IBM® Tivoli® Netcool/OMNIbus Probe for ECI eNM
5.0

Reference Guide
March 31, 2011

SC14-7216-01

Note

Before using this information and the product it supports, read the information in Appendix A, “Notices and Trademarks,” on page 9.

Edition notice

This edition applies to version 5.0 of IBM Tivoli Netcool/OMNIbus Probe for ECI eNM (SC14-7216-01) and to all subsequent releases and modifications until otherwise indicated in new editions.

This edition replaces SC14-7216-00.

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Document control page

Use this information to track changes between versions of this guide.

The IBM Tivoli Netcool/OMNIbus Probe for ECI eNM documentation is provided in softcopy format only. To obtain the most recent version, visit the IBM® Tivoli® Information Center:

https://www.ibm.com/support/knowledgecenter/SSSHTQ/omnibus/probes/common/Probes.html

Table 1. Document modification history

Document version	Publication date	Comments
SC14-7216-00	January 16, 2009	Summary table updated. IPv6 support information added. FIPS information added. Installation section added.
SC14-7216-01	March 31, 2011	Installation section replaced by “Installing probes” on page 2.

Chapter 1. Probe for ECI eNM

The ECI Network Manager (eNM) Management System monitors synchronous digital hierarchy (SDH) equipment. ECI-SDH networks are supported in a service-oriented network management environment by the eNM. The system allows administrators to monitor and control faults, performance and security, and to support network configurations with end-to-end management capabilities.

Probe for ECI eNM supports ECI devices that generate `eci.dat` log files containing events whose minimum length is 100 characters. IBM does not maintain a list of compatible ECI devices.

This guide contains the following sections:

Summary

Each probe works in a different way to acquire event data from its source, and therefore has specific features, default values, and changeable properties. Use this summary information to learn about this probe.

The following table provides a summary of the Probe for ECI eNM.

Table 2. Summary	
Probe target	ECI eNM
Probe executable name	`nco_p_eci_eNM`
Patch number	5.0
Probe supported on	For details of the operating systems on which the probe is supported, see the following Release Notice on the IBM Software Support website: https://www-304.ibm.com/support/docview.wss?uid=swg21414857
Properties file	`$OMNIHOME/probes/`*`arch`*`/eci_eNM.props`
Rules file	`$OMNIHOME/probes/`*`arch`*`/eci_eNM.rules`
Requirements	A currently supported version of IBM Tivoli Netcool/OMNIbus
Connection method	REMSH, RSH, Telnet, TIP, or TMC Telnet **Note :** Currently a Telnet connection from HP-UX is not supported. Select an alternative value using the **`ConnectionProtocol`** property.

Table 2. Summary (continued)	
Remote connectivity	The Probe for ECI eNM can connect to a device on a remote host. Details of the remote device are specified using the **TargetSystem** and **PortNumber** properties in the properties file.
Multicultural Support	Available
Peer-to-peer failover functionality	Available
IP environment	IPv4 and IPv6 **Note :** The probe is supported on IPv6 when running on IBM Tivoli Netcool/OMNIbus V7.3.0, 7.3.1 and 7.4.0 on all UNIX and Linux operating systems.
Federal Information Protocol Standards (FIPS)	IBM Tivoli Netcool/OMNIbus uses the FIPS 140-2 approved cryptographic provider: IBM Crypto for C (ICC) certificate 384 for cryptography. This certificate is listed on the NIST website at http://csrc.nist.gov/groups/STM/cmvp/documents/140-1/1401val2004.htm. For details about configuring Netcool/OMNIbus for FIPS 140-2 mode, see the *IBM Tivoli Netcool/OMNIbus Installation and Deployment Guide*.

Installing probes

All probes are installed in a similar way. The process involves downloading the appropriate installation package for your operating system, installing the appropriate files for the version of Netcool/OMNIbus that you are running, and configuring the probe to suit your environment.

The installation process consists of the following steps:

1. Downloading the installation package for the probe from the Passport Advantage Online website.

   Each probe has a single installation package for each operating system supported. For details about how to locate and download the installation package for your operating system, visit the following page on the IBM Tivoli Knowledge Center:

   http://www-01.ibm.com/support/knowledgecenter/SSSHTQ/omnibus/probes/all_probes/wip/reference/install_download_intro.html
2. Installing the probe using the installation package.

   The installation package contains the appropriate files for all supported versions of Netcool/OMNIbus. For details about how to install the probe to run with your version of Netcool/OMNIbus, visit the following page on the IBM Tivoli Knowledge Center:

   http://www-01.ibm.com/support/knowledgecenter/SSSHTQ/omnibus/probes/all_probes/wip/reference/install_install_intro.html
3. Configuring the probe.

   This guide contains details of the essential configuration required to run this probe. It combines topics that are common to all probes and topics that are peculiar to this probe. For details about additional configuration that is common to all probes, see the *IBM Tivoli Netcool/OMNIbus Probe and Gateway Guide*.

Internationalization support

The probe supports multibyte character sets (for example, Japanese) and character sets that contain individual multibyte characters (for example German, French, and Spanish). To view the character sets correctly, you must configure the locale settings on the host machine correctly.

If you are using a language that contains multibyte characters, you must set the LANG environment variables to the name of your character set, and export the LC_ALL environment variable. For example, if you are using Japanese, set these environment variables to ja_JP.UTF-8; if you are using German, set these environment variables to de_DE.UTF-8. This will enable the probe to recognise the multibyte characters used by your character set when they occur in any network events.

The probe supports the following language locales:

Table 3. Supported language locales

Languages	**AIX**	**HP-UX**	**Solaris**	**Linux**
English (US)	en_US	en_US	en_US	en_US
Simplified Chinese	zh_CN	zh_CN	zh_CN	zh_CN
Traditional Chinese	zh_TW	zh_TW.eucTW	Zh_TW.big5	zh_TW.big5
Czech	cs_CZ	cs_CZ	cs	cs_CZ
French (standard)	fr_FR	fr_FR	fr	fr_FR
German (standard)	de_DE	de_DE	de	de_DE
Hungarian	hu_HU	hu_HU	hu	hu_HU
Italian (standard)	it_IT	it_IT	it	it_IT
Japanese	ja_JP	ja_JP	ja	ja_JP
Korean	ko_KR	ko_KR	ko	ko_KR
Polish	pl_PL	pl_PL	pl	pl_PL
Portuguese (Brazilian)	pt_BR	pt_BR	pt	pt_BR
Russian	ru_RU	ru_RU	ru	ru_RU
Spanish	es_ES	es_ES	es	es_ES

Example multi-byte character set on Solaris

The following steps describe how to configure Solaris to use the Japanese character set:

1. Install the necessary components for Japanese on to the host machine using the Solaris CD.
2. Set the LANG and LC_ALL environment variables to ja_JP PCK. This uses SJIS encoding.

   Note : You may have to set the LANG in the host machine's default settings file and reboot it to make the changes take effect.

3. Make sure that the file $OMNIHOME/platform/arch/locales/locales.dat has the following entry:

```
locale = ja_JP PCK, japanese, sjis
```

Where ja_JP PCK is the vendor locale, japanese is the Sybase language, and sjis is the Sybase character set.

Data acquisition

Each probe uses a different method to acquire data. Which method the probe uses depends on the target system from which it receives data.

The Probe for ECI eNM acquires event data by connecting to the ECI eNM device using a chat in script. The probe reads the event data stored by the device in the eci.dat log file, parses the events and sends them to the ObjectServer.

The Probe for ECI eNM supports the following connection protocols:

- tmctelnet
- telnet
- rsh
- remsh
- tip

Data acquisition is described in the following topics:

- "Log file processing" on page 4
- "Chat in and chat out scripts" on page 4
- "Peer-to-peer failover functionality" on page 5

Log file processing

The ECI eNM log file is updated periodically. Each time the file is updated, event data is written in the form of a report. This report is composed of the following types of lines:

- One header line containing column headings (Event/eNM Time, Severity, Object, ProbableCause) for the following lines
- One or more event lines containing event data separated into fields (each field is in its own column)
- One trailer line indicating the end of the report

The Probe for ECI eNM reads the log file and discards the header and trailer lines. Each event line is then parsed into elements.

The fields of the second column (Severity) of the event are parsed into the $Severity elements.

The fields of the third column (Object) of the event are parsed into two elements: $Object and $Component. The $Component element is then broken down into multiple dynamic elements ($Component1, $Component2,...). The number of component elements created depends on the number of column separated fields stored within the $Component element. The remainder of the event (ProbableCause) is parsed into the element: $Cause.

Chat in and chat out scripts

Chat in and chat out scripts control probe login and logout. These scripts are on a single line in the expect-send format (for chat in scripts) or send-expect format (for chat out scripts). You can specify chat in and

chat out strings using the **ChatinString** and **ChatoutString** properties or the `-chatinstring` and `-chatoutstring` command line options.

The format is:

```
ChatinString  : expect send expect send....
```

```
ChatoutString : send expect send expect....
```

Note : Each element in the chat strings is separated by white space. In order to send or expect a sequence that includes white space, surround the sequence with single quotes.

A typical chat in script might be:

```
.*login.*:.* anu\r\n .*assword.*:.* anu\r\n
```

The expect text can use any regular expression, while the send text can send any characters, including control characters using the standard UNIX/C escape sequences described in "Escape codes" on page 6.

Peer-to-peer failover functionality

The probe supports failover configurations where two probes run simultaneously. One probe acts as the `master` probe, sending events to the ObjectServer; the other acts as the `slave` probe on standby. If the master probe fails, the slave probe activates.

While the slave probe receives heartbeats from the master probe, it does not forward events to the ObjectServer. If the master probe shuts down, the slave probe stops receiving heartbeats from the master and any events it receives thereafter are forwarded to the ObjectServer on behalf of the master probe. When the master probe is running again, the slave probe continues to receive events, but no longer sends them to the ObjectServer.

Example property file settings for peer-to-peer failover

You set the peer-to-peer failover mode in the properties files of the master and slave probes. The settings differ for a master probe and slave probe.

Note : In the examples, make sure to use the full path for the property value. In other words replace $OMNIHOME with the full path. For example: `/opt/IBM/tivoli/netcool`.

The following example shows the peer-to-peer settings from the properties file of a master probe:

```
Server      :    "NCOMS"
RulesFile   :    "master_rules_file"
MessageLog  :    "master_log_file"
PeerHost    :    "slave_hostname"
PeerPort    :    6789 # [communication port between master and slave probe]
Mode        :    "master"
PidFile     : "master_pid_file"
```

The following example shows the peer-to-peer settings from the properties file of the corresponding slave probe:

```
Server      :    "NCOMS"
RulesFile   :    "slave_rules_file"
MessageLog  :    "slave_log_file"
PeerHost    :    "master_hostname"
PeerPort    :    6789 # [communication port between master and slave probe]
Mode        :    "slave"
PidFile     : "slave_pid_file"
```

Properties and command line options

You use properties to specify how the probe interacts with the device. You can override the default values by using the properties file or the command line options.

The following table describes the properties and command line options specific to this probe. For information about default properties and command line options, see the *IBM Tivoli Netcool/OMNIbus Probe and Gateway Guide,* (SC14-7530).

Table 4. Properties and command line options

Property name	Command line option	Description
ChatinString *string*	-chatinstring *string*	Use this property to specify the chat in script for connection to the host system. The default is `.*ogin: user .*assword: password .* 'tail -f /eci.dat'`.
ChatoutString *string*	-chatoutstring *string*	Use this property to specify the chat out script for disconnection from the host system. The default is `exit .*`
ConnectionProtocol *string*	-protocol *string*	Use this property to specify the protocol that the probe uses to connect to the device. Possible values are: • remsh • rsh • tmctelnet • telnet • tip The default is `telnet`.
PortNumber *integer*	-portnumber *integer*	Use this property to specify the port to which the probe connects. The default is `""`.
TargetSystem *string*	-targetsystem *string*	Use this property to specify the name of the host to which the probe connects. The default is `localhost`.

Escape codes

You can use C-style escape codes in the **ChatinString** and **ChatoutString** properties. This allows you to easily define whether to send escape code sequences after commands.

For example, the following chatin string sends a carriage return character (`\r`) after the user name and password:

```
ChatinString : ".*: user\r .*: passwd\r .*:"
```

The following table explains the character sequences that are recognized.

Table 5. ChatinString escape codes	
Escape code	**Character**
\b	This escape code specifies the backspace character.
\f	This escape code specifies the form-feed character.
\n	This escape code specifies the new-line character.
\r	This escape code specifies the carriage return character.
\t	This escape code specifies the tab character.
\\	This escape code specifies the backslash character.
\'	This escape code specifies the single quote character.
\"	This escape code specifies the double quote character.

Note : Due to the way in which the above properties are parsed, the escape sequences for backslash, single quote and double quote must be double-escaped. For example, to send a backslash character (\), use \\\\.

Elements

The probe breaks event data down into tokens and parses them into elements. Elements are used to assign values to ObjectServer fields; the field values contain the event details in a form that the ObjectServer understands.

The following table describes the elements that the Probe for ECI eNM generates. Not all the elements described are generated for each event; the elements that the probe generates depends upon the event type.

Table 6. Elements	
Element name	**Description**
$Cause	This element contains the probable cause of the event.
$Component	This element contains the component of the network object that generated the event.
$Componentn	This element contains the component of the network object that generated the event. Where n is the word position starting from one.
$Object	This element contains the network object that generated the event.
$Severity	This element contains the severity of the alarm.

Error messages

Error messages provide information about problems that occur while running the probe. You can use the information that they contain to resolve such problems.

The following table describes the error messages specific to this probe. For information about generic error messages, see the *IBM Tivoli Netcool/OMNIbus Probe and Gateway Guide,* (SC14-7530).

Table 7. Error messages

Error	Description	Action
`Child command: string`	There is a pipe failure.	Try tailing the `eci.dat` log file manually, then restart the probe.
`Connection sessionfailed` `Failed to open connection`	The probe was unable to connect to the ECI eNM system.	Check that the eNM device is running correctly. Check that the chat in and chat out scripts are set correctly. Check that the **`TargetSystem`** and **`PortNumber`** properties are specified correctly.
`Failed to initialize`	Internal error.	Note the message and contact IBM Support.
`Failed to install signal handler`	The probe was unable to install a signal handler for the signal type specified. The probe will try to continue, however any further signal handling will result in an error on exit.	Contact IBM Support.
`Failed to open pty for reading`	There is a problem with your machine, the network, or the probe configuration.	Check that there are no problems with your network and that you configured the correct port number in the probe properties file.
`SendAlert failed`	The probe was unable to send an alert to the ObjectServer.	Check that the ObjectServer is available.

Appendix A. Notices and Trademarks

This appendix contains the following sections:

- Notices
- Trademarks

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