IBM® Tivoli® Netcool/OMNIbus Probe for
Email
5.0

Reference Guide
July 20, 2017

IBM

Note

Before using this information and the product it supports, read the information in Appendix A, "Notices and Trademarks," on page 19.

Contents

About this guide

The following sections contain important information about using this guide.

Document control page

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

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

http://publib.boulder.ibm.com/infocenter/tivihelp/v8r1/index.jsp?topic=/com.ibm.tivoli.namomnibus.doc/welcome_ptsm.htm

Table 1. Document modification history		
Document version	**Publication date**	**Comments**
SC23-7860-01	December 14, 2007	First IBM publication.
SC23-7860-02	August 22, 2008	Support for Linux® for zSeries added.
SC23-7860-03	June 04, 2010	Updates to the Summary table described in "Summary" on page 1. Description for the **Forgetpop3TopHeader** property added to "Properties and command line options" on page 7.

Table 1. Document modification history (continued)

Document version	Publication date	Comments
SC23-7860-04	July 01, 2011	Information about operating system conventions added in "Conventions used in this guide" on page vii.
		Package version information and requirements updated in "Summary" on page 1.
		Installation section updated in "Installing probes" on page 2.
		New configuration information added in "Configuring the probe" on page 3.
		Backoff strategy information added in "Backoff strategy" on page 5.
		Formatting of multi-line elements described in "Formatting multi-line elements" on page 6.
		The following properties were added in "Properties and command line options" on page 7:
		• **EmailSocketTimeOut**
		• **KeyStoreFile**
		• **KeyStorePassword**
		• **TrustStoreFile**
		• **TrustStorePassword**
		Error messages updated in "Error messages" on page 13.
		New information about running the probe added in "Running the probe" on page 16.
SC23-7860-05	July 29, 2011	Failover configuration information updated in "Peer-to-peer failover functionality" on page 6.
SC23-7860-06	July 6, 2012	"Summary" on page 1 updated.
		The following property was added in "Properties and command line options" on page 7:
		• **MimeContentType**
		"ProbeWatch messages" on page 15 updated.
SC23-7860-07	November 24, 2016	Error messages updated in "Error messages" on page 13.
SC23-7860-08	July 20, 2017	Probe package version updated in "Summary" on page 1.
		Fixes: This version of the guide addresses the following APAR:
		• **IV95488**: Remove reference to Email Probe version 6.0.

Conventions used in this guide

All probe guides use standard conventions for operating system-dependent environment variables and directory paths.

Operating system-dependent variables and paths

All probe guides use standard conventions for specifying environment variables and describing directory paths, depending on what operating systems the probe is supported on.

For probes supported on UNIX and Linux operating systems, probe guides use the standard UNIX conventions such as **$**_variable_ for environment variables and forward slashes (**/**) in directory paths. For example:

```
$OMNIHOME/probes
```

For probes supported only on Windows operating systems, probe guides use the standard Windows conventions such as **%**_variable_**%** for environment variables and backward slashes (****) in directory paths. For example:

```
%OMNIHOME%\probes
```

For probes supported on UNIX, Linux, and Windows operating systems, probe guides use the standard UNIX conventions for specifying environment variables and describing directory paths. When using the Windows command line with these probes, replace the UNIX conventions used in the guide with Windows conventions. If you are using the bash shell on a Windows system, you can use the UNIX conventions.

Note : The names of environment variables are not always the same in Windows and UNIX environments. For example, %TEMP% in Windows environments is equivalent to $TMPDIR in UNIX and Linux environments. Where such variables are described in the guide, both the UNIX and Windows conventions will be used.

Operating system-specific directory names

Where Tivoli Netcool/OMNIbus files are identified as located within an _arch_ directory under NCHOME or OMNIHOME, _arch_ is a variable that represents your operating system directory. For example:

```
$OMNIHOME/probes/arch
```

The following table lists the directory names used for each operating system.

Note : This probe may not support all of the operating systems specified in the table.

Table 2. Directory names for the arch variable	
Operating system	**Directory name represented by _arch_**
AIX® systems	`aix5`
Red Hat Linux and SUSE systems	`linux2x86`
Linux for System z	`linux2s390`
Solaris systems	`solaris2`
Windows systems	`win32`

OMNIHOME location

Probes and older versions of Tivoli Netcool/OMNIbus use the OMNIHOME environment variable in many configuration files. Set the value of OMNIHOME as follows:

- On UNIX and Linux, set $OMNIHOME to $NCHOME/omnibus.
- On Windows, set %OMNIHOME% to %NCHOME%\omnibus.

Chapter 1. Probe for Email

The IBM Tivoli Netcool/OMNIbus Probe for Email monitors either an IMAP or a POP3 mail server, from which it gets events in the form of emails. It retrieves events by matching a regular expression to a particular header field in an email.

The probe is described in 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 summarizes the probe.

Table 3. Summary

Probe target	POP3 or IMAP mail server
Probe executable file name	`nco_p_email.jar` (run by `nco_p_nonnative`)

Additional binaries	`activation.jar`
	`mail.jar`
	`nco_p_email.bat` (on Windows operating systems only)

Probe installation package	`omnibus-arch-probe-nco-p-email-version`
Package version	5.0
Probe supported on	For details of supported operating systems, see the following Release Notice on the IBM® Software Support website: http://www-01.ibm.com/support/docview.wss?uid=swg21503440
Properties file	`$OMNIHOME/probes/arch/email.props`
Rules file	`$OMNIHOME/probes/arch/email.rules`

Table 3. Summary (continued)	
Connection method	POP3 or IMAP
Multicultural support	Not available **Note :** The probe can only pass the content of emails with English language encoding to the ObjectServer.
Peer-to-peer failover functionality	Available
IP environment	IPv4 and IPv6
Federal Information Processing 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*.

Configuring the probe

Before running the probe for the first time, you must specify a minimum set of properties.

To run the probe successfully, the following properties are the minimum that you must specify in the `email.props` file:

- **Hostname** - This property specifies the host name of the target mail server.
- **Username** - This property specifies the user name for the target email account.
- **Password** - This property specifies the encrypted password for the target email account.

The following topics describe further configuration requirements:

Setting environment variables

Environment variables are specific preset values that establish the working environment of the probe. From the environment variable specified, the probe receives path information for the directories in which library files are present.

Encrypting the email account password

You must encrypt the password that the probe uses to connect to the email account and specify it in encrypted format in the properties file.

To encrypt the password using the `nco_g_crypt` utility, run the following command:

`$OMNIHOME/bin/nco_g_crypt` *password*

where *password* is the password required to access the email account.

After you have encrypted the email account password, specify the value of the **Password** property as the encrypted string generated by the `nco_g_crypt` utility.

Note : When you run the probe, the probe takes the encrypted password from the properties file and decrypts it before logging in to the email account. Once it is decrypted, the password is equivalent to a plaintext password. This means that the probe can only connect to the email account when the use of a plaintext password is enabled on the mail server. If the use of a plaintext password is disabled on the mail server, the probe will not be able to connect to the email account.

Specifying the email protocol

The probe can connect to a POP3 or IMAP mail server. It also supports the Transport Layer Security (TLS) communications security protocol. You must specify which protocol you are using in the properties file.

Use the **Protocol** property to specify which email protocol you are using and whether or not you are using it over a TLS connection. Use the following matrix to determine what value to specify for the **Protocol** property:

	Non-TLS	**TLS**

For example, if you are using the POP3 protocol over a TLS connection, specify a value of pop3s for the **Protocol** property.

Specifying a keystore file

If you are using a TLS connection, you must generate a keystore file to store the mail server's digital certificate and the encryption keys. You must also specify the keystore and truststore properties in the properties file.

To enable a TLS connection, you must first obtain the mail server's digital certificate file. The certificate usually contains the server name, the trusted certificate authority (CA) and the server's public encryption key. You then use the certificate to generate a Java™ keystore file.

You generate the keystore file using the Java `keytool` utility, which is located in the following directory:

`$NCHOME/platform/`*`arch`*`/jre_1.5.6/jre/bin`

To generate the keystore file, use the following steps:

1. Use the `keytool` utility to generate the keystore by running the following command:

   `keytool -import -alias `*`client_certificate`*` -file `*`certificate_file`*` -keystore `*`keystore_name`*

   where:

   - *client_certificate* is an alias (any name will do, for example: "omnibus").
   - *certificate_file* is the mail server's certificate file.
   - *keystore_name* is the name of the output keystore file, for example, `keystore_sol2`.

2. When prompted, enter a password for the keystore file and make a note of it.

3. Store the keystore file in the following directory:

   `$OMNIHOME/probes/`*`arch`*`/`

4. Encrypt the keystore password using the `nco_g_crypt` utility by running the following command:

   `$OMNIHOME/bin/nco_g_crypt `*`password`*

There are several methods for creating a truststore file. The best method for use with the SNMP Probe is to specify the same values for the keystore properties and the truststore properties. This means that, after generating the keystore file and encrypting its password, you must specify the following properties in the properties file:

- **KeyStoreFile** - Use this property to specify the location of the keystore file.
- **KeyStorePassword** - Use this property to specify the encrypted keystore password.
- **TrustStoreFile** - Use this property to specify the location of the keystore file.
- **TrustStorePassword** - Use this property to specify the encrypted keystore password.

This method is preferred because it requires only one file and password to be created, and it makes the truststore file specific to the probe and independent of the JRE installation.

Note : You might wish to use the keystore only for encrypting or signing files using your private key and use the truststore for other tasks, such as authenticating with remote servers. If you decide to divide tasks between the two stores, you must generate a separate truststore file from the same server certificate used to generate the keystore file. The keystore and truststore passwords can be different, if required.

Data acquisition

Each probe uses a different method to acquire data. The method that a probe uses is based on the target system from which the probe receives data.

The Probe for Email connects to a mail server, opens the default folder of the email store, and retrieves all messages that match the filtering criteria specified by the **Filter** property. The probe sends the retrieved messages to the ObjectServer as events, then disconnects from the mail server. The probe

continues to reconnect to the mail server and retrieve emails at an interval specified by the **PollInterval** property.

The probe retrieves events (emails) from the mail server using the JavaMail API.

The following topics describe how the probe retrieves events:

Retrieving events

The probe retrieves events directly from the mail server.

The probe makes a Transmission Control Protocol (TCP) connection to the mail server and logs in to an email account using a URL of the following format:

`Protocol://Username:Password@Hostname:Port/`

where *Protocol* is specified by the **Protocol** property, *Username* is specified by the **Username** property, *Password* is specified by the **Password** property, and *Hostname* is specified by the **Hostname** property.

After logging in to the account, the probe performs a list command to detect if there are any emails waiting to be read. The probe generates an element for each field in each email that it reads. For example, it generates elements for the `To`, `From`, `Subject`, `Date`, `Sender`, and `Recipient` fields. The probe then uses the values specified by the filtering properties to select which emails are to be sent to the ObjectServer as events.

Backoff strategy

If the **Retry** property is set to `true`, and the probe fails to establish a connection or loses an existing connection to the device, the probe reverts to a backoff strategy.

The probe's backoff strategy is to try to reestablish a connection at successive intervals of one second, two seconds, four seconds, eight seconds, and so on, up to a maximum of 4096 seconds. When the maximum retry interval is reached, the probe stops trying to reconnect and will not try again until it is restarted.

Retrieving POP3 headers

You can specify how the probe handles POP3 headers using the **Forgetpop3TopHeader** property.

Some server software, including some versions of Microsoft Exchange and IBM Lotus Notes®, returns slightly different headers each time the POP3 TOP and RETR commands are used. To ensure that message content returned by the RETR command is properly parsed, it is better in these cases to also use the headers returned by the RETR command.

Use the **Forgetpop3TopHeader** property to specify whether or not the probe forgets headers that have been retrieved by the TOP command and uses those retrieved by the RETR command instead.

Filtering emails

You can use the **Filter** and **FilterField** properties to specify the email fields that the probe parses.

Use the **Filter** property to specify the search criterion that the probe uses to select messages for retrieval. Use the **FilterField** property to specify the name of the email field that the probe uses, in conjunction with the **Filter** property, to select emails for retrieval.

The probe retrieves all emails whose **FilterField** property matches the criterion specified by the **Filter** property. For example, if the **FilterField** property is set to Subject and the **Filter** property is set to Netcool, the probe retrieves and parses all emails whose Subject field contains the term "Netcool®".

If the **FilterField** property is left empty, the probe retrieves all emails that contain the value specified by the **Filter** property in any email field. For example, if the **FilterField** property is empty, and the **Filter** property is set to .*Netcool.*, the probe retrieves and parses all emails that contain Netcool in any of their fields.

Note : To retrieve all emails from the server, set the **Filter** property to .* (a period followed by an asterisk). The **FilterField** property can be set to any value.

Formatting multi-line elements

You can use the **MultiLineFormat** property to specify the format that the probe uses to build multi-line elements.

The probe retrieves the full header and body of an email by building the multi-line elements $Header and $Body, using a printf function. The default value of the **MultiLineFormat** property is the line format %s_%d, where %s is the name of the element and %d is the line number. This produces elements such as $Header_1.

Note : To ensure that line elements are ordered correctly in the Event List details tab, use a left-0 padded, fixed-width line format to add zeros (0) at the beginning of values that are shorter than the width of the Event List field. For example, the line format %s_%03d produces the following line elements:

- $Header_001
- $Header_002
- ...
- $Header_nnn

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 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 is running again, the slave continues to receive events, but no longer sends them to the ObjectServer.

Running two instances of the probe in a failover configuration requires a separate mailbox for the master and slave instances of the probe. This is required to prevent problems that arise when the master and slave read and delete emails that reside in the same mailbox.

You must specify values for the **Username** and **Password** properties of both the master and slave probes. If the slave probe's mailbox is on a separate host, you must also specify the name of that host using the slave probe's **Hostname** property.

One possible way of running two mailboxes is to set up an email alias that forwards an incoming email to two separate mailboxes. In this way, the alias can be used for sending emails and each instance of the probe receives the unique event stream it requires for the failover configuration to work.

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.

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    :    5555 # [communication port between master and slave probe]
Mode        :    "master"
Username             :    "master_mailbox_user"
Password             :    "master_mailbox_password"
Hostname             :    "master_mail_server_host"
```

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    :    5555 # [communication port between master and slave probe]
Mode        :    "slave"
Username             :    "slave_mailbox_user"
Password             :    "slave_mailbox_password"
Hostname             :    "slave_mail_server_host"
```

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 more information about generic Netcool/OMNIbus properties and command line options, see the *IBM Tivoli Netcool/OMNIbus Probe and Gateway Guide*.

Table 4. Properties and command line options		
Property name	**Command line option**	**Description**
AuthType *string*	-authapop (This is equivalent to **AuthType** with a value of apop.) -authuserpass (This is equivalent to **AuthType** with a value of userpass.)	Use this property to specify the authentication method that the probe uses to log in to POP3 email accounts. This property takes the following values: apop: The probe uses APOP authentication. userpass: The probe uses a user name and password combination to authenticate the connection. The default is userpass. **Note :** The **AuthType** property is used only for non-TLS POP3 and IMAP connections.

Table 4. Properties and command line options (continued)		
Property name	**Command line option**	**Description**
DeleteEmails *boolean*	`-deleteemails` (This is equivalent to **DeleteEmails** with a value of `true`.) `-nodeleteemails` (This is equivalent to **DeleteEmails** with a value of `false`.)	Use this property to specify whether or not the probe deletes emails from the mail server after retrieving them. This property takes the following values: `false`: The probe leaves the emails on the mail server after retrieval. `true`: The probe deletes the emails from the mail server after retrieval. The default is `true`.
EmailSocketTimeOut *integer*	`-emailsockettimeout` *integer*	Use this property to specify the maximum amount of time (in seconds) that the probe will wait for a response from the email server during the initial connection. The default is `10`.
Filter *string*	`-filter` *string*	Use this property to specify the search criterion that the probe uses to select messages for retrieval. The default is `#NETCOOL`. **Note :** Setting this property to `.*` (a period followed by an asterisk) retrieves all the emails from the mail server, ignoring the value specified for the **FilterField** property.
FilterField *string*	`-filterfield` *string*	Use this property to specify the name of the email field that the probe uses, in conjunction with the **Filter** property, to select emails for retrieval. The default is `Subject`. **Note :** If this property is left empty, the search criterion specified by the **Filter** property is matched against all fields in the email.

Table 4. Properties and command line options (continued)

Property name	Command line option	Description
FlushBufferInterval *integer*	`-flushbufferinterval` *integer*	Use this property to specify how often (in seconds) the probe flushes all alerts in the buffer to the ObjectServer. The default is `0` (which instructs the probe to never flush the alerts to the ObjectServer).
Forgetpop3TopHeader *boolean*	`-forgetpop3topheader` (This is equivalent to **Forgetpop3TopHeader** with a value of `true`.) `-noforgetpop3topheader` (This is equivalent to **Forgetpop3TopHeader** with a value of `false`.)	Use this property to specify whether or not the probe forgets headers that have been retrieved by the POP3 TOP command and uses those retrieved by the RETR command instead. For details, see "Retrieving POP3 headers" on page 5. This property takes the following values: `false`: POP3 TOP headers are used. `true`: POP3 TOP headers are forgotten and RETR headers are used instead. The default is `false`.
Hostname *string*	`-hostname` *string*	Use this property to specify the host name of the mail server. The default is `mailhost`.
KeyStoreFile *string*	`-keystorefile` *string*	Use this property to specify the location of the keystore file. The default is `""`. **Note :** A keystore file is required for TLS connections only.
KeyStorePassword *string*	`-keystorepassword` *string*	Use this property to specify a password for the keystore file. The default is `""`. **Note :** The password must be encrypted. For details, see "Specifying a keystore file" on page 4.

Table 4. Properties and command line options (continued)		
Property name	**Command line option**	**Description**
MimeContentType *string*	-mimecontenttype *string*	Use this property to specify which MIME parts of an email the probe parses. This property enables the probe to parse multiple email attachments without creating duplicate data. For example, if you set this property to "text/plain", the probe will only parse the plain text attachment. The default is "" (which instructs the probe to parse all the MIME parts).
MultiLineFormat *string*	-multilineformat *string*	Use this property to specify the line format that the probe uses to uses to build the multi-line elements $Header and $Body. The default is %s_%d. For details, see "Formatting multi-line elements" on page 6.
Password *string*	-password *string*	Use this property to specify the password for the target email account. The default is netcool. **Note :** The password must be encrypted. For details, see "Encrypting the email account password" on page 3.
PollInterval *integer*	-pollinterval *integer*	Use this property to specify the frequency (in seconds) with which the probe checks the mail server for new email. The default is 600.

Property name	Command line option	Description
Table 4. Properties and command line options (continued)		
Port *integer*	`-port` *integer*	Use this property to specify the port on the mail server to which the probe connects. The following default values apply, depending on the protocol used: • POP3: The default is 110 • IMAP: The default is 143 • POP3 over TLS: The default is 995 • IMAP over TLS: The default is 993
Protocol *string*	`-protocol` *string*	Use this property to specify the protocol that the probe uses to retrieve email messages. This property takes the following values: `imap`: The probe connects to an IMAP mail server. `imaps`: The probe connects to an IMAP mail server over a TLS connection. `pop3`: The probe connects to a POP3 mail server. `pop3s`: The probe connects to a POP3 mail server over a TLS connection. The default is pop3.
Retry *boolean*	`-retry` (This is equivalent to **Retry** with a value of true.) `-noretry` (This is equivalent to **Retry** with a value of false.)	Use this property to specify whether or not the probe attempts to reconnect with the mail server after losing the connection. This property takes the following values: `false`: The probe remains disconnected. `true`: The probe tries to reconnect with the mail server. The default is `false`.

Table 4. Properties and command line options (continued)

Property name	Command line option	Description
TrustStoreFile *string*	`-truststorefile` *string*	Use this property to specify the location of the truststore file. The preferred method of doing this is to specify the location of the keystore file. For details, see "Specifying a keystore file" on page 4. The default is " ". **Note :** A truststore file is required for TLS connections only.
TrustStorePassword *string*	`-truststorepassword` *string*	Use this property to specify a password for the truststore file. The default is " ". **Note :** If you have specified the location of the keystore file as the value of the **TrustStoreFile** property, you can use the keystore password as the value of the **TrustStorePassword** property also. The password must be encrypted. For details, see "Specifying a keystore file" on page 4.
UseCurrentTime *integer*	`-usecurrenttime` *integer*	Use this property to specify whether or not the probe uses the current time when setting the `$FirstOccurrence` and `$LastOccurrence` elements. The default is `0`.
Username *string*	`-username` *string*	Use this property to specify the user name for the email account that the probe logs in to. The default is `omnibus`.

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.

Note : The **Summary** field in the Event List will only display the value assigned to the @Summary entry in the rules file. For example, the rules file entry @Summary=$Subject will pass the value of the $Subject element of the email to the **Summary** field.

The following table describes the elements that the probe generates. Not all the elements described are generated for each event; the elements that the probe generates depend on the event type.

Table 5. Elements

Element name	Element description
$Body	This element contains the body of the email.
$Body_LineCount	This element indicates the total number of lines in the body of the email.
$Body_*nn*	This element identifies a single line within the body of the email, where *nn* indicates the line number.
$Date	This element shows the date and time at which the email was sent.
$From	This element indicates the email address of the sender of the email.
$Header	This element contains the full header details of the email.
$Header_LineCount	This indicates the total number of lines in the header of the email.
$Header_*nn*	This element identifies a single line within the header of the email, where *nn* indicates the line number.
$Subject	This element indicates the subject of the email.
$To	This element indicates the email address of the recipient of the email.
$Severity	This element indicates the severity level of the event.

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 Netcool/OMNIbus error messages, see the *IBM Tivoli Netcool/OMNIbus Probe and Gateway Guide*.

Table 6. Error messages

Error message	Description	Action
Authentication failure - Bad username/password	The specified user name or password is not valid, or plaintext passwords have not been enabled on the mail server.	Specify a valid username and password and enable the use of plaintext passwords on the mail server.
Invalid AuthType: *authType*	The authentication method specified for the **AuthType** property is not valid.	Verify that the value specified for the **AuthType** property is either apop or userpass.

Table 6. Error messages (continued)

Error message	Description	Action
`Login Password is incorrect length (ensure it has been encrypted using nco_g_crypt)`	The password for the email account specified by the **Password** property is not the expected length.	Encrypt the password using the `nco_g_crypt` utility and use the encrypted password as the value of the **Password** property.
`Password to Client Certificate is incorrect length (ensure it has been encrypted using nco_g_crypt)`	The password for the keystore file specified by the **KeyStorePassword** property is not the expected length.	Encrypt the password using the `nco_g_crypt` utility and use the encrypted password as the value of the **KeyStorePassword** property.
`Password to Truststore is incorrect length (ensure it has been encrypted using nco_g_crypt)`	The password for the truststore file specified by the **TrustStorePassword** property is not the expected length.	Encrypt the password using the `nco_g_crypt` utility and use the encrypted password as the value of the **TrustStorePassword** property.
`Failed to connect to server`	The connection to the mail server was lost.	Verify that the mail server is running correctly. Check the network connection to the mail server.
`Failed to connect to mail server. Can't get lock. Mailbox in use.`	The probe cannot connect to the mail server. The most likely cause for this is that someone else was accessing the mailbox when the probe was also trying to access it. **Note :** The POP3 protocol does not allow multiple users to access the same mailbox simultaneously.	Set the **Retry** property to `true`. This allows the probe to retry the connection with the mail server after the other user has stopped accessing the mailbox.
`Failed to close connection: exception`	The probe encountered a problem while trying to close the connection to the email server.	No immediate action is required because the connection is closed even when the exception occurs.
`Failed to parse message`	The probe was unable to parse messages into tokens.	Verify that the rules file contains all the required information to generate the $Header and $Body elements.
`Failed to retrieve store object`	The attempt to instantiate a message store and its access protocol failed.	Verify that the mail server is running correctly. Check the network connection to the mail server.

Table 6. Error messages (continued)		
Error message	**Description**	**Action**
`Failed to get messages:` *`exception`*	The probe was unable to retrieve messages.	Verify that the mail server is running correctly. Verify that the **FilterField** and **Filter** properties have been specified correctly.
`Unsupported content type`	The probe found an unsupported email element.	Contact IBM Software Support for assistance.
`Java Exceptions`	Unable to run the probe due to an error related to Java files.	Verify that the correct version of Java is installed while running the probe.

ProbeWatch messages

During normal operations, the probe generates ProbeWatch messages and sends them to the ObjectServer. These messages tell the ObjectServer how the probe is running.

The following table describes the ProbeWatch messages that the probe generates. For information about generic Netcool/OMNIbus ProbeWatch messages, see the *IBM Tivoli Netcool/OMNIbus Probe and Gateway Guide*.

Table 7. ProbeWatch messages		
ProbeWatch message	**Description**	**Triggers or causes**
`Running ...`	The probe is running normally.	The probe has just been started up.
`Going Down`	The probe is shutting down.	The probe is shutting down after performing the shutdown routine.
`Failed to connect to mail server`	The probe was unable to connect to the mail server.	The probe failed to connect, or reconnect, to the mail server.
`Connected to mail server`	The probe has connected to the mail server.	The probe successfully established a connection to the mail server.
`Maximum backoff time has been reached - will not reconnect`	The probe has lost connection with the mail server and cannot reconnect.	The probe attempts to reconnect to the mail server once it loses connection. If the probe has not reconnected after the number of attempts specified by the **RetryConnectionCount** property, it will stop attempting to reconnect.

Table 7. ProbeWatch messages (continued)		
ProbeWatch message	**Description**	**Triggers or causes**
`Waiting for " + `*`retryWait`*` + "`*`seconds`*`"`	The probe will attempt to reconnect once the retry interval time is reached.	The probe attempts to reconnect with the mail server after connection is lost. The retry interval is specified using the **RetryConnectionTimeout** property.

Running the probe

Before running the probe for the first time, you must specify a minimum set of properties.

To run the probe successfully, the following properties are the minimum that you must specify:

- **Hostname**
- **Username**
- **Password**

    The password must be encrypted. For more information, see "Encrypting the email account password" on page 3.

To start the probe on UNIX and Linux operating systems, use the following command:

`$OMNIHOME/probes/nco_p_email`

To start the probe from the Windows command prompt, use the following command:

`%OMNIHOME%\probes\win32\nco_p_email`

To run the probe as a Windows service, use the following steps:

1. To run the probe on the same host as the ObjectServer, use the following command to register it as a service:

    `%OMNIHOME%\probes\win32\nco_p_email.bat -install -depend NCOObjectServer`

2. To run the probe on a different host to the ObjectServer, use the following command to register it as a service:

    `%OMNIHOME%\probes\win32\nco_p_email.bat -install`

3. To run the probe, start the NCO NONNATIVE Probe (NCOEmailProbe) service using the Microsoft Services Management Console.

To remove the probe, stop the service and use the following command:

`%OMNIHOME%\probes\win32\nco_p_email /remove`

Troubleshooting

Various issues arise as users work with the probe. Troubleshooting information is provided to help you diagnose and resolve such issues.

Probe is unable to read the properties file on Windows operating systems

The probe is unable to read the properties file from a specific location because the string that contains the path to the file location gets truncated by the operating system. This is a common problem in Windows operating systems where the directory file name is limited to eight characters.

For example, when you specify the following directory path to the properties file:

`C:\Program Files (x86)\IBM\Tivoli\Netcool\omnibus\probes\win32\email.props`

the operating system truncates it to:

```
C:\Program
```

To work around this problem, use the Windows 8.3 short filename convention for long directory names. Using 8.3 notation, you can specify a valid path to the properties file as follows:

```
C:\Progra~1(x86)\IBM\Tivoli\Netcool\omnibus\probes\win32\email.props.
```

Appendix A. Notices and Trademarks

This appendix contains the following sections:

- Notices
- Trademarks

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