS 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
z/VSE	Optional	None

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

The DYNAM pool name is supported in READ-FILE, WRITE-FILE and LIB-DIRECTORY for referencing single volume data sets and libraries. It is not currently supported for FILE-ALLOCATE.

## EDIT-TIMEOUT

---

Operating System	Type	Default
z/OS	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.).

## EOR-JOBNAME-WITH-NODE

---

Operating System	Type	Default
BS2000	Optional	NO

This parameter allows you to manipulate the composition of job names for Entire Operations tasks managed as NATURAL-SUB-TASKS. If multiple Entire Operations monitors are running on the same machine, you may define this parameter value to YES. However, please consult Software AG support staff before adding or changing this parameter. Possible options:

Option	Explanation
YES	The NODE parameter value is used to replace the rightmost three bytes of the EOR job names. If the value of NODE is greater than 999, the rightmost five bytes of the job names are used for the NODE value.
NO	The job names supplied by EOR are used without any modification.

## ESYTRACE

---

Operating System	Type	Default
z/OS, z/VSE	Optional	NO

This parameter allows you to switch on the internal tracing facility of Entire System Server.



**Important:** It should only be used upon request of Software AG support staff.

Option	Explanation
YES	Activate internal tracing facility.
NO	Default. Deactivate internal tracing facility.

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

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



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

## EVENTLEN

---

Operating System	Type	Default
BS2000	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
z/VSE	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
z/OS, z/VSE, BS2000	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.

## HOST-CODE-PAGE

Operating System	Type	Default
z/OS, z/VSE, BS2000	Optional	None

This parameter is used to define the default host codepage used for any input data in view SEND-EMAIL.

### Possible options for BS2000:

Option	Explanation
EDF03DRV	Coded character set (CCS) EBCDIC.DF.03 ISO-7-bit German
EDF03IRV	Coded character set (CCS) EBCDIC.DF.03 ISO-7-bit International
EDF041	Coded character set (CCS) EBCDIC.DF.04 ISO-8-bit International
EDF04DRV	Coded character set (CCS) EBCDIC.DF.04 ISO-8-bit German

### Possible options for z/OS, z/VSE:

Option	Explanation
1140	Brazil, Canada, Netherlands, Portugal, U.S.
1141	Austria, Germany
1142	Denmark, Norway
1143	Finland, Sweden
1144	Italy

Option	Explanation
1145	Latin America, Spain
1146	United Kingdom
1147	France
1148	International
1149	Iceland
114A	Israel Hebrew code page 424, z/OS only

## IDENTIFIER

---

Operating System	Type	Default
z/OS, z/VSE, BS2000	Optional	None

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	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.

## IMAP-HOST

---

Operating System	Type	Default	Maximum Value Length
z/OS	Optional	None	64 bytes

The name of the IMAP server, from which e-mails are received. IP notation is not supported. There is no default. If this parameter remains unspecified, view `RECEIVE-EMAIL` cannot be used.

## IMAP-PORT

---

Operating System	Type	Default	Maximum Value Length
z/OS	Optional	None	5 bytes

The port number by which the `IMAP-HOST` is accessed. This is usually port 993 for a connection secured by SSL. There is no default.

## IUBL

---

Operating System	Type	Default
z/OS, BS2000	Optional	32767
z/VSE	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 z/OS, we recommend not reducing this value, otherwise NAT3152 or Adabas response code 152 errors may occur.

## JOB-CLASS

---

Operating System	Type	Default	Maximum Value Length
BS2000	Optional	TSOSBAT	8 bytes

Specifies the job class for the ESY tasks if Entire System Server is using the SDF-P startup method activated by parameter `SDF-P=YES`.

## JOBCONS

---

Operating System	Type	Default	Maximum Value Length
BS2000	Optional	None	120 bytes

Specifies the location of the job control to start the Console Task. For details, see [BS2000 UCON Interface](#) in the Section [BS2000 Considerations](#) of the Entire System Server [Administration](#) documentation.

Possible options:

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

## JOB-ELEM

---

Operating System	Type	Default	Maximum Value Length
BS2000	Optional	None	64 bytes

Specifies the LMS element name of type J to run the ESY tasks if Entire System Server is using the SDF-P startup method activated by parameter `SDF-P=YES`.

## JOBEMAIL

---

Operating System	Type	Default	Maximum Value Length
BS2000	Optional	None	120 bytes

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

For more information about E-Mail administration, see [Run E-Mail Client](#) in [Common Entire System Server Features](#) in the Entire System Server [Administration](#) documentation.

Possible options:

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

## JOBENT

---

Operating System	Type	Default
BS2000	Optional	None

This parameter is used to control the usage of privileged code for submitting jobs by Entire System Server.

Possible options:

Option	Explanation
YES	Entire System Server will execute privileged code to submit jobs.
NO	Entire System Server will not execute privileged code to submit jobs.
Not specified	Entire System Server will execute privileged code for submitting jobs on systems with encrypted passwords.

## JOBEVENT

---

Operating System	Type	Default	Maximum Value Length
BS2000	Optional	None	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
<i>filename</i>	Enter job is saved as file. The startup parameter <code>SDF</code> is omitted or set to <code>NO</code> to use ISP format or set to <code>YES</code> to use SDF format.
<i>library(element)</i>	Enter job is saved as LMS element. The startup parameter <code>SDF</code> is omitted or set to <code>NO</code> to use ISP format.
* <code>LIBRARY-ELEMENT(LIBRARY=<i>library</i>, ELEMENT=<i>element</i>)</code>	Enter job is saved as LMS element. The startup parameter <code>SDF</code> is set to <code>YES</code> .

## JOB-LIB

---

Operating System	Type	Default	Maximum Value Length
BS2000	Optional	None	54 bytes

Specifies the LMS library to find the SDF-P procedure (defined by `JOB-ELEM`) to run the `ESY` tasks if Entire System Server is using the SDF-P startup method activated by parameter `SDF-P=YES`.

## JOB-NAME-CONS

---

Operating System	Type	Default	Maximum Value Length
BS2000	Optional	XCON199	8 bytes

Specifies the job name of the Console Task if Entire System Server is using the SDF-P startup method activated by parameter `SDF-P=YES`.

## JOB-NAME-EMAIL

---

Operating System	Type	Default	Maximum Value Length
BS2000	Optional	XEML199	8 bytes

Specifies the job name of the E-Mail Manager Task if Entire System Server is using the SDF-P startup method activated by parameter `SDF-P=YES`.

## JOB-NAME-EVENT

---

Operating System	Type	Default	Maximum Value Length
BS2000	Optional	XEVT199	8 bytes

Specifies the job name of the Eventing Task if Entire System Server is using the SDF-P startup method activated by parameter `SDF-P=YES`.

## JOB-NAME-SERVER

---

Operating System	Type	Default	Maximum Value Length
BS2000	Optional	XSRV199	8 bytes

Specifies the job name of the Server Task if Entire System Server is using the SDF-P startup method activated by parameter `SDF-P=YES`.

## JOB-RUN-PRIORITY

---

Operating System	Type	Default	Maximum Value Length
BS2000	Optional	STD	3 bytes

Specifies the run priority of the ESY tasks if Entire System Server is using the SDF-P startup method activated by parameter `SDF-P=YES`.

For details, refer to operand `RESOURCES=*PARAMETERS(RUN-PRIORITY=value)` of command `ENTER-PROCEDURE`.

## JOB-START-OPTION

---

Operating System	Type	Default	Maximum Value Length
BS2000	Optional	IMMEDIATELY	17 bytes

Specifies the start option of the ESY tasks if Entire System Server is using the SDF-P startup method activated by parameter `SDF-P=YES`.

## JOB-START-OPTION

---

Specifies the start option of the ESY tasks if Entire System Server is using the SDF-P startup method activated by parameter `SDF-P=YES`.

Operating System	Type	Default	Maximum Value Length
BS2000	Optional	IMMEDIATELY	17 bytes

For details, refer to operand `SCHEDULING-TIME=*PARAMETERS(START=value)` of command `ENTER-PROCEDURE`.

## JOB-TIME

---

Operating System	Type	Default	Maximum Value Length
BS2000	Optional	NO	5 bytes

Specifies the CPU limit of the ESY tasks if Entire System Server is using the SDF-P startup method activated by parameter `SDF-P=YES`.

For details, refer to operand `RESOURCES=*PARAMETERS(CPU-LIMIT=value)` of command `ENTER-PROCEDURE`.

## JOBNATSUB

Operating System	Type	Default	Maximum Value Length
BS2000	Optional	None	120 bytes

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

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

For more information about Natural subtasks, see [Aspects of Running System Automation Tools in Entire System Server on BS2000](#) in the Entire System Server [Administration](#) documentation.

## JOBSERVER

Operating System	Type	Default	Maximum Value Length
BS2000	Required	None	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
<i>filename</i>	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.
<i>library(element)</i>	Enter job is saved as LMS element. The startup parameter SDF is omitted or set to NO to use ISP format.
*LIBRARY - ELEMENT(LIBRARY= <i>library</i> , ELEMENT= <i>element</i> )	Enter job is saved as LMS element. The startup parameter SDF is set to YES.

## LANGUAGE

---

Operating System	Type	Default
BS2000	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.

## LIST-NUM-MAILS

---

Operating System	Type	Default	Maximum Value Length
z/OS	Optional	None	3 bytes

The default number of mails to be received by function `LIST` in view `RECEIVE-EMAIL`. Default is 20. You can specify a different value in the Natural programme. The maximum value is specified by `LIST-NUM-MAILS-MAX`.

## LIST-NUM-MAILS-MAX

---

Operating System	Type	Default	Maximum Value Length
z/OS	Optional	100	3 bytes

The maximum value for field `LIST-NUM-EMAILS` in view `RECEIVE-EMAIL`. Default is 100, maximum is 999.

## LOCAL

---

Operating System	Type	Default
z/OS, z/VSE, BS2000	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.

## LOCAL-HOST

---

Operating System	Type	Default	Maximum Value Length
z/OS, z/VSE, BS2000	Optional	None	63 bytes for z/OS and z/VSE, 160 bytes for BS2000

Specifies the domain name. In combination with the `LOGON-ID`, the parameter is used as sender address in `SEND-EMAIL` requests. It should be used only if there are difficulties in using the existing host name setting of the local machine.

## LOGCB

---

Operating System	Type	Default
z/OS, z/VSE, BS2000	Optional	NO

Specifies Adabas control block logging.

The value can be changed dynamically by using an operator command,

for example, `/F taskname, LOGCB=YES` (on z/OS).

see [Operator Commands](#).

See also [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
z/OS, z/VSE, BS2000	Optional	NO

Specifies format buffer logging.

The value can be changed dynamically by using an operator command,

for example, `/F taskname, LOGFB=YES` (on z/OS).

See the section [Operator Commands](#) in the *Entire System Server User's Guide*. See also [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
z/OS, z/VSE, BS2000	Optional	NO

Specifies command logging.

The value can be changed dynamically by using an operator command,

for example, `/F taskname, LOGGING=YES` (on z/OS). See the section [Operator Commands](#) in the *Entire System Server User's Guide*. See also [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
z/OS, z/VSE, BS2000	Optional	NO

Specifies record buffer logging.

The value can be changed dynamically by using an operator command,

for example, `/F taskname, LOGRB=YES` (on z/OS).

See the section [Operator Commands](#) in the *Entire System Server User's Guide*. See also [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
z/OS, z/VSE, BS2000	Optional	NO

Specifies search buffer logging.

The value can be changed dynamically by using an operator command,

for example, `/F taskname, LOGSB=YES` (on z/OS).

See the section [Operator Commands](#) in the Entire System Server *User's Guide*. See also [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
z/OS, z/VSE, BS2000	Optional	NO

Specifies value buffer logging.

The value can be changed dynamically by using an operator command,

for example, `/F taskname, LOGVB=YES` (on z/OS).

See the section [Operator Commands](#) in the Entire System Server *User's Guide*. See also [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
z/OS, z/VSE, BS2000	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.

## MONITOR-CANCEL

Operating System	Type	Default
BS2000	Optional	NO

This parameter provides additional control for Natural subtasks. If Entire System Server is shutting down, it cancels active Natural subtasks after elapsing SHUTDOWN-MAX-DELAY if MONITOR-CANCEL=YES is supplied.

The options on BS2000 are:

Option	Explanation
NO	Natural subtask shutdown is not enforced by Entire System Server.
YES	Natural subtask shutdown is enforced by Entire System Server. Tasks are cancelled after elapsing SHUTDOWN-MAX-DELAY.

## MONJV-PREFIX-NATSUB

Operating System	Type	Default	Maximum Value Length
BS2000	Optional	There is no default.	28 bytes

The prefix for the monitor job variables (MONJVs) used for Natural subtasks running under control of the Entire System Server. The value must contain a user ID.

## MSGLEVEL

---

Operating System	Type	Default
z/OS, z/VSE, BS2000	Optional	I

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

Option	Explanation
E   3	Error. Available in BS2000 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 only.

## NABS

---

Operating System	Type	Default
z/OS, z/VSE, BS2000	Optional	10

The number of attached buffers to be used. An attached buffer is an internal buffer used for inter-region 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	Optional	SYSDTA

On BS2000, 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.
SYSDDTA	Dynamic parameters are read from SYSDDTA.
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 [Aspects of Running System Automation Tools in Entire System Server on BS2000](#) in the Section [BS2000 Considerations](#) of the Entire System Server [Administration](#) documentation.

## NATMOD

Operating System	Type	Default
z/OS, z/VSE	Optional	None

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

If NATMOD was specified, it is recommended to set also parameter SHUTDOWN-MAX-DELAY.

## NATNUMSUB

Operating System	Type	Default
z/OS, z/VSE, BS2000	Optional	0

Number of Natural subtasks.

If NATNUMSUB was specified, it is recommended to set also parameter SHUTDOWN-MAX-DELAY.

## NATSYSOUT

---

Operating System	Type	Default
z/OS	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`).

If `NATSYSOUT` was specified, it is recommended to set also parameter `SHUTDOWN-MAX-DELAY`.

## NCQE

---

Operating System	Type	Default
z/OS, z/VSE, BS2000	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
z/OS, z/VSE, BS2000	Required	There is no default. <i>n</i> 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
z/OS, z/VSE, BS2000	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.

## NUMCONMSG

---

Operating System	Type	Default
BS2000	Optional	1024

This parameter defines the size of the table collecting console messages in number of messages. The value must be between 0 and 65535.

## NUMFAT

---

Operating System	Type	Default
BS2000	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
z/VSE	Optional	300

Maximum number of entries in the file ID table.

## NUMMAIL

---

Operating System	Type	Default
BS2000	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 [Run E-Mail Client](#) in [Common Entire System Server Features](#) in the Entire System Server [Administration](#) documentation.

## NUMTASK

---

Operating System	Type	Default
z/VSE, BS2000	Optional	z/VSE: 15, BS2000: 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 [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	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	Optional	None	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	Optional	None	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	Optional	None	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	Optional	None	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	Optional	None	120 bytes

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

## READ-LOCKED-FILE

---

Operating System	Type	Default
BS2000	Optional	None

This parameter is used to control the usage of privileged code for opening locked SAM files by the Entire System Server. Possible options:

Option	Explanation
YES	The Entire System Server will execute privileged code to open locked SAM files for reading records.
NO	The Entire System Server will not execute privileged code to open locked SAM files for reading records.
Not specified	The Entire System Server will execute privileged code for opening locked SAM files.

## PRODUCT

---

Operating System	Type	Default
z/OS, BS2000	Optional	None

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
z/OS, BS2000	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.

**z/OS only:** if `RECALL=NO`, you must start the recall using the view `FILE-MAINTENANCE`, `FUNCTION='RECALL'`.

## REVIEW

---

Operating System	Type	Default
z/OS	Optional	NO

Specifies whether Adabas Review is to be used with Entire System Server to collect performance data in local mode for requests originating from Natural. For other required steps, see [Using Adabas Review with Entire System Server](#) in the Section [z/OS Considerations](#) of the Entire System Server [Administration](#) documentation.

Option	Explanation
NO	Default. Adabas Review is not to be used.
YES	Adabas Review is to be used.

## SATSKEL-BEGIN

---

Operating System	Type	Default
BS2000	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 [Aspects of Running System Automation Tools in Entire System Server on BS2000](#) in the Section [BS2000 Considerations](#) of the Entire System Server [Administration](#) documentation.

## SATSKEL-END

---

Operating System	Type	Default
BS2000	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 *Aspects of Running System Automation Tools in Entire System Server on BS2000* in the Section *BS2000 Considerations* of the Entire System Server *Administration* documentation.

## SDF

Operating System	Type	Default
BS2000	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.

## SDF-P

Operating System	Type	Default
BS2000	Optional	NO

This parameter is used to control the startup method of Entire System Server. Possible options:

Option	Explanation
YES	<p>To run the various ESY tasks, Entire System Server is using the SDF-P procedure specified by the following parameters:</p> <ul style="list-style-type: none"> <li>■ JOB-ELEM</li> <li>■ JOB-LIB</li> </ul> <p>For the definition of more task specific attributes, the following parameters are available:</p> <ul style="list-style-type: none"> <li>■ JOB-CLASS</li> <li>■ JOB-NAME-CONS</li> <li>■ JOB-NAME-EMAIL</li> <li>■ JOB-NAME-EVENT</li> <li>■ JOB-NAME-SERVER</li> </ul>

Option	Explanation
	<ul style="list-style-type: none"> <li>■ JOB-RUN-PRIORITY</li> <li>■ JOB-START-OPTION</li> <li>■ JOB-TIME</li> </ul>
NO	<p>To run the various ESY tasks, Entire System Server is using the job control specified by parameters:</p> <ul style="list-style-type: none"> <li>■ OBCONS</li> <li>■ JOBEMAIL</li> <li>■ JOBEVENT</li> <li>■ JOBSERVER</li> </ul>

## SECURITY

Operating System	Type	Default
z/OS, z/VSE, BS2000	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 (TSOSJOIN).
RACF	RACF, ACF2 or TOP-SECRET security is used. For details, see <a href="#">Setting Up RACF Security for Operator Commands on z/OS</a> in the Section <a href="#">z/OS Considerations</a> .
RACX	RACF is installed but no logon is done. Normal security exits are invoked.
USER	Available in BS2000 only: Example exit USERLSEC must be modified to solve security considerations at your site.

## SERVER-DYN

---

Operating System	Type	Default
z/VSE, BS2000	Optional	NO

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

For further information, see [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	Optional	16
z/VSE	Optional	<i>n</i>

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 further information, see [Dynamic Server Management for Entire System Server](#) in the Section [Common Entire System Server Features](#).

For BS2000, the following rule applies:

$1 \leq \text{SERVER-MAX} \leq 16$ $\text{SERVER-MIN} \leq \text{NUMTASK} \leq \text{SERVER-MAX}$
--

For z/VSE, the following rule applies:

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

For z/VSE,  $n$  is calculated as follows:

$29 - 1$  if VTAMACB=YES -  $1$  if SPOOLACB=YES - NATNUMSUB.

## SERVER-MIN

---

Operating System	Type	Default
BS2000	Optional	1
z/VSE	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 further information, see [Dynamic Server Management for Entire System Server](#) in the Section [Common Entire System Server Features](#).

For BS2000, the following rule applies:

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

## SERVER-NONACT

---

Operating System	Type	Default
BS2000	Optional	10
z/VSE	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 further information, see [Dynamic Server Management for Entire System Server](#) in the Section [Common Entire System Server Features](#).

## SERVER-PER-USER

Operating System	Type	Default
BS2000	Optional	NO

This parameter is used to control the startup of the EYSERV tasks. Possible options:

Option	Explanation
YES	Entire System Server (NPR) will enter the job control of the EYSERV task with the user-ID of the requesting user. The module libraries assigned in the job control have to reside in a pubset accessible by all ESY users and have to be shareable.
NO	Entire System Server (NPR) will enter the job control of the EYSERV task with the same user-ID as the ESYMAIN task. This is the default value.

## SERVER-QUEUE-DEPTH

Operating System	Type	Default
BS2000	Optional	5
z/VSE	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 further information, see [Dynamic Server Management for Entire System Server](#) in the Section [Common Entire System Server Features](#).



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

## SHUTDOWN-MAX-DELAY

---

Operating System	Type	Default
BS2000	Optional	0
z/OS	Optional	0
z/VSE	Optional	0

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.

If Entire Operations (EOR) or Entire Output Management (EOM) are installed, it is recommended to set this parameter to 90.

This value must not be greater than 600 seconds.

For more information about Natural subtasks, see [Aspects of Running System Automation Tools in Entire System Server on BS2000](#) in the Section [BS2000 Considerations](#).

## SMFREC

---

Operating System	Type	Default
z/OS	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 [z/OS Accounting](#) in the Section [z/OS Considerations](#). Possible options:

Option	Explanation
<i>type</i>	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
z/OS, z/VSE	Optional	2

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

## SMTP-HOST

---

Operating System	Type	Default	Maximum Value Length
z/OS, z/VSE	Optional	There is no default.	63 bytes
BS2000	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 [Run E-Mail Client](#) in *Common Entire System Server Features* in the Entire System Server *Administration* documentation.

## SMTP-PORT

---

Operating System	Type	Default
z/OS, z/VSE, BS2000	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 [Run E-Mail Client](#) in *Common Entire System Server Features* in the Entire System Server *Administration* documentation.

## SPOOL

---

Operating System	Type	Default
z/OS, z/VSE	Optional	NONE
BS2000	Optional	BS2

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

Option	Explanation
NONE	No SPOOL interface (default on z/OS, z/VSE)
JES2	z/OS JES2 all versions.
JES3	z/OS JES3 all versions. See also <a href="#">Common JES Interface for z/OS</a> in the Section <a href="#">z/OS Considerations</a> .
POWR	POWER (z/VSE only)
BS2	BS2000 Spool (BS2000 only)

## SPOOLACB

---

Operating System	Type	Default
z/OS, z/VSE	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
<i>name</i>	Name of the VTAMACB.
NONE	The Entire Output Management printing facility is not activated

## STDUSER

---

Operating System	Type	Default
z/OS, z/VSE, BS2000	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
z/OS, z/VSE	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
z/OS	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
z/OS, z/VSE, BS2000	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 such as NOP, NOM, NCL .  $n, m, \dots, k$  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
z/OS, z/VSE, BS2000	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.

## SYSTEM-COMMAND-USER

---

Operating System	Type	Default	Maximum Value Length
BS2000	Optional	There is no default.	160 bytes

This parameter specifies a list of user IDs authorized to use view `SYSTEM-COMMAND`.

User exit `USERSSEC` is called during execution of view `SYSTEM-COMMAND` only if parameter `SYSTEM-COMMAND-USER` was NOT specified. Otherwise, `USERSSEC` is ignored.

Possible options:

Option	Explanation
userID1[,userID2[,userIDn]]	List of authorized user IDs.
NONE	No userID is authorized.

## SYSTEMCONS

Operating System	Type	Default
z/OS	Optional	NONE

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

The default value `NONE` means that no z/OS System limitation has been provided.

In other words, if you are running in a Sysplex environment, Entire System Server will read all messages from all z/OS consoles defined in the Sysplex. This may lead to an unwanted CPU power consumption if other products are producing much output on the related consoles.

Therefore we recommend to carefully check which console messages your programs want to see by using view `CONSOLE`. and to set this parameter to the system ID of your locals z/OS, if you only want to read the console messages from your local z/OS.

## TAPES

Operating System	Type	Default
z/OS, z/VSE, BS2000	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
z/OS, z/VSE	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 z/OS:

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 z/VSE:

- The parameter TCP-STACK is supported at version 4.2 or above. It is ignored in earlier versions.
- The parameter must contain the ID of the corresponding stack, that is you need to set TCP-STACK = SOCKET $nn$ , where  $nn$  is the ID of the VSE TCP stack.

For more information about E-Mail administration, see [Run E-Mail Client](#) in *Common Entire System Server Features* in the Entire System Server *Administration* documentation.

## TEMPUNIT

---

Operating System	Type	Default
z/OS	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
z/OS, z/VSE, BS2000	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, z/OS, z/VSE	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 further information, see [Creating Trace Data in the Entire System Server](#) in the Section [Common Entire System Server Features](#).

## TRACE-LEN

---

Operating System	Type	Default
BS2000, z/OS, z/VSE	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 further information, see [Creating Trace Data in the Entire System Server](#) in the Section [Common Entire System Server Features](#).

## TRACE-SAV

---

Operating System	Type	Default
BS2000, z/OS, z/VSE	Optional	YES

TRACE-SAV controls the trace save routine at exit.

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

For further information, see [Creating Trace Data in the Entire System Server](#) in the Section [Common Entire System Server Features](#).

## VIEWSEC

---

Operating System	Type	Default
BS2000	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
<i>name</i>	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
z/VSE	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
z/OS, z/VSE	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
<i>name</i>	Name of the VTAM application in the ACBNAME parameter.
NONE	The VTAM interface is not activated.

## VTAMQLEN

Operating System	Type	Default
z/OS, z/VSE	Optional	100

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

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

# 7 Operator Commands

---

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



**Note:** Support for z/VSE is deprecated. Support for BS2000 is also deprecated, except in conjunction with the ESM adapter. Features that are z/VSE and BS2000 specific will be removed from future releases.

## 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.

### z/OS:

```
F taskname, command parameter
```

where:

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

### z/VSE:

```
MSG pt replid command parameter
```

where:

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

**BS2000:**

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

where:

<i>tsn</i>	is the task sequence number of the Entire System Server main task (with loaded module ESYMAIN) unless otherwise stated.
<i>command</i>	is the operator command keyword.
<i>parameter</i>	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		z/OS, BS2000, z/VSE

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.



**Important:** We recommend to use `ADAEND` to ensure a smooth termination of a running Entire System Server including all running calls and ESM monitors used within its address space.

## CANCEL

Command	Parameter	Operating System
CANCEL	USER= <i>userid</i> ID= <i>sessionid</i> JOB= <i>jobname</i>	z/OS, BS2000, z/VSE

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		z/OS, z/VSE

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

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 EYSERV), 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:$DC1.P.NRTvrs.3932.
ESY2173I 00113 TSOS     0003   N      2  :CIS:$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.
```

## LOGGING

Command	Parameter	Operating System
LOGGING	YES	z/OS
	NO	

The operator command LOGGING=YES starts command logging as described in [Common Entire System Server Features](#).

Command LOGGING=NO stops the active logging. This operator command can be used to log a specific situation without stopping and restarting Entire System Server.

## SERVER-DYN

Activates or deactivates dynamic server support.

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

### 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	<i>nn</i>	BS2000, z/VSE

### 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	<i>nn</i>	BS2000, z/VSE

### SERVERS

Displays information about current server load.

Command	Parameter	Operating System
SERVERS		BS2000, z/VSE

### 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	z/OS, z/VSE, BS2000

START ALL (re)starts the initial SAT task to run ESM monitors.

Command is rejected if the SAT environment is still active.

Issue the command SHUTDOWN ALL to stop the SAT environment.

**STATUS**

Command	Parameter	Operating System
STATUS	EOR, NOM, NCL, RPC	z/OS, z/VSE, BS2000

The operator command STATUS returns information about Natural subtasks related to Entire System Management (ESM) products.

**TAPES**

Command	Parameter	Operating System
TAPES		z/OS

Display tape units allocated to the Entire System Server.

**TAPEFREE**

Command	Parameter	Operating System
TAPEFREE	<i>ddname</i> , ALL	z/OS

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	<i>userid</i>	z/OS, z/VSE, BS2000

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		z/OS

Display open VSAM files.

## VSAMFREE

Command	Parameter	Operating System
VSAMFREE	<i>ddname</i>	z/OS
	ALL	

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
```

## XABS

Command	Parameter	Operating System
XABS		z/OS, z/VSE, BS2000

Displays the total size, the number of bytes in use, the number of free bytes and the largest free windows in the Adabas attached buffer pool on the console.

### Sample Output:

```
XC00016I 00113 Operator command: XABS
XC00090I 00113 Attached buffer usage
XC00090I 00113 0000409600 bytes total = 0000000100 NABS
XC00090I 00113 0000007168 bytes used
XC00090I 00113 0000007168 bytes used HWM
XC00090I 00113 0000402176 bytes free
XC00090I 00113 0000402176 bytes current largest free windows
XC00090I 00113 0000402176 bytes minimum of all largest free windows
```

## XCANCEL

Command	Parameter	Operating System
XCANCEL		z/OS, z/VSE, BS2000

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		z/OS, z/VSE, BS2000

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		z/OS, z/VSE, BS2000

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

**XPARAM**

Command	Parameter	Operating System
XPARAM		z/OS, z/VSE, BS2000

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		z/OS, z/VSE, BS2000

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

**XSTAT**

Command	Parameter	Operating System
XSTAT		z/OS, z/VSE, BS2000

Entire System Server statistics are displayed as console messages.

**XSTOP**

Command	Parameter	Operating System
XSTOP		z/OS, z/VSE, BS2000

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

 **Important:** This command is not recommended for a regular shut down of a running Entire System Server because existing calls and ESM monitors within its address space are shut down immediately and cannot terminate in a regular way. Therefore, XSTOP can be compared to an emergency brake that should only be applied to avoid an accident. For a regular shut down and to ensure a smooth termination, we strongly recommend [ADAEND](#).

**XUSER**

Command	Parameter	Operating System
XUSER		z/OS, z/VSE, BS2000

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



# 8

## Common Entire System Server Features

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This section describes common Entire System Server features.



**Note:** Support for z/VSE is deprecated. Support for BS2000 is also deprecated, except in conjunction with the ESM adapter. Features that are z/VSE and BS2000 specific will be removed from future releases.

## Running System Automation Tools in Entire System Server

---

### General

Entire System Server (ESY) enables the operation of System Automation Tools, for example, Entire Output Management (EOM), Entire Operations (EOR), as subtasks in the address space of Entire System Server (z/OS, z/VSE) or as pseudo subtasks, that is, standalone tasks (BS2000). 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.

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

As Natural subtasks are implemented as separate tasks under BS2000, 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)
- 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 (for example, 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. As of Entire System Server 3.1.1, this job skeleton is definable as part of the ESY startup file.

### Recently Introduced Startup Parameters under BS2000

- **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

**As of 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 `D0` procedure with integrated assembler source. This `D0` 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

As of Entire System Server Version 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 Entire System Server Version 3.1.1 is the operator command START ALL to restart SAT. It restarts the entire SAT environment without restarting the Entire System Server. 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 Entire System Server 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 the Entire System Server, 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, Entire System Server 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 Entire System Server Version 3.1.1. This parameter limits the Deferred Shutdown to a specified number of seconds. If the time limit is exceeded, 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 Entire System Server termination will be continued immediately.

## Common Diagnostic Features

---

There are two common diagnostic features:

- *Command Logging*
- *Creating Trace Data in the Entire System Server*

### Command Logging

For users of Adabas and Adabas Review, Entire System Server provides the capability to optionally log commands to a sequential data set for later analysis. Command logging can be controlled by the corresponding startup parameters `LOGGING`, `LOGCB`, `LOGFB`, `LOGRB`, `LOGSB` and `LOGVB`. The log data set needs to be pre-allocated and defined in the `JCL` for Entire System Server as `CLOG`.

For `z/OS` only, two data sets may be used which then need to be allocated with `DDNAMEs` `CLOGR1` and `CLOGR2`. If one log data set gets an out-of-space condition, command logging will switch to the alternate log data set.

WTO message `ESY0038I` is reporting this as follows:

```
> ESY0038I Command logging file full, ...
> DSN=command.log.data.set.name
> logging switched to next logging file
```

Using an MPF exit or some other automation tool, this message can be used to initiate a backup of the full command log data set.

Although the command logging facility in Entire System Server (NPR) is similar to the facility in Adabas, there is no support for a user exit to submit the equivalent of the ADARES CLCOPY offload job: The command log datasets are simply overwritten or closed when they are full. However, you can code your own MPF exit to automatically offload, or the datasets can be manually copied.

The best example for an MPF exit is the sample user exit 2 source provided with Adabas.

An Entire System Server (NPR) CLOG requires the following attributes:

```
Organization . . . .:PS
Record format . . . :VB
Record length . . . :10000
Block size . . . . :10004
```

To print the CLOG, use PRILOG utility of Adabas or batch reports with Adabas Review. Note that the ADAPRI utility does not recognize this format.

The command logs can then be analyzed using the PRILOG utility of Adabas or batch reports with Adabas Review. For details, see the corresponding Adabas and Adabas Review documentation.

## 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, Entire System Server 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 is 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 `z/VSE`, an additional step is required to use the `MONITOR` mode of `ESYTRACE`.

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 is 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 8 KB) 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 `z/OS`, a `TRACE DD` statement is required. Under `z/VSE`, a `TRACSAV DLBL` (preferred) or `TLBL` is required, and it is assigned to `SYS021`. The data is fixed length, 288 bytes. Under `BS2000`, assignment is via the logical file name `TRACE` (for example., under `BS2000`: `/SET-FILE-LINK LINK-NAME=TRACE , FILE-NAME=name`); the data is 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	Size: <code>SPACE=(4,4)</code> Features: <code>BLKSIZE=(STD,2)</code> , <code>FCBTYPE=SAM</code> , <code>RECFORM=V</code>
z/OS	DCB attributes of <code>RECFM=FB</code> , <code>LRECL=288</code>
z/VSE	<code>SAM</code> (may be <code>VSAM</code> -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 (z/OS)`, `SYSLST (z/VSE)` or `SYSOUT (BS2000)`. Output is written to an optional file - `TRACEOUT DD (z/OS)`, `TRACOUT (SYS002) DLBL` or `TLBL (z/VSE)` or `TROUT (BS2000)`.

`ESYTRACE` is controlled by parameters, which are passed to it via the `PARM` parameter of the `JCL/JCS EXEC` statement (`z/OS`, `z/VSE`) or `RDATA (BS2000)`.

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 (z/OS)`, `TRACIN (SYS001) DLBL` or `TLBL (z/VSE)` or logical file name `TRIN (BS2000)` to be processed as input (`FILE-MODE`).

- Keyword parameters:

- `-d | --displ`

The prepared result data is transferred to `SYSPRINT (z/OS)`, `SYSLST (z/VSE)` or `SYSOUT (BS2000)`.

- `-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 `z/VSE`, 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	Size: SPACE=(4,4) Features: BLKSIZE=(STD,2),FCBTYPE=SAM,RECFORM=V
z/OS	LRECL=315,RECFM=FBA
z/VSE	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	/INTR <i>tsn</i> ,QUIT
z/OS	F <i>stcname</i> ,QUIT
z/VSE	MSG <i>xx</i> ,DATA=QUIT

## Write-to-Spool for Natural



### Notes:

1. This section applies to Natural 4.2 only. If you are using Natural 8.2 or higher, please refer to the corresponding installation documentation for Natural.
2. The Write-to-Spool feature is only available under z/OS and z/VSE.

This section covers the following topics:

- [Purpose](#)

- [Using the Write-to-Spool Feature](#)
- [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, IMS, Batch, etc.) and uses the Entire System Server view `WRITE-SPOOL`.

Under z/OS, the `SYSOUT` is part of the Entire System Server job stream within the JES spool, and it may be processed by any software which expects output in JES Spool. (for example, Entire Output Management).

The JES spool may be a JES2 or a JES3 spool.

Under z/VSE, the `SYSOUT` is a separate entry in `POWER` queue.

## Using the Write-to-Spool Feature

The Write-to-Spool feature is handled by a so called “access method”, which is called ESS for Entire System Server. You may define your printer in the Natural parameter module or dynamically in your session parameter as follows:

1. Define the Natural parameter module:

In the Natural parameter module, the `NTPRINT` macro has to be set with printer number and access method definition as follows:

```
NTPRINT (n),AM=ESS
```

Example:

```
NTPRINT (1,3),AM=ESS ↵
```

Here, printer 1 and 3 are defined for the access method “Entire System Server”.

Or:

Define the printer during session startup with: `PRINT=((1-6),AM=ESS)`

Here printers 1 until 6 are defined for access-method “Entire System Server”.

2. Link the access-method modules to the Natural nucleus (see [Installation Considerations](#)) or load it dynamically using the session parameters: `RCA=(NATAM11),RCALIAS=(NATAM11,NATWSPN4)`

`NATWSPN4` is the delivered write-to-spool module with the default parameters. If you have linked a module with adapted parameters use the name of this module instead.

3. Users must define the JES destination under the `OUTPUT` class using the `DEFINE PRINTER` statement in their programs.

Example:

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

Or:

```
DEFINE PRINTER (n) OUTPUT 'DAEF' /* For printing to JES-spool called DAEF ↵
```

where  $n$  is the number in the `PRINTER` entry in the Natural parameter module as described above.

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

```
DISPLAY (n)
```

or

```
WRITE (n)
```

or

```
PRINT (n)
```

where  $n$  is the number in the `PRINTER` entry in the Natural parameter module as described above.

Users can set the output format and number of copies using the `FORMS` and `COPIES` clauses of the `DEFINE PRINTER` statement.

Example:

```
DEFINE PRINTER (2) OUTPUT 'DEST'  
                    FORMS 'FORM'
```

You can find the defaults for items such as Entire System Server node, forms and output class in the module `NATWSPDF`.

## Installation Considerations

To use the Write-To-Spool feature you may either link the access method to your Natural nucleus or you may dynamically load the method (see also Natural parameters `RCA` and `RCALIAS`).

You can define the defaults for your Natural nucleus using `NATPWSDF` and assemble them before linking to nucleus. You can find the source member `NATPWSDF` in the source library of Natural.

There, you have the possibility to customize the defaults as follows:

### Defaults for Factory Settings:

```

WSPDFLT NODE=148, Entire System Server (NPR) TARGET NODE ↵
PROGRAM=, JES WRITER (8 CHARS MAX) ↵
CLASS=A, SYSOUT CLASS (1 CHAR) ↵
HOLD=YES, HOLD (YES/NO) ↵
CNTL=A, CARRIAGE CONTROL (A/M) ↵
FORM=, FORM (4 CHARS MAX) ↵
RMT=, JES REMOTE (8 CHARS MAX) ↵
FORMDEF=, FORMDEF (6 CHARS MAX) ↵
PAGEDEF= PAGEDEF (6 CHARS MAX) ↵
    
```

Parameter	Description
Node	The real Entire System Server node number which can contain up to 5 digits. It addresses the destination started task of Entire System Server and where the output is written.
Program	The JES Writer which can contain up to 8 characters. JES provides control to the Writer program. If JES does not find it, it is ignored. Possible Value: *OUTPUT means that the input from the Natural statement DEFINE PRINTER is used to be interpreted as JES Writer.
Class	The SYSOUT class within JES where the output has to be written. It can contain only one character or digit. It is a descriptor for further software (e.g. Entire Output Management) to detect the output stream for processing.

Parameter	Description
Hold = yes/no	Specifies if the output stream is to be held within the JES spool or not, in case the task previously started by Entire System Server terminates.
CNTL	Represents the control character for the SYSOUT dataset.  CNTL contains one character:  A ASA control character  M machine control character
Form <i>RMT</i>	Describes the form control buffer for JES. This value is transferred to JES which handles the processing.  <i>RMT</i> represents the JES remote user ID if SYSOUT has to be routed to a different JES system.  You can find the name of the JES system in the destination field within the DEFINE PRINTER statement (for example, DEFINE PRINTER OUTPUT='DAEM')
<i>Formdef</i> <i>Pagedef</i>	They can contain up to 6 characters.

After editing the NATPWSDF member with customized values, you can assemble and link it. (If you want to use the factory settings, you may omit these steps.)

To use the Write-to-Spool feature with statically linked access method at your site, relink the Natural module as follows:

**For z/OS:**

```
INCLUDE NATLIB(NATPWSPL)    The Write-to-Spool access method for Natural
INCLUDE NATLIB(NATPWSDF)    Write-to-Spool defaults (default or adapted parameter ↵
module) ↵
```

Or load it dynamically using the session parameters: RCA=(NATAM11),RCALIAS=(NATAM11,NATPWSAM)

If you have linked a module with adapted parameters, use the name of this module instead.

```
INCLUDE NATLIB(NATWSPL)
INCLUDE USRLIB(NATWSxx) your adapted parameter module
NAME NATWSPxx(R) your adapted write to spool module. This name must be used ↵
in RCALIAS=(NATAM11,NATWSPxx)
```

**For z/VSE:**

```
INCLUDE NATWSP41 The Write-to-Spool access method for Natural 4.1
INCLUDE NATWSPDF Write-to-Spool defaults (your adapted parameter module)
```

To use dynamic load you may either use the delivered module NATWSPN4 with default parameters or you may link your adapted parameter module.

Examples:

**1. Assume using the factory settings and executing the Natural program:**

```
DEFINE PRINTER (2) OUTPUT 'WK1'
WRITE (2) 'THIS IS A SMART RECORD'
CLOSE PRINTER (2) ↵
```

During the execution of this program, you can see the following fields with their in the Display Active Tasks panel:

```
DDNAME      DSID Owner C Dest Rec-Cnt Forms Wtr PageDef FormDef
SYS00001    104 WKK  A WK1      2      STD ↵
```

Browsing this dataset, you can see:

```
Page 1
THIS IS A SMART RECORD
```

**2. Assume using the defaults member:**

```
WSPDFLT NODE=55526, Entire System Server (NPR) TARGET NODE ↵
```

```
PROGRAM=HUGO, JES WRITER (8 CHARS MAX) ↵
```

```
CLASS=Y, SYSOUT CLASS (1 CHAR) ↵
```

```
HOLD=YES, HOLD (YES/NO) ↵
```

```
CNTL=A, CARRIAGE CONTROL (A/M) ↵
```

```
FORM=WOFO, FORM (4 CHARS MAX) ↵
```

```
RMT=JESWOLF, JES REMOTE (8 CHARS MAX) ↵
```

```
FORMDEF=FOWOLF, FORMDEF (6 CHARS MAX) ↵
```

```
PAGEDEF=PAWOLF PAGEDEF (6 CHARS MAX) ↵
```

Executing the following Natural program:

```
DEFINE PRINTER (2) OUTPUT 'WK1'
WRITE (2) 'THIS IS A SMART RECORD'
CLOSE PRINTER (2) ↵
```

During the execution of this program, you can see the following fields with their in the Display Active Tasks panel:

DDNAME	DSID	Owner	C	Dest	Rec-Cnt	Forms	Wtr	PageDef	FormDef
SYS00002	105	WKK	Y	WK1	2	WOFO	HUGO	PAWOLF	FOWOL

Browsing this dataset, you can see:

```
Page 1
THIS IS A SMART RECORD
```

### 3. Assume using the default member:

```
WSPDFLT NODE=55526, Entire System Server (NPR) TARGET NODE ↵
```

```
PROGRAM=*OUTPUT, JES WRITER (8 CHARS MAX)
```

The other parameters in the default member are not changed.

Run the following example program:

```
DEFINE PRINTER (2) OUTPUT 'KURT'
PRINT (2) ' hier kommt KURT'
CLOSE PRINTER (2)
```

After that, Entire System Server fetches the value from the field OUTPUT in the DEFINE PRINTER statement and inherits it as the JES Writer attribute for the specific spool-dataset.

Looking in TSO/SDSF under the job-name of Entire System Server, you can see the following:

```
PREFIX=NPR*  DEST=(ALL)  OWNER=*  SYSNAME=
NP   DDNAME   Time      Forms    FCB  UCS  Wtr    Flash
     SYS00005 10:20:48          ****  ****  KURT   ****
```

If in JES an associated JES Writer Program is defined, it gets control and handles this output as defined in the program.

**For z/VSE**

In z/VSE the output is written into the POWER spool under a new job number. The name of the printed spool dataset will be the name of the original batch job or the user ID of the TP monitor.

Examples:

1. Assume we are using the factory settings for NATWSPDF and have the natural program:

```
DEFINE PRINTER (2) OUTPUT 'ELSA'
WRITE (2) 'THIS IS A SMART RECORD'

CLOSE PRINTER (2)
```

User WKK is running this program in a batch-mode Natural, with JOBNAME=GERHARD.

The power queue contains the following information:

```
JOBNAME JOBNO  Q NUM C D PR  STAT FROM TO  CP PAGES RECORDS ID
GERHARD 0020443 L      A H 003 HOLD WKK  ELSA  1    1      2  ←
```

Browsing this output displays the following information:

```
BROWSE-DJ:GERHARD(20443)-Queue:LS ----- Row 0 - Columns 001 076
  COMMAND===>                                SCROLL===> CSR
***** top of list *****
1Page      1                                date, time
0THIS IS A SMART RECORD
***** bottom of list *****
```

2. Assume we are using the factory settings for NATWSPDF and have the natural program:

```
DEFINE PRINTER (2) OUTPUT  'KARL'
                        FORMS  'F001'
                        COPIES  4
WRITE (2) 'PRINTER TEST'
WRITE (2) 'OK?'
CLOSE PRINTER (2) ←
```

The power queue contains the following information:

JOBNAME	JOBNO	Q	NUM	C	D	PR	STAT	FROM	TO	FORM	CP	PAGES	RECORDS	ID	PR
GERHARD	0020465	L		A	H	003	HOLD	WKK	KARL	F001	4	1	3		←

## Dynamic Server Management for Entire System Server

(This feature is available under BS2000, z/VSE 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](#)
- [Troubleshooting](#)
- [z/VSE Considerations](#)

### Dynamic Server Management Concepts

Unlike z/OS, under BS2000, z/VSE, a fixed number of server tasks/subtasks are started in Entire System Server in order to process user requests. Under z/OS, there is a 1:1 relationship between user and subtask, that is, 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, z/VSE 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, the server with the least load will process the new request. Under z/VSE, 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. As of Entire System Server Version 3.1.1 (BS2000, z/VSE), 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, 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 z/VSE, 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
<code>SERVER-DYN</code>	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.
<code>SERVER-MAX</code>	Defines the upper limit of the number of servers. This may be changed via an operator command at any time.
<code>SERVER-MIN</code>	Defines the lower limit of the number of servers. This may be changed via an operator command at any time.
<code>SERVER-NONACT</code>	Fixes the maximum idle time of a server. If the value is reached or exceeded, the server will be terminated if <code>SERVER-MIN</code> is smaller than the current number of servers.
<code>SERVER-QUEUE-DEPTH</code>	Fixes the depth of the task queue; if the server with the least load has reached this value, another server will be started if <code>SERVER-MAX</code> is greater than the current number of servers.
<code>SMFTIME</code>	z/VSE 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, 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:

```
11:21:31 ADAI29 00113  OPER CMD: SERVERS
11:21:31 XC00016I 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 [Operator Commands](#). The display under z/VSE 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 - that is, the server as well - so that server control by means of a program is possible.

## Troubleshooting

You may experience in a heavy loaded System the Error Message ESY5508 ADABAS response code 111.

### The following applies:

The Adabas (resp. Entire System Server) response code 111 is accompanied by the console message:  
ESY0084W ALL TASKS ACTIVE - INCREASE "NUMTASK"

It indicates that a request could not be serviced because all Entire System Server tasks are busy, or dedicated to a caller that needs his context preserved over multiple service calls. The customer action depends on the setting of the SERVER-DYN startup parameter:

If SERVER-DYN=NO:

- Stop Entire System Server and re-start it with an increased NUMTASK parameter
- Or issue operator command SERVER-DYN=YES, possibly followed by operator command SERVER-MAX=*nn* (where *nn* is greater than the number specified with the NUMTASK startup parameter.)

If SERVER-DYN=YES is in effect:

- Increase the number of tasks using operator command SERVER-MAX.

If you receive console message

```
ESY0001I INVALID NUMERIC VALUE ENTERED
```

Or

```
ESY0056W nn TASKS ATTACHED (INSTEAD OF kk)
```

the maximum number of subtasks in a VSE partition has been reached and no more server tasks can be created.

## z/VSE Considerations

Under z/VSE, 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* in the Entire System Server *Administration* documentation for a description of the parameters *HOST-CODE-PAGE*, *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, in the user tasks on z/OS or in the server tasks on z/VSE. 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 z/OS

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 with a proper user ID for z/OS UNIX. Error message *ESY5897 Mailer response: errno 0156 in EZASMI INITAPI reporting errno 156 (EMVSINITIAL) is returned as ERROR-TEXT if the requesting user ID is not properly defined for z/OS UNIX.. This error message is also issued if the MAXPROCUSER limit of z/OS Unix has been exceeded. In this case a higher value for MAXPROCUSER needs to be specified in the BPXPRMxx parmlib member.*

### Requirements on z/VSE

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 error message *ESY5897 Mailer response: errno 2 in EZASMI GETHOST* will be issued to the caller.

## Requirements on BS2000

E-Mail Manager Task requires the SOCKETS subsystem installed and running on the BS2000 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

---

As of 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 (z/OS), SYSLST (z/VSE) or SYSLST01 (BS2000).

### Note for BS2000:

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.

### 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

z/OS, z/VSE 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 [Operator Commands](#) in the Entire System Server [Administration](#) documentation.

For BS2000, see [How to Start/End Entire System Server on BS2000](#) in the section [BS2000 Considerations](#) in the Entire System Server [Administration](#) documentation.

## Return Codes Issued by Entire System Server at Termination

### On z/OS, z/VSE

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

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'.

# 9 z/OS Considerations

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## z/OS Access Method Modules

---

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

### z/OS 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 `FAIRnn` 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 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 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 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 - 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 hundredths 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

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.

## z/OS JES3 Considerations

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 Entire System Server Version 2.2. 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.

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 <sup>2</sup>	(X)	(X)	X
DATE-ON-READER	-	-	X
DATE-XEQ-START	-	-	X
DATE-XEQ-STOP	-	-	X
DATX-ON-READER	X	X	X
DATX-XEQ-START	-	-	X
DATX-XEQ-STOP	-	-	X
DESTINATION	-	-	X
HOLD <sup>1</sup>	(X)	(X)	X
JOB-CLASS	-	-	X
JOB-ID	X	X	X
JOB-NAME	X	X	X

SPOOL-QUEUE	JES3 Interface Version 2.2.2	“compatibility mode”	“consistency mode”
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	X	X	X
TIME-XEQ-START	-	-	X
TIME-XEQ-STOP	-	-	X
TIMX-ON-READER	X	X	X
TIMX-XEQ-START	-	-	X
TIMX-XEQ-STOP	-	-	X
TYPE <sup>3</sup>	(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.

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 <sup>1</sup>	X	X	X
CLASS	X	X	X
COMPACT			
COPIES	X	X	X
DATA-SET <sup>4</sup>	X	X	X

SPOOL-FILES	JES3 Interface Version 2.2.2	“compatibility mode”	“consistency mode”
DATA-SET-KEY <sup>4</sup>	X	X	X
DDNAME	X	X	X
DESTINATION-NODE			
DESTINATION-REMOTE			
DSNAME <sup>2</sup>	X	X	X
FCB <sup>1</sup>	X	X	X
FLASH	X	X	X
FORM <sup>1</sup>	X	X	X
HOLD	X	X	X
IDENTIFIER <sup>2</sup>	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 <sup>3</sup>	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 (*procstep-name.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”.

## APPC/MVS Definitions for the SYSTEM-COMMAND View

The SYSTEM-COMMAND view processor has been rewritten to invoke an APPC/MVS transaction program to execute the requested TSO/E command(s). The transaction program will then be initiated by the APPC/MVS transaction scheduler, and the output from the TSO/E command will be returned to the SYSTEM-COMMAND view.

The following definitions are required for the transaction program and its resources. You may need assistance from your systems programmer and from your network administrator to implement these definitions.

1. Define the logon mode table LOGMODES with entry APPCHOST, if not already present, or an equivalent logon mode entry to be used as default for the LU defined above. The source for the LOGMODES table can be found in the ATBLMODE member of SYS1.SAMPLIB.

A new logon mode table needs to be activated with the VTAM command MODIFY TABLE.

2. Define the APPC/MVS LU as an application to VTAM. If you run Entire System Server on multiple systems, define different application names for each system. For multiple Entire System Server address spaces on one system, only one local APPC/MVS LU needs to be defined.

```

NPRLU01  APPL  ACBNAME=NPRLU01,          ACBNAME FOR APPC          C
          APPC=YES,                      C
          AUTOSES=0,                      C
          DDRAINL=NALLOW,                C
          MODETAB=LOGMODES,              C
          DLOGMOD=APPCHOST,              C
          DMINWNL=5,                      C
          DMINWNR=5,                      C
          DRESPL=NALLOW,                 C
          DSESLIM=10,                     C
          LMDENT=19,                      C
          PARSESS=YES,                    C
          SECACPT=ALREADYV,              C
          SRBEXIT=YES,                   C
          VPACING=1                       C

```

The definition needs to be activated with the VTAM command VARY ACT.

3. Define the local LU in parmlib member APPCPM<sub>xx</sub> (APPC/MVS Configuration).

If you run Entire System Server on multiple systems, define local LUs using different names for each system. The LU name(s) must correspond to the VTAM application definitions for APPC/MVS (see Step 2).

```
LUADD ACBNAME(NPRLU01) TPDATA(SYS1.APPCTP) TPLEVEL(USER)
```

The definition needs to be activated with the `SET APPC=xx` system command. Note that a base LU for the APPC/MVS transaction scheduler is also required in the configuration.

4. Define a class of transaction initiators in parmlib member `ASCHPMxx` (APPC/MVS Transaction Scheduler). You may also use a class that you have already defined. The minimum number of started transaction initiators should correspond to the expected number of transactions running at a time.

```
CLASSADD CLASSNAME(A) MSGLIMIT(1000) MAX(10) MIN(1) RESPGOAL(1)
```

The definition needs to be activated with the `SET ASCH=xx` system command.

5. Verify that the APPC and ASCH address spaces for APPC/MVS and the transaction scheduler are active on the system. If not, they need to be started using the commands:

```
START APPC, SUB=MSTR, APPC=xx
START ASCH, SUB=MSTR, ASCH=xx
```

To start the APPC and ASCH address spaces automatically at IPL, you can add these `START` commands to the `COMMNDxx` member of your parmlib concatenation.

6. Define the transaction program in parmlib member `IKJTS0xx` as an authorized program by adding `XCOMTP46` to the `AUTHPGM NAMES` statement:

```
AUTHPGM NAMES(..., XCOMTP46 ...)
```

The definition needs to be activated with the TSO/E command `PARMLIB UPDATE(xx)`.

7. Define the transaction program to APPC/MVS using the Administration Utility:

```
//TPADD EXEC PGM=ATBSDFMU
//SYSPRINT DD SYSOUT=*
//SYSSDLIB DD DSN=SYS1.APPCTP, DISP=SHR
//SYSSDOUT DD SYSOUT=*
//SYSIN DD DATA, DLM=ZZ
TPADD
TPNAME(SAG.NPRvrs.XCOMTP46)
ACTIVE(YES)
TPSCHED_DELIMITER(##)
CLASS(A)
TPSCHED_TYPE(STANDARD)
JCL_DELIMITER(END_OF_JCL)
//NPRPTSO JOB (&SYSUID), MSGCLASS=X, MSGLEVEL=(1,1), REGION=4096K
//TSOE EXEC PGM=IKJEFT01, PARM='CALL ''NPRvrs.MVSLOAD(XCOMTP46)'''
//SYSTSPRT DD UNIT=VIO, DISP=(,DELETE),
// DCB=(RECFM=FB, LRECL=133, BLKSIZE=13300, DSORG=PS)
//SYSTSIN DD UNIT=VIO, DISP=(,DELETE),
// DCB=(RECFM=FB, LRECL=80, BLKSIZE=800, DSORG=PS)
//SYSABEND DD SYSOUT=X
```

```
//ESYTRACE DD SYSOUT=X
END_OF_JCL
###
ZZ
//
```

The definition is active when the utility was executed successfully.

8. Define the APPC/MVS resource names to be used in the Entire System Server startup parameters APPC-TPNAME, APPC-LUNAME and APPC-MODENAME. To activate these definitions, Entire System Server needs to be restarted.
9. To verify the APPC/MVS definitions for the SYSTEM-COMMAND view transaction program, logon to Natural using library SYSNPE, run the sample program for the view SYSTEM COMMAND and enter the TSO/E command TIME. If all definitions are active, you will get a response like:

```
READY
TIME
IKJ56650I TIME-07:17:07 PM. CPU-00:00:01 SERVICE-9829 SESSION-00:00:02 JULY 17, ←
2007
READY
END
```

## z/OS 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.

If the APPL resource class is active in the security system, the Entire System Server address space has to be defined as an application with its STC or job name and the users need to be authorized to access that Entire System Server application.

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

---

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.

## Using Adabas Review with Entire System Server

---

Adabas Review (Version 4.3.2 or above) may be used with Entire System Server (Version 3.4.1 or above) to collect performance data in local mode for requests originating from Natural (Version 4.2.2 or above). To enable Adabas Review in local mode with Entire System Server, the following steps need to be taken:

- Specify your Review load library in the `STEPLIB` concatenation for Entire System Server.
- Verify that you have one of the following Zaps applied:
  - `RD432100` for Review Version 4.3.2 or
  - `RD441017` for Review Version 4.4.1

- Additional DD statements for data sets used by Review will be needed in your JCL. Please see the Adabas Review documentation to determine which RVU . . . data sets you need and add the corresponding DD statements to your JCL for Entire System Server.
- Specify `REVIEW=YES` in your startup parameters for Entire System Server.

If you have used the startup parameter `UEX4=RAOSEXIT` with an earlier release of the Entire System Server, please remove it as it is no longer supported.

- Specify the Natural profile parameter `ADAPRM=ON` for the Natural environments that you want to collect data from.
- If you want to report calls from a Batch Natural environment running as a subtask within the Entire System Server address space (such as subtasks of ESM products), re-link your `ADALNKR` module with the required Review modules as described in the section *Implement Support for Reporting from Batch Natural* of the *Installation and Operations for z/OS* documentation for Adabas Review.

## Configuring AT-TLS to Build a Secure Connection

Define a traffic descriptors:

```
Protocol: TCP
Localport all
Remoteport 993
Connection direction: either
Jobname <jobname of Entire System Server>
Userid -
AT-TLS configuration index 0
```

Configuration associated with this AT-TLS Application:

```
AT-TLS configuration index 0
Handshake Role Client
Key ring: your kdb and sth file
Certificate label -
Application controlled off
Secondary Map off
Handshake timeout 10 seconds
```

See also *z/OS Communications Server > z/OS Communications Server:IP Configuration Guide > Server applications Application Transparent Transport Layer Security data protection > Options for configuring AT-TLS security* under [https://www.ibm.com/support/knowledgecenter/en/SSLTBW\\_2.2.0/com.ibm.zos.v2r2.cs3/cs3.htm](https://www.ibm.com/support/knowledgecenter/en/SSLTBW_2.2.0/com.ibm.zos.v2r2.cs3/cs3.htm).



# 10 z/VSE Considerations

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**Note:** Support for z/VSE is deprecated. Support for BS2000 is also deprecated, except in conjunction with the ESM adapter. Features that are z/VSE and BS2000 specific will be removed from future releases.

## VSE/POWER Considerations

---

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

## z/VSE 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'
```

## z/VSE Security Considerations

---

As of z/VSE Version 2.4, a SAF security interface is now provided. Either the Basic Security Manager (minimal security, distributed as part of z/VSE) 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 (for example, generic data set names) are not supported due to the limited amount of data returned by defined CA-Dynam/D interfaces.



# 11

## BS2000 Considerations

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**Note:** Support for z/VSE is deprecated. Support for BS2000 is also deprecated, except in conjunction with the ESM adapter. Features that are z/VSE and BS2000 specific will be removed from future releases.

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

---

### 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 `ESYMAIN` task must have been started under `TSOS`. All other tasks required for an Entire System Server node will then be automatically started by the `ESYMAIN` task. All tasks are running with the same user ID i.e. `TSOS`.

### Server-per-User Mode

This mode is a variation of the existing Multi-User Mode. Therefore, parameter `SERVER-PER-USER` was introduced with `NPR361`. `SERVER-PER-USER=YES` is used to start `ESYSERV` tasks as jobs under the user ID of the requesting user but not as privileged `TSOS` tasks. This simplifies the request processing in the Entire System Server. The Operating System performs all the necessary security checks. There is no need to do such a check in `ESY` anymore. Features like Coowner-Support are supported with the Server-per-User Mode.

The Server-per-User Mode is based on the privileged `/ENTER` and the dynamic server feature.

### Changes within the Entire System Server Initialization (for version 3.6.1 or above)

The initialization of `NPR361` modifies the following parameter settings internally if `SERVER-PER-USER=YES` was specified:

- `AUTOLOG = NO`
- `JOBENT = YES`

- SDF-P = NO
- SECURITY = BS2
- SERVER-DYN = NO

The job control E .ESYSERV must not contain a user ID for the assignment of the SYSLST files because all users are using this job control. The module libraries NPR361.MOD and NPR361.USER.MOD must be cataloged as shareable and must reside on a pubset accessible by all users.

Only one ESYSERV task is started under TSOS during initialization to handle requests like SYSTEM-INFO and NATPROC-USERS. These views do not require a user being logged on.

Parameter NUMTASK is ignored at startup.

### Changes within the Entire System Server processing

NPR361 starts an ESYSERV task whenever a user issues a NATPROC-LOGON. LOGON-ID, ACCOUNTING and PASSWORD of the NATPROC-LOGON request are used for the /ENTER command and an error is returned if there was a problem with the supplied credentials. This procedure does not require a privileged /ENTER.

The user specific ESYSERV task is stopped after elapsed SERVER-NONACT. The next user request will not find a running ESYSERV task. In order to avoid an extra NATPROC-LOGON, a privileged /ENTER has to be used since the password is not known at that time

### Shutdown of Entire System Server on BS2000

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 ESYMAIN task.

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

For information on how to terminate Entire System Server via operator command, see [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.

As of 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, that is, as user TSOS.

The program ESYSTOP is driven by parameters obtained from SYSDTA. Job name or TSN of the ESYMAIN 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`.

## Details for Running Entire System Server on BS2000

---

- [Tasks](#)
- [Communication](#)
- [Library Concept on BS2000 for Entire System Server](#)
- [Program Characteristics](#)

### Tasks

Entire System Server under BS2000 consists of several tasks.

The `ESYMAIN` 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 `ESYMAIN` task regularly checks the state of all `ESY` tasks, for example, the status of the started `ESYSERV` 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 on BS2000 for Entire System Server

The library concept of Entire System Server under BS2000 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.

The Server-per-User Mode requires access of all ESY users to the module libraries assigned in the job control of the ESYSERV task. Therefore, these libraries have to reside on a pubset accessible by all ESY users and they have to be shareable.

### Program Characteristics

As of 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

---

### 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 (z/OS, z/VSE) or as pseudo subtasks, i.e., standalone tasks (BS2000). 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

As Natural subtasks are implemented as separate tasks under BS2000, 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 as of 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 (for example, 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. As of ESY 3.1.1, this job skeleton is definable as part of the ESY startup file.

### Recently Introduced Startup Parameters under BS2000

- 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 has been exceeded, 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 Security Considerations

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### Multi-User Mode

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 user ID `TSOS`. Users' access rights are checked by the Entire System Server in order to provide access to BS2000 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 logon user ID for batch, or `TIAM`, `*USER` for `openUTM`) is not defined in BS2000, 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 `NAT-PROC-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, only functions which do not require a BS2000 user ID are available (such as `EVENTING`).

## Server-per-User Mode

This mode was introduced with ESY 3.6.1 and is more effective than the Multi-User Mode. The `ESYSERV` task that has been started for the requesting user runs with the same user ID. There is no need to perform extra security checks. Access to Operating System resources is executed in the related `ESYSERV` user task but not in a privileged `TSOS` task. This simplifies the security requirements since all checks are done by the Operating System itself. The `ESYMAIN` task sets following parameters if `SERVER-PER-USER=YES` was specified:

- `AUTOLOG = NO`
- `JOBENT = YES`
- `SDF-P = NO`
- `SECURITY = BS2`
- `SERVER-DYN = NO`

## BS2000 SECOS Considerations

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### Multi-User Mode

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 `ESYSERV` from the Entire System Server Module Library in any `GUARD` concerned, if `GUARDs` are used.

### Server-per-User Mode

There is no need to apply extra security definitions for ESY. The `ESYSERV` task runs with the user ID of the requesting user.

## BS2000 UCON Interface

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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 generation and this name must be defined as BS2000 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.

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 documentation 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.

With startup parameter `CONACCESS`, the use of console functions can be restricted for all users on the respective node.

If `WRITE` is specified for `CONACCESS`, an exit can be used to further restrict the 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, is passed to the exit as input parameters and the exit checks whether the user is authorized to issue the command. If the user exit `USERCSEC` does not exist, all operator commands are accepted.

For a sample exit `USERCSEC`, see the supplied Source library. For a description of the `CONACCESS` parameter, see the section [Startup Parameters](#).

## BS2000 System Command Interface

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The `SYSTEM-COMMAND` view allows to issue a BS2000 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.