



Tivoli Business Systems Manager
CA-7 Release Notes Version 1.5



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Integration Overview

CA-7 is a Computer Associates product that is designed to schedule and control an enterprise workload. Applications and the jobs that comprise them are defined, scheduled, and submitted by the CA-7 Central Control System and tracked by SMF and JES exits and internal CA-7 code in the second component of the system called the Independent Communications Manager or ICOM.

In a multi-image environment, one system runs the Central Control System and there is an instance of ICOM on each of the systems (including the system running the Central Control Task). Status, based on the tracking, is posted within CA-7 and used by operators to control and plan the workload. Messages associated with the tracking, that indicate milestones (start/stop/normal completion) and mishaps (late start/excessive run time/abends) are also written by the controller to a master station that is most commonly defined as a browse dataset.

The integration of CA-7 with TBSM provides both discovery data and event data by two separate methods--one for job discovery and one for event data. Job discovery information is provided by a forecast report generated at a client defined interval that is transported to TBSM for processing. Event data is captured by the TBSM External Data Interface (EDI) using a CA-7 defined exit.

Architecture

Bulk discovery data is captured by the processing of forecast reports that are generated at customer determined intervals. The jobs are grouped by application under Batch Schedule Set icons on the physical tree. These jobs can then be viewed from the Batch Management Summary view, which is available with a right mouse click at any level of the hierarchy.

Event data is captured by a CA-7 user exit that processes messages as they are written to the CA-7 browse dataset. This exit, SASSXX17, is an assembler routine that processes a pre-determined set of messages from CA-7 that provide notification of certain events for each job. These events are:

- Job start
- Job end
- Job abend
- Job late to start
- Job running too long
- New occurrence of job added to schedule

When one of these messages is encountered, its text is sent to the TBSM Object Pump by a call to the TBSM EDI. The Object Pump then processes the data and places it in the data space. The data is then retrieved by the TBSM object server and transported to the NT environment. Once in the NT environment, pertinent data is extracted from the record allowing the event to be processed and posted.

CA-7 batch objects are uniquely identified within the NT environment using the following criteria:

- The CA-7 complex from which the event or forecast file arrived (known in TBSM as **schedule set**)
- The **SYSTEM** name for the job as indicated in the forecast file or the CA-7 SIRD-11 message event (known in TBSM as **schedule**)
- The **JOB** name as indicated in the forecast file or the CA-7 SIRD-11 message event
- The **SCHED ID** (SCHID in messages) as indicated in the forecast file or the CA-7 SIRD-11 message event

When there are multiple instances of the combination listed in the previous paragraph (which may occur if a job is triggered multiple times or manually demanded without the use of SCHED ID), the events are applied to a single object. If any one of the listed fields is blank, the event for it is discarded and the object is not created. However when the schedule set is blank, the event is posted to the generating operating system.

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Discovery Processing

Auto-discovery of CA-7 jobs by events is enabled with this implementation. Job attributes are discovered by way of the CA-7 SIRD-11 message text and added to the appropriate schedules in TBSM. However, all jobs added in this manner are considered non-key jobs until they are either manually changed using the TBSM interface or through a new download of forecast information.

If you change the key status (key to non-key or non-key to key) of a job through the TBSM interface, you must also change the key attribute in Discovery Forecast files. Alterations to key status made through the TBSM interface are not immediately recognized.

Key to non-key state change causes the object priority to change from **inherit from event** to **ignore** and vice versa for non-key to key. As with all changes in object priority, the Propagation Dispatcher service must be restarted for this change to be recognized. Also, changing the key state of a CA-7 batch job does not change the propagation of previously reported events. For example, if you alter a key job that has a red alert icon to non-key, this does not remove the red alert icon from its parent objects.

Forecast files are used for the initial population of the database. They may also be used after the initial population if critical fields such as SYSTEM, SCHED ID, or JOBNAME change for key jobs, or if a job changes key status.

Also, the TBSM **scheduled start**, **estimated start**, **estimated stop time**, and **estimated duration** fields within the batch management summary are derived only from the forecast file. If these fields are to be used, the forecast files should be downloaded at an interval consistent with the time duration of the previous forecast file as specified by the SPAN keyword on the forecast command.

When forecast files are downloaded, the **object priority** field is set to **inherit from event** for key jobs and **ignore** for non-key jobs. This causes key jobs to propagate their alert states to their parent objects (for example, LOBs or schedule sets). Non-key jobs are set to **ignore** so that their state is not propagated beyond the batch job object itself. This object priority field will be reset to these values each time the forecast files are downloaded with the following exception: If you manually change the object priority of a CA-7 job to **critical**, **high**, **medium**, or **low**, these priority values will persist through subsequent forecast file loads.

Discovery Architecture

The following diagram depicts the flow for detection and capture of CA-7 resource data that loads the TBSM database.

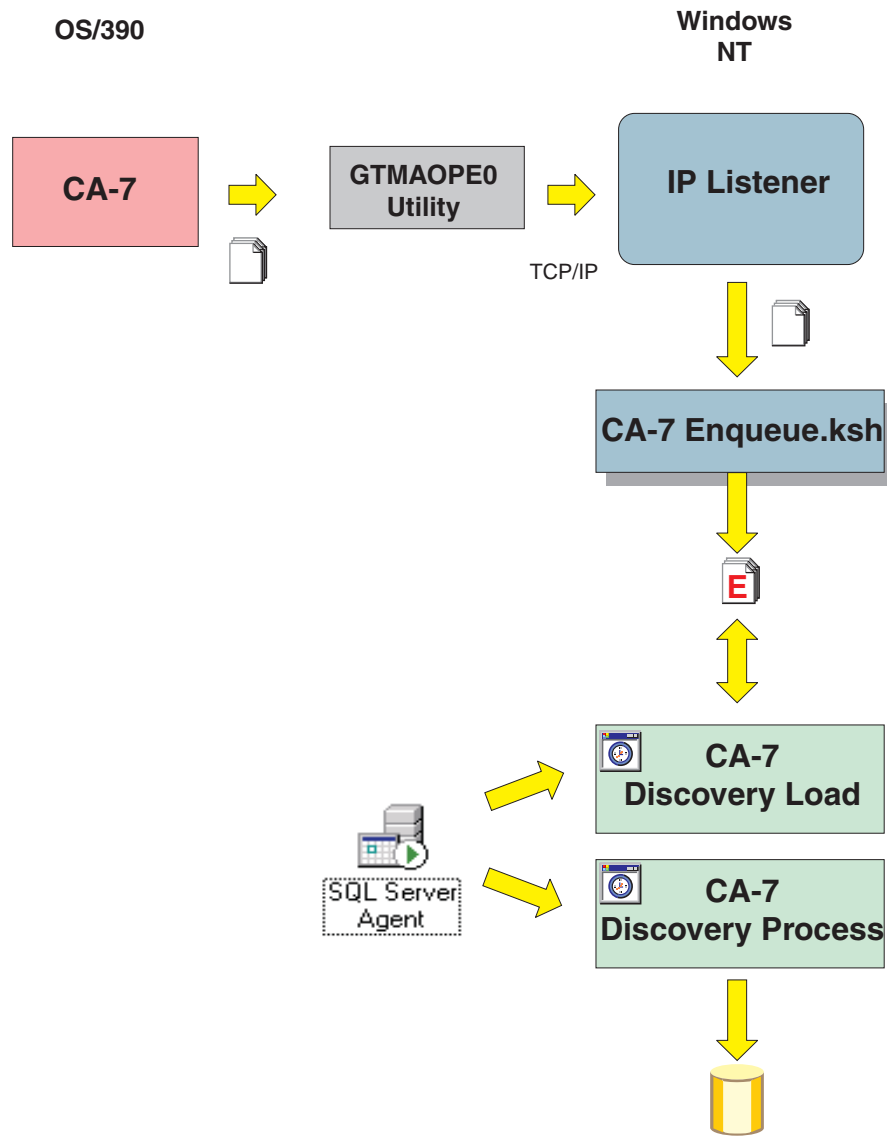


Figure 1. CA-7 Discovery Architecture

Downloading CA-7 Forecast Files

TBSM CA-7 integration requires a periodic download of the CA-7 forecast files to the TBSM SQL server. The files should be downloaded at an interval consistent with the time duration of the previous forecast file as specified by the SPAN keyword on the forecast command. The SQL server checks for new or updated files at a designated interval and processes the files if changes have been made.

The forecast command **FJOB,SPAN=hh,TRIG=DJ,LIST=W** must be used to provide the entire CA-7 file in the standard format expected by TBSM. **SPAN=hh** indicates the time interval of the report in hours. For example, to download a new CA-7 file every 24 hours, use a SPAN of 25 on the FJOB command to ensure no loss of scheduling data during file processing.

For monitoring of key batch jobs, additional forecast files need to be sent to the TBSM SQL server for the same time period. Parameters such as SYS= and JOBNET= may be specified on the FJOB command to provide key jobs forecast files. See the CA-7 Commands Guide for more information regarding filtering the list of jobs with the FJOB command.

SAMPLE JCL for Downloading CA-7 Forecast Files

Following is sample JCL for downloading CA-7 Forecast files to the NT server. For more information on the GTMAOPE0 utility, refer to the *TBSM Installation and Configuration Guide*.

```
//CA7DISC JOB MSGCLASS=A
//*****
//* PROVIDE VALID JOBCARD INFORMATON. *
//* GLOBALLY CHANGE 'PREFIX' TO VALID DSN PREFIX. *
//* GLOBALLY CHANGE 'SCHNAME' TO SCHEDULE NAME. *
//* GLOBALLY CHANGE UNIT=3390 TO VALID DEVICE TYPE. *
//* GLOBALLY CHANGE TCPIP_ADDRESS=??.???.?? TO IP ADDRESS *
//* OF SERVER RUNNING ASIMVSIPLISTENERSVC SERVICE. *
//*****
//* CREATE TEMPORARY DATASET NEEDED FOR TBSM/CA7 INTERFACE. *
//*****
//CREATE EXEC PGM=IEFBR14
//SYSPRINT DD SYSOUT=*
//CRTDSN DD DSN=PREFIX.SCHNAME.READY.TXT,DISP=(NEW,CATLG),
// UNIT=3390,SPACE=(56664,(1,1),RLSE),
// DCB=(LRECL=80,RECFM=FB,BLKSIZE=8000)
//*****
//* PROVIDE VALID DSN - DATASET NAME MUST BE AS FOLLOWS: *
//* "PREFIX.NAME_OF_SCHEDULE_.ALL.TXT" *
//*****
//FCSTALL EXEC CA7BTI
//SYSPRINT DD DISP=(NEW,CATLG),UNIT=3390,SPACE=(TRK,(10,1)),
// DSN=PREFIX.SCHNAME.ALL.TXT
//*****
//* CHANGE 'LOGON MASTER' TO PROPER LOGON PARMS *
//* TO DOWNLOAD A NEW CA7 FILE EVERY 24 HOURS, USE SPAN OF *
//* 25 ON THE FJOB COMMAND TO ENSURE NO LOSS OF SCHEDULING *
//* DATA DURING FILE PROCESSING. USE HH FOR NUMBER OF HOURS *
//* YOU WANT TO SPAN THE FORECAST. *
//*****
//SYSIN DD *
/LOGON MASTER
FJOB,SPAN=HH,TRIG=DJ,LIST=W
/LOGOFF
//*****
//* PROVIDE VALID DSN - DATASET NAME MUST BE AS FOLLOWS: *
//* "PREFIX.NAME_OF_SCHEDULE_.KEY1.TXT" FOR KEY FILE 1 *
//* "PREFIX.NAME_OF_SCHEDULE_.KEY2.TXT" FOR KEY FILE 2 *
//* "PREFIX.NAME_OF_SCHEDULE_.KEY3.TXT" FOR KEY FILE 3 ETC.*
//*****
//FCSTKEY EXEC CA7BTI
//SYSPRINT DD DISP=(NEW,CATLG),UNIT=3390,SPACE=(TRK,(10,1)),
// DSN=PREFIX.SCHNAME.KEY1.TXT
//*****
//* CHANGE LOGON MASTER TO PROPER LOGON PARMS *
//* TO DOWNLOAD A NEW CA7 FILE EVERY 24 HOURS, USE A SPAN OF *
//* 25 ON THE FJOB COMMAND TO ENSURE NO LOSS OF SCHEDULING *
//* DATA DURING FILE PROCESSING. USE HH FOR NUMBER OF HOURS *
//* YOU WANT TO SPAN THE FORECAST AND USE SYS TO PROVIDE *
//* KEY JOBS FORECAST FILE. *
//*****
//SYSIN DD *
/LOGON MASTER
FJOB,SPAN=HH,TRIG=DJ,LIST=W,SYS=TEST*
/LOGOFF
```

```

//*****
//* SEND FILE DOWNSTREAM TO TBSM *
//* *
//* SPECIFY THE DOTTED IP ADDRESS, OR RESOLVABLE NAME, OF THE*
//* TBSM SERVER AS THE DESTINATION. IT IS REQUIRED THAT THE *
//* TBSM MAINFRAME COMPONENTS HAVE BEEN INSTALLED. *
//* *
//* CHANGE TCP/IP ADDRESS=???.??? to IP ADDRESS OF *
//* SERVER RUNNING ASIMVSIPLISTENERSVC SERVICE. *
//*****
//SND2BSM1 EXEC PGM=GTMAOPE0
//SYSTCPD DD DISP=SHR,DSN=USER.PARMLIB(TCPDATA)
//STEPLIB DD DISP=SHR,DSN=TME.E120E.V1R1M0P2.SGTMMODS
//SYSPRINT DD SYSOUT=*
//SYSUT1 DD DISP=(OLD,DELETE),DSN=PREFIX.SCHNAME.ALL.TXT
//SYSIN DD *
TCP/IP_ADDRESS=???.???
TCP/IP_PORT=1021
CODEPAGE=037
COMMAND=CA7DISCOVERY
USERDATA=USER_STRING
CONVERT=NO
TEXT=YES
DATA_SEPARATOR=X'25'
FORMAT=X'0A'
//*****
//* SEND FILE DOWNSTREAM TO TBSM *
//* *
//* SPECIFY THE DOTTED IP ADDRESS, OR RESOLVABLE NAME, OF THE*
//* TBSM SERVER AS THE DESTINATION. IT IS REQUIRED THAT THE *
//* TBSM MAINFRAME COMPONENTS HAVE BEEN INSTALLED. *
//*****
//SND2BSM2 EXEC PGM=GTMAOPE0
//SYSTCPD DD DISP=SHR,DSN=USER.PARMLIB(TCPDATA)
//STEPLIB DD DISP=SHR,DSN=TME.E120E.V1R1M0P2.SGTMMODS
//SYSPRINT DD SYSOUT=*
//SYSUT1 DD DISP=(OLD,DELETE),DSN=PREFIX.SCHNAME.KEY1.TXT
//SYSIN DD *
TCP/IP_ADDRESS=???.???
TCP/IP_PORT=1021
CODEPAGE=037
COMMAND=CA7DISCOVERY
USERDATA=USER_STRING
CONVERT=NO
TEXT=YES
DATA_SEPARATOR=X'25'
FORMAT=X'0A'
//*****
//* SEND FILE DOWNSTREAM TO TBSM *
//* *
//* SPECIFY THE DOTTED IP ADDRESS, OR RESOLVABLE NAME, OF THE*
//* TBSM SERVER AS THE DESTINATION. IT IS REQUIRED THAT THE *
//* TBSM MAINFRAME COMPONENTS HAVE BEEN INSTALLED. *
//*****
//SND2BSM3 EXEC PGM=GTMAOPE0
//SYSTCPD DD DISP=SHR,DSN=USER.PARMLIB(TCPDATA)
//STEPLIB DD DISP=SHR,DSN=TME.E120E.V1R1M0P2.SGTMMODS
//SYSPRINT DD SYSOUT=*
//SYSUT1 DD DISP=(OLD,DELETE),DSN=PREFIX.SCHNAME.READY.TXT
//SYSIN DD *
TCP/IP_ADDRESS=???.???
TCP/IP_PORT=1021
CODEPAGE=037
COMMAND=CA7DISCOVERY
USERDATA=USER_STRING
CONVERT=NO
TEXT=YES

```

```
DATA_SEPARATOR=X'25'  
FORMAT=X'0A'  
//*
```

Forecast File Naming Conventions

Forecast files should be transmitted to NT as detailed in the sample JCL. The names of the files must follow the conventions as listed below. If required, a prefix can be added to the file names, but the prefix must be the same for all transmitted CA-7 files.

- The file listing all of the CA-7 jobs, as provided with the FJOB,SPAN=hh,TRIG=DJ,LIST=W command, must have the following filename:

Schedulesetname.ALL.txt

where Schedulesetname refers to the name under which all applications in this schedule will be grouped. Schedulesetname must follow normal OS/390 dataset naming conventions. If desired, mapping of this name can be done within the TBSM database to allow longer, more meaningful names. Database requirements for schedulesetname are:

- No longer than 30 characters
- Consist of letters (A - Z, a - z, numbers 0-9, with no punctuation or spaces)

Typically this name represents the complex in which CA-7 runs, however this is not a limitation and the customer may choose an alternate name to represent this group of applications.

- The file listing all of the KEY CA-7 JOBS, as provided with the FJOB,SPAN=hh,TRIG=DJ,LIST=W command and additional filtering options such as SYSTEM or JOBNET, must have the following file name:

Schedulesetname.KEY#.txt

Where # represents the number of the file (for example, 1, 2, 3, ...). Because there may be multiple KEY files for a given CA-7 environment, each one must have a unique number assigned to it. **Schedulesetname** must be the same as that specified in the ALL file for each CA-7 complex.

- Once all CA-7 forecast files for a schedule set name have been sent to NT, an empty file, named:

Schedulesetname.READY.txt

must be sent to indicate that all files have been sent and are ready for processing for the named schedule set.

Forecast File Naming Convention Examples

The Schedule Set name is customized by the forecast file name(s) sent to NT. For example if you have two CA-7s for each of the two complexes eastern and western, you may send down files:

```
WESTPROD.ALL.TXT  
WESTPROD.KEY1.TXT  
WESTPROD.KEY2.TXT  
WESTPROD.READY.TXT
```

```
WESTCMC.ALL.TXT  
WESTCMC.KEY1.TXT  
WESTCMC.READY.TXT
```

```
EASTPROD.ALL.TXT  
EASTPROD.KEY1.TXT
```

EASTPROD.READY.TXT

EASTCMC.ALL.TXT
EASTCMC.KEY1.TXT
EASTCMC.KEY2.TXT
EASTCMC.READY.TXT

This results in four Schedule Sets monitored via TBSM. The schedule Set Name is the first part of the file (WESTPROD, WESTCMC, etc.) The applications included under each schedule set are those in the named forecast files

Example Forecast File (Expected Format)

In the following example, key fields are:

- JOB=TESTJOB
- LATEST STRT=00304/0929
- DUEOUT TIME=00304/0930
- SYSTEM=TESTAPPL
- SCHED ID=009

An example of a Forecast report that is used in initial discovery follows.

JOB=TESTJOB	COMPLETED	
SCHEDULE:	LATEST STRT=00304/0929 DUEOUT TIME=00304/0930 SUBMIT TIME=00304/0000	SCHD MBR=SJ000106 SCHED ID=009
GENERAL:	JCLMBR=D4D11000 SYSTEM=TESTAPPL NBRRUN=915	JCLID=001 LTERM= LSTRUN=00303/0930
RESOURCE:	MAINID= SY1 PRTY=155 ELAPTM=0005 TP1 =000	CLASS=1 TP2 =000
EXECUTION:	RELOAD=NO EXEC=YES RETJCL=NO HOLD=NO	MAINT=NO

Forecast File Fields

The following CA-7 forecast fields are used within the TBSM integration. In the event that a field appears multiple times for a particular job, which may occur with fields such as SYSTEM, the last occurrence is used.

JOB: The JOB field represents the actual job name to be run.

LATEST STRT:

Job start time is represented by this field and is displayed on the TBSM STATISTICS tab for this job object.

DUEOUT TIME:

This value is composed of two fields in the format yyddd and hhmm respectively, and is the date and time that a job must complete. This value is displayed on the TBSM STATISTICS tab for this job object.

SCHED ID

1- to 3-digit number that is used to identify:

- Scheduling variations

-
- Data set or network triggers instead of job triggers on certain days
 - Different requirements on different days
 - Different due-out or processing times on different days
 - Special JCL on certain days

SYSTEM:

Indicates the application name to which this job belongs. This field is used to group the jobs into a schedule within the Batch Management Summary view. In addition, this field can also be used in the FJOB forecast command as SYS= to limit those jobs that are defined as key.

Batch Management Summary View

In the TBSM Batch Management Summary view, the schedule set correlates to the name of the CA-7 Forecast file received by NT. The schedule name correlates to the SYSTEM field in the CA-7 forecast file and/or the CA-7 SIRD-11 event received by the TBSM server. Selecting a schedule causes the jobs that match that schedule name to be displayed in the lower portion of the view.

3

Event Processing

Event data for jobs scheduled through CA-7 is gathered by the CA-7 online exit SASSXX17. This exit gets control at the point where messages are ready to be written to the CA-7 browse dataset. TBSM supplies an assembler routine that watches for specific messages representing the possible events that are needed. When one of the desired messages is encountered, it is formatted as required by the EDI and sent along to be delivered to the NT platform.

Once the message is on the NT platform, specific information (such as job name, CA-7 job ID, system (application) name, and SCHID) is extracted so that the alert can be posted against the appropriate job object. The Batch Management Summary view can then be used to view the status of all the jobs in the Batch Schedule Set.

Bulk Discovery

In bulk discovery jobs with identical **SCHEDULE** name, **JOB** name, and **SCHED ID** (SCHID) but with different **Start/Stop** time, share the same object. Information from the job with the earliest date/time is used to create the object.

Additionally during bulk discovery, newly created objects only have **Est.StartTime**, **Est.StopTime**, **Est.Duration**, and **Key** status fields valued. **StartTime** and **StopTime** fields are empty. For existing objects, **Est.StartTime**, **Est.StopTime**, **Est.Duration**, and **Key** status fields are updated with new information from the discovery. However, **StartTime** and **StopTime** fields contain values from the previous run.

Discovery by Event

Event discovery is based on CA-7 message SIRD-11. Jobs not discovered during the bulk discovery process are discovered as Non-Key jobs. **DUE-OUT** time on the SIRD-11 message is used to update **Est.StopTime** and the time stamp on the SIRD-11 is used as **Est.StartTime**. When the jobs actually starts/stops, the **StartTime/StopTime** fields are updated accordingly.

Scheduling of Jobs

As jobs are scheduled by CA-7, messages indicating this are written to the browse dataset. These messages not only signify that the job has been scheduled, they also carry important information about the job that will be used by TBSM to identify and place the job in the database. Chief among this information are **SYSTEM**, which indicates the application that the job belongs to, and the CA-7 **job ID** that identifies each specific occurrence of the job. **SCHID** is also used to distinguish multiple jobs with the same name and **SYSTEM**.

Once scheduled, a job awaits its designated start time or trigger event. When the start time or trigger event occurs, the job starts and another message indicating the start is written to the browse dataset.

This message is captured and posted to the specific job. If for some reason the job does not start at the designated start time or trigger event, a late message is issued and is captured via the exit code and posted to the job object. If and when the job starts, messages indicating either normal end of job (NEOJ), abnormal end of job (abend), or excessive run time are issued, captured through SASSXX17, and posted to the job object within the appropriate batch schedule set.

Event messages are listed in Appendix A.

How Event Processing Works

TBSM locates or creates the necessary CA-7 job objects within the database as follows.

The OS/390 image from which the event is received is looked up in the CA7 COMPLEXES line of business. The OS/390 image must only appear under one schedule set within that line of business. The event will be applied to this schedule set. If the event is received from an OS not within the CA7 COMPLEXES LOB, an exception is posted on the OS/390 image.

The appropriate schedule within the schedule set is determined by the **SYSTEM** field as valued on the SIRD-11 message. If **SYSTEM** is not valued, then the event is discarded. If the schedule set is not already known to TBSM, it is automatically created.

The Job within the schedule set is further located by a combination of the **jobname** and **schid** fields on the SIRD-11. If the job does not exist, it is automatically created. In addition, the CA-7 **jobid**, as provided in the SIRD-11 message, is now associated with this specific job object in TBSM so that subsequent event messages may be applied to this object.

If a CA-7 event is received for a **jobid** not known to TBSM, a **Missing SIRD-11** exception is posted to the schedule set and the CA-7 event is discarded.

4

Installing TBSM / CA-7 Interface

This chapter explains the necessary steps for enabling message/event flow from CA-7 to TBSM.

Enabling TBSM Mainframe Components

To enable TBSM mainframe components:

1. SMP/E install appropriate TBSM maintenance.
2. Update TBSM Object Pump start-up parameters to include the following statement:
`CA7_JOBNAME=taskname`

where taskname is the name of the CA-7 central control task.

Mainframe Installation Steps

■ In TBSM

1. Download the CA-7 Forecast file to the TBSM NT environment. Refer to Chapter 2, Discovery Processing, for information about downloading CA-7 Forecast files. Chapter 2 also includes sample JCL for downloading CA-7 Forecast files.

■ In CA-7

1. SMP/E install CA-7 usermod SASSXX17. A sample is provided as member GTMCA7EX in the TBSM SGTMSAMP library as part of the installation of the above-mentioned maintenance.
2. Include the TBSM SGTMMODS dataset in the STEPLIB concatenation in the CA-7 Central Control task procedure or include the SGTMMODS dataset in the linklist.
3. Include the following statement in the CA-7 Central Control task initialization statements:
`APPLCTN,NAME=SASSXX17,ATTR=RESO`

Notes:

1. By default, CA-7 delivers late messages for all defined CPU jobs. If you want to reduce the number of events to TBSM, or if there are jobs for which late messages are not needed, change the definition for the job within CA-7 to include **PROMPTS: N** on the **MESSAGES** line of the **CA-7 CPU JOB DEFINITION** panel.
2. By default, CA-7 does not suppress SIRD-11 messages. However, you may optionally suppress these messages by coding **ABR=YES** in the SCHEDULE initialization statements. The SIRD-11 message is required for the TBSM implementation, therefore verify that you are using the default value of **ABR=NO**.

Setting Up the TBSM Server

This section explains how to set up the TBSM server by configuring Windows NT CA-7 Discovery components.

Configuring Windows NT CA-7 Discovery Components

The following section describes the configuration of the Windows NT based components for processing CA-7 discovery.

Modifying Windows NT Directory

On the server running the TBSM database, configure the appropriate directory(ies) where file processing will be performed. The following action will prepare the filesystem for the receiving of CA-7 forecast files.

In the TBSM installation directory create the following directory:

Data/Ca7

For example, if the installation directory is C:/TivoliManager, you would create the directory: C:/TivoliManager/Data/Ca7

IP Listener Configuration

The ASIMVSIPLListener is used to receive files sent by the GTMAOPE0 utility. The ASIMVSIPLListenerSvc must run on the SQL Server.

For installations before TBSM Version 1.5, you must manually:

1. Copy the ASIMVSIPLListenerSvc.exe from Tivoli Manager\bin on the Event Handler machine to the same location on the SQL Server machine.
2. Install SNA client software on the SQL machine. Refer to the *TBSM Installation and Configuration Guide* for more details.
3. From a command prompt on the SQL server, issue:
ASIMVSIPLISTENERSVC -SERVICE
4. Make any Registry modifications as specified in the next section (Registry Modifications for the IP Listener) and start the service.

Registry Modifications for the IP Listener

On servers running the ASIMVSIPLListenerSvc, configure the appropriate entry in the registry for the processing to be done. The following registry keys define the processing for the CA-7 discovery feed.

The following setting defines the port address to communicate with GTMAOPE0. This is specified on the TCPIP_PORT control card of GTMAOPE0.

Key	HKEY_LOCAL_MACHINE \ SOFTWARE \ Accessible Software, Inc. \ Access1 \ 1.0 \ Components \ ASIMVSIPLListenerSvc \ Settings
Name	Port
Type	DWORD
Data	0x000003fd (1021)

The following setting defines the command to be triggered on the Windows NT Server by GTMAOPE0. This is specified on the COMMAND control card of GTMAOPE0.

Key	HKEY_LOCAL_MACHINE \ SOFTWARE \ Accessible Software, Inc. \ Access1 \ 1.0 \ Components \ ASIMVSIPLListenerSvc \ Settings \ CommandAliases
Name	CA7DISCOVERY
Type	String
Data	sh ca7Enqueue.ksh -i%s -oc:/tivolimanager/data/ca7/%DS -r<prefix>

In the preceding setting, ca7Enqueue.ksh script provides a **-r** option that truncates the specified prefix from the name of the dataset on its creation on Windows NT. This allows the users to follow their own mainframe environment naming conventions, yet allows the root filename to be created on the Windows NT environment.

For example, to follow a user's mainframe environment naming conventions, a forecast file is created with the following name:

CA7.TBSM.DEV.ALL.TXT

However, the desired naming convention in Windows NT is as follows:

DEV.ALL.TXT

To provide for this transformation the **-r** option is specified as **CA7.TBSM.** (-rCA7.TBSM.). If no transformation is required, omit the **-r** option entirely.

The following setting defines the IP clients that are authorized to run GTMAOPE0. Code the DNS name or IP address of the host where GTMAOPE0 runs.

Key	HKEY_LOCAL_MACHINE \ SOFTWARE \ Accessible Software, Inc. \ Access1 \ 1.0 \ Components \ ASIMVSIPLListenerSvc \ Settings \ ValidClients
Name	<host>
Type	String
Data	

TBSM Line of Business Configuration

On a workstation running the TBSM Client, create the needed schedule sets, add them to the appropriate Line of Business (LOB), and add exit generating operating systems to the appropriate schedule sets under the LOB. The following schedule set operations define the location of the CA-7 objects within the TBSM system.

1. For each schedule set to be discovered, create a schedule set in the desired location within the enterprise outliner.

Note: You can have only one schedule set defined per OS/390 system.

2. Create an LOB called **CA7 COMPLEXES**.

Note: The name must be CA7 COMPLEXES, or event processing will not be able to place events to the appropriate job.

3. Drag and drop all the preceding schedule sets into the CA7 COMPLEXES LOB.
4. Drag and drop any operating systems that will generate CA7 SASSXX17 exit events into the appropriate schedule set under the CA7 COMPLEXES LOB.

Note: If an event is received from an operating system that does not exist under the CA7 COMPLEXES LOB, an exception will be posted to the operating system.

CA-7 Filename to Schedule Set Name Configuration

On a server running Microsoft SQL Query Analyzer connected to the TBSM object database, create the records used for translation of CA-7 forecast root filename prefixes to LOBs. Following is the process for creating SQL commands for the appropriate schedule set.

Each unique root filename prefix can be sent to only one schedule set listed under the CA7 COMPLEXES LOB.

The root filename prefix is the section of the filename that is not used for mainframe naming convention prefixing and is not used for Windows NT naming convention suffixing. For clarity, the following mainframe dataset name has been broken down into its respective parts:

File Example	Definition
CA7.TBSM.DEV.ALL.TXT	Mainframe dataset name
CA7.TBSM.	Mainframe naming convention prefix
DEV.ALL.TXT	Root Filename
DEV	Root Filename Prefix
.ALL.TXT	Windows NT naming convention suffix

For each unique root filename prefix perform the following SQL command:

```
EXEC asisp_setCA7bcysnamelookup '<Root>', '<ScheduleSetName>'
```

Where <Root> is the root filename prefix and <ScheduleSetName> is the name of the schedule set (including spaces).

For example, to place a root filename prefix of DEV to the schedule set name of Development Environment, execute the following SQL command:

```
EXEC asisp_setCA7bcysnamelookup 'DEV', 'Development Environment'
```

Configuring Discovery Behavior

On a server running a Microsoft SQL Server Query Analyzer connected to the TBSM Object Database, create the records that guide discovery by event behavior. The following SQL commands dictate the circumstances of new object creation based on event records.

When an event is sent by SIRD-11 for an object that is unknown to TBSM, TBSM must decide to create or not create this object within TBSM. If the object's **SYSTEM** field is not equal to **NULL**, the object is created. If the object's **SYSTEM** field is equal to **NULL**, the default behavior is for TBSM not to create the object and to discard the event.

To change the object creation behavior execute one of the following SQL commands.

To create batch jobs for SIRD-11 events, where the **SYSTEM** field is **NULL**, apply the following command to the Object database using the Microsoft SQL Server Query Analyzer interface:

```
asisp_setCA7Globals 'CA7', 'keep_unknown', '1', 'TINYINT'
```

Note: Objects created by this method appear under the **UNKNOWN** schedule as non-key jobs.

If you choose **not** to have the batch objects created and to have the event discarded, apply the following command to the Object database using the Microsoft SQL Server Query Analyzer interface:

```
asisp_setCA7Globals 'CA7', 'keep_unknown', '0', 'TINYINT'
```

SQL Server Job Configuration

On the server running Microsoft SQL Server Enterprise Manager connected to the TBSM database, create scheduled jobs to load and process CA-7 forecast files. The following actions automate the discovery of CA-7 forecast files.

- To facilitate automation of CA-7 discovery, stored procedures are invoked from the SQL Server Agent as scheduled Jobs, which are configurable from the SQL Server Enterprise Manager.

The first job is called **CA7 Discovery Load** and it parses and loads those files marked as enqueued. Files are enqueued by the Ca7Enqueue.ksh script specified in the preceding Windows NT Registry modification section. When it receives the '<ssn>.READY.TXT' file for a schedule set, it marks the file as enqueued in the TBSM database.

The second job is called **CA7 Discovery Process**, which takes the data that has been manipulated by the load job and updates the objects within TBSM.

Each of these polling jobs should run at a designated interval on the TBSM database. If either job is invoked and there is no information in a state to be processed, then the job notes that it ran and exits. If the job encounters an error, then an appropriate error is reported in the Job section of the SQL Server Enterprise Manager. If the job is successful in processing its data, then the information is enqueued for the next existing step in processing.

- The following jobs should be created (or checked if they exist to ensure that they are enabled) to run at customer deemed intervals. Additionally, their job histories should be reviewed to make sure that the jobs are running successfully and as scheduled.

Job Name	Stored Procedure Called
CA7 Discovery Load	_LoadCA7DiscoveryBatch
CA7 Discovery Process	_DiscoverCA7Objects

- The status of the discovery process can be viewed within the SQL table **DiscoveryBatch**. The **pstep** and **pstat** values in this table for your CA-7 load file indicate where you are within the bulk discovery process. Possible values are:

pstep = 0, pstat = 0	ASIIPListenerSvc received ready file for the schedule set
pstep = 1, pstat = 1	parsing forecast file
pstep = 1, pstat = 0	*.bcp file ready to load
pstep = 2, pstat = 1	start to load *.bcp file into db
pstep = 2, pstat = 0	finish to load *.bcp file into db and ready for process
pstep = 3, pstat = 1	start to process data in db

Entries will be deleted after processing successfully. If there is an error in any step, **pstat** is set to **1**, and **error** and **errtext** are used to post error messages for each step.



Exception Messages

This appendix describes messages that are used to track events as they occur for CA-7 scheduled jobs.

The following table lists CA-7 messages, along with their alert states, priority, and the message description.

Message ID	Alert State	Priority	Message Description
SCNP-11	Red	Medium	Job running too long
SCNP-11	Red	Medium	Job has not started
SMF0-19	Red	High	Job abended/canceled
SMF0-12	Green	High	Job started
SCRJ-12	Green	Ignore	Job completed normally
SIRD-11	Green	Ignore	Job arrived at CA-7 request queue

Messages

The following CA7- event messages are trapped via SASSXX17 and forwarded to TBSM:

■ SCNP-11 Job running too long:

```
SCNP-11 JOB SAMTEST1(0083)  SYS=                *** IS LATE ***
REQUIRED BY 00.298 AT 1218, MUST START BY 00.298  AT 1218
SCHID=001 PROSE#=00000000 ERQD=001 ENSAT=001 IRQD=000 INSAT=000
MCNT=001 FLAGS=10/08/00/02/00/00/00
```

■ SCNP-11 Job has not started

```
SCNP-11 JOB SAMTEST1(0083)  SYS=                *** IS LATE ***
REQUIRED BY 00.298 AT 1218, MUST START BY 00.298  AT 1218
SCHID=001 PROSE#=00000000 ERQD=001 ENSAT=001 IRQD=000 INSAT=000
MCNT=001 FLAGS=10/08/00/02/00/00/00
```

■ SMF0-19 Job abended/canceled (while running):

```
SMF0-19 JOB SAMBR14 (0086) ABNORMALLY TERMINATED. *** RESTART REQUIRED ***
FAILING CODE = S0806.  LAST STEP EXECUTED = IEFBR14
```

■ SMF0-12 Job started:

```
SMF0-12 JOB SAMTEST2 (0087) ACTIVE ON MAIN.
```

■ SCRJ-12 Job completed normally:

```
SCRJ-12 JOB SAMBR14 (0088) COMPLETED NORMALLY.  *** COMPLETED ***.
HIGHEST CONDITION CODE = 0000.
```

■ SIRD-11 When a job arrives at CA-7 request queue:

SIRD-11 ***** JOB=SAMBR14 (0096) EXECUTION REQUIREMENTS ***** JCLID=000
SYSTEM= DESC=CA7/TBSM TEST
DUE-OUT 00.299/1021 DEAD-LINE 00.299/1021 MAINID=
SCHID=001 PROSE#=00000013 ERQD=000 ENSAT=000 IRQD=000 INSAT=000
MCNT=000 FLAGS=10/08/00/02/00/00/00
*** REQUIREMENTS ***
*NONE *



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