

HP OpenView Smart Plug-in for BEA Tuxedo

User's Guide

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Architecture and Tuxedo SPI Components

The SMART Plug-In for BEA Tuxedo is a preconfigured add-on module for the HP OpenView Operations (OVO) software. The BEA Tuxedo SPI extends the OVO management environment to include Tuxedo systems and Tuxedo applications.

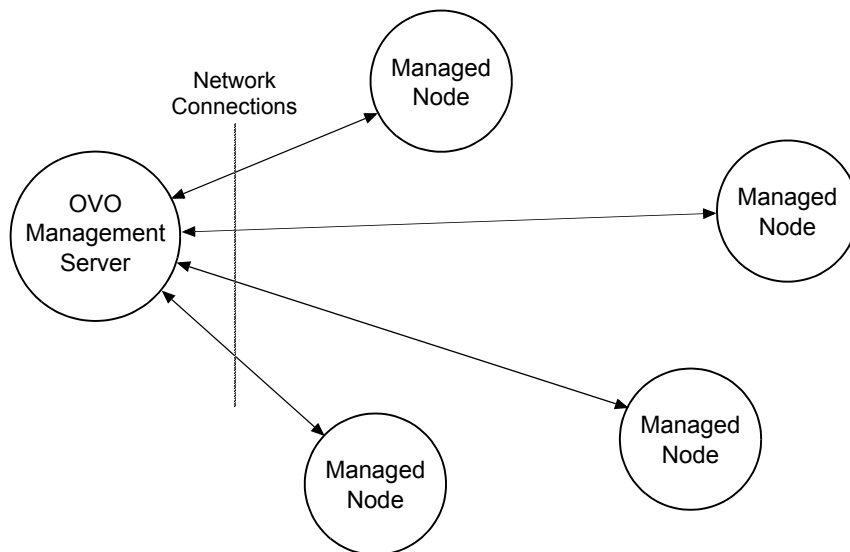
This chapter describes the architecture of OVO, Tuxedo, and the Tuxedo SPI.



HP OpenView IT/Operations (ITO) and HP OpenView VantagePoint Operations (VPO) have been renamed to HP OpenView Operations (OVO) for UNIX®. The name change has not yet been fully implemented across the OVO software and documentation. As a result, you may encounter references to all three product names.

HP OVO Architecture

As shown in the following figure, the OVO architecture is based on communication between a management server and one or more managed nodes. The managed nodes are the computer machines monitored and controlled by OVO.

Figure 1 Simplified View of HP OVO Architecture

OVO server processes running on the central management server machine communicate with OVO agent processes running on the managed nodes. The OVO agent processes collect *events*—status changes or threshold violations—on the managed nodes and then forward relevant information in the form of OVO messages to the management server. The management server responds with actions to prevent or correct problems on the managed nodes.

Management Server

The OVO management server is the controlling element of the entire OVO system. It holds the OVO database and the OVO software, including the complete current configuration and the OVO agent software. During the installation of an OVO system, the OVO administrator downloads copies of the OVO agent software to the managed nodes.

OVO provides a graphical user interface (GUI) through which OVO administrators and operators can monitor and control the OVO software, the managed applications, and the hardware on which the applications run. A management server can support multiple OVO GUIs per server machine.

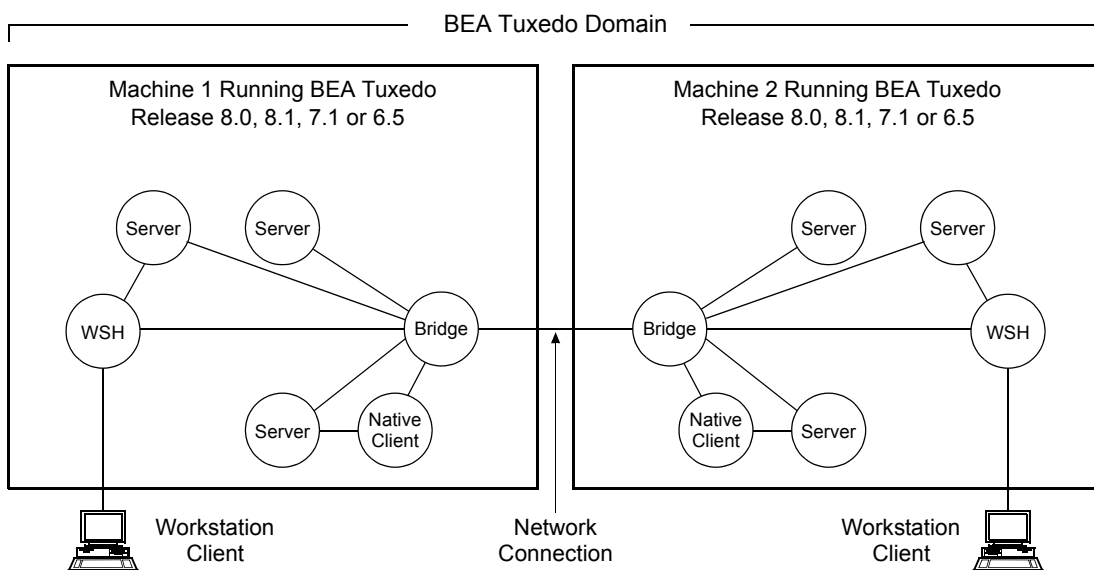
Managed Nodes

Once installed and running, the OVO agent software reads log files, console messages, and Simple Network Management Protocol (SNMP) traps—significant but unsolicited events. If so configured, the OVO message interceptor can intercept messages from any application running locally on a managed node.

BEA Tuxedo System Architecture

The following figure shows a Tuxedo domain, which is the basis of the Tuxedo system architecture.

Figure 2 Simplified View of BEA Tuxedo System Architecture



A Tuxedo domain, also known as a Tuxedo application, is a business software program, built upon the Tuxedo system, that is defined and controlled by a single configuration file—the UBBCONFIG file. A Tuxedo domain consists of one or more clients (local or remote), one or more servers, and one or more machines. It is administered as a single unit.

Tuxedo UBBCONFIG File

Each Tuxedo domain is controlled by a configuration file in which installation-dependent parameters are defined. The text version of the configuration file is referred to as `UBBCONFIG`, although the configuration file may have any name, as long as the content of the file conforms to the format described on the `UBBCONFIG(5)` reference page in *BEA Tuxedo File Formats and Data Descriptions Reference*. Typical configuration filenames begin with the string `ubb`, followed by a mnemonic string, such as `simple` in the filename `ubbsimple`.

Tuxedo Master Machine

The master machine, or master node, for a Tuxedo domain contains the domain's `UBBCONFIG` file, and is designated as the master machine in the `RESOURCES` section of the `UBBCONFIG` file. Starting, stopping, and administering a Tuxedo domain is done through the master machine.

In a multi-machine Tuxedo domain running different releases of the Tuxedo system software, the master machine must run the highest release of the Tuxedo system software in the domain.

Tuxedo Domain ID

The Domain ID for a Tuxedo domain is designated in the `RESOURCES` section of the `UBBCONFIG` file. It specifies the name of the Tuxedo domain.

Tuxedo Logical Machine ID

The logical machine ID (LMID) is designated in the `MACHINES` section of the `UBBCONFIG` file. There is an LMID entry for each machine in a Tuxedo domain.

Tuxedo TUXCONFIG File

The TUXCONFIG file is a binary version of the UBBCONFIG file. It is created by running the `tmloadcf(1)` command, which parses UBBCONFIG and loads the binary TUXCONFIG file to the location referenced by the TUXCONFIG environment variable. As with UBBCONFIG, the TUXCONFIG file may be given any name.

The master machine for a Tuxedo domain contains the master copy of the TUXCONFIG file. Copies of the TUXCONFIG file are propagated to every other machine in a Tuxedo domain—referred to as non-master machines—whenever the Tuxedo system is booted on the master machine.

Tuxedo TUXCONFIG Environment Variable

The TUXCONFIG environment variable defines the location on the master machine where the `tmloadcf(1)` command loads the binary TUXCONFIG file. It must be set to an absolute pathname ending with the device or system file where TUXCONFIG is to be loaded.

The TUXCONFIG pathname value is designated in the MACHINES section of the UBBCONFIG file. It is specified for the master machine and for every other machine in the Tuxedo domain. When copies of the binary TUXCONFIG file are propagated to non-master machines during system boot, the copies are stored on the non-master machines in accordance to the TUXCONFIG pathname values.

Tuxedo TUXDIR Environment Variable

The TUXDIR environment variable defines the installation directory of the BEA Tuxedo system software on the master machine. It must be set to an absolute pathname ending with the name of the installation directory.

The TUXDIR pathname value is designated in the MACHINES section of the UBBCONFIG file. It is specified for the master machine and for every other machine in the Tuxedo domain.

Tuxedo Management Information Base

The Tuxedo Management Information Base (TMIB) is a Tuxedo system component that provides a complete definition of the classes and their attributes that formally define a Tuxedo domain. Separate classes are designated for machines, servers, networks, and so on. The TMIB reference pages (TM_MIB(5), generic reference page MIB(5), ...) are defined in BEA Tuxedo File Formats and Data Descriptions Reference.

When a Tuxedo server becomes active, it advertises the names of its services in the Bulletin Board, which is the dynamic part of the TMIB. (A service is an application routine that a client can request.) The Tuxedo system uses the binary TUXCONFIG file on the master machine to construct the Bulletin Board, and propagates a copy of the TUXCONFIG to the non-master machines in the domain to set up the Bulletin Board on those machines. A Bulletin Board runs on each machine in a Tuxedo domain.

Tuxedo Distinguished Bulletin Board Liaison Server

The Distinguished Bulletin Board Liaison (DBBL) is a Tuxedo system administrative server that propagates the global changes to the TMIB and maintains the static part of the TMIB. The DBBL also coordinates the state of the different machines involved in the Tuxedo domain. There is only one DBBL for the entire domain, and it runs on the machine—the master machine—where the UBBCONFIG file resides.

The Bulletin Board Liaison (BBL) is a Tuxedo system administrative server that maintains the Bulletin Board—a runtime representation of the TMIB that is replicated on every machine in the Tuxedo domain. (The Bulletin Board is the where global or local state changes to the TMIB are posted.) The BBL coordinates changes to the local copy of the TMIB and verifies the sanity of the software programs that are active on the same machine as the BBL.

Tuxedo User Log

ULOG is a Tuxedo system central event user log. A ULOG file is a text file containing Tuxedo system error messages, warning messages, debugging messages, and information messages. The Tuxedo system creates a new ULOG file each day on each machine in a Tuxedo domain.

The full pathname of a ULOG file is as follows:

- If the variable ULOGPFX is set, its value becomes the prefix for the filename.
- If ULOGPFX is not set, ULOG becomes the prefix for the filename.

Each time a Tuxedo process calls the `userlog(3c)` function to write a message to the ULOG, `userlog()` determines the date and concatenates the month, day, and year to the prefix as `mmddyy` to set the name for the file. The first time a process writes to the ULOG, it first writes an additional message indicating the associated BEA Tuxedo system version.

Tuxedo System Events

The Tuxedo system reports system-defined events and application-defined events. System-defined events are situations (primarily failures) defined by the Tuxedo system, such as the exceeding of certain system capacity limits, server terminations, security violations, and network failures. Application-defined events are situations defined by customer business programs. Both system-defined and application-defined events are received and distributed by the BEA Tuxedo EventBroker component, which also provides a system-wide summary of events.

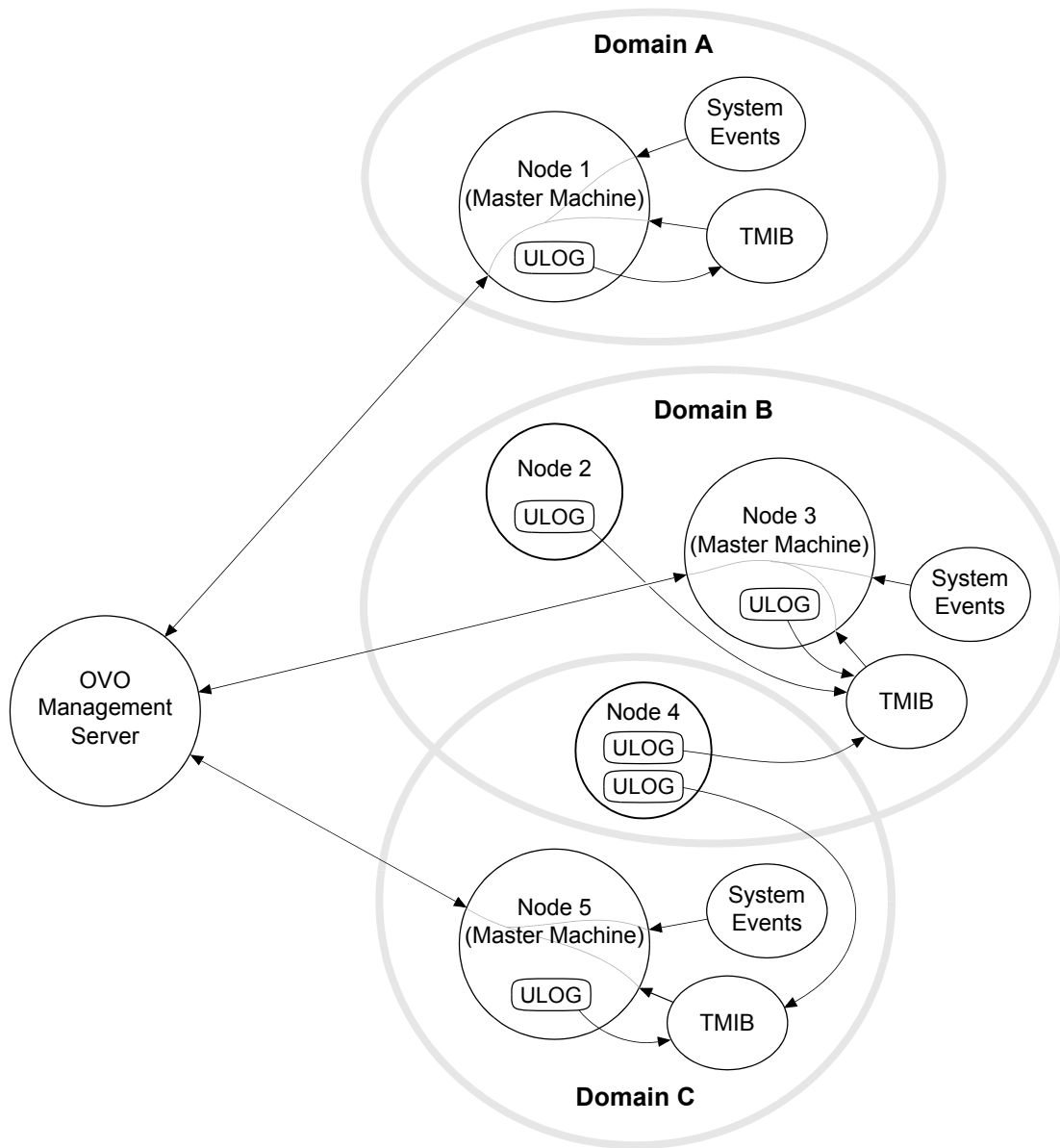
Tuxedo Runtime Administrative Command

The Tuxedo bulletin board command interpreter, `tmadmin(1)`, provides for the inspection and modification of Bulletin Boards and associated entities in a uniprocessor, multiprocessor, or networked environment. Depending upon its invocation, `tmadmin` can join a Tuxedo domain as an administrative process or client via a running BBL.

OVO and Tuxedo SPI Architecture

The following figure shows how the Tuxedo architecture integrates with the HP OVO architecture. Each master machine in a managed Tuxedo domain provides the domain's ULOG messages, system events, and TMIB metrics to the management server.

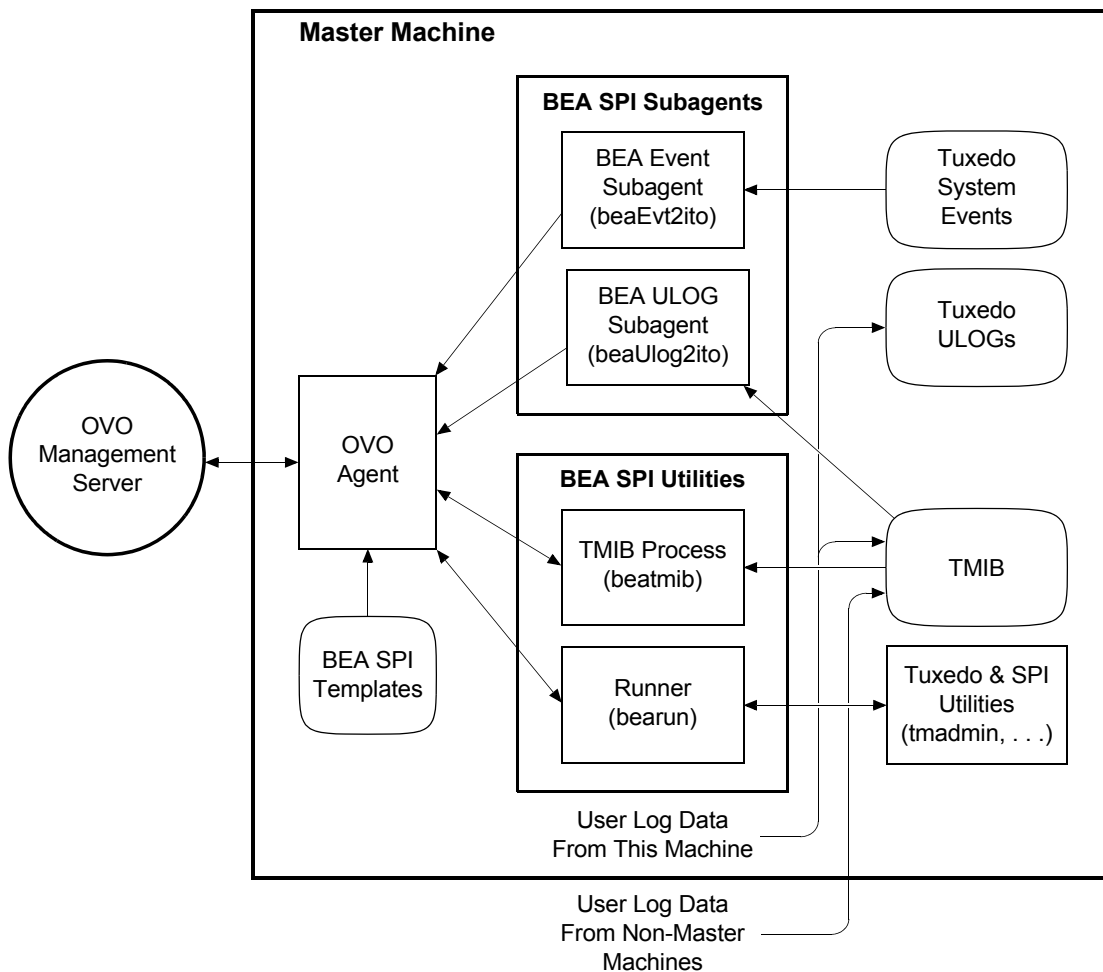
Figure 3 Simplified View of OVO and Tuxedo SPI Architecture



Managed Node Architecture

The following figure shows the relationships between agent processes, subagent processes, and Tuxedo processes running on a Tuxedo master machine.

Figure 4 OVO and Tuxedo SPI Software on a Tuxedo Master Machine

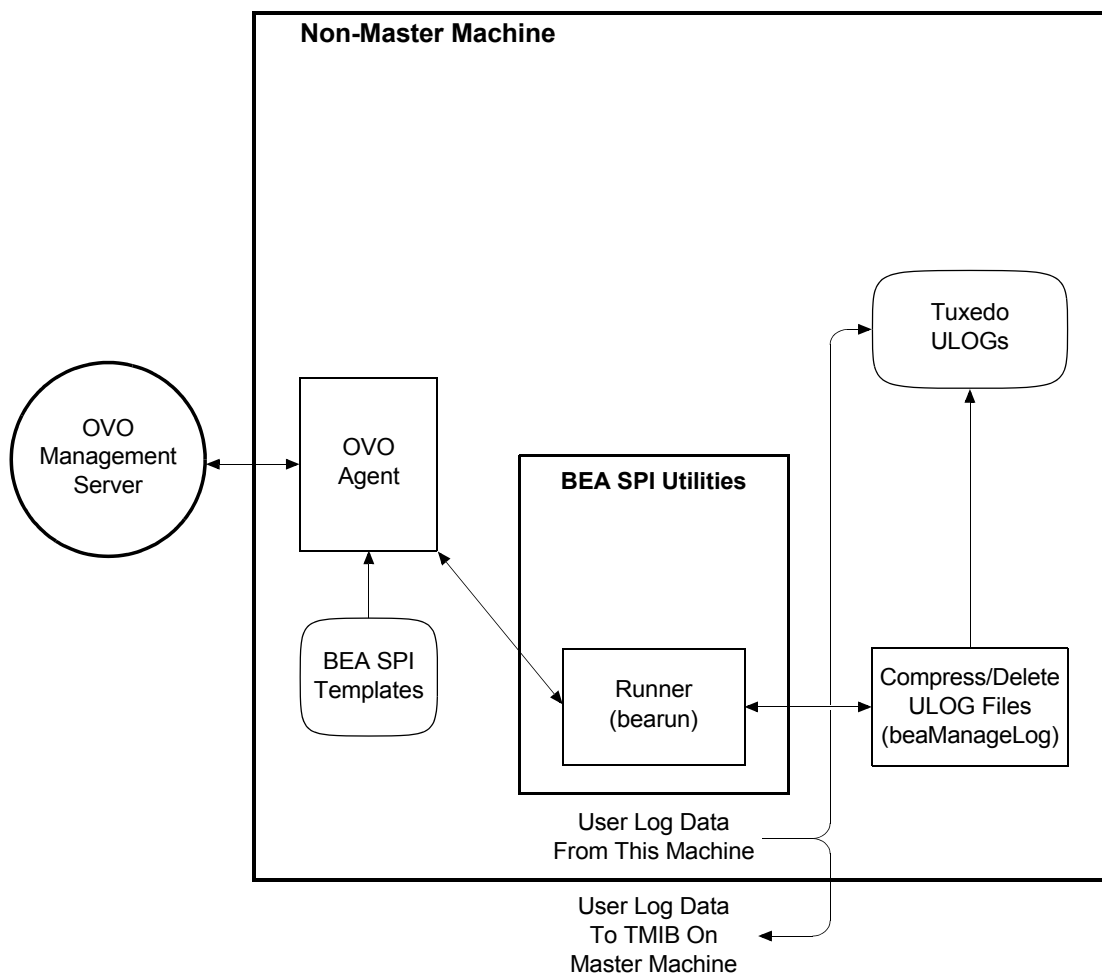


An OVO agent process runs on each managed node in an OVO system. Typically, the managed node starts the OVO agent upon system boot. The OVO agent in turn starts the platform processes needed to provide OVO services on that machine. If the OVO agent is not active, no OVO services are available on that machine.

The Tuxedo SPI managed node software performs the following major tasks:

- Receives monitoring information (ULOGs, system events, TMIB values) from the Tuxedo domain and forwards it to the OVO agent
- Receives instructions for administrative tasks (such as starting and stopping Tuxedo servers) from the OVO agent and forwards them to the Tuxedo domain
- Periodically compresses and deletes outdated ULOG files
- Monitors the `beaEvt2ito` and `beaUlog2ito` processes

Figure 5 OVO and Tuxedo SPI Software on a Tuxedo Non-Master Machine



Tuxedo SPI Managed Node Components

The Tuxedo SPI managed node software consists of the following components:

- BEA SPI Agent and Subagents

- BEA SPI Utilities
- BEA SPI Templates

BEA SPI Agent and Subagents

The BEA SPI subagents are:

- `beaUlog2ito`, which monitors ULOG messages via the TMIB and forwards them to the OVO agent. The OVO agent consults a particular BEA SPI template to determine how to filter the ULOG messages. If the template indicates that a ULOG message should be forwarded, the OVO agent sends it to the management server.
- `beaEvt2ito`, which monitors Tuxedo system events and forwards them to the OVO agent.

BEA SPI Utilities

The Tuxedo SPI managed node software includes the following utilities:

- Runner (`bearun`)

The `bearun` utility runs the Tuxedo utilities (`tmadmin(1)` and `tmunloadcf(1)`) and the Tuxedo SPI command line utilities. When you call a utility, `bearun` prepares the Tuxedo environment based on the invocation options and then invokes the utility.

- TMIB process (`beatmib`)

The `beatmib` utility extracts information from the TMIB, processes the information, and forwards resulting messages to the OVO agent. The OVO agent calls `beatmib` according to schedules specified in the BEA SPI templates.

- Tuxedo SPI command line utilities

You can invoke the Tuxedo SPI command line utilities from a script or program.

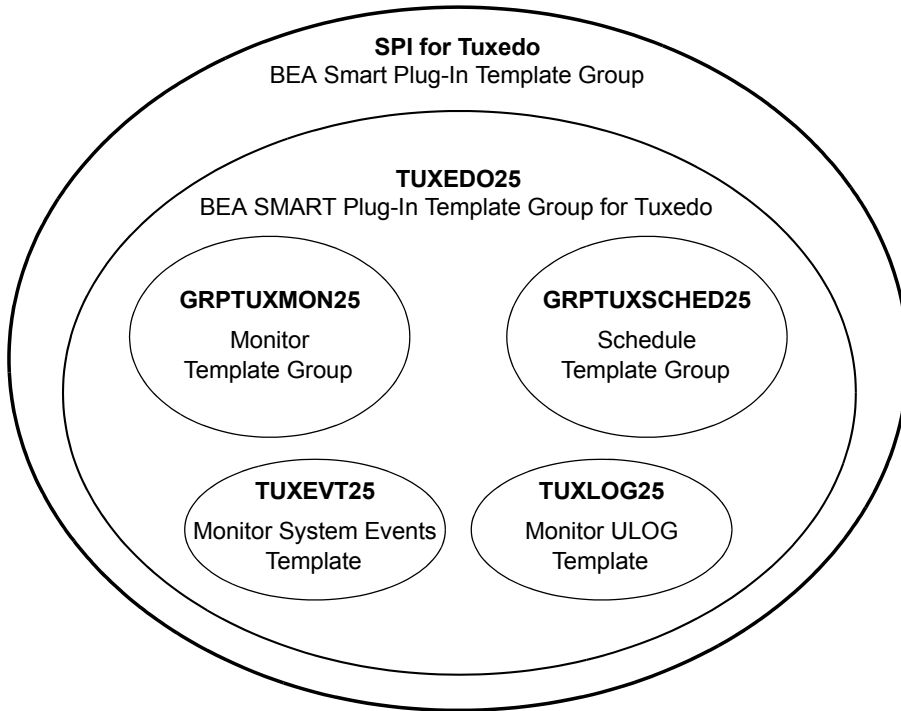
BEA SPI Templates

A template is a set of parameters that tells OVO how to monitor processes, log files, events, and messages. OVO uses templates to intercept messages from different message sources on a managed node and to monitor areas where predefined values or limits are exceeded. Template administrators use configuration tools to set up message collection and monitoring services and to define filters and suppression criteria to refine and reduce information sent to the OVO management server.

The Tuxedo SPI managed node software sends Tuxedo ULOG messages, system event messages, and TMIB metrics to the OVO agent. The OVO agent uses the BEA SPI templates to determine whether or not to send the information to the management server. The OVO agent also uses the templates to determine whether or not it is time to execute a scheduled task.

The SPI for Tuxedo template group, which is displayed in the Message Source Templates window, contains the TUXEDO25 template group. The TUXEDO25 template group contains two template groups and two individual templates, as shown in the following figure.

Figure 6 Templates for BEA Tuxedo SPI Version 2.5



GRPTUXMON25

This template group contains the following types of templates:

- Monitoring templates

The OVO agent uses the monitoring templates to determine how and when to monitor the TMIB metrics. There is a template for each TMIB metric.

- Error template

The beatmib process uses the "T_CLASS-UNKNOWN" template to generate a message when it cannot calculate a TMIB metric. This problem can occur if the monitor template contains an invalid TMIB metric number or if the required TMIB attributes are not available in the Tuxedo release that you are using..

GRPTUXSCHED25

The OVO agent uses the templates in this group to execute scheduled tasks:

- COMPRESSULOG25 instructs the OVO agent to compress the ULOG files that are older than a specified time interval.
- DELETEULOG25 instructs the OVO agent to delete the ULOG files that are older than a specified time interval.

TUXEVT25

The OVO agent uses this template to retrieve and monitor Tuxedo system events. If the template indicates that a system event message should be forwarded, the OVO agent reformats the message and sends it to the management server.

TUXEVT25 provides a template condition for each system event. Each template condition equals either Suppress (-) or Message (+). By default, the system events with a severity of Normal have a template condition of Suppress. All other system events have a template condition of Message.

TUXLOG25

The OVO agent uses this template to filter ULOG messages. If the template indicates that a ULOG message should be forwarded, the OVO agent reformats the message and sends it to the management server.

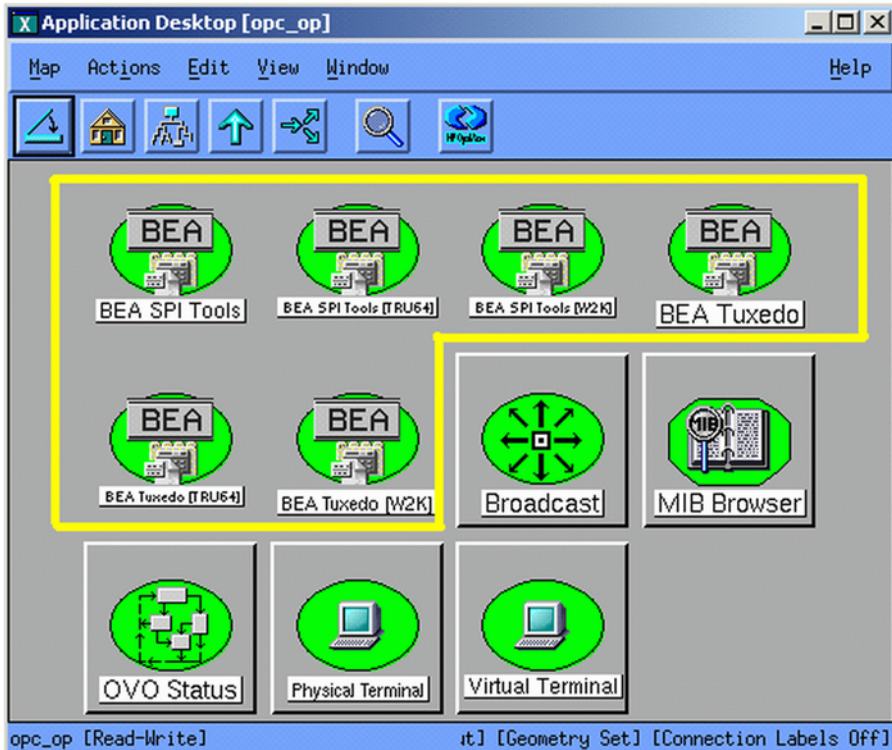
Tuxedo SPI Icons in the HP OVO User Interface

The Tuxedo SPI adds a number of icons to the OVO graphical user interface (GUI). This chapter describes the icons.

Icons in the OVO Application Bank Window

The OVO Application Bank window displays an icon for each application group and service for each platform (UNIX or Windows). The following figure shows a typical OVO Application Bank window, including the Tuxedo SPI icons. The order of the icons in your OVO Application Bank window might differ from the order shown here.

Figure 7 OVO Application Bank Window



In the OVO Application Bank window, the Tuxedo SPI icons are:



BEA SPI Tools (for HP-UX and Solaris)

When you double-click this icon, the Tuxedo SPI displays the BEA SPI Tools Application Group window.

See ["Icons in the BEA SPI Tools Application Group Window"](#) on page 29.



BEA Tuxedo (for HP-UX and Solaris)

When you double-click this icon, the Tuxedo SPI displays the Tuxedo Application Group window.

See ["Icons in the BEA Tuxedo Application Group Window"](#) on page 33.



BEA SPI Tools [for Tru64 UNIX]

When you double-click this icon, the Tuxedo SPI displays the BEA SPI Tools Application Group window.

See ["Icons in the BEA SPI Tools Application Group Window"](#) on page 29.



BEA Tuxedo [for Tru64 UNIX]

When you double-click this icon, the Tuxedo SPI displays the Tuxedo Application Group window.

See ["Icons in the BEA Tuxedo Application Group Window"](#) on page 33.



BEA SPI Tools [W2K]

When you double-click this icon, the Tuxedo SPI displays the BEA SPI Tools [W2K] Application Group window.

See ["Icons in the BEA SPI Tools Application Group Window"](#) on page 29.



BEA Tuxedo [W2K]

When you double-click this icon, the Tuxedo SPI displays the BEA Tuxedo [W2K] Application Group window.

See ["Icons in the BEA Tuxedo Application Group Window"](#) on page 33.

Icons in the BEA SPI Tools Application Group Window

The icons in the BEA SPI Tools Application Group window represent the commands you run to administer the Tuxedo SPI managed node software. To see this window, which is shown in the following figure, double-click the BEA SPI Tools icon in the OVO Application Bank window. The order of the icons in your BEA SPI Tools Application Group window might differ from the order shown here.

Figure 8 BEA SPI Tools Application Group Window for UNIX Managed Nodes

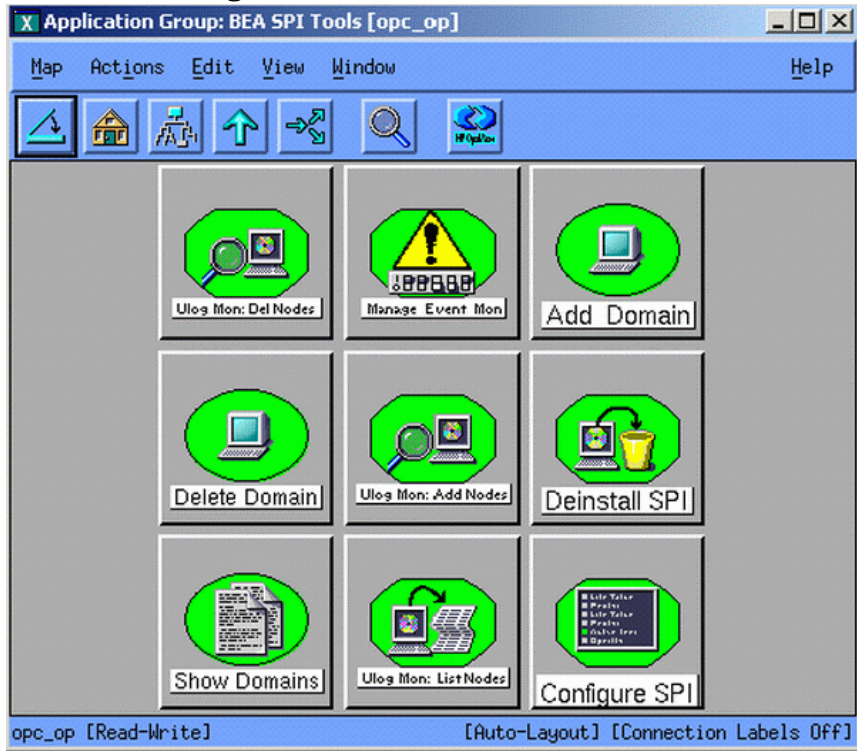
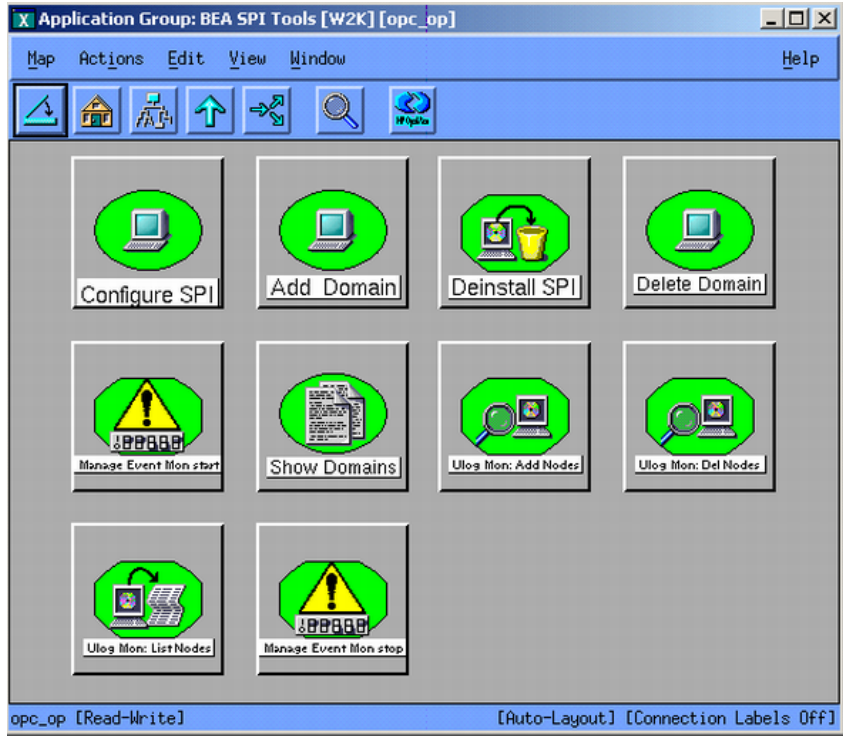


Figure 9 BEA SPI Tools Application Group Window for Tru64 UNIX Managed Nodes



Figure 10 BEA SPI Tools [W2K] Application Group Window for Windows Managed Nodes



Icons in the BEA Tuxedo Application Group Window

The icons in the BEA Tuxedo Application Group window represent the commands you run to administer Tuxedo domains. To see this window, which is shown in the following figure, double-click the Tuxedo icon that is in the OVO Application Bank window. The order of the icons in your BEA Tuxedo Application Group window might differ from the order shown here.

Figure 11 BEA Tuxedo Application Group Window for UNIX Managed Nodes

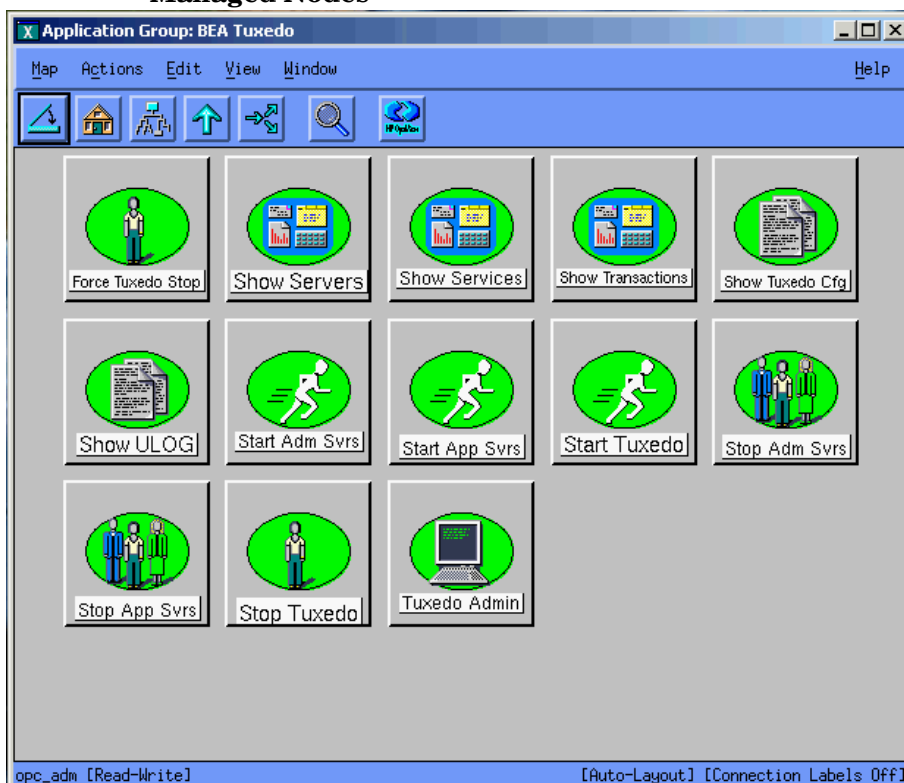


Figure 12 BEA Tuxedo Application Group Window for Tru64 UNIX Managed Nodes

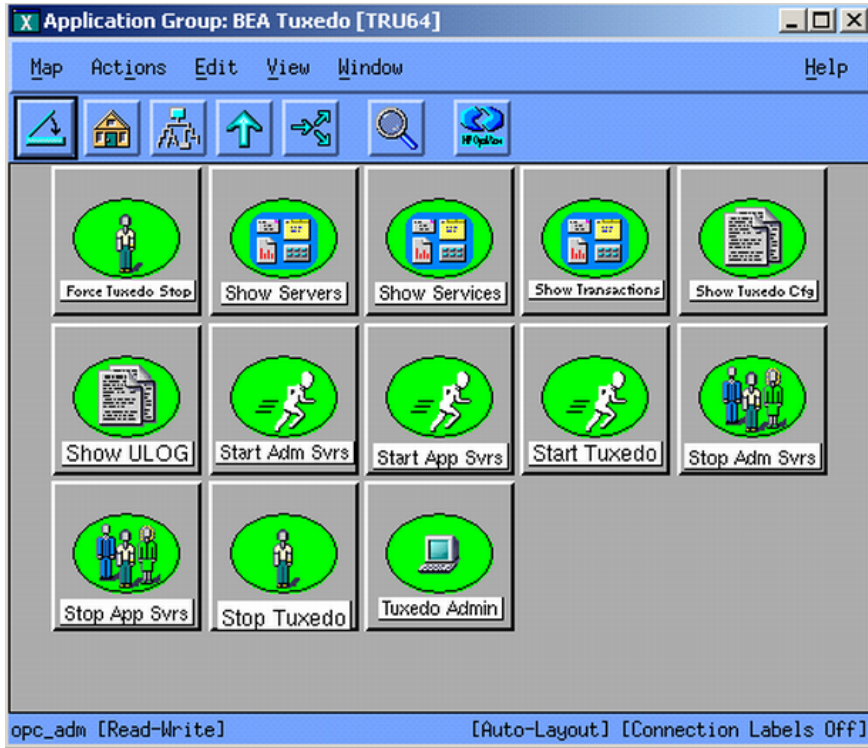
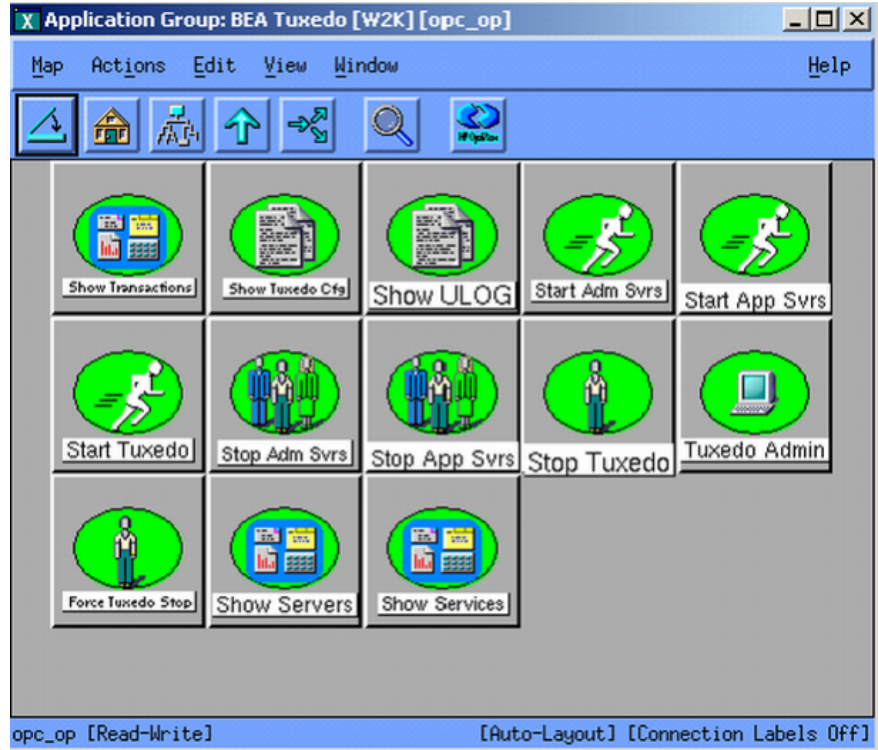


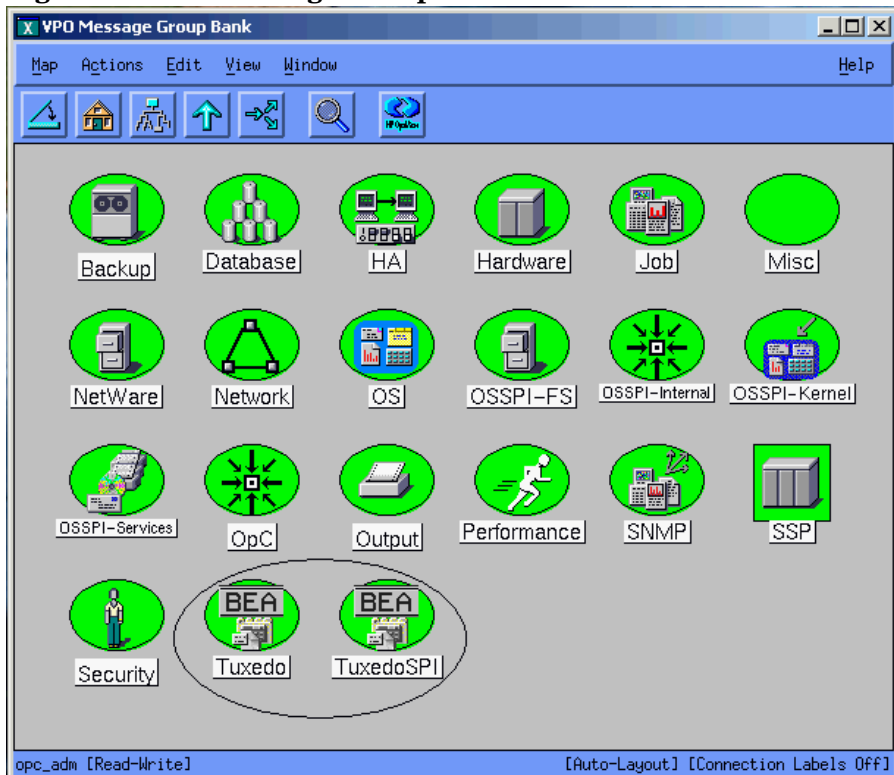
Figure 13 BEA Tuxedo Application Group Window for Windows Managed Nodes



Icons in the OVO Message Group Bank Window

The OVO Message Group Bank window displays an icon for each message group. A message group brings together messages from lots of related sources, providing status information about a class of managed objects or services. The following figure shows a typical OVO Message Group Bank window, including the Tuxedo SPI icons. The order of the icons in your OVO Message Group Bank window might differ from the order shown here.

Figure 14 OVO Message Group Bank Window



In the OVO Message Group Bank window, the Tuxedo SPI icons are:



Tuxedo

This icon represents Tuxedo messages. To view Tuxedo messages in a Message Browser window:

- 1 Select the icon.
- 2 Right-click to display the popup menu.
- 3 Choose the Message Browser menu option.

Tuxedo messages are generated by the Tuxedo system. They consist of ULOG messages, Tuxedo system events messages, and messages about TMIB metrics.



Tuxedo SPI

This icon represents messages about the Tuxedo SPI software. To view Tuxedo SPI messages in a Message Browser window:

- 1 Select the icon.
- 2 Right-click to display the popup menu.
- 3 Choose the Message Browser menu option.

Tuxedo SPI messages are generated by the Tuxedo SPI.

Performing Administrative Tasks

This chapter describes how to use the OVO graphical user interface (GUI) to perform Tuxedo SPI administrative tasks.

Logging In as the OVO Administrator

When you log in as the OVO administrator, you have administrator privileges for both the local OVO software and the OVO agent software running on the managed nodes. The OVO administrator user ID is `opc_admin`.

Because the standard (Motif) OVO GUI is displayed on an X-Windows display, either your workstation must be running an X-display (not an ASCII screen console) or you must have an X-Windows based server, like Exceed X server or WRQ Reflection X, running on your PC.

Starting the OVO GUI on a Remote Workstation

To start the OVO GUI on a remote workstation, follow these steps:

- 1 Execute the `xhost` command to allow the OVO management server to make a connection to the X server running on your workstation:

```
/usr/bin/X11/xhost + (on HP-UX platforms)  
/usr/openwin/bin/xhost + (on Solaris platforms)
```

- 2 Open a Telnet connection to the OVO management server and log in as user root.
- 3 Set the DISPLAY variable to the Internet Protocol (IP) address of your workstation:

```
export DISPLAY=IP_address:0.0
```

If you do not know the IP address, enter `nslookup host_name` at the system prompt to see the IP address. If you do not know the host name, enter `hostname` at the system prompt to see the host name. If these commands do not work on your workstation, see your system administrator for assistance.

- 4 Execute the `xhost` command to allow your workstation to make a connection to the X server running on the OVO management server:

```
/usr/bin/X11/xhost + (on HP-UX platforms)  
/usr/openwin/bin/xhost + (on Solaris platforms)
```

- 5 Start the OVO GUI as the OVO administrator by entering:

```
opc
```

```
login: opc_admin
```

```
Password: password
```

After a few minutes, the OVO administrator GUI starts up. The startup is complete when the Node Bank window appears.

Starting the OVO GUI on a PC

To start the OVO GUI on the PC using Exceed X server software running on Windows NT or 2000, follow these steps:

- 1 Move the cursor to the bottom of your screen, click the Start button, point to Programs, then point to Exceed, and then click Xstart. An Xstart window appears.
- 2 In the Xstart window, enter the following information:

```
Start Method: REXEC (TCP/IP)
```

```
Program Type: X Window
```

```
Host: name_of_machine_running_OVO_management_server_software
```


User ID: `root`

Password: *password*

Command (on HP-UX platforms): `/usr/bin/X11/xterm -sb -ls -d @d`

Command (on Solaris platforms): `/usr/openwin/bin/xterm -sb -ls -d @d`

Prompt: None

Description: `xterm`

- 3 In the Xstart window, click the Other button to open the Other Settings dialog box. The default connection settings on the Connection page are as follows:

Timeouts

Connect (min.): 1

Close (sec.): 10

Response (sec.) 4

Prompt (sec.) 2

Status/Debug

Show progress: unchecked

Show host reply: unchecked

The Connection page enables you to troubleshoot problems by displaying host-generated messages and setting timeout values. For now, click the OK button to accept the default values.

- 4 In the Xstart window, select Save from the File menu, specify a file name and directory in which to save your login and command settings, and then click the OK button. Your login and command settings are now saved in an Xstart file having the following name and extension: *your_file_name.xs*
- 5 In the Xstart window, click Run! on the Xstart menu bar to connect to the OVO management server. After a few seconds, an xterm client window appears. You are now logged in to the OVO management server.

You may want to close or minimize some of the Exceed-related windows at this time.

- 6 Start the OVO GUI as the OVO administrator by entering:
`opc`

login: `opc_admin`

Password: *password*

After a few minutes, the OVO administrator GUI starts up. The startup is complete when the OVO Node Bank window appears.

To initiate your next OVO GUI session, you can click the Start button, point to Programs, then point to Exceed, then click Xsession, then double-click the name of the Xstart file you created in step 4, and then click Run! on the Xstart menu bar. Or, you can create a shortcut icon for the Xstart file and drag it onto your desktop.

Working with Icons

On the OVO GUI, the icons in the BEA SPI Tools Application Group window and the BEA Tuxedo Application Group window represent Tuxedo SPI administrative applications. Applications are scripts or programs integrated into the OVO having predefined startup parameters.

An OVO administrator can choose one of two methods to start administrative applications:

- Interactive prompting
Invoke the application without specifying any startup parameters and then specify the parameters when prompted.
- Customized startup
Specify all startup parameters before invoking the application.

Using Interactive Prompting

With this method, you start a Tuxedo SPI application without specifying any parameters. The application starts with default options, then you are prompted to provide the information needed to run the application. If the parameters needed to run an application are already specified by default, you will not be prompted for application parameters.

Typically, you drag the target node icon from the OVO Node Bank window and drop it on the application icon to start the application on that node. You can also select (click) a target node in the OVO Node Bank window and then start an application (double-click an application icon) in the Application Group window on the selected node.

To use interactive prompting, follow these steps:

- 1 On the OVO Node Bank window (or any OVO primary window), Choose Window > Application Bank to display the OVO Application Bank window.
- 2 On the OVO Application Bank window, double-click the BEA application group (BEA SPI Tools or BEA Tuxedo) that you want to run. The Application Group window appears for the selected BEA application group.
- 3 Do one of the following to start a Tuxedo SPI application on a target node:
 - On the OVO Node Bank window, drag the icon representing the master machine for which you need to perform a task and drop it on an icon in the BEA SPI Tools Application Group window or the BEA Tuxedo Application Group window.
 - On the OVO Node Bank window, select the icon representing the master machine for which you need to perform a task. Then, in the BEA SPI Tools Application Group window or the BEA Tuxedo Application Group window, double-click an icon.
- 4 When prompted, specify the application startup parameters, using the following table as a reference. See the Legend at the end of the table for parameter descriptions.

Applications in the Tru64 UNIX application groups do not allow interactive parameters. To specify parameters, right-click the required Tuxedo SPI application icon, select Customized Startup from the pop-up menu that appears, and specify the parameters in the Customized Startup window. If any application requires Domain ID as interactive parameter, run the Set Domain ID application and then run the required application with out any parameter.

Table 1 BEA SPI Parameters for Interactive Prompting

Application	Application Startup Parameters
BEA SPI Tools Application Group Icons	
Configure SPI	None
Add Domain	TUXDIR pathname, TUXCONFIG pathname
Delete Domain	Name of target domain (DomainID)
Manage Event Mon	Name of target domain (DomainID), status or start or stop (default: status)
Manage Event Mon Start (W2K only)	Name of target domain (DomainID)
Manage Event Mon Stop (W2K only)	Name of target domain (DomainID)
Ulog Mon:Add Nodes	Name of target domain (DomainID), one or more target machine LMIDs or all
Ulog Mon:Del Nodes	Name of target domain (DomainID), one or more target machine LMIDs or all
Ulog Mon:List Nodes	Name of target domain (DomainID)
Deinstall SPI	None
Show Domains	None
BEA Tuxedo Application Group Icons	
Start Tuxedo	Name of target domain (DomainID)
Stop Tuxedo	Name of target domain (DomainID)
Force Tuxedo Stop	Name of target domain (DomainID)
Start Adm Svrs	Name of target domain (DomainID)
Stop Adm Svrs	Name of target domain (DomainID)

Table 1 BEA SPI Parameters for Interactive Prompting (cont'd)

Application	Application Startup Parameters
Start App Svrs	Name of target domain (DomainID)
Stop App Srvr	Name of target domain (DomainID)
Tuxedo Admin	Name of target domain (DomainID)
Show Servers	Name of target domain (DomainID)
Show Services	Name of target domain (DomainID)
Show Transactions	Name of target domain (DomainID)
Show ULOG	Name of target domain (DomainID), one or more target machine LMIDs or all, month-day-year of ULOG file in mmddyy format (default: today's date). For a Windows managed node, this application displays the ULOG file for the current day only.
Show Tuxedo Cfg	Name of target domain (DomainID)

Legend:

TUXDIR pathname = Full pathname to the top-level installation directory for your Tuxedo application. The TUXDIR pathname is given in the text version of the Tuxedo configuration file (UBBCONFIG).

TUXCONFIG pathname = Full pathname to the binary Tuxedo configuration file including the file name. (The file name is usually tuxconfig.) The TUXCONFIG pathname is given in the text version of the Tuxedo configuration file (UBBCONFIG).

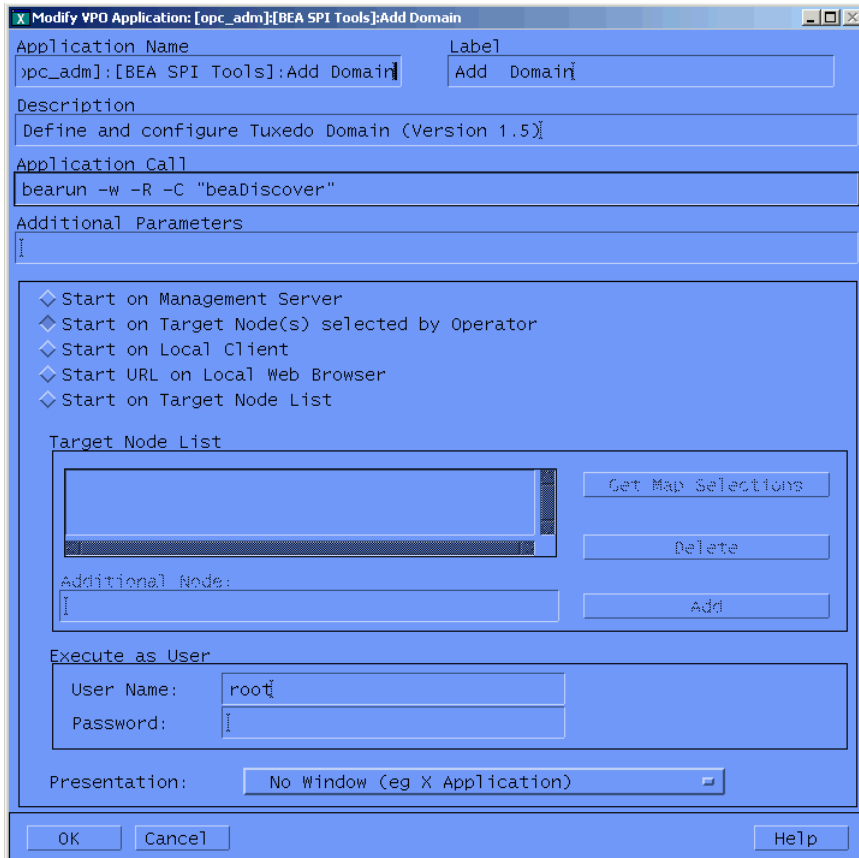
LMID = Logical machine ID string of target node. The LMID is given in the text version of the Tuxedo configuration file (UBBCONFIG).

Using Customized Startup

With customized startup, you right-click a Tuxedo SPI application icon for which you want to specify application parameters, choose Customized Startup from the popup menu that appears, and then specify the parameters in the Customized Startup window. If you choose this method, you will not be prompted for application parameters when you start the application.

The following figure is an example of a Customized Startup window.

Figure 15 Customized Startup Window for Add Domain Application—Example



You can change many of the startup parameters of an application using the Customized Startup window. You can change the node or nodes on which an application is to start, the user name, or any call parameter that does not appear in the Application Call field. The only item that you cannot change is the application call.

The following listings and table describe the bearun syntax for the application call and the bearun syntax of the application parameters.

Listing 0-1 bearun Application Call Syntax

```
bearun -w [-R][-N][-z] -C "BEA_subcommand"
```

Listing 0-2 bearun Application Parameters Syntax

```
bearun [-g][-G][-w]{-N|-d Instance_Name|-a|-A|[-R -t TUXDIR
-T TUXCONFIG]}[-c config_file] -C command_name -X
command_extension ...
```

Listing 0-3 bearunNT.sh Application Parameters Syntax

```
bearun [-U][-g][-G][-w]{-N|-d Instance_Name|-a|-A|[-R -t TUXDIR
-T TUXCONFIG]}[-c config_file] -C command_name -X
command_extension ...
```

Note that when the -R option is in the Application Call field, you must include the -t TUXDIR and -T TUXCONFIG options (but may *not* include the -d Instance_Name, -a, or -A options) in the Application Parameters field.

Option Name	Description
-w	Starts X Windows.
-R	Allows you to specify a Tuxedo domain with the -t TUXDIR -T TUXCONFIG options.
-N	Enables bearun to be executed without sourcing the Tuxedo environment.
-z	Indicates the use of a BEA subcommand that is Tuxedo-version independent.
-C	Signifies a BEA subcommand (enclosed in quotation marks) that appears immediately after this option.

Option Name	Description
-U	Indicates to the command that user input is required. The user input depends on the application call. For example, for the “Add Domain” application, use <code>/opt/BEASPI/bin/bearunNT.sh -w -U -C “beaDiscover”</code> where “beaDiscover” is the application call and the user must enter the “Tuxedo Home Directory (TUXDIR)” and “Path to TUXCONFIG file.”
-g	Creates a trace file for the invoked command (in <code>/tmp</code> for UNIX; in <code>%TEMP%</code> for Windows).
-G	Creates a trace file for the invoked command (in the <code>/tmp</code> for UNIX; in <code>%TEMP%</code> for Windows).
-d	Allows you to specify a Tuxedo domain by name.
-a	If you use this option, all domains on the selected master machine will be affected by the command.
-A	If you use this option, all domains on the selected non-master machine will be affected by the command.
-c	Specify the complete alternative path to the <code>beamgr.conf</code> file. If this is not specified a default is used (<code>/opt/OV/subagent/BEASPI/etc/</code> for UNIX; <code>\usr\OV\subagent\BEASPI\etc\</code> for Windows).
-X	Appends parameters to the BEA subcommand specified by the <code>-C</code> option in the Application Call field of the Customized Startup window.

To use customized startup, follow these steps:

- 1 On the OVO Node Bank window, select the icon representing the master machine for which you need to perform a task.
- 2 On the BEA SPI Tools Application Group window or the BEA Tuxedo Application Group window, right-click an icon to display a popup menu and choose Customized Startup. A Customized Startup window appears for the application for which you want to specify application parameters.

- 3 Add the application startup parameters to the Application Parameters field, using the following tables as a reference, then click OK. See the Legend at the end of the tables for parameter descriptions.

Table 2 BEA SPI Parameters for Customized Startup (UX)

Application	What Appears in Application Call Field
	Application Startup Parameters
BEA SPI Tools Application Group Icons	
Add Domain	bearun -w -R -C "beaDiscover"
	-t <i>TUXDIR</i> -T <i>TUXCONFIG</i>
Configure SPI	beaSPIConfigure.sh
	(no parameters)
Delete Domain	bearun -w -N -C "beaDelDom"
	-X "-d <i>DomainID</i> "
Manage Event Mon	bearun -w -C "beaEvtMon"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> } -X [status start stop] default: status
Ulog Mon:Add Nodes	bearun -w -C "beaAddNodesUlogMon"
	{-d <i>DomainID</i> -a -A} -X "{ <i>LMID_1</i> ... [<i>LMID_N</i>] all}"
Ulog Mon:Del Nodes	bearun -w -C "beaDelNodesUlogMon"
	{-d <i>DomainID</i> -a -A} -X "{ <i>LMID_1</i> ... [<i>LMID_N</i>] all}"
Ulog Mon:List Nodes	bearun -w -C "beaListNodesUlogMon"
	{-d <i>DomainID</i> -a -A}
Deinstall SPI	bearun -w -N -C "beaclean"
	(leave blank)
Show Domains	bearun -w -N -C "beaShowDom"
	(leave blank)
BEA Tuxedo Application Group Icons	
Start Tuxedo	bearun -w -z -C "beaStartTux"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }
Stop Tuxedo	bearun -w -z -C "beaStopTux"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }

Table 2 BEA SPI Parameters for Customized Startup (UX) (cont'd)

Application	What Appears in Application Call Field
	Application Startup Parameters
Force Tuxedo Stop	bearun -w -z -C "beaForceTux"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }
Start Adm Svrs	bearun -w -z -C "beaStartAdm"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }
Stop Adm Svrs	bearun -w -z -C "beaStopAdmin"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }
Start App Svrs	bearun -w -z -C "beaStartSrvr"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }
Stop App Srvr	bearun -w -z -C "beaStopSrvr"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }
Tuxedo Admin	bearun -w -C "beaTuxAdmin"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }
Show Servers	bearun -w -z -C "beaShowSvr"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }
Show Services	bearun -w -z -C "beaShowSvc"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }
Show Transactions	bearun -w -z -C "beaShowTx"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }
Show ULOG	bearun -w -C "beaalog"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> } -X "[-n <i>LMID</i>] [-d <i>mmddy</i>]" defaults: selected master machine for -n option and today's date for -d option
Show Tuxedo Cfg	bearun -w -z -C "beaShowConf"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }
Stop SPI	bearun -w -N -C "beaStopSpi"
	(leave blank)
Add Domain	bearun -w -R -C "beaDiscover"
	-t <i>TUXDIR</i> -T <i>TUXCONFIG</i>

Table 2 BEA SPI Parameters for Customized Startup (UX) (cont'd)

Application	What Appears in Application Call Field
	Application Startup Parameters
Delete Domain	bearun -w -N -C "beaDelDom"
	-X "-d <i>DomainID</i> "
Manage Event Mon	bearun -w -C "beaEvtMon"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> } -X [status start stop] default: status
Ulog Mon:Add Nodes	bearun -w -C "beaAddNodesUlogMon"
	{-d <i>DomainID</i> -a -A} -X "{ <i>LMID_1</i> ... [<i>LMID_N</i>] all}"
Ulog Mon:Del Nodes	bearun -w -C "beaDelNodesUlogMon"
	{-d <i>DomainID</i> -a -A} -X "{ <i>LMID_1</i> ... [<i>LMID_N</i>] all}"
Ulog Mon:List Nodes	bearun -w -C "beaListNodesUlogMon"
	{-d <i>DomainID</i> -a -A}
Deinstall SPI	bearun -w -N -C "beaclean"
	(leave blank)
Show Domains	bearun -w -N -C "beaShowDom"
	(leave blank)

The "{}" symbols denote parameters that are required. The "[]" symbols denote parameters that are optional. The "|" symbols denote a choice.

Legend:

TUXDIR = Full pathname to the top-level installation directory for your Tuxedo application. The *TUXDIR* pathname is given in the text version of the Tuxedo configuration file (UBBCONFIG).

TUXCONFIG = Full pathname to the binary Tuxedo configuration file including file name. (The file name is usually tuxconfig.) The *TUXCONFIG* pathname is given in the text version of the Tuxedo configuration file (UBBCONFIG).

DomainID = Name of subject domain (DOMAINID in UBBCONFIG file).

In reference to: {-d *DomainID* | -a | -A | -R -t *TUXDIR* -T *TUXCONFIG*}:

-d *DomainID* = Uses domain specified by *DomainID*.

-a = Uses all domains of selected master machine.

-A = Uses all domains of selected non-master machine.

-R = Uses domain corresponding to specified *TUXDIR* and *TUXCONFIG*.

LMID_N = Logical machine ID string of node *N*. The LMID is given in the text version of the Tuxedo configuration file (UBBCONFIG).

Table 3 BEA SPI Parameters for Customized Startup (W2K)

Application	What Appears in Application Call Field
	Application Startup Parameters
BEA SPI Tools [W2K] Application Group Icons	
Add Domain	/opt/BEASPI/bin/bearunNT.sh -w -U -C "beaDiscover" -t <i>TUXDIR</i> -T <i>TUXCONFIG</i>
Configure SPI	beaSPIConfigure.cmd (no parameters)
Delete Domain	/opt/BEASPI/bin/bearunNT.sh -w -z -U -C "beaDelDom" -X -d <i>DomainID</i>
Manage Event Mon start	/opt/BEASPI/bin/bearunNT.sh -w -U -C "beaEvtMon start" {-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> } -X [status start] default: status
Manage Event Mon stop	/opt/BEASPI/bin/bearunNT.sh -w -U -C "beaEvtMon stop" {-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> } -X [status stop] default: status
Ulog Mon:Add Nodes	/opt/BEASPI/bin/bearunNT.sh -w -U -C "beaAddNodesUlogMon all" {-d <i>DomainID</i> -a -A} -X "{ <i>LMID_1</i> ... [<i>LMID_N</i>] all}"
Ulog Mon:Del Nodes	/opt/BEASPI/bin/bearunNT.sh -w -U -C "beaDelNodesUlogMon all" {-d <i>DomainID</i> -a -A} -X "{ <i>LMID_1</i> ... [<i>LMID_N</i>] all}"
Ulog Mon:List Nodes	/opt/BEASPI/bin/bearunNT.sh -w -U -C "beaListNodesUlogMon" {-d <i>DomainID</i> -a -A}

Table 3 BEA SPI Parameters for Customized Startup (W2K) (cont'd)

Application	What Appears in Application Call Field
	Application Startup Parameters
Deinstall SPI	/opt/BEASPI/bin/bearunNT.sh -w -N -C "beaClean"
	(leave blank)
Show Domains	/opt/BEASPI/bin/bearunNT.sh -w -z -N -C "beaShowDom"
	(leave blank)
BEA Tuxedo [W2K] Application Group Icons	
Start Tuxedo	/opt/BEASPI/bin/bearunNT.sh -w -z -U -C "beaStartTux"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }
Stop Tuxedo	/opt/BEASPI/bin/bearunNT.sh -w -z -U -C "beaStopTux"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }
Force Tuxedo Stop	/opt/BEASPI/bin/bearunNT.sh -w -z -U -C "beaForceTux"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }
Start Adm Svrs	/opt/BEASPI/bin/bearunNT.sh -w -z -U -C "beaStartAdm"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }
Stop Adm Svrs	/opt/BEASPI/bin/bearunNT.sh -w -z -U -C "beaStopAdmin"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }
Start App Svrs	/opt/BEASPI/bin/bearunNT.sh -w -z -U -C "beaStartSvr"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }
Stop App Svr	/opt/BEASPI/bin/bearunNT.sh -w -z -U -C "beaStopSvr"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }
Tuxedo Admin	/opt/BEASPI/bin/bearunNT.sh -w -z -U -C "beaTuxAdmin"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }
Show Servers	/opt/BEASPI/bin/bearunNT.sh -w -z -U -C "beaShowSvr"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }
Show Services	/opt/BEASPI/bin/bearunNT.sh -w -z -U -C "beaShowSvc"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }
Show Transactions	/opt/BEASPI/bin/bearunNT.sh -w -z -U -C "beaShowTx"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }

Table 3 BEA SPI Parameters for Customized Startup (W2K) (cont'd)

Application	What Appears in Application Call Field
	Application Startup Parameters
Show ULOG	/opt/BEASPI/bin/bearunNT.sh -w -U -C "bealog"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> } -X "[-n <i>LMID</i>] [-d <i>mmddyy</i>]" defaults: selected master machine for -n option and today's date for -d option
Show Tuxedo Cfg	/opt/BEASPI/bin/bearunNT.sh -w -z -U -C "beaShowConf"
	{-d <i>DomainID</i> -a -A -R -t <i>TUXDIR</i> -T <i>TUXCONFIG</i> }

The “{}” symbols denote parameters that are required. The “[]” symbols denote parameters that are optional. The “|” symbols denote a choice.

Legend:

TUXDIR = Full pathname to the top-level installation directory for your Tuxedo application. The *TUXDIR* pathname is given in the text version of the Tuxedo configuration file (UBBCONFIG).

TUXCONFIG = Full pathname to the binary Tuxedo configuration file including file name. (The file name is usually *tuxconfig*.) The *TUXCONFIG* pathname is given in the text version of the Tuxedo configuration file (UBBCONFIG).

DomainID = Name of subject domain (DOMAINID in UBBCONFIG file).

In reference to: {-d *DomainID* | -a | -A | -R -t *TUXDIR* -T *TUXCONFIG*}:

-d *DomainID* = Uses domain specified by *DomainID*.

-a = Uses all domains of selected master machine.

-A = Uses all domains of selected non-master machine.

-R = Uses domain corresponding to specified *TUXDIR* and *TUXCONFIG*.

LMID_N = Logical machine ID string of node *N*. The LMID is given in the text version of the Tuxedo configuration file (UBBCONFIG).

Working with the BEA SPI Tools Icons

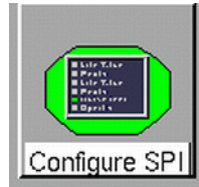
The Tuxedo SPI icons in the BEA SPI Tools Application Group window, listed in the following table, represent applications that you run when working with the Tuxedo SPI software for both UNIX and Windows (operating system specific applications are noted). You can perform all the applications on a managed master machine, and you can perform the Start SPI, Stop SPI, Deinstall SPI, and Status SPI applications on a managed non-master machine running the Tuxedo SPI software.

- Add Domain
- Configure SPI
- Delete Domain
- Manage Event Mon (UX)
- Manage Event Mon Start (W2K & Tru64)
- Manage Event Mon Stop (W2K & Tru64)
- Set Domain (Tru64)
- Ulog Mon:Add Nodes
- Ulog Mon:Del Nodes
- Ulog Mon:List Nodes
- Deinstall SPI
- Show Domains



Add Domain

Before running this task, you must use the Configure SPI icon to start the BEA SPI agent on the target master machine. You use the Add Domain application to add a Tuxedo domain to the Tuxedo SPI configuration file (beamgr.conf) on the target master machine. The Add Domain application not only adds the domain to the target master machine, but also adds the domain to the Tuxedo SPI configuration file on any non-master machine in the domain running the Tuxedo SPI software.



Configure SPI

The application copies the required Tuxedo SPI files and applications into the required location. The Configure SPI application must be run before running the Add Domain application.



Delete Domain

Deletes a Tuxedo domain from the Tuxedo SPI configuration file (beamgr.conf) on the target master machine. The Delete Domain application not only deletes the domain from the target master machine, but also deletes the domain from the Tuxedo SPI configuration file on any non-master machine in the domain running the Tuxedo SPI software.



Manage Event Mon (UX)

Starts or stops system event monitoring for the target master machine's Tuxedo domain. Also shows system event monitoring status for the domain.



Manage Event Mon Start (W2K & Tru64)

Starts system event monitoring for the target master machine's Tuxedo domain. Also shows system event monitoring status for the domain.



Manage Event Mon Stop (W2K & Tru64)

Stops system event monitoring for the target master machine's Tuxedo domain. Also shows system event monitoring status for the domain.



Set Domain (Tru64)

Sets the Tuxedo domain for running BEA Tuxedo applications. This application needs to be run before running any application in the BEA Tuxedo application group.



Ulog Mon:Add Nodes

Starts ULOG monitoring on one or more machines in the target master machine's Tuxedo domain. Only new messages from a monitored ULOG file are sent to the OVO management server.



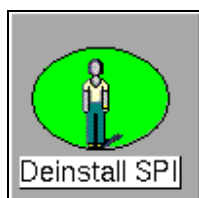
Ulog Mon:Del Nodes

Stops ULOG monitoring on one or more machines in the target master machine's Tuxedo domain.



Ulog Mon:List Nodes

Shows what machines in the target master machine's Tuxedo domain are being monitored for ULOG messages.



Deinstall SPI

Stops Tuxedo domain monitoring on the target master machine and deletes the Tuxedo SPI files from the master machine. You can also use this application to uninstall the Tuxedo SPI software on a managed non-master machine.



Show Domains

Displays the target master machine's Tuxedo domains.

Working with the Tuxedo Icons

The Tuxedo SPI icons in the BEA Tuxedo Application Group window, listed in the following table, represent applications that you run when working with the Tuxedo system software. You can perform all the applications on a managed master machine, and you can perform the Show ULOG application on a managed non-master machine running the Tuxedo SPI software.

- Start Tuxedo
- Stop Tuxedo
- Force Tuxedo Stop
- Start Adm Svrs
- Stop Adm Svrs
- Start App Svrs
- Stop App Svrs
- Tuxedo Admin
- Show Servers
- Show Services
- Show Transactions
- Show ULOG
- Show Tuxedo Cfg



Start Tuxedo

Starts all administration and application servers in the target master machine's Tuxedo domain.

Before starting Tuxedo in a multi-machine configuration, you need to start `tlisten`. You can run `tlisten` on the command line. For details, see `tlisten(1)` in the BEA Tuxedo File Formats and Data Descriptions Reference. On a UNIX system, it is typical to run `tlisten` in a system startup script such as `rc.local`.



Stop Tuxedo

Stops all administration and application servers in the target master machine's Tuxedo domain.

When you shut down the Tuxedo system, the Tuxedo SPI software stops monitoring Tuxedo system events. To restart Tuxedo system event monitoring, first restart the Tuxedo system, then use the Manage Event Mon command to stop and then start Tuxedo system event monitoring. This command is in the BEA SPI Tools Application Group window.



Force Tuxedo Stop

Forces all administration and application servers in the target master machine's Tuxedo domain to shut down even if clients are accessing them.

When you shut down the Tuxedo system, the Tuxedo SPI software stops monitoring Tuxedo system events. To restart Tuxedo system event monitoring, first restart the Tuxedo system, then use the Manage Event Mon command to stop and then start Tuxedo system event monitoring. This command is in the BEA SPI Tools Application Group window.



Start Adm Svrs

Starts all the administration servers in the target master machine's Tuxedo domain.

An administration server is a software program that performs administration functions. Each Tuxedo managed node has the following administration servers:

BRIDGE. An administration server that establishes the machine's listening address.

Bulletin Board Liaison (BBL). An administration server that creates the shared memory Bulletin Board.

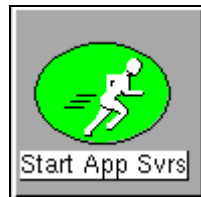
Each master machine also has a Distinguished Bulletin Board Liaison (DBBL), which is an administration server that manages the updates to the Bulletin Board.

A Tuxedo managed node may have additional administration servers, such as Transaction Management Server (TMS), which handles transaction completion.



Stop Adm Svrs

Stops all the administration servers in the target master machine's Tuxedo domain.



Start App Svrs

Starts all the application servers in the target master machine's Tuxedo domain. An application server is a software process that stores Tuxedo services. A service is an application routine that a client can request.



Stop App Svrs

Stops all the application servers in the target master machine's Tuxedo domain.



Tuxedo Admin

Runs the `tadmin` utility for the target master machine.

The `tadmin` utility provides statistical information about machines, servers, services, clients, and transactions. It also lets you enter many administrative commands that duplicate the functions of other commands. For example, the `tadmin shutdown` command is identical to the `tmshutdown` command.



Show Servers

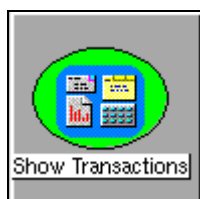
Displays the servers and server statistics in the target master machine's Tuxedo domain.



Show Services

Displays the Tuxedo services and service statistics in the target master machine's Tuxedo domain.

A service is an application routine that a client can request.



Show Transactions

Displays the transactions in the target master machine's Tuxedo domain.

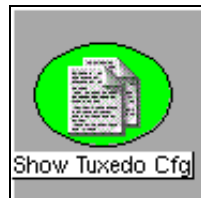
A transaction is a set of operations based on business rules. The operations act as one logical unit, even if they are distributed geographically. By acting as one unit, either all the transaction's operations complete successfully (if the transaction completes successfully) or all the operations roll back (if the transaction fails).



Show ULOG

Displays ULOG files for the target master machine. You can also use this application to display ULOG files on a managed non-master machine running the Tuxedo SPI software. The Show ULOG application reads the `EDITOR` environment variable setting on the OVO management server and displays the ULOG messages in the editor.

A ULOG is a user log file, which contains Tuxedo system error messages, warning messages, debugging messages, and information messages.



Show Tuxedo Cfg

Runs the `tmunloadcf` utility and displays the `TUXCONFIG` file for the target master machine's Tuxedo domain.

The `tmunloadcf` utility unloads the Tuxedo configuration file by converting it from binary (the `TUXCONFIG` file) to text (the `UBBCONFIG` file).

Performing Additional Tasks

Monitoring Domain System Events

Prerequisite: Before you start Tuxedo SPI event monitoring, you must boot the `TMSYSEVT` server.

To start monitoring system events for the Tuxedo domain, follow these steps:

- 1 On the OVO Node Bank window, ensure that the target managed node icon is selected.
- 2 On the BEA SPI Tools Application Group window, double-click the Manage Event Mon icon (for UNIX managed nodes) or on the BEA SPI Tools [W2K] Application Group window, double-click the Manage Event Mon start icon (for Windows managed nodes).
- 3 When prompted, specify the domain name (DomainID) of the Tuxedo domain.
- 4 When prompted, select start.

The Manage Event Mon command starts the Tuxedo SPI beaEvt2ito process, which starts monitoring the Tuxedo domain system events via the target managed node.

Looking at the Messages

You can view Tuxedo messages or Tuxedo SPI messages or both types of messages. Tuxedo messages are generated by the Tuxedo system. They consist of ULOG messages, Tuxedo system events, and TMIB metrics. Tuxedo SPI messages are generated by the Tuxedo SPI.

To view both types of messages, display the Message Browser window.

To view only one kind of message for all machine in your management domain, follow these steps:

- 1 Display the OVO Message Group Bank window.
- 2 Right-click the Tuxedo icon or the Tuxedo SPI icon to display a popup menu.
- 3 Choose the Message Browser menu option to view the Tuxedo or Tuxedo SPI messages in a Message Browser window.

You will see the Tuxedo or Tuxedo SPI messages for all managed nodes assigned to you. To display Tuxedo or Tuxedo SPI messages for a specific managed node assigned to you, select (click) the managed node icon in the OVO Node Bank window and then perform the three steps.

Monitoring Domain ULOG Messages

To start monitoring ULOG messages for the Tuxedo domain, follow these steps:

- 1 On the OVO Node Bank window, ensure that the target managed node icon is selected.
- 2 On the BEA SPI Tools Application Group window, double-click the Ulog Mon:Add Nodes icon.
- 3 When prompted, specify the domain name (DomainID) of the Tuxedo domain.

The Ulog Mon:Add Nodes command starts the Tuxedo SPI beaUlog2ito process, which starts monitoring the ULOG messages for the specified machine in the Tuxedo domain via the TMIB on the target managed node.

You can run the Ulog Mon:Add Nodes command a number of times to start ULOG monitoring on other machines in the Tuxedo domain.

Deleting a Tuxedo Domain

To delete a Tuxedo domain from the Tuxedo SPI environment on a master machine:

- 1 Stop monitoring the Tuxedo system events and ULOG messages:
 - a Display the OVO Node Bank window or the appropriate Node Group window.
 - b Select the master machine for the domain.
 - c Display the appropriate BEA SPI Tools platform-specific Application Group window.
 - d Double-click the Manage Event Mon icon and stop the Tuxedo system event monitoring for the domain for UNIX managed nodes or double-click the Manage Event Mon stop icon and stop the Tuxedo system event monitoring for the domain for Windows managed nodes
 - e Double-click the Ulog Mon:Del Nodes icon and stop the ULOG monitoring on all machines in the domain.
- 2 Remove the Tuxedo domain from the environment:
 - a Display the OVO Node Bank window or the appropriate Node Group window.
 - b Select the master machine from which you will remove the domain.
 - c Display the BEA SPI Tools Application Group window.
 - d Double-click the Delete Domain icon and remove the domain.

Rediscovering a Domain

The Tuxedo SPI might need to rediscover a domain if :

- the path to the TUXDIR or TUXCONFIG file changes;
- the name of the master machine changes;
- the name of the Domain ID changes;
- the Tuxedo User ID changes.

To rediscover a Tuxedo domain:

- 1 Delete the domain. See "[Deleting a Tuxedo Domain](#)" on page 64.
- 2 Add the domain. Refer to the *HP OpenView Operations Smart Plug-in for BEA Tuxedo Release Note*.

Working with the License Usage Report

The License Usage Report provides a list of the master machines on which the Tuxedo SPI software is installed. You can view and print this report from the management server.

To view or print the License Usage Report:

- 1 From the OVO Node Bank window, choose Actions > Utilities > Reports to display the OVO Reports dialog.
- 2 In the OVO Reports dialog, scroll through the list and select BEA SPI License Usage Report.
- 3 You can display, print, or save the report.

Assigning Tuxedo and Tuxedo SPI Message Groups

After an OVO administrator has selected the managed nodes and has grouped messages and applications, the administrator is ready to set up users. Through task-oriented environments, OVO users see only the information from systems and objects under their control.

An OVO administrator needs to complete the following tasks to enable a user to view Tuxedo and Tuxedo SPI messages in the Message Browser window:

- 1 On the OVO Node Bank window (or any OVO primary window), Choose Window > User Bank to display the OVO User Bank window.

- 2 In the OVO User Bank window, right-click the icon representing the user and choose the Modify menu option. This option displays the Modify User window.
- 3 In the Modify User window, click Responsibilities. This menu option displays the Responsibilities for Operator window.
- 4 In the Responsibilities for Operator window, select the Tuxedo and TuxedoSPI message groups.

Troubleshooting

Problem The Tuxedo SPI uses the Tuxedo license file to determine the version of Tuxedo being run. If Tuxedo is booted with an older license file, the Tuxedo SPI will not be able to discover the Tuxedo domain. For example, this problem will occur if you boot Tuxedo 6.5 using a Tuxedo 6.4 license file

Solution

Configure the Tuxedo domain for the Tuxedo SPI manually:

- 1 Distribute templates and install the subagent onto the Tuxedo master machine.
- 2 Verify that the subagent is installed successfully. Also verify that the file `/opt/OV/subagent/BEASPI/etc/beamgr.conf` exists.
- Edit `/opt/OV/subagent/BEASPI/etc/beamgr.conf`. Add the following at the end of the file:

```
TMAGENT domain $TUXDIR $TUXCONFIG Tux_UID mstr_mchn version
```

where `TMAGENT` is a keyword and must be entered exactly.

domain is a unique domain name of the site. The domain name may be configured in the `UBBCONFIG` or `TUXCONFIG` file. If the domain name of the site is not configured in these files, use any name that uniquely identifies the domain (for example, `mydomain!`).

\$TUXDIR is the Tuxedo home directory that is defined by the `TUXDIR` environment variable (for example, `/home/tuxedo/tux8.0/`)

\$TUXCONFIG is the directory in which the `TUXCONFIG` file is located for this domain, as defined by the `TUXCONFIG` environment variable (for example, `/home/tuxedo/tuxapps/tuxconfig`).

Tux_UID is the user ID that Tuxedo runs as (for example, 0, which is the root user).

mstr_mchn is the name of the master machine on which Tuxedo is booted. The master machine name is configured in the `UBBCONFIG` file. The name must be in the same format as the output of the command “`uname -n`” and is NOT the LMID value.

version is the version of Tuxedo and must be one of the following:

- 65 - Tuxedo version 6.5 running on a 32 bit system
- 65_64bit - Tuxedo version 6.5 running on a 64 bit system
- 71 - Tuxedo version 7.1 running on a 32 or 64 bit system
- 80 - Tuxedo version 8.0/8.1 running on a 32 or 64 bit system

Tuxedo System Events Supported by the Tuxedo SPI

The OVO agent uses the TUXEVT22 template to retrieve and monitor Tuxedo system events. If the template indicates that a system event message should be forwarded, the OVO agent reformats the message and sends it to the management server. For example, the TUXEVT22 template tells the OVO agent to suppress identical messages for a specified length of time. Thus, if a Tuxedo system event is generating multiple messages, HP OVO displays only one of the messages.

For each system event, the Tuxedo system provides values for the following variables: `tuxEventsName`, `tuxEventsSeverity`, `tuxEventsLmid`, `tuxEventsTime`, `tuxEventsUsec`, `tuxEventsDescription`, `tuxEventsClass`, `tuxEventsUlogCat`, `tuxEventsUlogMsgNum`.

The following table classifies the event descriptions:

Event Group	Events	
Bridge Events	networkConfig networkDropped networkFailure	networkFlow networkState
Client Events	clientConfig clientDied	clientSecurity clientState
Domain Events	resourceConfig	
Event Monitor Events	eventDelivery	eventFailure
Machine Events	machineBroadcast machineConfig machineFullMaxAccessers machineFullMaxConv machineFullMaxGtt	machineFullMaxWsClients machineMsgQ machinePartitioned machineSlow machineState
Server Events	serverCleaning serverConfig serverDied serverInit	serverMaxgen serverRestarting serverState serverTpExit
Transaction Events	transactionHeuristicAbort	transactionHeuristicCommit

Bridge Events

networkConfig

EVENT ID: .sysNetworkConfig
 SUMMARY: A network configuration value changed.

SEVERITY:	Normal
DESCRIPTION:	A network configuration value changed.
RECOMMENDATION:	This is an informational message. No action is required.

networkDropped

EVENT ID:	.sysNetworkDropped
SUMMARY:	A network connection was dropped.
SEVERITY:	Critical
DESCRIPTION:	A network connection was dropped.
RECOMMENDATION:	<ul style="list-style-type: none">• Check the original message to see which machines have a dropped bridge connection.• Make sure the network between machines is active. You can use ping to check the network.

networkFailure

EVENT ID:	.sysNetworkFailure
SUMMARY:	A network connection failed.
SEVERITY:	Critical
DESCRIPTION:	A network connection failed.
RECOMMENDATION:	<ul style="list-style-type: none">• Check the original message to see which machines have a network failure.• Make sure the network between machines is active. You can use ping to check the network.

networkFlow

EVENT ID:	.sysNetworkFlow
SUMMARY:	A warning has occurred for the flow control between the machines specified in this message.
SEVERITY:	Warning
DESCRIPTION:	A warning has occurred for the flow control between the machines specified in this message.
RECOMMENDATION:	If this event happens frequently, it indicates that the specified machines are overloaded. Try to decrease the loads on the machines.

networkState

EVENT ID:	.sysNetworkState
SUMMARY:	A connection's state changed.
SEVERITY:	Normal
DESCRIPTION:	A connection's state changed.
RECOMMENDATION:	This is an informational message. No action is required.

Client Events

clientConfig

EVENT ID:	.sysClientConfig
SUMMARY:	A client's configuration changed.

SEVERITY: Warning

DESCRIPTION: A client's configuration changed.

RECOMMENDATION: This is an informational message. No action is required.

clientDied

EVENT ID: .sysClientDied

SUMMARY: A client process died.

SEVERITY: Warning

DESCRIPTION: A client process died.

RECOMMENDATION: Check the client machine to verify that it has died and try to determine why the client machine died.

clientSecurity

EVENT ID: .sysClientSecurity

SUMMARY: A client had an authentication failure.

SEVERITY: Critical

DESCRIPTION: A client had an authentication failure, which caused a security violation. If this message appears repeatedly, an unauthorized user is trying to log in to the system.

RECOMMENDATION: Try to find the unauthorized user.

clientState

EVENT ID:	.sysClientState
SUMMARY:	A client changed its state.
SEVERITY:	Normal
DESCRIPTION:	A client changed its state.
RECOMMENDATION:	This is an informational message. No action is required.

Domain Events

resourceConfig

EVENT ID:	.sysResourceConfig
SUMMARY:	A domain's configuration changed.
SEVERITY:	Normal
DESCRIPTION:	A domain's configuration changed.
RECOMMENDATION:	This is an informational message. No action is required.

Event Monitor Events

eventDelivery

EVENT ID:	.sysEventDelivery
SUMMARY:	The system event monitor had a delivery failure.

SEVERITY:	Critical
DESCRIPTION:	The system event monitor had a delivery failure because it could not deliver asynchronous events.
RECOMMENDATION:	If the TMSYSEVT process is not running, start it. To start TMSYSEVT, you might need to modify the Tuxedo configuration file. (TMSYSEVT is a Tuxedo administration server process.)

eventFailure

EVENT ID:	.sysEventFailure
SUMMARY:	The system event monitor had a subsystem failure.
SEVERITY:	Critical
DESCRIPTION:	The system event monitor had a subsystem failure.
RECOMMENDATION:	If the TMSYSEVT process is not running, start it. To start TMSYSEVT, you might need to modify the Tuxedo configuration file. (TMSYSEVT is a Tuxedo administration server process.)

Machine Events

machineBroadcast

EVENT ID:	.sysMachineBroadcast
SUMMARY:	A machine failed to deliver a broadcast message.

SEVERITY:	Warning
DESCRIPTION:	The broadcast message was not delivered to certain clients because they were abnormally disconnected from the domain.
RECOMMENDATION:	Use the <code>bbclean</code> command in the <code>tmadmin</code> utility to clean the outstanding resources. After <code>bbclean</code> , the machine will automatically try to broadcast the message again.

machineConfig

EVENT ID:	<code>.sysMachineConfig</code>
SUMMARY:	A machine's configuration changed.
SEVERITY:	Normal
DESCRIPTION:	A machine's configuration changed.
RECOMMENDATION:	This is an informational message. No action is required.

machineFullMaxAccessers

EVENT ID:	<code>.sysMachineFullMaxAccessers</code>
SUMMARY:	A machine reached the <code>MAXACCESSERS</code> limit.
SEVERITY:	Warning
DESCRIPTION:	The domain does not have enough resources to handle all the accessers (clients).
RECOMMENDATION:	<ul style="list-style-type: none">• Shut down the domain.• Increase the <code>MAXACCESSERS</code> parameter in the Tuxedo configuration file.

machineFullMaxConv

EVENT ID:	.sysMachineFullMaxConv
SUMMARY:	A machine reached the MAXCONV limit.
SEVERITY:	Warning
DESCRIPTION:	The domain does not have enough resources to handle all the conversations.
RECOMMENDATION:	<ul style="list-style-type: none">• Shut down the domain.• Increase the MAXCONV parameter in the Tuxedo configuration file.

machineFullMaxGtt

EVENT ID:	.sysMachineFullMaxGtt
SUMMARY:	A machine reached the MAXGTT limit.
SEVERITY:	Warning
DESCRIPTION:	The domain does not have enough resources to handle all the global transactions.
RECOMMENDATION:	<ul style="list-style-type: none">• Shut down the domain.• Increase the MAXGTT parameter in the Tuxedo configuration file.

machineFullMaxWsClients

EVENT ID:	.sysMachineFullMaxWsClients
SUMMARY:	A machine reached the MAXWSCLIENTS limit.

SEVERITY:	Warning
DESCRIPTION:	The domain does not have enough resources to handle all the workstation clients.
RECOMMENDATION:	<ul style="list-style-type: none">• Shut down the domain.• Increase the MAXWSCLIENTS parameter in the Tuxedo configuration file.

machineMsgQ

EVENT ID:	.sysMachineMsgQ
SUMMARY:	A machine reached the MAXQUEUES limit.
SEVERITY:	Warning
DESCRIPTION:	The domain does not have enough resources to register all the Tuxedo queues.
RECOMMENDATION:	<ul style="list-style-type: none">• Shut down the domain.• Increase the MAXQUEUES parameter in the Tuxedo configuration file.

machinePartitioned

EVENT ID:	.sysMachinePartitioned
SUMMARY:	A machine is partitioned.

SEVERITY:	Critical
DESCRIPTION:	A machine was partitioned, which means that it is no longer connected to the domain.
RECOMMENDATION:	<ul style="list-style-type: none">• Use the <code>psr</code> command in the <code>tmadmin</code> utility to determine whether or not the machine is really partitioned.• If the machine is partitioned, use the <code>rc0</code> command in the <code>tmadmin</code> utility to reconnect the machine.

machineSlow

EVENT ID:	<code>.sysMachineSlow</code>
SUMMARY:	A machine is slow in responding to the DBBL.
SEVERITY:	Warning
DESCRIPTION:	The communication between the DBBL and BBL processes is slow. This problem is usually caused by a slow network connection.
RECOMMENDATION:	If this message appears frequently, modify the Tuxedo configuration file. You may need to decrease one or more of the following configuration values: SCANUNIT, SANITYSCAN, DBBLWAIT, BBLQUERY.

machineState

EVENT ID:	<code>.sysMachineState</code>
SUMMARY:	A machine changed its state.

SEVERITY:	Normal
DESCRIPTION:	A machine changed its state.
RECOMMENDATION:	<ul style="list-style-type: none">• Check the original message for the final state of the machine.• If the machine's state indicates that the machine is partitioned, use the psr command in the tadmin utility to see if the machine is partitioned.• If the machine is partitioned, use the rco command in the tadmin utility to reconnect the machine.• If the machine is activated, acknowledge this event.

Server Events

serverCleaning

EVENT ID:	.sysServerCleaning
SUMMARY:	The Tuxedo system is cleaning resources for an application server that died.
SEVERITY:	Critical
DESCRIPTION:	The Tuxedo system is cleaning resources for an application server that died.
RECOMMENDATION:	This event will be accompanied by additional events that indicate exactly what happened. Follow the instructions in the accompanying events.

serverConfig

EVENT ID:	.sysServerConfig
SUMMARY:	A server instance changed its configuration.
SEVERITY:	Normal
DESCRIPTION:	A server instance changed its configuration.
RECOMMENDATION:	This is an informational message. No action is required.

serverDied

EVENT ID:	.sysServerDied
SUMMARY:	A server instance died.

SEVERITY:	Critical
DESCRIPTION:	A server instance died.
RECOMMENDATION:	<ul style="list-style-type: none">• Use the psr command in the tadmin utility to verify that the server died.• If the server died, wait until the message “The application server instance has been cleaned.” arrives.• Wait at least one minute. If the message “The application server has been restarting.” arrives, the Tuxedo system automatically restarted the server.• Use the psr command in the tadmin utility to see if the server restart was successful.• If the server restart was not successful, run the bbclean command and wait at least one minute to see if the Tuxedo system will automatically restart the server.• Use the psr command in the tadmin utility to see if the server restart was successful.• If the Tuxedo system does not successfully restart the server, use the boot -i server command in the tadmin utility to manually restart the server.

serverInit

EVENT ID:	.sysServerInit
SUMMARY:	A server instance failed during initialization.
SEVERITY:	Critical
DESCRIPTION:	A server instance failed during initialization.
RECOMMENDATION:	Check the server environment file /var/spool/appid/APPDIR.SYSROLE/ENVFILE to see if the necessary database instance is running.

serverMaxgen

EVENT ID:	.sysServerMaxgen
SUMMARY:	A server instance reached the MAXGEN limit.
SEVERITY:	Critical
DESCRIPTION:	A server instance reached the MAXGEN limit, which means that the server could not be restarted.
RECOMMENDATION:	Check the machine's ULOG file and report the problem to Customer Support.

serverRestarting

EVENT ID:	.sysServerRestarting
SUMMARY:	A server instance is restarting.
SEVERITY:	Critical
DESCRIPTION:	A server instance is restarting.
RECOMMENDATION:	Wait for the next message from the server which will indicate the server's status.

serverState

EVENT ID:	.sysServerState
SUMMARY:	A server instance changed its state.

SEVERITY: Normal

DESCRIPTION: A server instance changed its state.

RECOMMENDATION: Check the original message to see the server's new state.

- The possible server states are:
- **ACTIVE:** The server was started.
- **SUSPENDED:** The server was shut down.
- **RESTARTING:** The server is restarting.
- **DEAD:** The server is not running. Wait up to two minutes to see if the server is restarted. If not, restart the server manually by using the `boot -i <server>` command in the `tmadmin` utility.

serverTpExit

EVENT ID: .sysServerTpExit

SUMMARY: A server instance requested TPEXIT.

SEVERITY: Critical

DESCRIPTION: A server instance requested TPEXIT, which means that the server needs to shut down.

RECOMMENDATION: None

Transaction Events

transactionHeuristicAbort

EVENT ID:	.sysTransactionHeuristicAbort
SUMMARY:	The Tuxedo system performed a heuristic abort for a transaction.
SEVERITY:	Critical
DESCRIPTION:	The Tuxedo system performed a heuristic abort for a transaction.
RECOMMENDATION:	None

transactionHeuristicCommit

EVENT ID:	.sysTransactionHeuristicCommit
SUMMARY:	The Tuxedo system performed a heuristic commit for a transaction.
SEVERITY:	Critical
DESCRIPTION:	The Tuxedo system performed a heuristic commit for a transaction.
RECOMMENDATION:	None

TMIB Metrics

A TMIB metric is a value that the Tuxedo SPI calculates from TMIB attributes. For example, the TMIB metric PCT_TRANABT (percentage of transactions that are aborted) is the number of aborted transactions divided by the total number of transactions. The number of aborted transactions and the total number of transactions are TMIB attributes.

The default thresholds, which are listed in the metric descriptions, are guidelines and are not necessarily suitable for every system because each Tuxedo domain is unique.

This chapter describes the TMIB metrics and how the Tuxedo SPI handles them.

Naming Conventions

For the TMIB metrics that have names that end in “MIN,” the Tuxedo SPI calculates the metric based on the total value that has accumulated since the Tuxedo domain was booted up. For example, NUMPOST_MIN (number of post operations per minute) is the total number of post operations that have occurred since the Tuxedo domain booted divided by the number of minutes since the Tuxedo domain booted. These types of calculations are advantageous because they do not generate messages for short bursts of high activity.

The full name for each metric consists of the group name, a hyphen, and the metric name. For example, the full name for the PCT_WSCLIENTS metric, which is in the T_MACHINE group, is T_MACHINE-PCT_WSCLIENTS.

The number that precedes each metric's name provides a quick way to refer to the metric. The `beatmib` utility uses these numbers. The table at the beginning of the descriptions lists the TMIB metrics and their corresponding numbers.

Templates

The OVO agent uses the templates in the GRPTUXMON22 group to determine when to run `beatmib` and which TMIB metrics to monitor.

Running `beatmib`

The OVO agent calls `beatmib` at the time intervals specified in the following BEA SPI templates, which are in the GRPTUXMON22 group:

TUXMON-15M	This template tell the HP OVO agent to call <code>beatmib</code> every 15 minutes for the TMIB metrics listed in the template.
TUXMON-1H	This template tell the OVO agent to call <code>beatmib</code> every hour for the TMIB metrics listed in the template.
TUXMON-5M	This template tell the OVO agent to call <code>beatmib</code> every 5 minutes for the TMIB metrics listed in the template.

Use the following methods to change an interval:

To change the interval for one TMIB metric:

- 1 Remove the TMIB metric from the template that it is in.

For example, the default interval for T_MACHINE-STATE is 5 minutes (as listed in the description for T_MACHINE-STATE). To remove this TMIB metric from its current template, open the TUXMON-5M template and remove 2001.

- 2 Add the TMIB metric to the desired template.

For example, if you want T_MACHINE-STATE to be monitored every 15 minutes, open the TUXMON-15M template and add 2001.

To change the interval for a group of TMIB metrics:

- 1 Open the template for the group you want to change.

For example, if you want to change the interval for the TMIB metrics that are monitored every five minutes, open the TUXMON-5M template.

- 2 Change the template's polling interval value.

For example, if you want these TMIB metrics to be monitored every 10 minutes, change the polling interval to 10 minutes. You might also want to change the template's name to reflect the new interval.

Monitoring the TMIB Metrics

Each TMIB metric monitoring template (in the GRPTUXMON22 group) defines a threshold and a comparison. For each TMIB metric, the HP OVO and Tuxedo SPI software do the following:

- 1 The beatmib utility uses the TMIB values to calculate the TMIB metric.
- 2 The beatmib utility sends the TMIB metric to the OVO agent.
- 3 The OVO agent compares the TMIB metric to the threshold.
- 4 If the threshold has been violated, the OVO agent creates a message and sends it to the management server.

You can change the values in the templates. Each TMIB metric monitoring template also provides instruction text for the TMIB metric.

Identifiers

The Tuxedo SPI passes identifiers to OVO for the TMIB metrics in each metrics group. The identifiers are passed as a set of OVO option strings. This section covers:

- T_MACHINE identifiers
- T_SERVER identifiers

- T_CLIENT identifiers
- T_MSG identifiers

T_MACHINE Identifiers

The Tuxedo SPI software passes the following identifiers to HP OVO for TMIB metrics in the T_MACHINE group.

DOMAINID	Logical name of the Tuxedo domain as defined in the Tuxedo SPI configuration file
LMID	Logical name of the machine
MASTER	Physical name of the master machine
PMID	Physical name of the machine
TUXCONFIG	Path and filename for the Tuxedo configuration file on the managed node
TUXDIR	Directory where the Tuxedo system is installed on the managed node

T_SERVER Identifiers

The Tuxedo SPI software passes the following identifiers to HP OVO for TMIB metrics in the T_SERVER group.

DOMAINID	Logical name of the Tuxedo domain as defined in the Tuxedo SPI configuration file
GRPNO	Identification number of the server group
LMID	Logical name of the machine
MASTER	Physical name of the master machine

SERVERNAME	Executable name of the application server
SRVGRP	Name of the server group
SRVID	Identification number of the server

T_CLIENT Identifiers

The Tuxedo SPI software passes the following identifiers to HP OVO for TMIB metrics in the T_CLIENT group.

CLIENTID	Identification number of the client
CLTNAME	Name of the client as defined in the TPINIT buffer when the TMIB metric was calculated
DOMAINID	Logical name of the Tuxedo domain as defined in the Tuxedo SPI configuration file
LMID	Logical name of the machine
MASTER	Physical name of the master machine
PID	PID of the client
USERNAME	User name

T_MSG Identifiers

The Tuxedo SPI software passes the following identifiers to HP OVO for TMIB metrics in the T_MSG group.

DOMAINID	Logical name of the Tuxedo domain as defined in the configuration file
LMID	Logical name of the machine
MASTER	Physical name of the master machine
MSGID	Identification number of the message

Descriptions

The following table provides easy access to the event descriptions when you are viewing this document online (in a Web browser or a PDF file):

Metric Group	Metrics	
T_MACHINE Metrics (2xxx)	2001: STATE	2005: PCT_CONV
	2003: PCT_ACCESSERS	2006: PCT_GTT
	2004: PCT_CLIENTS	2007: PCT_WSCLIENTS
T_SERVER Metrics (3xxx)	3008: PCT_GEN	3015: NUMTRAN_MIN
	3009: NUMNCONV_MIN	3016: PCT_TRANABT
	3010: NUMDEQUEUE_MIN	3017: NUMREQC_MIN
	3012: NUMENQUEUE_MIN	3018: NUMCONV
	3012: NUMPOST_MIN	3019: NUMREQ
T_CLIENT Metrics (4xxx)	3013: NUMREQ_MIN	
	4001: STATE	4008: NUMSUBSCRIBE_MIN
	4002: IDLETIME	4009: NUMTRAN_MIN
	4003: NUMCONV_MIN	4010: PCT_TRANABT
	4004: NUMDEQUEUE_MIN	4012: NUMUNSOL
	4005: NUMENQUEUE_MIN	4012: NUMCONV
	4006: NUMPOST_MIN	4013: ENCRYPTBITS
4007: NUMREQ_MIN	4014: NUMREQ	
T_MSG Metrics (5xxx)	5001: PCT_MSG_CBYTES	5003: MSG_RUNTIME
	5002: MSG_QNUM	5004: MSG_STIME

T_MACHINE Metrics

2001: STATE

SUMMARY:	State of the machine
SEVERITY:	Critical
DESCRIPTION:	<p>The default threshold is 0 (partitioned). This threshold specifies an unacceptable machine state. A threshold violation indicates that a machine was partitioned, which means that it is no longer available. The most probable reasons for this are:</p> <ul style="list-style-type: none">• The network connection was broken.• One of the BRIDGE processes died.• The machine was shut down or crashed.
RECOMMENDATION:	<ul style="list-style-type: none">• If the network connection was broken: Normally the BRIDGE process automatically reconnects the machine. Wait at least two minutes and then use the <code>pnw</code> command in the <code>tmadmin</code> utility on the master machine to determine whether or not the machine is still partitioned. If it is, use the <code>rcv</code> command in the <code>tmadmin</code> utility to reconnect the machine. If the machine is still not reconnected, check the Tuxedo ULOG file for details.• If one of the BRIDGE processes died: Normally the BBL process automatically restarts the BRIDGE process. Wait at least two minutes and then use the <code>pnw</code> command in the <code>tmadmin</code> utility on the master machine to determine whether or not the machine is still partitioned. If it is, check the Tuxedo ULOG file for details.• If the machine was shut down or crashed: Use the <code>pclean</code> command in the <code>tmadmin</code> utility to clean up the Tuxedo bulletin board. Then use the <code>tmboot -B <machine></code> command to reboot the machine.
DEFAULT INTERVAL:	Every 5 minutes
MONITORING TYPE:	Fault
TEMPLATE:	T_MACHINE-STATE

2003: PCT_ACCESSERS

SUMMARY:	Percentage of used entries in the accessor table An accessor is a process that accesses a Tuxedo domain. Accessers include native and remote clients, servers, and administration processes.
SEVERITY:	Warning or Critical
DESCRIPTION:	The default threshold is: <ul style="list-style-type: none">• Warning: more than 80 percent• Critical: more than 90 percent This threshold specifies the maximum percentage of used entries. A threshold violation indicates that the accessor table is becoming too full, which can prevent additional accessers from accessing the Tuxedo domain.
RECOMMENDATION:	<ul style="list-style-type: none">• Next time the Tuxedo domain is shut down, increase the MAXACCESSORS parameter in the Tuxedo configuration file's *RESOURCES or *MACHINE section.• Adjust the threshold for this TMIB metric in the T_MACHINE-PCT_ACCESSERS template.
DEFAULT INTERVAL:	Every 5 minutes
MONITORING TYPE:	Capacity
TEMPLATE:	T_MACHINE-PCT_ACCESSERS

2004: PCT_CLIENTS

SUMMARY:	Percentage of used entries in the client table
SEVERITY:	Warning or Critical
DESCRIPTION:	<p>The default threshold is:</p> <ul style="list-style-type: none">• Warning: more than 80 percent• Critical: more than 90 percent <p>This threshold specifies the maximum percentage of used entries. A threshold violation indicates that the client table is becoming too full, which can prevent additional clients from accessing the Tuxedo domain.</p>
RECOMMENDATION:	<ul style="list-style-type: none">• Next time the Tuxedo domain is shut down, increase the MAXACCESSORS parameter in the Tuxedo configuration file's *RESOURCES or *MACHINE section.• Adjust the threshold for this TMIB metric in the T_MACHINE-CLIENTS template.
DEFAULT INTERVAL:	Every 5 minutes
MONITORING TYPE:	Capacity
TEMPLATE:	T_MACHINE-CLIENTS

2005: PCT_CONV

SUMMARY:	Percentage of used entries in the conversation table
SEVERITY:	Warning or Critical
DESCRIPTION:	<p>The default threshold is:</p> <ul style="list-style-type: none">• Warning: more than 80 percent• Critical: more than 90 percent <p>This threshold specifies the maximum percentage of used entries. A threshold violation indicates that the conversation table is becoming too full, which can prevent clients from initiating additional Tuxedo conversations.</p>
RECOMMENDATION:	<ul style="list-style-type: none">• Next time the Tuxedo domain is shut down, increase the MAXCONV parameter in the Tuxedo configuration file's *RESOURCES or *MACHINE section.• Adjust the threshold for this TMIB metric in the T_MACHINE-PCT_CONV template.
DEFAULT INTERVAL:	Every 15 minutes
MONITORING TYPE:	Capacity
TEMPLATE:	T_MACHINE-PCT_CONV

2006: PCT_GTT

SUMMARY:	Percentage of used entries in the open transactions table
SEVERITY:	Warning or Critical
DESCRIPTION:	<p>The default threshold is:</p> <ul style="list-style-type: none">• Warning: more than 80 percent• Critical: more than 90 percent <p>This threshold specifies the maximum percentage of used entries. A threshold violation indicates that the open transactions table is becoming too full, which can prevent clients from initiating additional transactions.</p>
RECOMMENDATION:	<ul style="list-style-type: none">• Next time the Tuxedo domain is shut down, increase the MAXGTT parameter in the Tuxedo configuration file's *RESOURCES or *MACHINE section.• Adjust the threshold for this TMIB metric in the T_MACHINE-PCT_GTT template.
DEFAULT INTERVAL:	Every 5 minutes
MONITORING TYPE:	Capacity
TEMPLATE:	T_MACHINE-PCT_GTT

2007: PCT_WSCLIENTS

SUMMARY:	Percentage of used entries in the /WS client table
SEVERITY:	Warning or Critical
DESCRIPTION:	<p>The default threshold is:</p> <ul style="list-style-type: none">• Warning: more than 80 percent• Critical: more than 90 percent <p>This threshold specifies the maximum percentage of used entries. A threshold violation indicates that the /WS client table is becoming too full, which can prevent additional /WS clients from accessing the Tuxedo domain.</p>
RECOMMENDATION:	<ul style="list-style-type: none">• Next time the Tuxedo domain is shut down, increase the MAXWSCLIENTS parameter in the Tuxedo configuration file's *MACHINE section.• You might also need to increase the MAXACCESSOR parameter.• Adjust the threshold for this TMIB metric in the T_MACHINE-PCT_WSCLIENTS template.
DEFAULT INTERVAL:	Every 5 minutes
MONITORING TYPE:	Capacity
TEMPLATE:	T_MACHINE-PCT_WSCLIENTS

T_SERVER Metrics

3008: PCT_GEN

SUMMARY:	Percentage of available restarts that the server had used
SEVERITY:	Warning or Critical
DESCRIPTION:	<p>The default threshold is:</p> <ul style="list-style-type: none">• Warning: more than 20 percent• Critical: more than 50 percent <p>This threshold specifies the maximum percentage of available restarts that a server can use. A threshold violation indicates that server is getting close to using all available restarts, which means that it will eventually be unable to restart.</p>
RECOMMENDATION:	Check the Tuxedo ULOG file to determine why the server is failing.
DEFAULT INTERVAL:	Every 15 minutes
MONITORING TYPE:	Performance
TEMPLATE:	T_SERVER-PCT_GEN

3009: NUMCONV_MIN

SUMMARY:	Average number of conversations per minute
SEVERITY:	Critical
DESCRIPTION:	<p>The default threshold is more than 20 conversations per minute.</p> <p>This threshold specifies the maximum number of open conversations the server can participate in per minute. A threshold violation indicates that the server is handling a high number of conversions, which means that too many internal Tuxedo resources are being used. This situation can prevent additional clients from communicating with the server and can decrease the server's throughput.</p>
RECOMMENDATION:	<p>Ask the development team to review the source code. As long as a high number of open conversations does not degrade system performance, the server can continue to run as is. Otherwise, use the <code>tmshutdown</code> or <code>kill</code> utilities to shut down the server.</p>
DEFAULT INTERVAL:	Every 5 minutes
MONITORING TYPE:	Performance
TEMPLATE:	T_SERVER-NUMCONV_MIN

3010: NUMDEQUEUE_MIN

SUMMARY: Average number of dequeue operations per minute

SEVERITY: Warning

DESCRIPTION: The default threshold is more than 100 operations per minute.

This threshold specifies the maximum number of dequeue operations the server can perform per minute. A threshold violation indicates that the server is performing a high number of dequeue operations, which can cause disk I/O operations to become necessary. This situation can degrade the system performance.

RECOMMENDATION: Ask the development team to review the source code. As long as a high number of dequeue operations does not degrade system performance, the server can continue to run as is. Otherwise, use the `tmshutdown` or `kill` utilities to shut down the server.

DEFAULT INTERVAL: Every 5 minutes

MONITORING TYPE: Performance

TEMPLATE: T_SERVER-NUMDEQUEUE_MIN

3012: NUMENQUEUE_MIN

SUMMARY: Average number of enqueue operations per minute

SEVERITY: Warning

DESCRIPTION: The default threshold is more than 100 operations per minute.

This threshold specifies the maximum number of enqueue operations the server can perform per minute. A threshold violation indicates that the server is performing a high number of enqueue operations, which can cause disk I/O operations to become necessary. This situation can degrade the system performance.

RECOMMENDATION: Ask the development team to review the source code. As long as a high number of enqueue operations does not degrade system performance, the server can continue to run as is. Otherwise, use the `tmshutdown` or `kill` utilities to shut down the server.

DEFAULT INTERVAL: Every 5 minutes

MONITORING TYPE: Performance

TEMPLATE: T_SERVER-NUMENQUEUE_MIN

3012: NUMPOST_MIN

SUMMARY:	Average number of post operations per minute
SEVERITY:	Warning
DESCRIPTION:	<p>The default threshold is more than 50 operations per minute.</p> <p>This threshold specifies the maximum number of post operations the server can perform per minute. A threshold violation indicates that the server is performing a high number of post operations, which can cause the system load to become excessively high.</p>
RECOMMENDATION:	<p>Check the operating system and Tuxedo system values for CPU load, disk I/O operations, and outstanding messages in the IPC queues. As long as a high number of post operations does not degrade system performance, the server can continue to run as is. Otherwise, use the <code>tmshutdown</code> or <code>kill</code> utilities to shut down the server.</p>
DEFAULT INTERVAL:	Every 5 minutes
MONITORING TYPE:	Performance
TEMPLATE:	T_SERVER-NUMPOST_MIN

3013: NUMREQ_MIN

SUMMARY:	Average number of requests per minute
SEVERITY:	Warning
DESCRIPTION:	<p>The default threshold is more than 150 requests per minute.</p> <p>This threshold specifies the maximum number of requests the server can initiate per minute. A threshold violation indicates that the server is initiating a high number of requests, which can cause the system load to become excessively high.</p>
RECOMMENDATION:	<p>Check the operating system and Tuxedo system values for CPU load, disk I/O operations, and outstanding messages in the IPC queues. As long as a high number of requests does not degrade system performance, the server can continue to run as is. Otherwise, use the <code>tmshutdown</code> or <code>kill</code> utilities to shut down the server.</p>
DEFAULT INTERVAL:	Every 5 minutes
MONITORING TYPE:	Performance
TEMPLATE:	T_SERVER-NUMREQ_MIN

3015: NUMTRAN_MIN

SUMMARY:	Average number of transactions per minute
SEVERITY:	Warning
DESCRIPTION:	<p>The default threshold is more than 150 transactions per minute.</p> <p>This threshold specifies the maximum number of transactions the server can initiate per minute. A threshold violation indicates that the server is initiating a high number of transactions, which can cause the system load to become excessively high.</p>

RECOMMENDATION: Check the operating system and Tuxedo system values for CPU load, disk I/O operations, and outstanding messages in the IPC queues. As long as a high number of transactions does not degrade system performance, the server can continue to run as is. Otherwise, use the `tmshutdown` or `kill` utilities to shut down the server.

DEFAULT INTERVAL: Every 5 minutes

MONITORING TYPE: Performance

TEMPLATE: T_SERVER-NUMTRAN_MIN

3016: PCT_TRANABT

SUMMARY:	Percentage of transactions that were aborted
SEVERITY:	Critical
DESCRIPTION:	<p>The default threshold is more than 5 percent.</p> <p>This threshold specifies the maximum percentage of transactions that the server can abort. A threshold violation indicates that one or both of the following situations occurred:</p> <ul style="list-style-type: none">• The server needed to abort transactions because the transactions returned unexpected results.• The Tuxedo system forced the server to abort transactions because problems occurred between the application server and the database or between the Transaction Management Server (TMS) and the database.
RECOMMENDATION:	<ul style="list-style-type: none">• Make sure that the database and all servers connected to the database are running.• Check the Tuxedo ULOG file for problems that the servers reported.• If no problems were reported, check the business logic in your server, which might indicate inconsistent or unexpected data from the database.
DEFAULT INTERVAL:	Every 5 minutes
MONITORING TYPE:	Fault
TEMPLATE:	T_SERVER-PCT_TRANABRT

3017: NUMREQC_MIN

SUMMARY:	Average number of completed requests per minute
SEVERITY:	Warning
DESCRIPTION:	<p>The default threshold is more than 150 requests per minute.</p> <p>This threshold specifies the maximum number of requests that the server can complete per minute. A threshold violation indicates that the server is completing a high number of requests, which can cause the system load to become excessively high.</p>
RECOMMENDATION:	<p>Check the operating system and Tuxedo system values for CPU load, disk I/O operations, and outstanding messages in the IPC queues. As long as a high number of requests does not degrade system performance, the server can continue to run as is. Otherwise, use the <code>tmshutdown</code> or <code>kill</code> utilities to shut down the server.</p>
DEFAULT INTERVAL:	Every 5 minutes
MONITORING TYPE:	Performance
TEMPLATE:	T_SERVER-NUMREQC_MIN

3018: NUMCONV

SUMMARY:	Number of conversations that are open
SEVERITY:	Warning
DESCRIPTION:	<p>The default threshold is more than 5 conversations per minute.</p> <p>This threshold specifies the maximum number of open conversations the server can participate in simultaneously. A threshold violation indicates that there are too many open conversions, which means that too many internal Tuxedo resources are being used. This situation can prevent additional clients from communicating with the server and can decrease the server's throughput.</p>
RECOMMENDATION:	<p>Ask the development team to review the source code. As long as a high number of open conversations does not degrade system performance, the server can continue to run as is. Otherwise, use the <code>tmshutdown</code> or <code>kill</code> utilities to shut down the server.</p>
DEFAULT INTERVAL:	Every 5 minutes
MONITORING TYPE:	Capacity
TEMPLATE:	T_SERVER-NUMCONV

3019: NUMREQ

SUMMARY:	Number of open asynchronous requests
SEVERITY:	Warning or Critical
DESCRIPTION:	<p>The default threshold is:</p> <ul style="list-style-type: none">• Warning: more than 10 open requests• Critical: more than 15 open requests <p>This threshold specifies the maximum number of asynchronous requests the server can handle. A threshold violation indicates that there are too many asynchronous requests, which means that too many internal Tuxedo resources are being used. This situation prevents additional clients and servers from communicating with the server until the server processes and closes a request.</p>
RECOMMENDATION:	Ask the development team to review the source code. As long as a high number of asynchronous requests does not degrade system performance, the server can continue to run as is. Otherwise, use the <code>tmshutdown</code> or <code>kill</code> utilities to shut down the server.
DEFAULT INTERVAL:	Every 5 minutes
MONITORING TYPE:	Fault
TEMPLATE:	T_SERVER-NUMREQ

T_CLIENT Metrics

4001: STATE

SUMMARY:	Client state
SEVERITY:	Critical
DESCRIPTION:	<p>The default threshold is 0 (inactive).</p> <p>This threshold specifies an unacceptable client state. A threshold violation indicates that the client was abnormally disconnected from a server. It can be difficult to determine why this problem occurred. The reasons can range from a bug in the code to an unexpected input from a user.</p>
RECOMMENDATION:	<ul style="list-style-type: none">• If the client is an interactive client that communicates with the user, discuss the problem with the development team.• If the client is a batch program that feeds data into the system, ask the development team to check the client code and data input for abnormalities.
DEFAULT INTERVAL:	Every 5 minutes
MONITORING TYPE:	Fault
TEMPLATE:	T_CLIENT-STATE

4002: IDLETIME

SUMMARY:	Client idle time, which is the time during which the client is connected to the Tuxedo domain but not communicating with it. During client idle time, the client uses resources that other clients or servers might need.
SEVERITY:	Warning
DESCRIPTION:	<p>The default threshold is 60 minutes.</p> <p>This threshold specifies the maximum client idle time. A threshold violation indicates that the client is hogging resources that could be used by other clients or servers.</p>
RECOMMENDATION:	<p>Disconnect the client by doing one of the following:</p> <ul style="list-style-type: none">• Ask the user to disconnect.• Use operating system utilities to disconnect the client.
DEFAULT INTERVAL:	Every 15 minutes
MONITORING TYPE:	Capacity
TEMPLATE:	T_CLIENT-IDLETIME

4003: NUMCONV_MIN

SUMMARY:	Number of conversations per minute
SEVERITY:	Critical
DESCRIPTION:	<p>The default threshold is more than 20 conversations per minute.</p> <p>This threshold specifies the maximum number of conversations the client can open per minute. A threshold violation indicates that the client is opening so many conversations that it might be creating unnecessary internal processing that delays normal processing.</p>

RECOMMENDATION: Ask the development team to review the source code. As long as a high number of open conversations does not degrade system performance, the client can continue to run as is. Otherwise, use the `tmshutdown` or `kill` utilities to shut down the client.

DEFAULT INTERVAL: Every 15 minutes

MONITORING TYPE: Performance

TEMPLATE: T_CLIENT-NUMCONV_MIN

4004: NUMDEQUEUE_MIN

SUMMARY:	Number of dequeue operations per minute
SEVERITY:	Warning
DESCRIPTION:	<p>The default threshold is more than 100 operations per minute.</p> <p>This threshold specifies the maximum number of dequeue operations the client can perform per minute. A threshold violation indicates that the client is performing a high number of dequeue operations, which can cause disk I/O operations to become necessary. This situation can degrade the system performance.</p>
RECOMMENDATION:	Ask the development team to review the source code. As long as a high number of dequeue operations does not degrade system performance, the client can continue to run as is. Otherwise, use the <code>tmshutdown</code> or <code>kill</code> utilities to shut down the client.
DEFAULT INTERVAL:	Every 15 minutes
MONITORING TYPE:	Performance
TEMPLATE:	T_CLIENT-NUMDEQUEUE_MIN

4005: NUMENQUEUE_MIN

SUMMARY:	Number of enqueue operations per minute
SEVERITY:	Warning
DESCRIPTION:	<p>The default threshold is more than 100 operations per minute.</p> <p>This threshold specifies the maximum number of enqueue operations the client can perform per minute. A threshold violation indicates that the client is performing a high number of enqueue operations, which can cause disk I/O operations to become necessary. This situation can degrade the system performance.</p>
RECOMMENDATION:	<p>Ask the development team to review the source code. As long as a high number of enqueue operations does not degrade system performance, the client can continue to run as is. Otherwise, use the <code>tmshutdown</code> or <code>kill</code> utilities to shut down the client.</p>
DEFAULT INTERVAL:	Every 15 minutes
MONITORING TYPE:	Performance
TEMPLATE:	T_CLIENT-NUMENQUEUE_MIN

4006: NUMPOST_MIN

SUMMARY:	Number of post operations per minute
SEVERITY:	Warning
DESCRIPTION:	<p>The default threshold is more than 50 operations per minute.</p> <p>This threshold specifies the maximum number of post operations the client can perform per minute. A threshold violation indicates that the client is performing a high number of post operations, which can cause the system load to become excessively high.</p>
RECOMMENDATION:	Check the operating system and Tuxedo system values for CPU load, disk I/O operations, and outstanding messages in the IPC queues. As long as a high number of post operations does not degrade system performance, the client can continue to run as is. Otherwise, use the tmshutdown or kill utilities to shut down the client.
DEFAULT INTERVAL:	Every 15 minutes
MONITORING TYPE:	Performance
TEMPLATE:	T_CLIENT-NUMPOST_MIN

4007: NUMREQ_MIN

SUMMARY:	Number of requests per minute
SEVERITY:	Warning
DESCRIPTION:	<p>The default threshold is more than 150 requests per minute.</p> <p>This threshold specifies the maximum number of requests the client can initiate per minute. A threshold violation indicates that the client is initiating a high number of requests, which can cause the system load to become excessively high.</p>
RECOMMENDATION:	<p>Check the operating system and Tuxedo system values for CPU load, disk I/O operations, and outstanding messages in the IPC queues. As long as a high number of requests does not degrade system performance, the client can continue to run as is. Otherwise, use the <code>tmshutdown</code> or <code>kill</code> utilities to shut down the client.</p>
DEFAULT INTERVAL:	Every 15 minutes
MONITORING TYPE:	Performance
TEMPLATE:	T_CLIENT-NUMREQ_MIN

4008: NUMSUBSCRIBE_MIN

SUMMARY:	Number of subscribe operations per minute
SEVERITY:	Warning or Critical
DESCRIPTION:	<p>The default threshold is:</p> <ul style="list-style-type: none">• Warning: more than 20 subscriptions per minute• Critical: more than 50 subscriptions per minute <p>This threshold specifies the maximum number of subscribe operations the client can initiate per minute. A threshold violation indicates that the client is initiating a high number of subscribe operations, which can cause disk I/O operations to become necessary. This situation can degrade the system performance.</p>
RECOMMENDATION:	Ask the development team to review the source code. As long as a high number of subscribe operations does not degrade system performance, the client can continue to run as is. Otherwise, use the <code>tmshutdown</code> or <code>kill</code> utilities to shut down the client.
DEFAULT INTERVAL:	Every 15 minutes
MONITORING TYPE:	Performance
TEMPLATE:	T_CLIENT-NUMSUBSCRIBE_MIN

4009: NUMTRAN_MIN

SUMMARY:	Number of transactions per minute
SEVERITY:	Warning
DESCRIPTION:	<p>The default threshold is more than 1000 transactions per minute.</p> <p>This threshold specifies the maximum number of transactions the client can initiate per minute. A threshold violation indicates that the client is initiating a high number of transactions, which can cause the system load to become excessively high.</p>
RECOMMENDATION:	<p>Check the operating system and Tuxedo system values for CPU load, disk I/O operations, and outstanding messages in the IPC queues. As long as a high number of transactions does not degrade system performance, the client can continue to run as is. Otherwise, use the tmshutdown or kill utilities to shut down the client.</p>
DEFAULT INTERVAL:	Every 5 minutes
MONITORING TYPE:	Performance
TEMPLATE:	T_CLIENT-NUMTRAN_MIN

4010: PCT_TRANABT

SUMMARY:	Percentage of transactions that were aborted
SEVERITY:	Critical
DESCRIPTION:	<p>The default threshold is more than 5 percent.</p> <p>This threshold specifies the maximum percentage of transactions that the client can abort. A threshold violation indicates that one or both of the following situations occurred:</p> <ul style="list-style-type: none">• The client needed to abort transactions because the transactions returned unexpected results.• The Tuxedo system forced the client to abort transactions because problems occurred between the server and the database or between the Transaction Management Server (TMS) and the database.
RECOMMENDATION:	<ul style="list-style-type: none">• Make sure that the database and all servers connected to the database are running.• Check the Tuxedo ULOG file for problems that the servers reported.• If no problems were reported, check the business logic in your server, which might indicate inconsistent or unexpected data from the database.
DEFAULT INTERVAL:	Every 5 minutes
MONITORING TYPE:	Fault
TEMPLATE:	T_CLIENT-PCT_TRANABT

4012: NUMUNSOL

SUMMARY:	Number of unsolicited messages in the client queue
SEVERITY:	Warning or Critical
DESCRIPTION:	<p>The default threshold is:</p> <ul style="list-style-type: none">• Warning: more than 5 unsolicited messages in the queue• Critical: more than 10 unsolicited messages in the queue <p>This threshold specifies the maximum number of unsolicited messages in the client queue. A threshold violation indicates that the high number of unsolicited messages can cause the queue to fill up, which means that there would not be space for additional messages from the servers. When the queue is full, the client stores incoming message to disk or discards them.</p>
RECOMMENDATION:	<p>Use the <code>ipcs</code> command to check the space left in the queue. If the queue frequently becomes full, do one or more of the following:</p> <ul style="list-style-type: none">• Increase the queue length.• On the client, unsubscribe some of the events.• Check the configuration parameters that are related to message queuing: <code>MSGMNB</code>, <code>MSGSEG</code>, <code>MSGSSZ</code>, and <code>MSGMAX</code>. Increase these values if necessary.
DEFAULT INTERVAL:	Every 5 minutes
MONITORING TYPE:	Performance
TEMPLATE:	T_CLIENT-NUMUNSOL

4012: NUMCONV

SUMMARY:	Number of conversations that are open
SEVERITY:	Critical
DESCRIPTION:	<p>The default threshold is more than 5 conversations per minute.</p> <p>This threshold specifies the maximum number of open conversations the client can participate in simultaneously. A threshold violation indicates that there are too many open conversions, which means that too many internal Tuxedo resources are being used. This situation can prevent additional clients from communicating with the server and can decrease the server's throughput.</p>
RECOMMENDATION:	Ask the development team to review the source code. As long as a high number of open conversations does not degrade system performance, the client can continue to run as is. Otherwise, use the <code>tmshutdown</code> or <code>kill</code> utilities to shut down the client.
DEFAULT INTERVAL:	Every 5 minutes
MONITORING TYPE:	Capacity
TEMPLATE:	T_CLIENT-NUMCONV

4013: ENCRYPTBITS

SUMMARY:	Encryption level for client connections. For secured applications, the encryption level should be at least 40.
SEVERITY:	Critical
DESCRIPTION:	<p>The default threshold is less than 40 bytes.</p> <p>This threshold specifies unacceptable encryption levels. A threshold violation indicates that the client is causing a security threat to the Tuxedo domain.</p>
RECOMMENDATION:	<ul style="list-style-type: none">• Use the operating system utilities to disconnect the client.• Check the Tuxedo configuration file and ULOG file to determine why the Tuxedo system accepted the connection.
DEFAULT INTERVAL:	Every 5 minutes
MONITORING TYPE:	Security
TEMPLATE:	T_CLIENT-ENCRYPTBITS

4014: NUMREQ

SUMMARY:	Number of open asynchronous requests
SEVERITY:	Warning or Critical
DESCRIPTION:	<p>The default threshold is:</p> <ul style="list-style-type: none">• Warning: more than 10 open requests• Critical: more than 15 open requests <p>This threshold specifies the maximum number of asynchronous requests the client can handle. A threshold violation indicates that there are too many asynchronous requests, which means that too many internal Tuxedo resources are being used. This situation prevents additional clients and servers from communicating with the server until the client processes and closes a request.</p>
RECOMMENDATION:	Ask the development team to review the source code. As long as a high number of asynchronous requests does not degrade system performance, the client can continue to run as is. Otherwise, use the <code>tmshutdown</code> or <code>kill</code> utilities to shut down the client.
DEFAULT INTERVAL:	Every 5 minutes
MONITORING TYPE:	Capacity
TEMPLATE:	T_CLIENT-NUMREQ

T_MSG Metrics

5001: PCT_MSG_CBYTES

SUMMARY:	Percentage of used space in the server queues
SEVERITY:	Warning or Critical
DESCRIPTION:	<p>The default threshold is:</p> <ul style="list-style-type: none">• Warning: more than 50 percent• Critical: more than 75 percent <p>This threshold specifies the maximum amount of used space. A threshold violation indicates that the server queues are becoming too full, which can cause the Tuxedo system to store buffers in temporary files on the disk. This situation can decrease system performance. It can also cause Tuxedo synchronous requests, asynchronous requests, and other Tuxedo ATMI calls to return error messages if the queues are full.</p>
RECOMMENDATION:	<p>Start additional instances of the application server to handle the load. To start a server instance, use the <code>boot</code> command in the <code>tmadmin</code> utility. If the Tuxedo system does not let you start additional server instances, shut down the Tuxedo system and reconfigure it by adding more servers to the <code>*SERVERS</code> section or by increasing <code>MAX</code> in the <code>*SERVERS</code> section. If the situation is critical, you can use the <code>tmconfig</code> utility to reconfigure the system online.</p> <p>Additionally, you can check the configuration parameters that are related to message queuing: <code>MSGMNB</code>, <code>MSGSEG</code>, <code>MSGSSZ</code>, and <code>MSGMAX</code>. Increase these values if necessary.</p>
DEFAULT INTERVAL:	Every 5 minutes
MONITORING TYPE:	Capacity
TEMPLATE:	T_MSG-PCT_MSG_CBYTES

5002: MSG_QNUM

SUMMARY:	Number of outstanding messages in the server queues
SEVERITY:	Warning or Critical
DESCRIPTION:	<p>The default threshold is:</p> <ul style="list-style-type: none">• Warning: more than 2 messages• Critical: more than 5 messages <p>This threshold specifies the maximum number of outstanding messages. A threshold violation indicates that the Tuxedo domain is not processing the messages fast enough, which causes clients to wait longer than necessary for results.</p>
RECOMMENDATION:	<p>Start additional instances of the application server to handle the load. To start a server instance, use the boot command in the tmadmin utility. If the Tuxedo system does not let you start additional server instances, shut down the Tuxedo system and reconfigure it by adding more servers to the *SERVERS section or by increasing MAX in the *SERVERS section. If the situation is critical, you can use the tmconfig utility to reconfigure the system online.</p> <p>Additionally, you can check the configuration parameters that are related to message queuing: MSGMNB, MSGSEG, MSGSSZ, and MSGMAX. Increase these values if necessary.</p>
DEFAULT INTERVAL:	Every 5 minutes
MONITORING TYPE:	Performance
TEMPLATE:	T_MSG-MSG_QNUM

5003: MSG_RUNTIME

SUMMARY:	Length of time, in minutes, since a message was read from a server queue
SEVERITY:	Warning
DESCRIPTION:	The default threshold is 60 minutes. This threshold specifies the maximum length of time for a message to wait in a server queue. A threshold violation indicates that the Tuxedo domain is probably not using the server.
RECOMMENDATION:	Minimize the number of server instances
DEFAULT INTERVAL:	Every hour
MONITORING TYPE:	Performance
TEMPLATE:	T_MSG-MSG_RUNTIME

5004: MSG_STIME

SUMMARY:	Length of time, in minutes, since a message was written to a server queue
SEVERITY:	Warning
DESCRIPTION:	The default threshold is 60 minutes. This threshold specifies the maximum length of time for a server queue not to be written to. A threshold violation indicates that the Tuxedo domain is probably not using the server.
RECOMMENDATION:	Minimize the number of server instances
DEFAULT INTERVAL:	Every hour
MONITORING TYPE:	Performance
TEMPLATE:	T_MSG-MSG_STIME

Tuxedo SPI Command Line Utilities

The Tuxedo SPI supports the following command line utilities in addition to other command line utilities:

- bearun
- beaDiscover
- beaDelDom
- beaEvtMon
- beaAddNodesUlogMon
- beaDelNodesUlogMon
- beaListNodesUlogMon

You can include these utilities in scripts and programs that you create.

bearun

DESCRIPTION:	Runs the Tuxedo utilities and the Tuxedo SPI command line utilities. The bearun utility prepares the Tuxedo environment based on the specified options and invokes the specified BEA subcommand.
CALLING SEQUENCE:	<pre>bearun -w [-N][-z][-G] -C "BEA_subcommand" [-d DomainID -a -A -R -t TUXDIR -T TUXCONFIG] [-X "options_applied to_BEA_subcommand"]</pre>
OPTIONS AND ARGUMENTS:	<p><i>-d DomainID</i></p> <p>Identification string for the domain as given in the <code>UBBCONFIG</code> file for the domain. This value enables the Tuxedo SPI to identify the domain on the target machine.</p> <p>Format: string up to 26 characters.</p> <p><i>-a</i></p> <p>If you use this option, all domains on the selected master machine will be affected by the command.</p> <p><i>-A</i></p> <p>If you use this option, all domains on the selected non-master machine will be affected by the command.</p> <p><i>-R -t TUXDIR -T TUXCONFIG</i></p> <p>Allows you to specify a Tuxedo domain with the <i>-t TUXDIR -T TUXCONFIG</i> options. <i>TUXDIR</i> is the directory on the target machine where the Tuxedo system is installed, and <i>TUXCONFIG</i> is the path and filename for the binary Tuxedo configuration file on the target machine. <i>TUXDIR</i> and <i>TUXCONFIG</i> are given in the <code>UBBCONFIG</code> file for the domain.</p> <p><i>-X</i></p> <p>You use this option to append parameters to the BEA subcommand specified by the <i>-C</i> option in the <code>bearun</code> application call.</p> <p><i>-C BEA_subcommand</i></p> <p>Shell script or compiled program. Typically, BEA subcommand is a Tuxedo utility or a Tuxedo SPI command line utility.</p>

DETAILS: This utility lets you define an action in a template. The action can be automatic or operator-initiated.

For the ULOG and system event templates (TUXLOG20 and TUXEVT20), *DomainID* is available in the `OBJECT` variable. To associate an action with one of these templates, set *DomainID* to `$OBJECT`. For example:

```
bearun -w -d $OBJECT -C BEA_subcommand
```

For the TMIB templates (GRPTUXMON20), *DomainID* is available in the `OPTION(DOMAINID)` variable. To associate an action with one of these templates, set *DomainID* to `$OPTION(DOMAINID)`. For example:

```
bearun -w -d $OPTION(DOMAINID) -C BEA_subcommand
```

For example, to use `bearun` to display the current Tuxedo configuration, define the following action:

```
bearun -w -d $OPTION(DOMAINID) -C tmunloadcf
```

If desired, select the `annotate` checkbox to annotate the command output to the message that is generated by the template.

RETURN VALUE: This utility returns a non-zero value if one of the following errors occurs:

- The Tuxedo SPI configuration file (`beamgr.conf`) is not available.
 - Syntax error in the calling sequence.
 - *DomainID* is not unique.
 - `TUXDIR` is not valid.
 - `TUXCONFIG` file is not found.
-

beaDiscover

DESCRIPTION:	Adds information about a Tuxedo domain to the Tuxedo SPI environment on a target master machine and any non-master machine in the domain running the Tuxedo SPI software. You can run this command <i>only</i> on a master machine.
CALLING SEQUENCE:	<code>bearun -w -C "beaDiscover" -R -t TUXDIR -T TUXCONFIG</code>
OPTIONS AND ARGUMENTS:	<code>-R -t TUXDIR -T TUXCONFIG</code> Allows you to specify a Tuxedo domain with the <code>-t TUXDIR -T TUXCONFIG</code> options. <code>TUXDIR</code> is the directory on the target machine where the Tuxedo system is installed, and <code>TUXCONFIG</code> is the path and filename for the binary Tuxedo configuration file on the target machine. <code>TUXDIR</code> and <code>TUXCONFIG</code> are given in the <code>UBBCONFIG</code> file for the domain.
DETAILS:	This utility updates the Instances section in the Tuxedo SPI configuration file (<code>beamgr.conf</code>) on the target master machine and any non-master machine in the domain running the Tuxedo SPI software.
RETURN VALUE:	This utility returns a non-zero value if one of the following errors occurs: <ul style="list-style-type: none">• The Tuxedo SPI configuration file (<code>beamgr.conf</code>) is not available.• Syntax error in the calling sequence.• Target node is <i>not</i> a master machine.• <code>TUXDIR</code> is not valid.• <code>TUXCONFIG</code> file is not found.

beaDelDom

DESCRIPTION: Deletes information about a Tuxedo domain from the Tuxedo SPI environment on a target master machine and any non-master machine in the domain running the Tuxedo SPI software. You can run this command *only* on a master machine.

CALLING SEQUENCE: `bearun -w -N -C "beaDelDom" -X "-d DomainID"`

OPTIONS AND ARGUMENTS: `-d DomainID`

Identification string for the domain as given in the `UBBCONFIG` file for the domain. This value enables the Tuxedo SPI to identify the domain on the target master machine and any non-master machine in the domain running the Tuxedo SPI software.

Format: string up to 26 characters.

DETAILS: This utility deletes the domain from the Tuxedo SPI configuration file (`beamgr.conf`) on the target master machine and any non-master machine in the domain running the Tuxedo SPI software.

RETURN VALUE: This utility returns a non-zero value if one of the following errors occurs:

- The Tuxedo SPI configuration file (`beamgr.conf`) is not available.
 - Syntax error in the calling sequence.
 - Target node is *not* a master machine.
 - `DomainID` is not unique.
 - `TUXDIR` is not valid.
 - `TUXCONFIG` file is not found.
-

beaEvtMon

DESCRIPTION: Starts and stops system event monitoring for a Tuxedo domain and shows system event monitoring status for a domain. You can run this command *only* on a master machine.

CALLING SEQUENCE: `bearun -w -C "beaEvtMon" {-d DomainID | -a | -A | -R -t TUXDIR -T TUXCONFIG} -X [status | start | stop]`

OPTIONS AND ARGUMENTS: `-d DomainID`

Identification string for the domain as given in the `UBBCONFIG` file for the domain. This value enables the Tuxedo SPI to identify the domain on the target master machine.

Format: string up to 26 characters.

`-a`

If you use this option, all domains on the selected master machine will be affected by the command.

`-A`

If you use this option, all domains on the selected non-master machine will be affected by the command.

`-R -t TUXDIR -T TUXCONFIG`

Allows you to specify a Tuxedo domain with the `-t TUXDIR -T TUXCONFIG` options. `TUXDIR` is the directory on the target machine where the Tuxedo system is installed, and `TUXCONFIG` is the path and filename for the binary Tuxedo configuration file on the target machine. `TUXDIR` and `TUXCONFIG` are given in the `UBBCONFIG` file for the domain.

`-X`

You use this option to append parameter status, start, or stop to the BEA subcommand `beaEvtMon`. The default is status.

RETURN VALUE: This utility returns a non-zero value if one of the following errors occurs:

- Syntax error in the calling sequence.
 - Target node is *not* a master machine.
 - `DomainID` is not unique.
 - `TUXDIR` is not valid.
 - `TUXCONFIG` is not found.
-

beaAddNodesUlogMon

DESCRIPTION: Starts ULOG monitoring on one or machines in a Tuxedo domain. You can run this command *only* on a master machine.

CALLING SEQUENCE: `bearun -w -C "beaAddNodesUlogMon" {-d DomainID |`

`-a | -A} -X "{LMID_1 ... [LMID_N] | all}"`

OPTIONS AND ARGUMENTS: `-d DomainID`

Identification string for the domain as given in the `UBBCONFIG` file for the domain. This value enables the Tuxedo SPI to identify the domain on the target master machine.

Format: string up to 26 characters.

`-a`

If you use this option, all domains on the selected master machine will be affected by the command.

`-A`

If you use this option, all domains on the selected non-master machine will be affected by the command.

`-X`

You use this option to append one or more logical machine IDs (LMIDs) or `all` to the BEA subcommand `beaAddNodesUlogMon`. The LMIDs for a Tuxedo domain are given in the `UBBCONFIG` file for the domain.

RETURN VALUE: This utility returns a non-zero value if one of the following errors occurs:

- Syntax error in the calling sequence.
 - Target node is *not* a master machine.
 - `DomainID` is not unique.
 - `TUXDIR` is not valid.
 - `TUXCONFIG` file is not found.
-

beaDelNodesUlogMon

DESCRIPTION: Stops ULOG monitoring on one or more machines in a Tuxedo domain. You can run this command *only* on a master machine.

CALLING SEQUENCE: `bearun -w -C "beaDelNodesUlogMon" {-d DomainID |`

`-a | -A} -X "{LMID_1 ... [LMID_N] | all}"`

OPTIONS AND ARGUMENTS: `-d DomainID`

Identification string for the domain as given in the `UBBCONFIG` file for the domain. This value enables the Tuxedo SPI to identify the domain on the target master machine.

Format: string up to 26 characters.

`-a`

If you use this option, all domains on the selected master machine will be affected by the command.

`-A`

If you use this option, all domains on the selected non-master machine will be affected by the command.

`-X`

You use this option to append one or more logical machine IDs (LMIDs) or `all` to the BEA subcommand `beaDelNodesUlogMon`. The LMIDs for a Tuxedo domain are given in the `UBBCONFIG` file for the domain.

RETURN VALUE: This utility returns a non-zero value if one of the following errors occurs:

- Syntax error in the calling sequence.
 - Target node is *not* a master machine.
 - `DomainID` is not unique.
 - `TUXDIR` is not valid.
 - `TUXCONFIG` file is not found.
-

beaListNodesUlogMon

DESCRIPTION:	Shows ULOG monitoring for the machines in a Tuxedo domain. You can run this command <i>only</i> on a master machine.
CALLING SEQUENCE:	<code>bearun -w -C "beaListNodesUlogMon" {-d <i>DomainID</i> -a -A}</code>
OPTIONS AND ARGUMENTS:	<p><code>-d <i>DomainID</i></code> Identification string for the domain as given in the <code>UBBCONFIG</code> file for the domain. This value enables the Tuxedo SPI to identify the domain on the target master machine.</p> <p>Format: string up to 26 characters.</p> <p><code>-a</code> If you use this option, all domains on the selected master machine will be affected by the command.</p> <p><code>-A</code> If you use this option, all domains on the selected non-master machine will be affected by the command.</p>
RETURN VALUE:	This utility returns a non-zero value if one of the following errors occurs: <ul style="list-style-type: none"> • Syntax error in the calling sequence. • Target node is <i>not</i> a master machine. • <code><i>DomainID</i></code> is not unique. • <code><i>TUXDIR</i></code> is not valid. • <code><i>TUXCONFIG</i></code> file is not found.

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