Authorized Services Manager under z/OS

This document describes functionality and operation of the Authorized Services Manager (ASM) which is available with Natural under z/OS.

The following topics are covered:

- ASM Overview

- ASM System Requirements

- ASM Operation

ASM Overview

The Authorized Services Manager (ASM) provides authorized operating system functions to Natural. These functions include writing SMF records and z/OS Parallel Sysplex communication through the Coupling Facility (CF). The ASM provides its functions via PC routines and runs in its own address space.

The following authorized functions are provided:

- communicating Natural buffer pool administration messages,

- write-access to global buffer pools in system key,

- writing SMF records,

- holding Natural session information in the Session Information Pool (SIP).

The first three functions are always available, whereas the SIP is optional and can be made available via startup parameter. For more information on starting the ASM, see *Starting the ASM*.

You must use the ASM in the following cases:

- The Natural profile parameter BPPROP is set to PLEX or GLOBAL or GPLEX (buffer pool propagation is used).

- Natural global buffer pools are allocated in system key; see *Installing the Natural GBP Operating Program*.

- Natural under CICS is used in a z/OS Parallel Sysplex (SIP function required).

- Natural under IMS TM is used in terminal-oriented, non-conversational mode (with the SIP function).

- Natural under IMS TM is used, with the Accounting function writing SMF records.

The Session Information Pool (SIP) holds the Natural session information records. In terminal-oriented non-conversational mode, the NCI and NII interfaces need these records to continue a Natural session after a terminal I/O. When running in a z/OS Parallel Sysplex environment, the SIP is created in the CF and a data space is used as an intermediate buffer to avoid unnecessary access to the CF. Otherwise, the

SIP is created in a data space.

If the ASM is used in a z/OS Parallel Sysplex environment, one ASM instance must be started in each participating z/OS image.

Note concerning Natural/CICS: The CICS System Recovery Table should include the z/OS system abend code `0D6`.

ASM System Requirements

- APF Authorization

- System Linkage Index

- CF Structure

- XCF Signalling Paths

APF Authorization

Link the modules `NATASMvr` (*vr*=*v*ersion, *r*elease number) and `NATBPMGR` to an Authorized Program Facility (APF) library, specifying `IEWL` parameter `AC(1)`. Refer to *Installation Procedure for Natural under z/OS*.

System Linkage Index (System LX)

As the ASM reserves one system linkage index (System LX), check whether there is a high enough value of `NSYSLX` in member `IEASYSxx` of library `SYS1.PARMLIB`.

Note:
If you terminate the ASM, the address space ID is no longer available because a System LX has been used. It becomes available again with the next IPL.

CF Structure

A CF structure is only used if you run the SIP in a z/OS Parallel Sysplex environment. The space required can be calculated using the following formula:

```
30 KB + (SIP slot size in bytes + 165)  *  (number of SIP slots  +  8)
```

For 500 SIP slots of 512 bytes each, define:

```
STRUCTURE NAME(NATASM) SIZE(380) PREFLIST(CF1)
```

XCF Signalling Paths

To propagate buffer pool administration messages in a z/OS Parallel Sysplex environment, the XCF Signalling Services are used. The minimum message is 64 bytes long, the maximum is 2048 bytes. How often messages are sent depends on how often Natural objects are manipulated (with the system command `CATALOG`, `STOW` or `DELETE`).

ASM Operation

The following is covered below:

- Starting the ASM

- ASM Messages, Condition Codes and Abend Codes

- ASM Operator Commands

Starting the ASM

You start the ASM either as a batch job or as a started task by executing module `NATASM` *vr*, where *vr* stands for the current Natural version and release number. On the JCL `EXEC` statement, specify as `PARM` the following parameters:

```
subsystem-id,XCF-group-name,CF-structure-name,number-of-SIP-slots,SIP-slot-size,message-case
```

All parameters are positional and must be separated by a comma; they are explained in the table below:

Parameter	Possible Values	Default	Comment
`subsystem-id`	4-byte non-blank string	NAT*v*	The specified value must match the value of the Natural profile parameter `SUBSID` (*v*=*v*ersion). **Note:** With Natural under CICS, refer to the `CICSPLX` parameter in the NCMDIR macro for setting the appropriate subsystem ID.
`XCF-group-name`	any valid XCF group name	none	The name of the XCF group for signalling services.
`CF-structure-name`	any valid CF structure name	none	Optional, only needed if SIP is used. The name of the CF structure used for the SIP function.
`number-of-SIP-slots`	1 - 32767	none	Optional, only needed if SIP is used. The number of slots to be allocated if the CF structure has not yet been allocated. If omitted or specified as `0`, the entire structure will be used for as many slots as it can hold.
`SIP-slot-size`	256, 512, 1024, 2048, 4096	1024	The specified value is ignored if a CF structure has already been allocated.
`message-case`	UCTRAN or blank	blank	Specify `UCTRAN` if the Authorized Services Manager is to issue all its messages in upper case.

Examples:

```
//ASM EXEC PGM=NATASMvr,PARM='NATv,NATXCF,CFSIP,1500,512'
```

The subsystem ID is `NATv`, the message group for buffer pool communication is `NATXCF`, the structure for the Session Information Pool is CFSIP. 1500 SIP slots are to be used, each having a size of 512 bytes.

```
//ASM EXEC PGM=NATASMvr,PARM='NATv,NATXCF,CFSIP'
```

Same as above, except SIP slots:

The ASM will use as many SIP slots as the CFSIP structure can hold, each having a size of 1024 bytes.

```
//ASM EXEC PGM=NATASMvr,PARM='NATv,NATXCF,,500,512'
```

The SIP service is not to use the Coupling Facility, but to build 500 SIP slots in storage, each having a size of 512 bytes.

```
//ASM EXEC PGM=NATASMvr,PARM='NATv,NATXCF'
```

The SIP service will not be available.

ASM Messages, Condition Codes and Abend Codes

The ASM writes informational and error messages to `JESMSGLG` using the `WTO` macro (`ROUTCDE=11`). The messages are preceded by a message identifier and the ASM's job name, for example:

```
ASM0005 FBASMvr
```

In this example, Authorized Services Manager Version *vrs* (*vr=v*ersion, *r*elease, *s*ystem maintenance level) is active

The following condition codes are used:

Condition Code	Explanation
0	Normal completion
12	Wrong parameter input
16	Runtime error has occurred
20	Subtask has failed
24	Abend has occurred
>100	Working storage could not be allocated

The following user abend codes are used:

Abend Code	Reason	Comment
U0100	`IXCJOIN` failed.	Abend Register 14 contains the reason code.
U0101	`IXCQUERY` failed.	Abend Register 14 contains the reason code.
U0103	Active member list full.	Contact Software AG Support.
U0104	`IXCMSGI` failed.	Abend Register 14 contains the reason code.
U0105	Message Exit could not obtain a Purge Task Request Block.	Contact Software AG Support.
U0106	Work Space for `IXLCONN` could not be obtained.	Contact Software AG Support.
U02*xx*	`DSPSERV CREATE` failed.	*xx* is the reason code.
U03*xx*	`ALESERV ADD` failed.	*xx* is the reason code.
U04*xx*	`ALESERV ADD` failed.	*xx* is the reason code.
U05*xx*	`IXLCONN` failed.	*xx* is the reason code.
U06*xx*	`IXLLIST WRITE` failed.	*xx* is the reason code.

To find a description of reason codes, refer to *Programming: Sysplex Services Reference* (IBM documentation). If the error was environment-specific, and it is not clear what the reason was, contact Software AG Support.

ASM Operator Commands

The following commands can be passed to the ASM using the `MODIFY` command:

Command	Description
TERM	Terminates the ASM.
TRSTART	Debugging function, only to be used at Software AG's advice. Activates the Trace Task. If the GTF is started and enabled for User Records 202, the trace records are written to the GTF.
TRSTOP	Deactivates the Trace Task.
SNAP	Debugging function. The ASM's address space is dumped to `SYSUDUMP`.
VLIST	Display name, version, and assembly time of modules that are linked to the ASM.

For a list of return codes and reason codes of the SIP Service, refer to *SIP Service Return Codes and Reason Codes* in the *Messages and Codes* documentation.