



Tivoli Business Systems Manager
DB2 and DB2 PM Release Notes
Version 1.5



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Release Notes

Overview of DB2 and DB2 PM

Organizations in the rapidly growing technology environment demand reliable databases that can adapt to emerging global and electronic trends. The database must provide superior performance to handle large volumes of data and flexibility to run across a variety of hardware and software platforms. This critical data must be available on a 24x7 basis; downtime is not an option. Finally, the database environment must be engineered to require very little maintenance, thereby reducing cost of ownership

The IBM DB2 relational database management system provides a comprehensive array of database functionality including high performance, scalability, network and data integration, reliability, and availability. DB2 is extensively used for mission-critical applications throughout the world.

DB2 Performance Monitor (DB2 PM) is a tool for analyzing, controlling and tuning the performance of DB2 and DB2 applications. It runs on an OS/390 host server and has a real-time online monitor, which can run on a Windows NT or IBM Operating System/2 (OS/2) workstation.

DB2 PM provides detailed information about each DB2 subsystem including central processing unit (CPU) times, buffer pool use, locking, and I/O activity. In addition DB2 PM monitors DB2 thread activity measuring such critical performance factors as elapsed time, time spent, duration and suspension, read/write activity, locks obtained and SQL statements executed. It provides an immediate "snap-shot" view of DB2 for OS/390 activities and allows you to establish thresholds for exception processing. Features of DB2 PM include the following:

- Determine total DB2 system performance and efficiency
- Measure resource use and application performance
- Evaluate the applications impact on other applications and the system
- Identify potential problems
- Analyze and improve Structured Query Language (SQL) statements
- Determine the tuning requirements for DB2
- Through the Workstation Online Monitor, you view thread activity, statistics, and exception processing

Tivoli Business Systems Manager integrates with DB2 and DB2 PM as an exception source to monitor and control DB2 subsystems and Databases. Tivoli Business Systems Manager reports DB2 exceptions that are based on the event threshold settings established by DB2

and DB2 PM. This integration provides an end-to-end view of how DB2 is affecting applications and other system components including the operating system, OLTP, and storage. The Line of Business View capability of Tivoli Business Systems Manager offers a business systems-centric view of how DB2 is affecting each critical business application.

This document explains the architecture and functionality for the Tivoli Business Systems Manager interface with DB2 and DB2 PM.

Overview of Tivoli Business Systems Manager Processing

Tivoli Business Systems Manager utilizes DB2 PM exceptions, DB2 messages, and built-in automated exception thresholds to monitor the state of a DB2 system. This allows the components of DB2 (Tivoli Business Systems Manager objects) to be viewed graphically in combination with other critical systems components such as the Operating System, Customer Information Control System (CICS), network connections, and storage. The Tivoli Business Systems Manager Line of Business View capability depicts the impact these DB2 components have on critical business applications, enabling a business systems-centric approach to systems management.














The integration of DB2 and DB2 PM with Tivoli Business Systems Manager provides functionality in four primary areas. They are described in detail in the following sections:






- **DB2 Objects** – Several DB2-specific objects are added to the Tivoli Business Systems Manager Object Model to enhance the breadth and detail of DB2 object monitoring.
- **Exceptions** – Exceptions generated by DB2 and DB2 PM are applied to the appropriate Tivoli Business Systems Manager object instance, affecting both its alert state and properties allowing you to view the exception history of an object.
- **Launch of DB2 PM Workstation Online Monitor** – The DB2 PM Workstation Online Monitor is launched from the Tivoli Business Systems Manager graphical user interface to facilitate detailed problem determination. This function requires the installation of the DB2 PM Workstation Online Monitor component on the client.
- **Launch of DB2 Control Center** – The DB2 Control Center is launched from the Tivoli Business Systems Manager graphical user interface to provide a facility to access DB2 data on the enterprise server. This function requires the installation of DB2 Control Center on the client.

Tivoli Business Systems Manager operates through two essential processes. Objects to be managed need to be registered into the Tivoli Business Systems Manager SQL Server database. The process of object discovery involves running an initial batch job stream that detects the configuration and registers these objects. The process of event processing involves capturing specific events and routing them into the Tivoli Business Systems Manager server that results in updates to the Tivoli Business Systems Manager graphical user interface. These two important processes are described in the following sections and allow you to understand the overall sequence as well as important functions that are used.

DB2 Objects

The integration of DB2PM and Tivoli Business Systems Manager introduces several objects for monitoring DB2. These objects are described in the following table along with the icons that represent them in Tivoli Business Systems Manager graphical views and their parent object in the physical hierarchy. The Operating System object in the Tivoli Business Systems Manager physical object hierarchy is the parent object for the DB2 Subsystem object. The mapping of DB2 messages and exceptions to each object type appears in Appendix A.

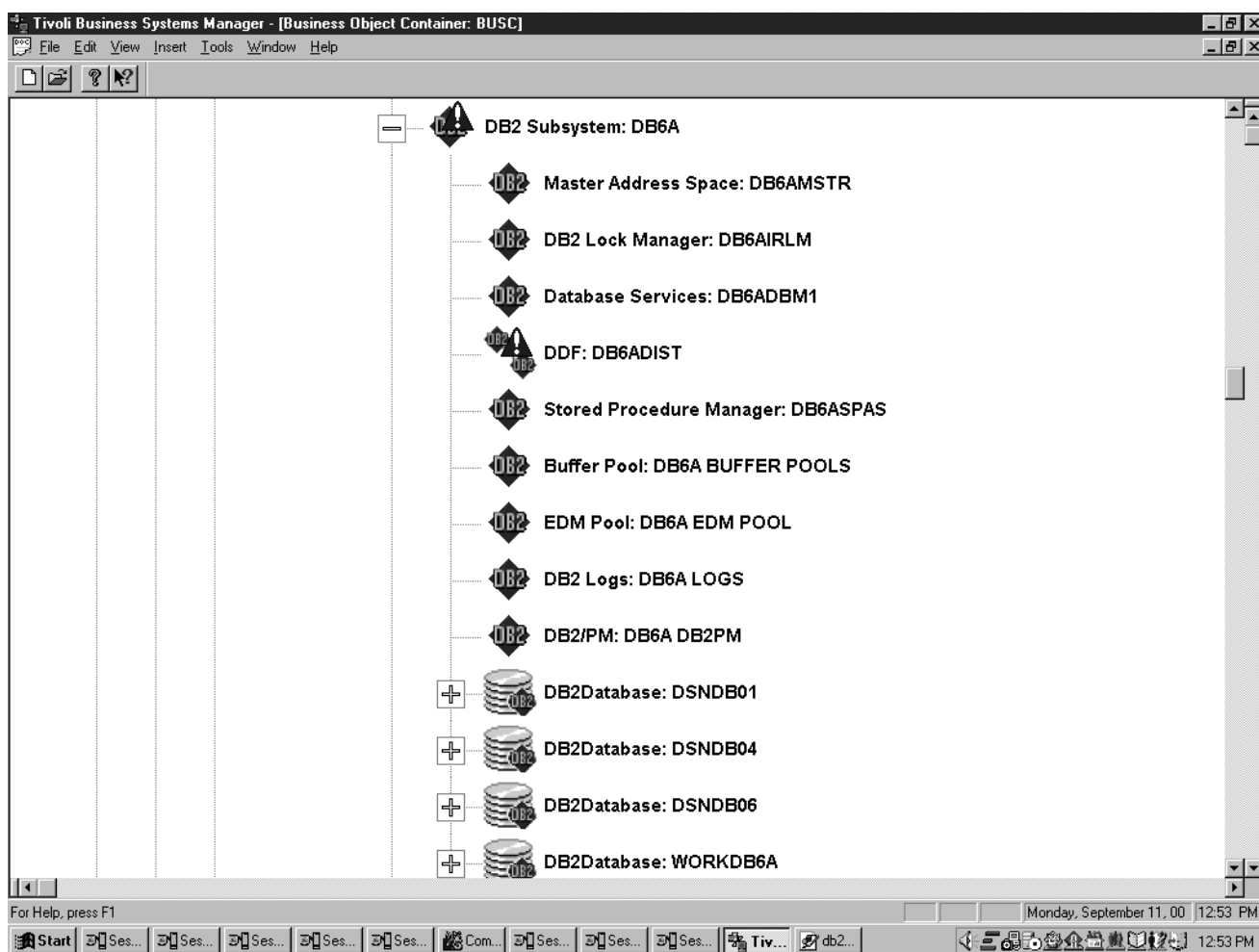
Object Type	Parent Object	Icon	Description
DB2 Subsystem	Operating System		The highest level object within the DB2 data model. An instance of a DB2 subsystem.
System Services	DB2 Subsystem		A required address space that manages a DB2 subsystem.
DB2 Lock Manager	DB2 Subsystem		A required address space for managing locks.
Database Services	DB2 Subsystem		A required address space for managing database services.
DDF	DB2 Subsystem		Distributed Data Facility (DDF) is the DB2 component that provides support for remote requests.
Stored Procedure	DB2 Subsystem		A required address space for execution of stored procedures.
Buffer Pool	DB2 Subsystem		Main storage reserved to satisfy the buffering requirements for one or more tables spaces or indexes. There can be up to 50 Buffer Pools for each DB2 subsystem but there is only one Buffer Pool object and all buffer pool alerts report to this object.
EDM Pool	DB2 Subsystem		The environmental descriptor manager (EDM) pool is a pool of main storage used for database descriptors and application plans. There is one EDM Pool object for each DB2 subsystem.
Logs	DB2 Subsystem		The DB2 log registers data changes and significant events as they occur. Logs consist of active logs and archive logs. There is one set of DB2 logs per DB2 subsystem.
DB2 PM Data Collector	DB2 Subsystem		DB2 PM Data Collector address space for managing DB2 PM exceptions.
DB2 Database	DB2 Subsystem		A DB2 database can contain one or more tablespaces. There are multiple DB2 databases for each DB2 subsystem. Each database name is unique within that DB2 subsystem.
Table Space	DB2 Database		A tablespace can contain none, one or more tables. There can be one or more tablespaces within each DB2 database. Each Tablespace name is unique for each DB2 database.
Table	Table Space		A named data object consisting of a specific number of columns and rows of data.

Object Type	Parent Object	Icon	Description
Index	Table		<p>A set of pointers that are logically ordered by the values of a key. Each table may have one or more indexes associated with it.</p> <p>An index can only refer to one table.</p>
Table Space Partition	Table Space		<p>A Tablespace may be partitioned. Up to 254 partitions may exist for a partitioned Tablespace.</p> <p>The Tablespace name identifies each partition, followed by '.n', where 'n' is the number of the partition.</p>
Index Partition	Table Space Partition		<p>A partitioned Table space contains one Index partition for each Tablespace partition.</p>
View Container	DB2 Subsystem		<p>An aggregate object that contains all DB2 views for a single DB2 Subsystem.</p>
DB2 View	View Container		<p>An alternative representation of data from one or more tables. There may be one or more Views that are defined within a DB2 subsystem.</p> <p>The view can contain one or more views or tables from within a database, or across multiple databases within a DB2.</p>

DB2 Object Physical Hierarchy

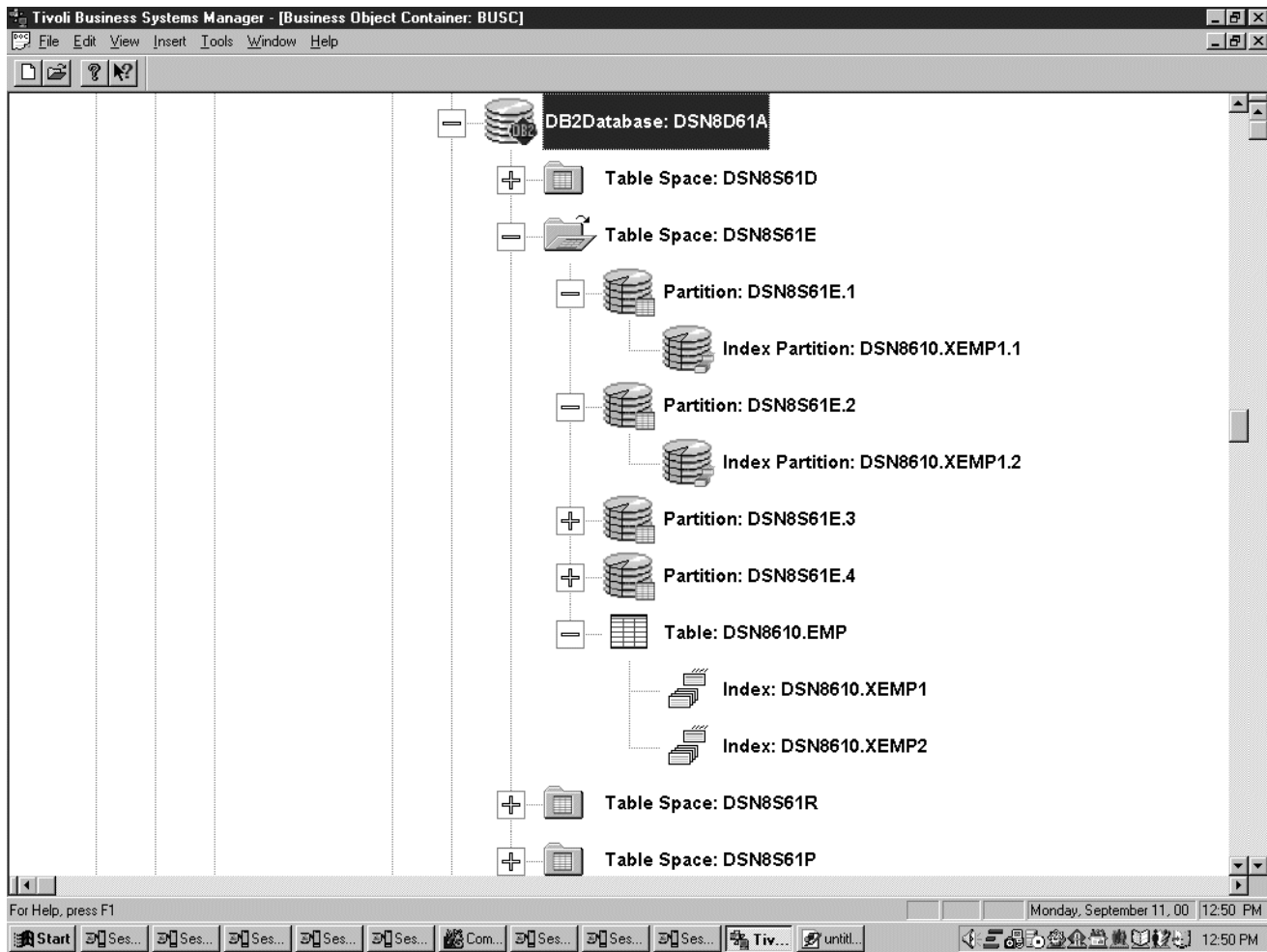
The relationship of DB2 objects within the Tivoli Business Systems Manager physical hierarchy is illustrated in the following TreeView.

The objects that appear in the following are physical children of a DB2 Subsystem within the Tivoli Business Systems Manager physical hierarchy.



You can also create a Views folder (container), which is a child of a DB2 subsystem and contains all DB2 views for your system.

The following illustration depicts the objects that appear below the DB2 Database object.



Object Discovery

The object registration process and the object discovery ensure that the Tivoli Business Systems Manager model contains all required enterprise resources and reflects an accurate topology. The object discovery process involves the running of a batch function. This batch job stream extracts all the information required to discover DB2 objects for Tivoli Business Systems Manager. The batch module creates a sequential file, which is forwarded to the Tivoli Business Systems Manager Server, where it is processed into the SQL Server database.

Object Rediscovery

Object rediscovery is the process that is used to maintain currency of the physical structure for DB2 subsystems and their components within Tivoli Business Systems Manager object model.

Rediscovery occurs as a result of incoming event data that Tivoli Business Systems Manager is processing for availability. These events determine which Complex a particular resource resides within as well as which Operating System the resource is running on and finally what the status is of the particular resource. If it is discovered that the resource has moved from one image to another, the database reflects the change. This appears if the resource moved from one branch of the tree to another on the workstation. This is also true of other attributes that are maintained within the object model for that resource; for example programs and transactions.

Rediscovery of DB2 objects is triggered under the following circumstances:

- The Tivoli NetView for OS/390 started task is initiated.
- A DB2 Subsystem has started.

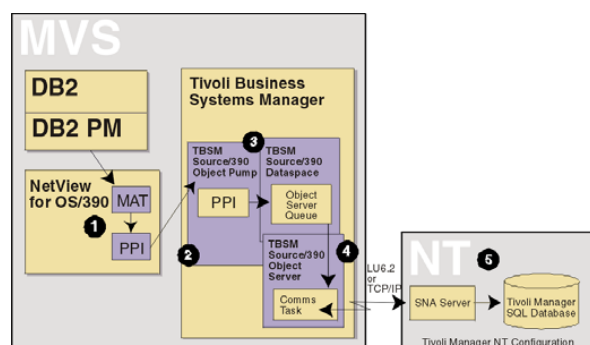
RediscoveryFlow

1. The DB2 startup message is trapped, and rediscovery processing (IHSBREFR) is started.
2. Instances of all object types within this DB2 Subsystem are retrieved.
3. The object instances are compared to the current Tivoli Business Systems Manager object structure.
4. Only changes are processed to update the object data store.

Rediscovery of DB2 objects is provided through pre-defined traps in the Tivoli NetView for OS/390 Message Automation Table (MAT). These traps trigger processing of object specific programs that process the intercepted messages and issue additional commands to retrieve needed data. The extracted information is transmitted to Tivoli Business Systems Manager NT resident discovery processes for analysis and update of the SQL database.

Processing DB2 Events

Tivoli Business Systems Manager is a suite of applications that resides in a three-tiered client/server environment and has server components on the OS/390 and Windows NT Server environments. Client workstation support includes Windows NT Workstation and Windows NT Server. The DB2 subsystem, its monitor DB2 PM, and its connecting partner Tivoli NetView for OS/390 are started tasks that run within OS/390. The following diagram depicts the architecture for Tivoli Business Systems Manager's interface support for DB2 and DB2 PM.



Event Flow

The events in the architectural diagram are annotated in the following steps:

1. Tivoli NetView for OS/390 retrieves DB2-related Multiple Virtual Storage (MVS) console messages and DB2 PM exceptions via the *Message Automation Table* (MAT).
2. The Tivoli NetView for OS/390 *Program to Program Interface* (PPI) forwards events to the TBSM Source/390 Object Pump through the *PPI Receiver* (PPI).
3. The Tivoli Business Systems Manager PPI Receiver formats these events and places them on the *Object Server Queue*.
4. Tivoli Business Systems Manager Comms Task forwards the event to Systems Network Architecture (SNA) server via a LU 6.2 link or TCP/IP connection.

-
5. The SNA Server forwards the event to an SQL database where it is acted on by a method within the Tivoli Business Systems Manager object model structure and is applied to the appropriate DB2 object.

Once an event has been posted to the Tivoli Business Systems Manager data store, event notification services post the exception or message to the target object. Every unique event type is assigned an alert state (Red or Yellow) and priority (Critical, High, Medium, Low and Ignore) that determines how many events of a specific type are required before an alert icon is overlaid on the object receiving the exception or message. You have the ability to customize these settings through administrative screens available to users with administrative authority.

Detailed information on the interaction between priority and alert state and how alerts are posted to the Tivoli Business Systems Manager graphical workstation can be found in the document titled *Tivoli Business Systems Manager User's Guide*. Information on how to customize priority and alert state settings is found in the *Tivoli Business Systems Manager Administration Guide*.

Installation

The first step is to install the programs, samples, messages, and JCL that enable discovery, event processing, and command processing for DB2. These data sets are installed through the System Modification Program Extended (SMP/E).

SMP/E Install

Install the DB2 instrumentation by using the directions in the *Program Directory for Tivoli Business Systems Manager*. Return to this book after installation for additional customizing steps.

After SMP/E completes the Tivoli Business Systems Manager installation, the target libraries contain five data sets that have the following low-level identifiers:

- SGTMEEXEC, which contains Tivoli NetView for OS/390 REXX execs.
- SGTMINST, which contains sample SMP/E job control statements (JCL).
- SGTMMODS, which contains Tivoli Business Systems Manager executable load modules.
- SGTMMSGS, which contains Tivoli NetView for OS/390 message files.
- SGTMSAMP, which contains samples for Tivoli NetView for OS/390 parameters and Tivoli Business Systems Manager customization.

OS/390 Customization

Setting up the Initial Discovery Jobs

The object discovery and registration process ensures that the Tivoli Business Systems Manager model contains all required enterprise resources and reflects an accurate topology. Discovery eliminates the need to manually enter any object definitions by extracting these resource definitions from system files and tables.

The Tivoli consulting team assigned to Tivoli Business Systems Manager implementation performs initial discovery of DB2 objects. The initial discovery process involves the submission of a series of batch jobs, which write output to sequential files. These files are

forwarded to the Tivoli Business Systems Manager Server where they are processed into the SQL database. Once customized, this process can be reused for future bulk discovery of the DB2 environment.

Customizing and Submitting Initial Discovery Jobs

The sample jobs are found in the SGTMSAMP data set. Each job, in turn, can be copied from the SGTMSAMP target library to a working data set, customized, and submitted. You can customize the JCL, to comply with your installation's standards, as detailed in the comments within the JCL and submit the job. The expected return code from each job is zero.

The first job **IHSBDSCA** uses REPRO to off load the DB2 system catalogs, for one or more DB2 subsystems, from DASD to TAPE.

For each DB2 subsystem that is to be processed, the following important values are required:

- DB2ID - DB2 subsystem ID.
- VCAT - HLQ of the DB2 system catalog data sets.

Entering **DSILSSS 2** from a NetView command line displays a list of DB2 subsystems defined to that NetView OS/390. If Tivoli Business Systems Manager has been configured into NetView, then entering **IHSBFIND db2id** from that NetView command line returns the VCAT for that db2id.

Security access required is READ access to the DB2 system catalogs, and appropriate access to create user data sets on tape. If the offsite process is being used for initial discovery then these tape(s) can now be moved to the offsite Tivoli center where the remaining batch jobs are executed.

The second job **IHSBDSCB** uses IEBGENER to copy the unloaded DB2 system catalogs, for one or more DB2 subsystems, from TAPE to DASD.

For each DB2 subsystem that is to be processed, the following important values are required:

- DB2ID- DB2 subsystem ID.

Security access required is READ access to the tape data sets, and ALTER access to allow creation of user data sets on DASD.

The third job **IHSBDSCC** starts the IHSBDSCO REXX exec, which processes the unloaded DB2 system catalogs for a single DB2 subsystem. The process creates two discovery files, which contain a record for every object discovered from the DB2 subsystem down to index and table. The process then downloads the two files to the Tivoli Business Systems Manager server by using the GTMAOPE0 utility. This job should be run once for each DB2 subsystem that is to be discovered.

For each DB2 subsystem that is to be processed, the following important values are required:

- DB2ID - DB2 subsystem ID.
- NETID - VTAM Network ID to which this DB2's OS/390 image belongs.

-
- CPNAME - VTAM Control Program Name of this DB2's OS/390 image.

Entering **D NET,VTAMOPTS** from a NetView command line displays a list of VTAM options for that NetView's OS/390. In the displayed output, the NETID option displays the NETID and the SSCPNAME option displays the CPNAME.

Security access required is ALTER access to allow both read and creation of user data sets on DASD.

Customization of Tivoli NetView for OS/390 Components

1. Customize or add a Tivoli NetView for OS/390 message automation table for DB2.
 - Insert the following statement into the NetView automation table:
%INCLUDE IHSBMAT
 - If you do not currently use a message automation table, refer to the *Tivoli NetView for OS/390 Automation Guide* for information about installing message automation tables.
2. Include the IHSBCMD member in DSICMD by adding the following statement to DSICMD in Tivoli NetView start procedure:
%INCLUDE IHSBCMD
3. Concatenate the SGTMSAMP data set to the data definition DSIPARM DD statement in the Tivoli NetView for OS/390 start procedure.
4. Concatenate the SGTMEEXEC dataset to the DSICLD DD statement in the Tivoli NetView for OS/390 start procedure.
5. Concatenate the SGTMMMSGs data set to the DSIMSG DD statement in the Tivoli NetView for OS/390 start procedure.
6. Include the IHSBOPR member in DSIOPF by adding the following statement to DSIOPF in Tivoli NetView for OS/390:
%INCLUDE IHSBOPR
7. Include the DB2 load library SDSNLOAD in the STEPLIB DD statement in the Tivoli NetView for OS/390 start procedure. Referring to the following table can determine the version of the DB2 load library to include:

DB2 Subsystems to be Managed	DB2 Version in SMP/E CALLIB	DB2 Version in NetView STEPLIB	Notes
V7.1.0	V7.1.0	V7.1.0	
V7.1.0 V6.1.0	V7.1.0	V6.1.0	a
V6.1.0	V6.1.0	V6.1.0	
V6.1.0 V5.1.0	V6.1.0	V5.1.0	b
V5.1.0	V5.1.0	V5.1.0	

- a. (1) DB2 v6.1.0 must have maintenance applied, to be upwardly compatible with DB2 v7.1.0, as documented in informational APAR II12653.
 - b. (2) DB2 v5.1.0 must have maintenance applied, to be upwardly compatible with DB2 v6.1.0, as documented in informational APAR II11442.
8. Run job IHSBTBND from SGTMSAMP. Refer to the job for more documentation.

-
9. Ensure that at least one MONITOR trace is running.

Setting up OS/390 Security

If the OS/390 Security Server has the DSNR resource class enabled, which is used for controlling access to DB2 subsystems, then Tivoli Business Systems Manager needs to be given access. For each DB2 subsystem to be monitored by Tivoli Business Systems Manager, there needs to be a db2id.BATCH resource profile to which the Tivoli Business Systems Manager task's userid requires READ access.

Depending on the level of security configured within the NetView hosting Tivoli Business Systems Manager, the Tivoli Business Systems Manager task's userid could be either the userid associated with the NetView started task, or the userid associated with the NetView autotask under which the Tivoli Business Systems Manager task happens to be currently executing. For the latter case, the autotask userids are normally IHSBAT00 to IHSBAT09, so each of these userids requires READ access to each db2id.BATCH profile, or alternatively these userids could be connected to a Security Server group that already has READ access to each db2id.BATCH profile.

Setting up DB2 Security

Tivoli Business Systems Manager needs to be granted access to certain DB2 objects, within each DB2 subsystem that is to be instrumented. The GRANT statements are contained within the IHSBTBND sample job that should have been run during customization. The GRANT statements require an authid to be specified, which is the userid associated with the Tivoli Business Systems Manager task connecting to DB2.

Depending on the level of security configured within the NetView hosting Tivoli Business Systems Manager, the Tivoli Business Systems Manager task's userid could be either the userid associated with the NetView started task, or the userid associated with the NetView autotask under which the Tivoli Business Systems Manager task happens to be currently executing. For the latter case, the autotask userids are normally IHSBAT00 to IHSBAT09, so each of these userids needs to be specified as an authid and granted access to each required DB2 object, or alternatively these userids could be connected to a Security Server group that already has been granted access to each required DB2 object.

Customization of DB2 PM

Use the following steps to prepare DB2 PM for generating events to Tivoli Business Systems Manager:

If DB2 PM is installed use the following steps to prepare DB2 PM for generating events to Tivoli Business Systems Manager:

1. Insert the following statement in the Netview automation table:

```
%INCLUDE IHSBPMAT
```
2. Update the Data Collector parameters during setup with the following:

```
SET EXCEPTIONEVENT=(GLBLTRACE)
```
3. Install and customize the exception threshold values for DB2 PM

The **IHSBPMTH** install job receives the predefined DB2 PM data set, which contains sample exception threshold values, to a user-specified data set. For detailed instructions on how to install this data set, read the prologue of this job. IHSBPMTH can be found in the SGTMSAMP library.

4. Start the Data Collector address space.

Each Data Collector is linked to a previously started DB2 subsystem. Associated with the Data Collector is a default DB2 plan which is part of each DB2 PM's installation. This default plan name is used for the instrumentation; so **do not** bind to a different name. The default plan name for each supported version of DB2 PM is listed in the following table:

Default Plan Name	Version
DB2PMOM	DB2 PM V5.1
DGOPMOM	DB2 PM V6.1
DGOPMOM	DB2 PM V7.1

5. Activate Exception Processing:

- Select the **Periodic** and **Exception event notification**, and **User Exit** fields on the DB2 PM **Online Monitor Exception Processor** panel.
- Update the Periodic units, Periodic interval, and supplied Exception threshold data set fields on the DB2 PM Online Monitor Exception Processor panel.
- After updating these fields exit from the panel to activate Exception Processing.

Refer to the *DB2 PM for OS/390 Online Monitors User's Guide* for additional information.

Setting up Tivoli NetView for OS/390 and Source/390

The Tivoli NetView for OS/390 Program to Program Interface (PPI) is used to transport the DB2 instrumentation events to the TBSM Source/390 Object Pump, which in turn forwards them to the Tivoli Business Systems Manager NT servers. For more information about setting up the Tivoli NetView for OS/390 PPI, refer to the *Tivoli NetView for OS/390 Installation and Administration Guide* and the *Tivoli NetView for OS/390 sample JCL CNMSJ010*.

To enable the TBSM Source/390 Object Pump PPI receiver, specify PPI=YES in the pump configuration member.

To confirm that the TBSM Source/390 Object Pump PPI interface is enabled, issue the Tivoli NetView command DISPPI and confirm NETVAOP is active.

Commands Support

Tivoli Business Systems Manager DB2 instrumentation command support requires an active NETCONV session between a Focal Point NetView and Tivoli Business Systems Manager NT Server. The NETCONV command requires the NetView CNMTAMEL task to be configured correctly:

- Ensure that the CNMTAMEL definition in DSIDMNB uses MEM=DUIISFP instead of the default DUIISC. DUIISFP defines CNMTAMEL as a focal point, and this member generally does not need to be changed. DUIISFP refers to member DUIFPMEM.

- If you intend to use a TCP/IP instead of LU 6.2 for the NETCONV session, DUIFPMEM needs to be customized.

For more information on enabling command communication, refer to the installation section of the *Tivoli Business Systems Manager Administration Guide*.

Note: The DB2 – Tivoli Business Systems Manager integration routines require the following software versions:

NetView – Version 1.2 or later.

DB2 – Version 5 or later.

DB2 PM – Version 5 or later.

For more information about message flow and event enablement, refer to the following publications:

- *Tivoli NetView for OS/390 Command Reference*
- *Tivoli NetView for OS/390 Automation Guide*

Setting up the Tivoli Business Systems Manager Server

Installing Windows NT DB2 Discovery Components

The following section describes the installation of the Windows NT based components necessary for processing DB2 discovery.

Registry Modifications

On hosts that run the ASIMVSIPLListenerSvc, configure the appropriate entry in the registry for the processing to be done. The following registry keys define the processing for the DB2 discovery feed. ***This is configured by default.***

This setting defines the port address to communicate with GTMAOPE0. This is specified on the TCPIP_ PORT control card of GTMAOPE0.

HKEY_LOCAL_MACHINE \ SOFTWARE \ Accessible Software,Inc. \ Access1 \ 1.0 \ Components \ ASIMVSIPLListenerSvc \ Settings

Port value (default 1021)

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

HKEY_LOCAL_MACHINE \ SOFTWARE \ Accessible Software,Inc. \ Access1 \ 1.0 \ Components \ ASIMVSIPLListenerSvc \ Settings \ CommandAliases

DB2DISCOVERY sh CreatediscoveryBatch.ksh -F17 -A1 -C37 %s

DB2VIEWTABLETABLEDISCOVERY sh CreatediscoveryBatch.ksh -F17 -A8 -C37 %s

This setting defines the IP clients that are authorized to run GTMAOPE0. This is specified on the TCPIP_ADDRESS or TCPIP_NAME control card of GTMAOPE0.

HKEY_LOCAL_MACHINE \ SOFTWARE \ Accessible Software,Inc. \ Access1 \ 1.0 \ Components \ ASIMVSIPLListenerSvc \ Settings \ Validclients

SQL Server Job Configuration

Two SQL Server jobs are installed for DB2 support and are used in the discovery of DB2 resources. The DB2 Discovery Load job takes any Discovery Batch that is in the ENQUEUED State and loads the associated file into the SQL Server database. The *CreateDiscoveryBatch.ksh* script defined in the registry (as shown above) creates the Discovery Batch, and assigns it a state of ENQUEUED. The Tivoli Business Systems Manager administrator should use the SQL Enterprise Manager and define a schedule for this job to run. This is a polling based job and should be run on intervals of several minutes during the course of a window of time that is designated. If there is no DB2 Discovery Batch that is in the ENQUEUED State, the job simply logs a message and exits. If it does find a Discovery Batch in the ENQUEUED state and the job is successful, the Discovery Batch is marked as LOADED. A failure causes the Discovery Batch to be marked as being in the LOAD_ERROR state.

The DB2 Discovery Process job performs the processing required on any DB2 Discovery Batch that is in the LOADED state. Similar to the DB2 Discovery Load job, the Tivoli Business Systems Manager administrator does have to define a schedule for this job. When a Discovery Batch is processed it can place significant load on the database, so if possible the job should be scheduled for low-activity periods.

DB2 Event Scenarios

Several sample DB2 event scenarios are portrayed in this section. For a complete list of events for the DB2 PM and Tivoli Business Systems Manager integration see “Mapping of Events to Object Types” on page 23.

Buffer Pool Full Scenario

1. DB2 Subsystem DBH1 on Machine A has a Buffer Pool full.
2. DB2 PM receives notification and issues a DG0V0100I message.
3. NetView traps the message through the Message Automation Table (MAT), extracts the actual event code (QBSTXFL), and forwards the event to the TBSM Source/390 Object Pump.
4. The TBSM Source/390 Object Pump then forwards the request through the Tivoli Business Systems Manager Server and LU6.2 up to the Tivoli Business Systems Manager Database.
5. The event is propagated and posted to the DB2 Subsystem DBH1 Object. Depending on the alert state/priority that has been assigned to this exception, an alert icon may appear on any Tivoli Business Systems Manager view containing that object.

DB2 Subsystem Not Operational Scenario

1. DB2 Subsystem DBH1 on Machine A goes down.
2. MVS console receives DSN31041 message.
3. NetView traps the message through the Message Automation Table (MAT) and forwards the event to the TBSM Source/390 Object Pump.
4. The TBSM Source/390 Object Pump then forwards the request through the Tivoli Business Systems Manager Server and LU6.2 up to the Tivoli Manger Database.

5. The event is propagated and posted to the DB2 Subsystem DBH1 Object. Since this is a Red/Critical event, a Red alert icon appears on any Tivoli Business Systems Manager view containing that object.

DB2 Subsystem Restart Scenario

1. The start command is issued for DB2 startup.
2. MVS console receives a DSN9022I message.
3. NetView traps the message through Message Automation Table (MAT).
4. The output of these command is used to discover the status of all the low-level DB2 objects.
5. The status is passed to the TBSM Source/390 Object Pump, which refreshes the Tivoli Business Systems Manager database with the current status.
6. The clear message propagates to the DB2 subsystem object and clears the alert on the Tivoli Business Systems Manager view.

Table Space Changes State Scenario

1. A Read/Write Table space changes to Read Only.
2. When an attempt is made to write to a table within this Table space, DB2 issues a DSNT501I message (reason code 00C90080) to the MVS console.
3. NetView traps the message through Message Automation Table (MAT) and forwards the event to the Tivoli Business Systems Manager Object Pump.
4. Alternatively, the changed state of the tablespace is detected by a polling program that runs periodically, and an event is forwarded to the TBSM Source/390 Object Pump.
5. The TBSM Source/390 Object Pump then forwards the request through the Tivoli Business Systems Manager Server and LU6.2 up to the Tivoli Manager Database.

Workstation Functions for DB2

Tivoli Business Systems Manager provides an extensive set of object management functions to the workstation user. Most of these functions are consistent across all object types such as DB2, CICS, IMS, and Batch. There are functions that are unique to a specific domain. For example, you can launch the Workstation Online Monitor component of DB2 PM from DB2-related objects, but not other object types.

Anyone who intends to use the Tivoli Business Systems Manager workstation should read the *Tivoli Business Systems Manager User's Guide* in its entirety in order to understand the full range of workstation functionality. The examples that appear in this section are introductory in nature and are not intended to replace full familiarity with the user guide.

DB2 Object Property Sheet

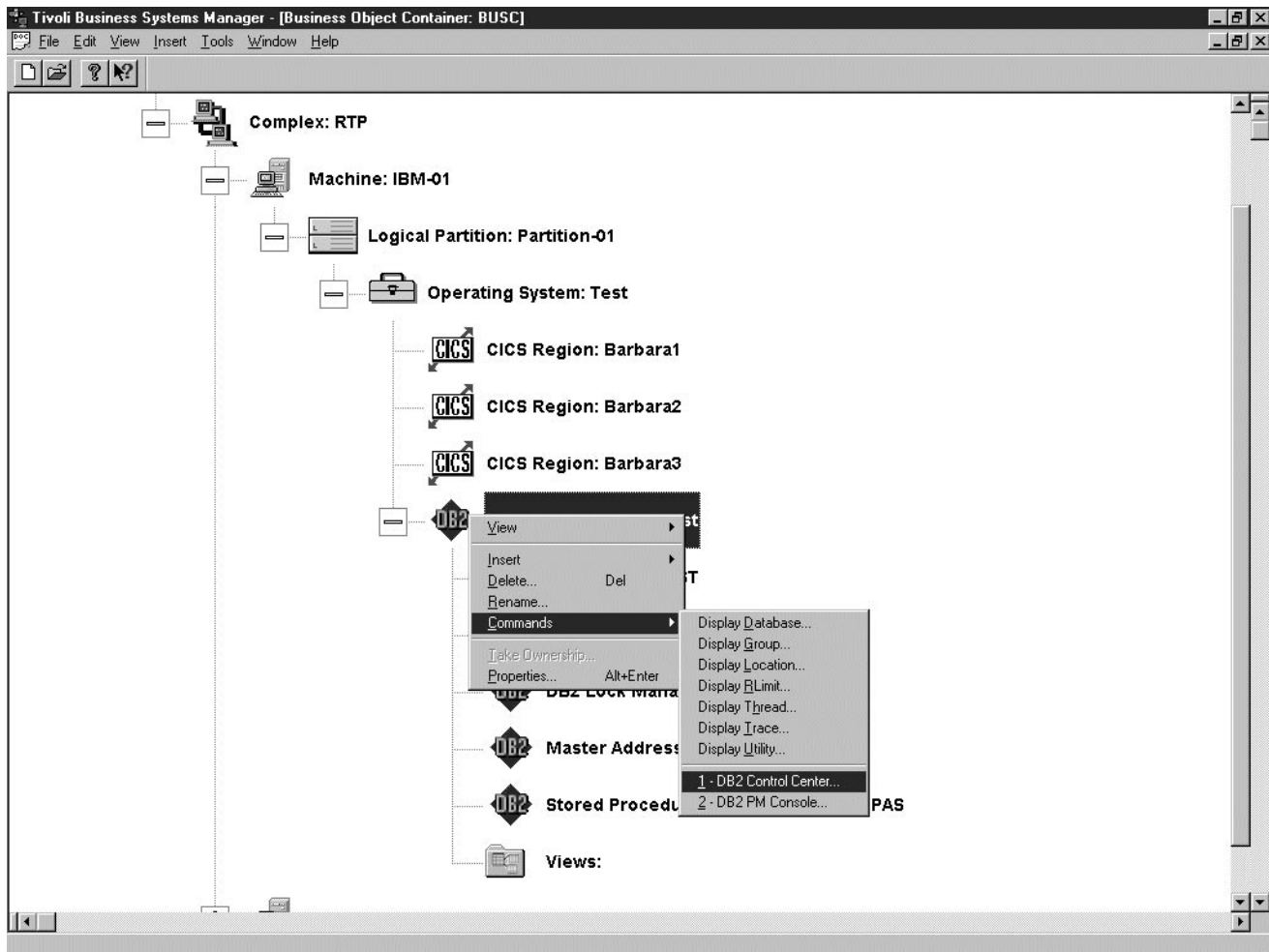
The Properties menu option provides you with a detailed Property Sheet consisting of the following tabs:

- Attributes - The default tab shows desired state information as well as current events that are posted to the object.
- Child Events - Shows events that have been received from child objects and thresholds that control alert propagation for these events.

- Exceptions -Shows current exceptions for the object and thresholds that control alert propagation for exceptions types of various severities.
- States - Shows current state altering messages for the object and valid states for the object.
- Tasks - Shows Tivoli Business Systems Manager tasks that are associated with this object instance, processing frequency, and run status.

DB2 Display Commands

Tivoli Business Systems Manager provides a command option for issuing DB2 display commands directly from the workstation. The available commands vary by DB2 object type.



The **Commands** menu is available for the DB2 Subsystem, DB2 Database, and DB2 Tablespace objects:

Object Type	Command
DB2 Subsystem	Display Database - Display information about the Databases
	Display Group - Display information about the group
	Display Location - Display information about threads and conversations with specific remote Locations.

Object Type	Command
	Display Rlimit - Display the current status of the Resource Limit facility
	Display Thread - Display current status information about threads
	Display Trace - Display all traces
	Display Utility - Display status information for all utility jobs currently known to DB2
DB2 Database	Display Database - Display information about the selected Database
DB2 Tablespace	Display Database Spacename (tablespace) - Display information about selected tablespace

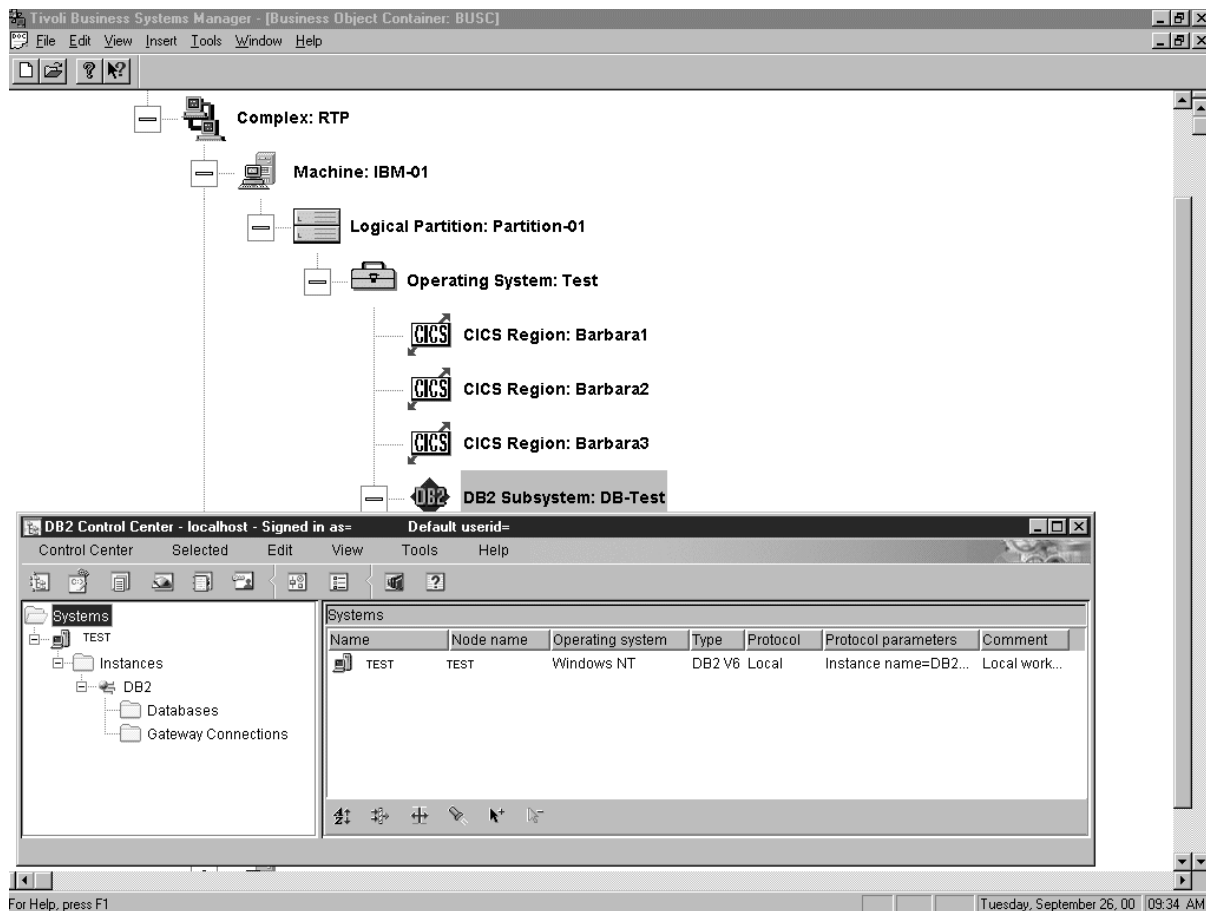
Launching DB2 Control Center

Tivoli Business Systems Manager enables you to launch the DB2 management tool called the *DB2 Control Center*. The *DB2 Control Center* module enables you to perform a wide range of DB2 management tasks including the following:

- Expand the database hierarchy to display all related objects
- View and alter runtime statistics
- Execute DB2 utilities like RUNSTATS, RECOVER INDEX, LOAD
- Perform other database administration tasks as required
- Provide continuity with the IBM DB2 Universal Database

You launch the DB2 Control Center via a drop-down menu option. You right-click DB2 Subsystem, DB2 Database, or DB2 Tablespace object, point to **Commands ► 1. DB2 Control Center**.

The following initial control center screen appears.



Launching DB2 PM Workstation Online Monitor

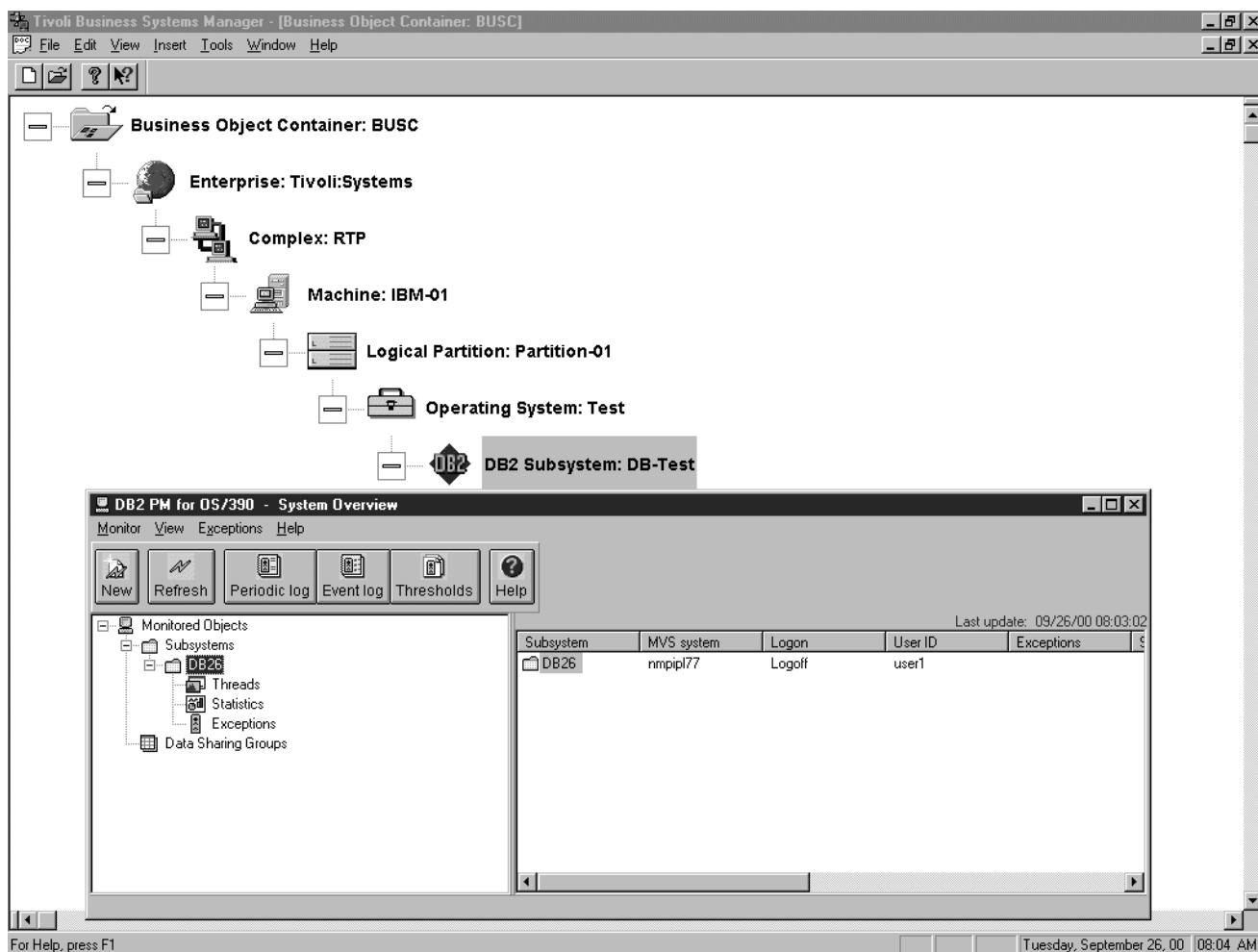
Tivoli Business Systems Manager provides the facility to monitor exceptions for important events triggered by DB2 and DB2 PM. The *DB2 Workstation Online Monitor* extends the DB2 monitoring functionality of Tivoli Business Systems Manager by allowing you to customize additional exceptions if necessary for further performance monitoring.

The Workstation Online Monitor component includes the following functions:

- Allows you to examine current activity of all active threads connected to a DB2 subsystem
- Gives an overview of DB2 system activity.
- Allows for definitions of threshold values for exception processing
- Monitoring more than one DB2 concurrently

Tivoli Business Systems Manager launches a session of the DB2 PM Workstation Online Monitor directly from the workstation. This capability allows you to perform more detailed problem analysis on receipt of an alert. Launch of the DB2 PM Workstation Online Monitor is accomplished from a drop-down menu. You right-click a DB2 Subsystem, DB2 Database, or DB2 Tablespace object, point to **Commands ►2. DB2 Workstation Online Monitor**.

After you select the 2. DB2 Workstation Online Monitor menu option, you view the following initial Online Monitor screen.



Troubleshooting

If you observe that the Windows NT based components of Tivoli Business Systems Manager are not receiving the instrumentation event data from DB2, it is necessary for you or the Tivoli Business Systems Manager administrator to perform problem determination. The correct data flow from the origin of a problem condition in DB2 to Tivoli Business Systems Manager is the following:

1. An abnormal condition occurs in a subsystem such as DB2.
2. DB2 or the operating system detect the condition and generate an exception or message, which is trapped by the Tivoli NetView for OS/390 Message Automation Table (MAT).
3. The Message Automation Table determines the processing routine associated with this alert or message.
4. The processing routine formats the exception/message and sends it to the TBSM Source/390 Object Pump via the Program to Program Interface (PPI).
5. The TBSM Source/390 Object Pump queues the exception/message in the dataspace.

-
6. The TBSM Source/390 Object Server dequeues the exception/message and forwards it to the Tivoli Business Systems Manager SNA Server via the LU6.2 pipe.

Diagnostic Activities

If the flow is interrupted, you or the Tivoli Business Systems Manager administrator should diagnose the failure point and then attempt to fix the problem. Since the flow involves several tasks, each task must be checked individually. The following list displays the diagnostic tasks that should be checked to ensure proper operation.

Trouble Source Check Item	Action and Information Reference
Verify that the DB2 subsystem and dependent regions are running.	Identify the Jobname/Taskname for the regions. Use the SDSF Display Active command or display the active tasks from the operator console. Refer to the <i>DB2 for OS/390: Administration Guide</i> .
Verify that the PPI Receiver NETVAOP is active from NetView's perspective. This informs you if the PPI connection between NetView and TBSMSource/390 Object Pump is functional.	Issue the DISPPI command from a NetView operator console. The list of receiver names and buffer statistics is displayed. NETVAOP receiver should be listed.
Verify that the required Message Automation Table entries are present and active.	Issue the AUTOTBL STATUS command from a NetView operator console. Verify that the <i>automation table</i> containing the instrumentation code supporting DB2 (IHSBMAT) and DB2 PM (IHSBPMAT) is active.
Verify that the Tivoli Business Systems Manager Server is up.	Refer to the <i>Tivoli Business Systems Manager Administration Guide</i> .
Verify that the Tivoli Business Systems Manager workstation is up.	Refer to the <i>Tivoli Business Systems Manager User's Guide</i> .

Note: All messages are documented in *Tivoli NetView for OS/390 Messages* and available through Tivoli NetView for OS/390 online message help.

Problem Determination

Problem:

The PPI Receiver name **NETVAOP** is not listed in NetView.

Action:

Check the NetView message automation table to ensure that the definitions are active. Verify the NetView SSI subsystem is running with the PPI option enabled.

Issue AUTOTBL STATUS and ensure IHSBMAT and/or IHSBPMAT is active

Problem:

The PPI Receiver name **NETVAOP** is listed but the automation table is not functioning.

Action:

The system programmer responsible for NetView needs to verify that the AMI support has been installed correctly. The automation table containing the AMI

statements should be checked that it is active. Verify the PPI Receiver **NETVAOP** is active from AOP's perspective by issuing the following command to display the status of the PPI Receiver.

F AOP,PPI STATUS

Problem:

The PPI Receiver task is not running within TBSM Source/390 Object Pump or the PPI is disabled.

Action:

Review the TBSM Source/390 Object Pump job log and determine the state of the PPI. If there are no messages indicating the state of the PPI issue the following command.

F AOP,PPI ENABLE

If the PPI command is not accepted, GTM7837E PPI OPTION IS INVALID then the PPI task is not running within AOP's address space.

Verify that PPI=YES is specified in the object pump's startup parameters.

If the PPI is enabled successfully then the PPI Receiver was inactivated by a PPI DISABLE command.

Verify data is received in the object server LOG Files.

Issue the **F OBJSRVR,LOGSWITCH** command to switch the log files. Review the job log of object server and determine the log file that is inactive. This is the file that was used prior to the LOGSWITCH command.

Problem:

Object Server LOG Files are not receiving data

Action:

Browse the inactive log file and determine if any records were written to that file. Assuming there has been no activity, verify the status of the PPI Receiver in NetView and TBSM Source/390 Object Pump. Verify if any records were received on the TBSM DAT FILE.

The TBSM DAT FILES are located on the machine that runs the SNA Client ASIMVSListenerSvc program and event handler services. The DAT files can be found in the following directory.

drive:\TivoliManager\Data\smfid_date_timestamp.dat

The same records that are viewed in the object server LOG FILE should also be viewed in the TBSM DAT FILE.

Problem:

The active DAT file is not receiving the AMI data from TBSM Source/390 Object Server.

Action:

Verify that TBSM Source/390 Object Server is receiving data from the PPI. Verify the status of the SNA communication environment supporting the LU6.2 pipe. Check the SNA Server, SNA Client, and VTAM environments to determine the state of all of these machines.

Correct the SNA connectivity problems. Restart TBSM Source/390 Object Server.

Accessing Publications Online

The Tivoli Customer Support Web site (<http://www.tivoli.com/support/>) offers a guide to support services (the *Customer Support Handbook*); frequently asked questions (FAQs); and technical information, including release notes, user's guides, redbooks, and white papers. You can access Tivoli publications online at <http://www.tivoli.com/support/documents/>. The documentation for some products is available in PDF and HTML formats. Translated documents are also available for some products.

To access most of the documentation, you need an ID and a password. To obtain an ID for use on the support Web site, go to <http://www.tivoli.com/support/getting/>.

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- Submit a PMR electronically through the IBMLink™ system. For information about IBMLink registration and access, refer to the IBM Web page at <http://www.ibm.link.ibm.com>.
- Send e-mail to support@tivoli.com.
- Customers in the U.S. can call **1-800-TIVOLI8 (1-800-848-6548)**.
- Customers outside the U.S. should refer to the Tivoli Customer Support Web site at <http://www.tivoli.com/support/locations.html> for customer support telephone numbers.

When you contact Tivoli Customer Support, be prepared to provide the customer number for your company so that support personnel can assist you more readily.



Mapping of Events to Object Types

The following tables show all of the DB2/DB2 PM events that are integrated with Tivoli Business Systems Manager. The **Resolution** column shows the action that clears the event. Some events have a corresponding resolution message. For example, a DSNB305I message clears a DSNB304I exception.

Events cleared by polled monitors (IHSBPOLL, IHSBCLER) are executed every 15 minutes (default).

Events cleared by polled monitor IHSBRSLV will only be triggered when certain exceptions occurred and this monitor will be executed every two minutes (default) as long as one affected exception remains unresolved. Some events will NOT have resolution events, for example, DSNJ111E, DSNJ110E and QISEFAIL.

An event that has another event id enclosed in brackets has a special purpose. For example, 00C900A0 (00C900AE) means that the event id enclosed in brackets (00C900AE) is trapped and processed at the OS/390 end, but the generic event id 00C900A0 is sent for NT processing.

Alert State and Priority categorize all events in Tivoli Business Systems Manager. This is indicated by the Alert State/Priority column. By default exceptions are assigned Yellow/Ignore status and messages are assigned Green/Ignore status.

The Tivoli Business Systems Manager administrator has the ability to override these values in order to “tune” Tivoli Business Systems Manager enabling only meaningful alerts are propagated to the user workstation.

Alert State can have values of Red, Yellow or Green.

Priority can have the values of Critical, High, Medium, Low or Ignore

DB2 Event Processing

Object Type	Object State/Exception	Event ID	Description	Resolution	Alert State/Priority
DB2 Subsystem	Active	DSN9022I	DB2 operational	N/A	Green/Medium
	Inactive	DSN3104I	DB2 not operational	N/A	Red/Medium
	Abended	DSNV086E	DB2 Abend	N/A	Red/High
	Exception	DSN3201I	Utility Abend	IHSBRSV	Yellow/Medium
	Exception	00C900A5 00C90084	Temp file failure	IHSBCLER	Yellow/Medium
	Exception	DSN7501A	SCA Connectivity Failure	N/A	Red/Critical
	Exception	DSN7504I	SCA Connectivity Failure	N/A	Red/Critical
	Exception	DSN7506A	SCA Connectivity Failure	N/A	Red/Critical
	Exception	DSN7508I	SCA Structure Failure	N/A	Red/Critical
	Exception	DSN7510I	SCA Rebuild Process Still Incomplete	N/A	Red/Critical
	Exception	DSN7511I	SCA Rebuild Process Failure	N/A	Red/Critical
	Exception	DSN7514I	SCA Rebuild Process Failure	N/A	Red/Critical

Object Type	Object State/Exception	Event ID	Description	Resolution	Alert State/Priority
	Exception	DXR122E	Lock Structure Failure	N/A	Red/Critical
	Exception	DXR123E	Lock Structure Failure	N/A	Red/Critical
	Exception	DXR134E	Lock Structure Failure	N/A	Red/Critical
	Exception	DXR135E	Lock Structure Failure	N/A	Red/Critical
	Exception	DXR138E	Lock Structure Failure	N/A	Red/Critical
	Exception	DXR139E	Lock Structure Failure	N/A	Red/Critical
	Exception	DXR143I	Lock Structure Failure	N/A	Red/Critical
	Exception	DXR164E	Lock Structure Connectivity Failure	N/A	Red/Critical
	Exception	DXR166E	Lock Structure Connectivity Failure	N/A	Red/Critical
MSTR			Dependent on DB2 subsystem	N/A	
IRLM			Dependent on DB2 subsystem	N/A	
DBM1	Active	IEF403I	Address space started	N/A	Green/Medium
	Inactive	IEF404I	Address space stopped	N/A	Red/Medium
DIST	Active	IEF403I	Address space started	N/A	Green/Medium
	Inactive	IEF404I	Address space stopped	N/A	Red/Medium
	Active	DSNL004I	DDF Started	N/A	Green/Medium
	Inactive	DSNL006I	DDF Stopped	N/A	Red/Medium
	Failure	DSNL008I	DDF Abnormal Termination	N/A	Red/Medium
SPAS	Active	DSNX964I	Address space started	N/A	Green/Medium
	Inactive	DSNX923I	Address space stopped	N/A	Red/Medium
Buffer Pool	Exception	DSNB228I	GBP Full	DSNB327I	Red/High
		DSNB327I	Resolves DSNB228I	N/A	

Object Type	Object State/Exception	Event ID	Description	Resolution	Alert State/Priority
	Exception	DSNB301E	GBP cannot be connected	IHSBCLER	Red/High
	Exception	DSNB303E	GBP lost of Connectivity	IHSBCLER	Red/High
	Exception	DSNB304I	GBP set to 'DAP'	DSNB305I	Red/High
	Exception	DSNB305I	Resolves DSNB304I	N/A	
	Exception	DSNB309I	GBP disconnected with reason of 'Failure'	IHSBCLER	Red/High
	Exception	DSNB313I	GBP to be disconnected	IHSBCLER	Red/High
	Exception	DSNB314I	GBP – Damage Assessment to be triggered	IHSBCLER	Red/High
	Exception	DSNB330E	GBP cannot be Connected for Rebuild	IHSBCLER	Red/High
	Exception	DSNB335I	GBP rebuild stopped	DSNB338I	Red/High
		DSNB338I	Resolves DSNB335I	N/A	
	Exception	DSNB340E	GBP unexpected error during rebuild	IHSBCLER	Red/High
	Exception	DSNB352I	GBP automatic recovery cannot be initiated	IHSBCLER	Red/High
Logs	Exception	DSNJ111E	Active logs are out of space	None	Red/Critical
	Exception	DSNJ110E	Last Active log	None	Red/Critical
	Exception	DSNJ115I	Archive Failure	IHSBCLER	Red/High
Database	RW	00C900RW	Database in RW mode	N/A	Green/Medium
	RO	00C90080	Database set to RO	N/A	Yellow/Medium
	UT	00C90086	Database set to UTILITY mode	N/A	Yellow/Medium

Object Type	Object State/Exception	Event ID	Description	Resolution	Alert State/Priority
	Stop	00C90081	Database stopped	N/A	Red/Medium
Tablespace/ Index	RW	00C900RW	Tablespace set to RW mode	N/A	Green/Medium
	RO	00C90080	Tablespace set to RO mode	N/A	Yellow/Medium
	UT	00C90086	Tablespace set to Utility mode	N/A	Yellow/Medium
	Stop	00C90081	Tablespace stopped	N/A	Red/Medium
	Exception	00C90082 00C90083	Tablespace accessed by Utility	IHSBPOLL	Yellow/Medium
	Exception	00C900A3	Tablespace in Check pending mode	IHSBPOLL	Yellow/Medium
	Exception	00C900A0	Tablespace in Rebuild/Recovery pending mode	IHSBPOLL	Yellow/Medium
	Exception	00C900A0 (00C900AE)	Tablespace in Rebuild/Recovery pending mode	IHSBPOLL	Yellow/Medium
	Exception	00C900A0 (00C900C1)	Tablespace in Rebuild/Recovery pending mode	IHSBPOLL	Yellow/Medium
	Exception	00C90097	Tablespace in Copy pending mode	IHSBPOLL	Yellow/Medium
	Exception	00C900AD	Tablespace in Reorg pending mode	IHSBPOLL	Yellow/Medium
	Exception	00C900AB	Tablespace in Restart pending mode	IHSBPOLL	Yellow/Medium
	Exception	00C900CB	Tablespace in Refresh pending mode	IHSBPOLL	Yellow/Medium
	Exception	00C900C5	Tablespace in Aux Check pending mode	IHSBPOLL	Yellow/Medium
	Exception	00C900A1	Tablespace is GRECP	IHSBPOLL	Yellow/Medium
	Exception	00C9008E	Tablespace Time-out	IHSBPOLL	Yellow/Medium
	Exception	00C90088	Tablespace Deadlock	IHSBPOLL	Yellow/Medium

Object Type	Object State/Exception	Event ID	Description	Resolution	Alert State/Priority
	Exception	DSNP007I	Tablespace extend failed	IHSBPOLL	Yellow/Medium
	Exception	DSNB250E	Tablespace has pages in LPL	IHSBPOLL	Yellow/Medium
	Exception	DSNB250E (DSNB321I)	Tablespace has pages in LPL	IHSBPOLL	Yellow/Medium
	Exception	00C900A1 (DSNB321I)	Tablespace is GRECP	IHSBPOLL	Yellow/Medium
	Exception	00C900A1 (DSNB32I)	Tablespace is GRECP	IHSBPOLL	Yellow/Medium
	Exception	00C900A1 (DSNB350I)	Tablespace is GRECP	IHSBPOLL	Yellow/Medium
Partition Tablespace/ Partition Index	RW	00C900RW	Partition tablespace set to RW mode	N/A	Green/Medium
	RO	00C90080	Partition tablespace set to RO mode	N/A	Yellow/Medium
	UT	00C90086	Partition tablespace set to Utility mode	N/A	Yellow/Medium
	Stop	00C90081	Partition tablespace stopped	N/A	Red/Medium
	Exception	00C90082 00C90083	Partition tablespace accessed by Utility	IHSBPOLL	Yellow/Medium
	Exception	00C900A3	Partition tablespace in Check pending mode	IHSBPOLL	Yellow/Medium
	Exception	00C900A0	Partition tablespace in Rebuild/Recovery pending mode	IHSBPOLL	Yellow/Medium
	Exception	00C900A0 (00C900AE)	Partition tablespace in Rebuild/Recovery pending mode	IHSBPOLL	Yellow/Medium
	Exception	00C900A0 (00C900C1)	Partition tablespace in Rebuild/Recovery pending mode	IHSBPOLL	Yellow/Medium

Object Type	Object State/Exception	Event ID	Description	Resolution	Alert State/Priority
	Exception	00C90097	Partition tablespace in Copy pending mode	IHSBPOLL	Yellow/Medium
	Exception	00C900AD	Partition tablespace in Reorg pending mode	IHSBPOLL	Yellow/Medium
	Exception	00C900AB	Partition tablespace in Restart pending mode	IHSBPOLL	Yellow/Medium
	Exception	00C900CB	Partition tablespace in Refresh pending mode	IHSBPOLL	Yellow/Medium
	Exception	00C900C5	Partition tablespace in Aux Check pending mode	IHSBPOLL	Yellow/Medium
	Exception	00C900A1	Partition tablespace is GRECP	IHSBPOLL	Yellow/Medium
	Exception	00C9008E	Partition tablespace Time-out	IHSBCLER	Yellow/Medium
	Exception	00C90088	Partition tablespace Deadlock	IHSBCLER	Yellow/Medium
	Exception	DSNP007I	Partition tablespace extend failed	IHSBCLER	Yellow/Medium
	Exception	DSNB250E	Partition tablespace has pages in LPL	IHSBPOLL	Yellow/Medium
	Exception	DSNB250E (DSNB311I)	Partition tablespace has pages in LPL	IHSBPOLL	Yellow/Medium
	Exception	00C900A1 (DSNB320I)	Partition tablespace is GRECP	IHSBPOLL	Yellow/Medium
	Exception	00C900A1 (DSNB323I)	Partition tablespace is GRECP	IHSBPOLL	Yellow/Medium
	Exception	00C900A1 (DSNB351I)	Partition tablespace is GRECP	IHSBPOLL	Yellow/Medium

DB2 PM Event Processing

Object Type	Object State/Exception	Event ID	Description	Resolution	Alert State/Priority
DB2 Subsystem	Exception	GLOBAL	Global trace started	IHSBCLER	Yellow/Low
	Exception	QISTRLLM	RDS limit exceeded	IHSBCLER	Yellow/Medium
	Exception	Q3STINDT	Units of recovery gone indoubt	IHSBCLER	Red/High
	Exception	QTXANPL	Max page or row locks held	IHSBCLER	Yellow/Low
	Exception	SLCLKET	Lock escalations exceeded	IHSBCLER	Yellow/Low
	Exception	Q3STCTHW	Queued at create thread	IHSBCLER	Red/High
	Exception	QDSTQDBT	DBAT Max Active	IHSBCLER	Red/High
	Exception	ADTWTDB	WaitingT ime Class 2 in DB2	IHSBCLER	Yellow/Low
	Exception	ADDB2ETT	Elapsed Time Class 2 in DB2	IHSBCLER	Yellow/Low
	Exception	ADDBCPUT	CPU Time Class 2 in DB2	IHSBCLER	Yellow/Low
	Exception	QTGSDRTA	Incompatible retained lock	IHSBCLER	Yellow/Medium
	Exception	QTGSPEQW	P - Lock engine unavailable	IHSBCLER	Yellow/Medium
Buffer Pool	Exception	QBSTXFL	Buffer pool full	IHSBRSLV	Red/High
	Exception	QBSTXFV	Unavailable virtual storage	IHSBCLER	
	Exception	QBSTVPA	Buffer pool expansion/contraction	IHSBCLER	Yellow/Medium
	Exception	QBSTDMC	DM critical threshold reached	IHSBRSLV	Red/High
	Exception	QBSTSPD	Pre fetch disabled	IHSBRSLV	Yellow/Medium
	Exception	QBSTMIG	DFHSM migrated datasets	IHSBCLER	Yellow/Medium

Object Type	Object State/Exception	Event ID	Description	Resolution	Alert State/Priority
	Exception	QBSTRTO	DFHSM Recall time outs	IHSBCLER	Yellow/Medium
	Exception	SBRBUTP	Virtual buffer pages in use%	IHSBCLER	Yellow/Low
	Exception	ADRGPRIO	Get page/Sync reads	IHSBCLER	Yellow/Low
	Exception	QBACRIO	Synchronous read IOs	IHSBCLER	Yellow/Low
	Exception	QBGLCT	Castout class threshold reached	IHSBRSLV	Yellow/Medium
	Exception	QBGLGT	GBP castout threshold reached	IHSBRSLV	Yellow/Medium
	Exception	QBGLCN	Castout engine unavailable	IHSBRSLV	Yellow/Medium
	Exception	QBGLSU	Write engine unavailable	IHSBRSLV	Yellow/Medium
	Exception	QBGLRF	Read failed no storage	IHSBRSLV	Yellow/Medium
	Exception	QBGLWF	Write failed no storage	IHSBRSLV	Yellow/Medium
DB2 PM	PM DC Active	DGOV0006I	DB2 PM operational	N/A	Green/Medium
	PM DC Inactive	DGOV0007I	DB2 PM not operational	N/A	Red/Medium
EDM Pool	Exception	QISEFAIL	EDM pool is full	None	Red/Critical



Messages for TBSM DB2 Monitoring Component

The following DB2 Monitoring Component error messages may be generated by the Tivoli NetView for OS/390 instrumentation and discovery components of Tivoli Business Systems Manager:

Initial Discovery

IHS380E EXECIO for file *file_name* failed with RC = *rc*

Explanation: The EXECIO service has failed while attempting to perform I/O to the specified file.

Parameters:

file_name

The file or DD name that EXECIO failed against.

rc

The REXX return code from the EXECIO service.

Module: IHSBDISC

System Action: Tivoli Business Systems Manager DB2 Initial Discovery will terminate.

User Response: Check the DD definition of the file in the DB2 Initial Discovery JCL IHSBDSCC for correctness. Ensure adequate DASD space has been allocated. For further investigation of the REXX return code, refer to the *OS/390 TSO/E REXX Reference Guide* and contact systems programmer.

Runtime

IHS390E IHSBPMCH - Call to IEFSSI FAILED WITH RC=*rc* RSN=*rsn*

Explanation: IHSBPMCH was unable to connect to the IEFSSI.

User Action: Contact System Administrator.

IHS391E IHSBPMCH Call to IEFSSI Returned incomplete DATA.

Explanation: IEFSSI interface returned insufficient data to IHSBPMCH.

User Action: Contact System Administrator

IHS394E *program_name* DSIGET Failure.

Explanation: The specified program issued an unsuccessful DSIGET call.

User Action: Contact System Administrator.

IHS395E The DB2 subsystem name must be 1 - 4 characters long

Explanation: An invalid DB2 subsystem name was passed to IHSBFIND.

User Action: Internal error. Contact the IBM Support Center.

IHS396E Connect to DB2 subsystem *subsystem_name* failed. Return codes *rtn_1/rtn_2*

Explanation: IHSBFIND was unable to connect to the specified DB2 subsystem.

User Action: Contact System Administrator.

IHS397E Call to DB2 DSNWLI Failed. DB2 Return codes *rtn_1/rtn_2*

Explanation: IHSBFIND issued an unsuccessful call to DSNWLI.

User Action: Contact System Administrator.

IHS398E Call to DB2 IFI Failed. DB2 return codes *rtn_1/rtn_2*

Explanation: IHSBFIND issued an unsuccessful call to the DB2 IFI.

User Action: Contact System Administrator.

IHS580E IHSMSG Failed with return code *rc* Action = *action_code* Object Type = *object_type*

Subsystem = *DB2_subsys_name*

Explanation: Internal API failed to complete. Processing continues.

User Action: Internal error. Contact the IBM Support Center.

IHS581E IHSBINIT - Return code *rtn_code* from IHSMSG. Processing Terminated.

Explanation: Internal API failed to complete. Processing terminates.

User Action: Internal error. Contact the IBM Support Center.

IHS582I IHSBINIT Completed with return code *rtn_code*

Explanation: Initialization of DB2 instrumentation for Tivoli Business Systems Manager completed.

User Action: None required, unless return code is greater than zero, then contact System Administrator.

IHS583W IHSBINIT - Unsuccessful call to IHSBPMCH. Processing continues.

Explanation: Unsuccessful call to IHSBPMCH.

User Action: Internal error. Contact the IBM Support Center.

IHS584I IHSBREFR Finished processing *db2_subsys_name* with return code *rtn_code*

Explanation: Indicates the refresh discovery for a DB2 subsystem has completed.

User Action: None required unless the return code is greater than zero, then contact System Administrator.

IHS585E IHSBREFR - Unexpected output from display command for *db2_subsys_name*

Explanation: Invalid output from DB2 DISPLAY command issued by IHSBREFR.

User Action: Internal error. Contact the IBM Support Center.

IHS586E IHSBREFR - Subsystem *db2_subsys_name* not found in DSILSSS output. Processing terminated.

Explanation: DB2 subsystem supplied for Refresh Discovery could not be located. Processing does not continue.

User Action: Internal error. Contact the IBM Support Center.

IHS587E IHSBREFR - Unsuccessful call to IHSBSQL for subsystem *db2_subsys_name*. Processing terminated.

Explanation: Call to internal function IHSBSQL failed for specified DB2 subsystem.

User Action: Ensure Tivoli Business Systems Manager DB2 bind job has been run correctly.

IHS588W IHSBREFR - Unsuccessful call to IHSBFIND for subsystem *db2_subsys_name*. Processing continues.

Explanation: Internal function IHSBFIND failed to execute for specified DB2 subsystem.

User Action: Internal error. Contact the IBM Support Center.

Commands Processing

IHS590E Subsystem *db2_subsys_name* is DOWN. *Db2_command* not issued.

Explanation: A DB2 command was issued against a DB2 subsystem which was not operational on this MVS image.

User Action: None.

IHS591E Invalid parameter: *supplied_parm*. Only START or STOP are permitted.

Explanation: A parameter other than START or STOP was supplied with the DB2 command.

User Action: Re-issue the command with parameters START or STOP.

IHS592E Invalid parameter: *supplied_parm*. Only RESTRICT is permitted.

Explanation: A parameter other than RESTRICT was supplied with the DB2 command

User Action: Re-issue the command with input parameter RESTRICT or no parameters.

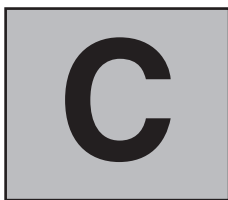
IHS594E Invalid input: subsystem name = *db2_subsys_name*, Database name = *db2_dbase_name*.

Explanation: An invalid object name was passed with the START DATABASE command.

User Action: Internal error. Contact the IBM Support Center.

IHS595E Invalid input: subsystem name = *db2_subsys_name*, Database name = *db2_dbase_name*, Tablespace name = *tbl_space_name*.

Explanation: An invalid object name was passed with the START DATABASE command.



Creating REXX Function Package Aliases

Use the following sample as a guideline if you want to create IRXFLOC and DSIRXLFP REXX function package aliases. The data set used in the SYSLMOD data definition (DD) statement must be authorized for the authorized program facility (APF) and concatenated to the STEPLIB DD statement in the procedure used to start Tivoli NetView for OS/390. It is recommended that this data set be the first data set in the concatenation stream.

```
//LKEDJOB MSGLEVEL=(1,1),REGION=4M
//*****
//*                LINKEDIT OF EYU9AR00 TO ADD ALIAS OF DSIRXLFP
//*****
//EXEC PGM=IEWL,REGION=4096K,
//PARM='RENT,REUS,NCAL,LIST,MAP,LET,
//AMODE=31,RMODE=ANY
//SYSLIBDD DISP=SHR,DSN=DB2130.SEYAUTH
//SYSLMOD      DD DISP=SHR,DSN=DB2.USERLINK
//SYSUT1DD UNIT=SYSDA,SPACE=(TRK,(30,30))
//SYSPRINTDD SYSOUT=*
//SYSLINDD *
INCLUDE SYSLIB(EYUPAR00)
ORDER    EYU9AR00
ENTRY    EYU9AR00
MODE     AMODE(31)
MODE     RMODE(ANY)
ALIAS     EYU9AR01
ALIAS     IRXFLOC
ALIAS     DSIRXLFP
SETCODE AC(1)
NAME     EYU9AR00(R)
```




Object Pump Startup Parameters

General

TBSM Source/390 Object Pump initialization parameters are input via the AOPSYSIN DD card (LRECL=80, RECFM=F or FB). Most are optional and defaults are used if not supplied. Some, however, are required and some functions of TBSM Source/390 Object Pump may not be available if these are omitted.

The ACC1IDxx DD card in the TBSM Source/390 Object Pump startup JCL supplies a two character ID (the xx characters of the DD name) used to identify and connect each set of TBSM Source/390 Object Pump, Dataspace, and Object Server regions (the Tivoli Business Systems Manager regions) on an MVS system.

The characters default to 01 if no ACC1IDxx DD card is included in the startup JCL. By using a different suffix for each set of Tivoli Business Systems Manager Tivoli Business Systems Manager regions, you can run multiple copies of Tivoli Business Systems Manager on a single MVS system (for example for testing purposes).

You can also cause TBSM Source/390 Object Pump to insert the ACC1IDxx characters into TBSM Source/390 Object Pump startup parameters, thus allowing you to automatically configure TBSM Source/390 Object Pump depending upon the ID characters in use. To do this, code two dots (..) at each point in the parameter where you want the characters to be inserted. For example, each TBSM Source/390 Object Pump region on an MVS system needs its own MCS console name. By coding .. in the *CONSOLE_NAME* parameter operand, TBSM Source/390 Object Pump inserts the ID chars into the name, thus ensuring that the name is unique within that MVS system.

Thus if:

```
CONSOLE_NAME=ACCPRD..
```

and the ACC1IDxx DD card is coded as:

```
//ACC1IDPD DD DUMMY
```

The console name used by TBSM Source/390 Object Pump is ACCPRDPD

Continuing Parameters

If a parameter needs to be continued onto one or more cards then specify a comma followed by a space at the end of the data and start the continued data in column one of the next card.

Thus:

```
KEYWORD=partof,thedata
```

is the same as:

KEYWORD=partofthedata

Notice that the comma is NOT part of the data for the keyword. If you want a comma to be part of the data code two commas. Either of the following is valid:

KEYWORD=part1,,
part2

—OR—

KEYWORD='part1',
'part2'

Both of these are the same as

KEYWORD=part1,part2

The data for KEYWORD is "part1,part2".

The first comma is included in the data, the last comma indicates that the data is continued on the next card.

Parameters

INITIAL_EXEC=@AOPEXEC | name

Specifies the one to eight character name of the initial REXX EXEC that TBSM Source/390 Object Pump runs, once initialization has completed. The default is @AOPEXEC. You can change this to run a different initialization REXX EXEC if required.

CONSOLE=ACCESS.. | name | NO

Specifies the one to eight character name to be assigned to the TBSM Source/390 Object Pump MCS console. The default is ACCESS.. (where .. are the ID chars from the ACC1ID DD card in the TBSM Source/390 Object Pump startup JCL, or 01 if omitted).

If CONSOLE=NO is coded then console messages are not trapped by TBSM Source/390 Object Pump and operator commands cannot be issued (by the REXX OPER command, or the OPER action in traps).

CONSOLE_MSCOPE=LOCAL | ALL

Specifies the message scope of the console. LOCAL specifies that the console only receives messages from the local system (the one TBSM Source/390 Object Pump is running on). ALL specifies that the console receives messages from all systems in the Sysplex.

The default is LOCAL.

MAX_TRAPS = 2016 | number

Specifies the maximum number of traps that TBSM Source/390 Object Pump is able to define. The actual number that can be defined may be slightly smaller than this, depending upon the mix of trap types defined. The number defined is rounded UP to a multiple of 32. If storage is not available for the defined number of traps then TBSM Source/390 Object Pump calculates the maximum number of traps that it can handle in the storage available.

number can be in the range 512-20000.

TERMINAL_PREFIX=prefix | AOPTERM

Specifies a one to seven character prefix that is used as a prefix to build the LU names of the terminals used to logon to Omegamon and other VTAM applications.

If no prefix is supplied VTAM services are NOT available in TBSM Source/390 Object Pump. The default is AOPTERM.

NUMBER_OF_TERMINALS=0 | number

Specifies the number of virtual terminals to be available to TBSM Source/390 Object Pump in the range 0-99999. If 0 is specified or allowed to default then VTAM services are not available to TBSM Source/390 Object Pump. A pool of virtual terminals is created by using the *prefix* value from the *TERMINAL_PREFIX* operand with a number in the specified range.

The combined length of the prefix and the number of digits in the largest number must not exceed 8. Thus if the prefix is AOPLU2, the maximum number of virtual terminals is 99 (giving AOPLU201 through AOPLU299).

The numeric suffix of each terminal is zero filled and right justified to the number of digits in the *NUMBER_OF_TERMINALS* operand. Thus if *NUMBER_OF_TERMINALS*=80 (2 digits) then the numeric suffix of each terminal is 01, 02 etc to 80. If *NUMBER_OF_TERMINALS*=200 (3 digits) then the numeric suffix of each terminal is 001, 002 etc to 200.

MODEL2_LOGMODE=D4A32782 | name

Specifies the logmode name to be used for model 2 (24 x 80) terminals. This should be an SNA non queriable logmode.

MODEL3_LOGMODE=D4A32783 | name

Specifies the logmode name to be used for model 3 (32 x 80) terminals. This should be an SNA non queriable logmode.

MODEL4_LOGMODE=D4A32784 | name

Specifies the logmode name to be used for model 4 (43 x 80) terminals. This should be an SNA non queriable logmode.

MODEL5_LOGMODE=D4A32785 | name

Specifies the logmode name to be used for model 5 (27 x 132) terminals. This should be an SNA non queriable logmode.

LOG_SCREEN=NO | YES

Specifies whether screen images from the VTAM 3270 virtual session should be logged or not.

The default is NO.

EDI=NO | YES

Specifies whether TBSM Source/390 Object Pump is to initialize the External Data Interface.

The default is NO.

EDI_BUFFER_SIZE=2048 | size

Specifies the size (in K, 1 K = 1024 bytes) of the External Data Interface buffer.

The default is 2048 K (2 Megabytes).

size can be in the range 50 (50 K) to 20480 (20 Megabytes).

EXEC_REFRESH=YES | NO

Specifies whether REXX EXECs are loaded from disk each time (YES) the default, or only loaded once and then held in storage (NO).

YES is suitable for a development environment where REXX execs may be being changed while TBSM Source/390 Object Pump is running.

NO is suitable for a production environment where the performance impact of continually re-loading the REXX EXECs is best avoided.

SUBSYSTEM_NAME=AS.. | name | NO

Specifies the four character name of the subsystem created and used by TBSM Source/390 Object Pump.

The default is AS.. (where .. are the ID chars from the ACC1ID DD card in the TBSM Source/390 Object Pump startup JCL, or 01 if omitted).

Coding the value NO prevents TBSM Source/390 Object Pump from initializing the TBSM Source/390 Object Pump subsystem. In that case command (CMD) traps are not processed as no system commands are captured.

SUBSYSTEM_MAXTHREADS = 2 | nn

Specifies the maximum number of concurrent operator commands that can be processed by the TBSM Source/390 Object Pump subsystem/address space. The default is 2.

nn can be in the range 1 to 50.

MAXTHREADS_PROMPT = YES | NO

Specifies whether TBSM Source/390 Object Pump should prompt the operator to increase the number of subsystem threads or not by issuing message ACC7560 when SUBSYSTEM_MAXTHREADS is reached by the subsystem command interface.

YES indicates that TBSM Source/390 Object Pump should issue the WTOR message. NO indicates that TBSM Source/390 Object Pump should not issue the WTOR message.

If NO is coded the operator is NOT prompted to increase the maximum number of subsystem command threads when the limit (SUBSYSTEM_MAXTHREADS) is reached. Some operator commands may not be trapped by TBSM Source/390 Object Pump in this case.

LOAD=program_name

Causes TBSM Source/390 Object Pump to pre-load the named program and save its entry point in an internal table which can then be used at trap match time to CALL a program when a trap match occurs. This parameter can be specified as many times as required in the input parm stream.

USE_DATASPACE = YES | NO

Specifies whether the region should connect to the TBSM dataspace or not. The default is YES. The TBSM dataspace must be initialized and the server running before TBSM Source/390 Object Pump is started when YES is coded.

CMD=command,PROGRAM=program

Defines a modify command that TBSM Source/390 Object Pump recognizes and the handling program is invoked to process the command.

CALL program ATTACH program [,TYPE=MAIN]

The CALL and ATTACH statements can only be coded within the region

initialization table. They cannot be coded as user input in the AOPPARM input deck. They define the sequence and names of programs to CALL or ATTACH during TBSM Source/390 Object Pump startup to initialize the region.

TYPE=MAIN indicates that the attached program runs as an extension of MAIN and is shutdown last after all subtasks have ended. It should NOT be used for most normal managers.

OMEGAMON_REFRESH_PERIOD=*hh:mm:ss* | 00:04:00

Defines the default setting for how frequently Omegamon sessions should be polled for exceptions. The default setting is 4 minutes.

OMEGAMON_EXCEPTION_CNTRL=ALL | DELTA

Specifies if ALL Omegamon exceptions should be sent to NT (the default) or only changes.

TRAP_REPORT=*destination* | SYSOUT(A)

Specifies the destination for trap reports. The default is SYSOUT class A.

LOG_FILE=*destination* | SYSOUT(A)

Specifies the destination of the log file. The default is SYSOUT class A.

LOG_FILE_RECORD_LENGTH=*length* | 200

Specifies the *lrecl* for the log file. The default is 200.

LOG_SPIN_INTERVAL=*hh:mm:ss* | 04:00:00

Specifies how often the log file should be spun off. The default is 4 hours

COMMAND_PREFIX=*string*

Specifies the character string that TBSM Source/390 Object Pump recognizes as commands intended for the pump. This should be unique within your system and not duplicate any existing command string, for example \$ (for JES) or D for system commands.

SHUT_OBJECT_SERVER=YES | NO

Specifies whether the Object Pump will shutdown the Object Server when the pump is terminated. YES indicates that the pump will terminate the Object Server. NO indicates that it will not. The default is NO.

SHUTDOWN_DELAY=*n* | 0

Specifies the number of seconds that the pump waits before terminating. The default is zero seconds. n is the number of seconds to wait in the range 0 to 30 where zero specifies no wait occurs.

OPC_JOBNAME=*jobname* [*jobname.jobname,...*]

Specifies one or more job names for OPC address spaces. A Generalized EDI message trap is created for each jobname specified.

SA390_JOBNAME=*jobname* [*jobname.jobname,...*]

Specifies one or more job names for SA/390 address spaces. A Generalized EDI message trap is created for each jobname specified.

AFOPER_JOBNAME=*jobname* [*jobname.jobname,...*]

Specifies one or more job names for AF/Operator address spaces. A Generalized EDI message trap is created for each jobname specified.

OPSMVS_JOBNAME=*jobname* [*jobname.jobname,...*]

Specifies one or more job names for OPS/MVS address spaces. A Generalized EDI message trap is created for each jobname specified.

PPI=YES | NO

Specifies whether TBSM Source/390 Object Pump is to initialize the PPI Interface. The PPI interface is used to receive Netview's application management instrumentation data from CICSplex, DB2PM, and IMS. The default is NO.

PPI_RECEIVER_NAME=NETVAOP | *receiver_name*

Specifies the 1 to 8 character name used for the PPI receiver task. The default is NETVAOP.

PPI_BUFFER_SIZE=512 | *size*

Specifies the size (in bytes) of the Receive Buffer that is used to receive the application management instrumentation data.

The default is 512 bytes. The *size* can be in the range from 256 bytes to 32768 bytes.

PPI_BUFFER_QUEUE_LIMIT=1000 | *number*

Specifies the maximum number of outstanding buffers that a receiver buffer queue can have in storage.

The default is 1000. The range can be from 100 to 10000

PPI_TRACE=YES | NO

YES specifies whether the data sent over the PPI interface is written to AOPLOG. The default is NO.



Object Pump Modify Commands

The TBSM Source/390 Object Pump accepts the following MVS Modify commands (F *pump,command [options]*):

REFRESH

The REFRESH command causes the TBSM Source/390 Object Pump to re-load a REXX EXEC into storage, when running with EXEC_REFRESH=NO (No automatic refresh of REXX EXECs). This can be used if a REXX EXEC has changed and needs to be re re-loaded without restarting the TBSM Source/390 Object Pump. It is not valid if EXEC_REFRESH=YES was coded in the startup parameters, and has no effect if the EXEC being refreshed was not previously loaded.

Syntax:

F *pump*,REFRESH *execname*

Where:

Execname is the name of the REXX EXEC to reload.

LOGSCREENS

The LOGSCREENS command allows you to turn 3270 screen logging on or off dynamically while the TBSM Source/390 Object Pump is running. Logged screens are written to the AOPLOG DD.

Syntax:

F *pump*,LOGSCREENS ON | OFF

Where:

ON specifies that screen logging should be started.

OFF specifies that screen logging should be stopped.

If the command is issued without either ON or OFF being specified then the command displays the current status of screen logging.

SHOW

The SHOW command can be used to display the various resources within the TBSM Source/390 Object Pump.

Syntax:

F *pump*,SHOW *resource [options]*

Where:

Resource I the resource type to display.

Options are any options valid for the resource type.

SHOW TRAPS

The SHOW TRAPS command displays information about the selected traps and/or trap types.

Syntax:

F *pump*,SHOW TRAPS *mask type* [LONG | NOLIST]

Where:

Mask is a generic or specific trap name that is used to select the trap name(s) to display. The default is * (all traps of the selected type).

Type is the trap type, which can be one of WTO, TOD, XOM, XOC, XOI, XO2, CMD or *. The default is * (all trap types).

LONG specifies that the long form of the selected traps be displayed. The long form includes all the information about the trap and the action that it takes. If the short form is allowed to default then only the trap name and the number of matches is displayed for each trap.

NOLIST specifies that only the summary line is to be displayed, which shows a count by trap type for the selected traps (bask on *mask*).

SHOW SESSIONS

The SHOW SESSIONS command displays information about the current 3270 sessions.

Syntax:

F *pump*,SHOW SESSIONS *mask*

Where:

Mask is a generic or specific session name that is to be used to select the session name(s) to display. The default is * (all sessions).

SHOW POOLS

The SHOW POOLS command displays the names of the currently defined global variable pools.

Syntax:

F *pump*,SHOW POOLS [*mask*]

Where:

Mask is a generic or specific pool name to select the pools to be displayed. The default is * (all pools).

SHOW VARS

The SHOW VARS command displays the variable names and currently assigned values of the selected variables in the selected pool(s).

Syntax:

```
F pump,SHOW VARS varnamemask poolnamemask
```

Where:

Varnamemask specifies a generic or specific variable name to display. The default is * (all variables in the selected pools).

Poolnamemask specifies a generic or specific pool name that is to be used to select the pool(s) to scan for the selected variable names. The default is * (all pools).

Two pools are always defined. They are the following:

- System Pool - Contains Read only variables.
- User pool - The User pool always exists, even when empty. Contains work variables used by the Source/390 Object Pump.

SHOW MSGCOUNT

The SHOW MSGCOUNT command displays the number of console messages received by the console interface.

Syntax:

```
F pump,SHOW MSGCOUNT
```

SHOW PPICOUNT

The SHOW PPICOUNT command displays the number of application instrumentation (AMI) messages received by the PPI interface.

Syntax:

```
F pump,SHOW PPICOUNT [* | type]
```

Where:

Type specifies the format type for which the count is to be displayed. The following values are valid types:

- DB2
- IMS
- CPSM
- AMI

RODM

The RODM command can be used to start or stop the TBSM Source/390 Object Pump RODM Interface.

Syntax:

```
F pump,RODM START | STOP
```

Where:

START indicates that the TBSM Source/390 Object Pump should attempt to start communications with RODM

STOP indicates that the TBSM Source/390 Object Pump should stop communications with RODM.

PPI ENABLE

Starts the TBSM Source/390 Object Pump PPI Interface.

Syntax:

F *pump*,PPI ENABLE

PPI DISABLE

Stops the TBSM Source/390 Object Pump PPI Interface.

Syntax:

F *pump*,PPI DISABLE

PPI STATUS

Displays the status of the TBSM Source/390 Object Pump PPI receiver task.

PPI TRACE

The PPI TRACE command starts, stop or display the PPI trace.

Syntax:

F *pump*,PPI TRACE [ON\YES | NO\OFF]

Where:

ON (or YES) specifies that PPI tracing should start. Data received by the PPI Listener is written to the TBSM Source/390 Object Pump AOPLOG DD.

OFF (or NO) specifies that tracing by the PPI listener should stop.

If no option is specified the command displays the current state of PPI tracing.

PPI RESET

Displays or resets the PI buffer queue limit.

Syntax:

F *pump*,PPI RESET [*buffer_queue_limit*]

Where:

Buffer_queue_limit specifies the new limit to be applied to the PPI buffer. The valid range is 100 to 10000. If the operand is omitted then the command displays the current setting for the buffer queue limit.



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