Authorized-Services Manager under OS/390

This document describes functionality and operation of the Authorized-Services Manager (ASM) which is available with Natural under OS/390. It covers the following topics:

- ASM Functionality
- ASM System Requirements
- ASM Operation

ASM Functionality

The Authorized-Services Manager (ASM) provides authorized operating system functions for usage within Natural. These functions include writing SMF records or accessing the Coupling Facility (CF). The ASM provides functions via PC routines and runs in its own address space.

The following authorized operating-system functions are provided:

- propagating Natural buffer pool objects;
- writing SMF records;
- holding Natural session information in the Session Information Pool (SIP).

The first two 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 under CICS is used in Sysplex mode (with the SIP function);
- 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. The SIP can be used in Sysplex mode (with the Coupling Facility) or in non-Sysplex mode (without the CF). If used in Sysplex mode, the SIP is created in the CF; a data space is used as an intermediary buffer to avoid unnecessary access to the CF. If used in non-Sysplex mode, the SIP is created in a data space.

If the ASM is used in Sysplex mode, one ASM instance must be started for each OS/390 image.

Note concerning Natural/CICS: The CICS System Recovery Table should include the OS/390 system abend code 0D6.

ASM System Requirements

- APF Authorization
- System Linkage Index (System LX)
- Data Space
- CF Structure
- XCF Signalling Paths

APF Authorization

Copy the following APF load modules to an APF-authorized library:

- NATAUMAT
- NATAUPGT
- NATAUTRT

The NATAUMAT module is delivered with AC=1.

System Linkage Index

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. It becomes available again with the next IPL because a System LX has been used.

Data Space

Data space is created only if you use the SIP. You can calculate the size of this data space by multiplying the SIP slot size by the number of SIP slots, both of which are ASM startup parameters.

CF Structure

The CF structure is only used if you run the SIP in Sysplex mode. 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 objects in Sysplex mode, 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 have been manipulated (with the CATALOG, STOW or DELETE system command).

ASM Operation

- Starting the ASM
- ASM Messages, Condition Codes and Abend Codes
- ASM Operator Commands

Starting the ASM

To start the ASM, enter the following parameter string:

subsystem-id,*XCF-group-name*,*CF-structure-name*,*number-of-SIP-slots*,*SIP-slot-size*

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

Parameter	Possible Values	Default	Comment
subsystem-id	4-byte non-blank string	NAT3	The specified value must match the value of the Natural profile parameter SUBSID. **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 which the XCF signalling is used.
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. Then the maximum possible number of slots is allocated if the CF structure has not yet been allocated.
SIP-slot-size	256, 512, 1024, 2048, 4096	1024	The specified value is ignored if a CF structure has already been allocated.
force	F or none	none	Enables the forced restart of the Authorized Services Manager after it has been cancelled.

Examples:

```
//AUMAT EXEC PGM=NATAUMAT,PARM='NAT3,NATXCF,CFSIP,1500,512'
```

The subsystem ID is NAT3, 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.

```
//AUMAT EXEC PGM=NATAUMAT,PARM='NAT3,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.

```
//AUMAT EXEC PGM=NATAUMAT,PARM='NAT3,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.

```
//AUMAT EXEC PGM=NATAUMAT,PARM='NAT3,NATXCF'
```

The SIP service will not be available.

ASM Messages, Condition Codes and Abend Codes

On every important event during execution and on every error, the ASM issues a WTO message in the form "NATAUTHS -- *text*".

The following condition codes are used:

0	Everything OK
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
100	IXCJOIN failed.	Abend Register 14 contains the reason code.
101	IXCQUERY failed.	Abend Register 14 contains the reason code.
103	Active member list full.	Contact Software AG Support.
104	IXCMSGI failed.	Abend Register 14 contains the reason code.
105	Message Exit could not obtain a Purge Task Request Block.	Contact Software AG Support.
106	Work Space for IXLCONN could not be obtained.	Contact Software AG Support.
2*xx*	DSPSERV CREATE failed.	*xx* is the reason code.
3*xx*	ALESERV ADD failed.	*xx* is the reason code.
4*xx*	ALESERV ADD failed.	*xx* is the reason code.
5*xx*	IXLCONN failed.	*xx* is the reason code.
6*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 issued to the ASM using the MODIFY command:

Command	Description
TERM	Terminates the ASM.
TRSTART	Debugging function. 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.

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).

