Generic mail agent configuration for

AOS Data Platforms

running firmware 17.2.1 and later

Quick Configuration Guide 61202880L1-42.1B March 2009

The mail agent feature of the ADTRAN Operating System (AOS) provides a method of adding email notification to any AOS feature. The mail agent is configured through the command line interface (CLI) and operates with any AOS feature that has configuration or **show** commands. The mail agent captures output from specified commands and emails them to a specified address in the body of an email message. Email messages are created when a specified event occurs, and are mailed on a specified schedule. Multiple mail agents can be configured and used at one time. The configuration of the mail agent is described in the following sections: *Accessing the CLI*, *Creating a Schedule*, *Creating a Trigger*, *Configuring the Mail Agent*, *Mail Agent Configuration Examples*, and *Mail Agent Command Summary*.

Accessing the CLI

To access the CLI on your AOS unit, follow these steps:

1. Boot up the unit.
2. Telnet to the unit (**telnet** <*ip address*>).

   For example, **telnet 208.61.209.1**

   

   *If during the unit's setup process you have changed the default IP address (**10.10.10.1**), use the configured IP address.*

3. Enter your user name and password at the prompt.

   

   *The AOS default user name is **admin** and the default password is **password**. If your product no longer has the default user name and password, contact your system administrator for the appropriate user name and password.*

4. Enable your unit by entering **enable** at the prompt as follows:

   >enable

5. Enter your Enable mode password at the prompt.
6. Enter the unit's Global Configuration mode as follows:

   #config terminal
   (config)#

Creating a Schedule

To have the mail agent capture command output and send an email at a specified time, you must first create a schedule. The schedule will be tied to a track, which will change states at the time the schedule becomes active or inactive. The schedule should be configured using the **schedule** <*name*> **periodic** command to set the duration that the schedule is active. To create a schedule, follow these steps:

1. Determine a name for the schedule and enter the **schedule** command at the Global Configuration mode prompt as follows:

   (config)#**schedule** <*name*>

   For example:
   (config)#**schedule EXAMPLE**
   (config-schedule-EXAMPLE)#

2. At the schedule configuration mode prompt, enter the **periodic** keyword and the desired schedule attributes as follows (underline denotes example configuration; replace the example with desired parameters):

   (config-schedule-EXAMPLE)#**periodic daily 08:00 to 17:00**

Schedules created for the mail agent application can also be used for access control list (ACL) timers, network monitoring, and other track-based applications. If the created schedule will only be used for the mail agent feature, it is recommended that the start and end times be set to a minute apart.

For more details about schedule configurations and parameter options, refer to the ***Network Monitor in AOS*** *configuration guide available on the Web at http://kb.adtran.com, article #3007.*

Creating a Trigger

A trigger is the event that signifies to the mail agent to begin gathering output from the specified commands. The event is usually defined as the instance where a specified track changes states. To create a trigger for the mail agent application, a track must first be created. To create a track, follow these steps:

1. Determine a name for the track and enter the track configuration mode by entering the **track** command at the Global Configuration mode prompt as follows:

   (config)#**track** <*name*>

   For example:
   (config)#**track mail**
   (config-track-mail)#

2. Once you have created the track, the schedule you created previously must be attached to the track. This is accomplished using the **test if schedule** command as follows:

   (config-track-mail)**#test if schedule** <*name*>

   The <*name*> parameter is the name of the schedule created to work with the mail agent feature. For example:

   (config-track-mail)**#test if schedule EXAMPLE**

> NOTE
>
> *You can also use the **test if** command to test an interface or a probe. These tests can also have a schedule attached for mail client purposes by using the **time-schedule** command. For more information on this command, refer to the **Network Monitor in AOS** configuration guide available on the Web at http://kb.adtran.com, article 3007.*

3. The track now needs to be attached to the mail agent. This is accomplished using the **send trigger** command, detailed in the next section.

Configuring the Mail Agent

The mail agent is configured by entering the mail agent configuration mode. Once this mode is accessed, the mail agent can be configured to capture specific commands, email command output at the time specified by the track and schedule, and also provide other optional information based on user preference. The first section of mail agent configuration explains the necessary commands for mail agent functionality, the second section explains optional mail agent commands, and the third section explains the troubleshooting commands.

Basic Mail Agent Configuration

Basic configuration for the mail agent feature consists of specifying an email server for sending emails, entering the mail agent configuration mode, specifying the command output to capture, capturing command output, and sending the output via email. To configure a mail agent, follow the steps below:

1. Specify the IP address or host name of the email server to use when sending an email event notification. Use the **logging email receiver-ip** <*ip address* | *hostname*> command as follows:

   (config)**#logging email receiver-ip 172.5.67.99**

   It is possible to specify a port for the Simple Mail Transfer Protocol (SMTP) messages, as well as to specify that authentication is used when sending email notifications. To change the port used for sending emails (default is port **25**), use the additional **port** keyword with the **logging email receiver-ip** command as follows:

   (config)**#logging email receiver-ip 172.5.67.99 port 587**

> *Some Internet Service Providers (ISPs) block SMTP (port 25) outbound from their subscribers unless it is directed to their SMTP server. Port 587 is also used for SMTP, and typically not blocked, so it can be used as a work-around to send traffic to another SMTP server on the Internet (assuming it is running on port 587). If you have a public SMTP server, the default port can be used to forward email; if you do not have a public SMTP server, you can use the ISP's server or port 587 to reach an SMTP server on the Internet without being blocked.*

To use authentication when sending email notifications, use the **auth-username** <*username*> and **auth-password** <*password*> parameters with the **logging email receiver-ip** command. The user name and the password are specified with these parameters. Enter the command as follows:

(config)**#logging email receiver-ip 172.5.67.99 auth-username USERNAME auth-password PASSWORD**

2. Specify the sender of outgoing email messages. Use the **logging email sender** <*email address*> command as follows:

   (config)**#logging email sender myUnit@myNetwork.com**

   The **logging email receiver-ip** and **logging email sender** commands configure the SMTP server globally. The SMTP server may also be configured on a per-mail agent basis using the **server** <*dns-name / ip address*> and **address from** <*email address*> commands.

   The **server** command functions exactly like the **logging email receiver-ip** command, except that it is entered from the mail agent configuration mode as follows:

   (config-mail-client-MyClient)**#server myUnit@myNetwork.com**

> *When using the **server** command on a per-mail agent basis, you cannot specify a port different than the default (port **25**), nor can you specify that authentication is used when sending emails as you can with the **logging email receiver-ip** command.*

   The **address from** command functions exactly like the **logging email sender** command, except that it is entered from the mail agent configuration mode as follows:

   (config-mail-client-MyClient)**#address from 172.5.67.99**

3. Enter the mail agent configuration mode using the **mail-client** <*agent name*> command. The <*agent name*> parameter is the name of the mail agent you will configure. Enter the command as follows:

   (config)**#mail-client MyClient**
   (config-mail-client-MyClient)#

4. Use the **address to** *<email address(es)>* command to specify the To field in the email message. This field is required for an email to be sent. Multiple email addresses, separated by semicolons, can be entered. Enter the command following the example:

   (config-mail-client-MyClient)**#address to joesmith@company.com**

   > NOTE
   >
   > *The **address to** command uses a default value from the **logging email address-list** command. If you have already configured the **logging email address-list** command, and want the mail agent notification to go to the same email, using the **address to** command is not necessary. The **address from** command and the **server** command are interchangeable with the **logging email sender** and **logging email receiver-ip** commands, respectively. For more information on the **logging email address-list** command, refer to the **AOS Command Reference Guide** on the **AOS Documentation** CD shipped with your unit or on the Web at www.adtran.com.*

5. Use the **capture commands** command to specify the command output to be captured. **Show** and **tcl** commands can be captured. When the **capture commands** command is entered, each command to be captured is specified with the **do** keyword followed by the command. List all commands to be sent in a single notification, followed by the **exit** keyword.

   For example:
   (config-mail-client-MyClient)**#capture commands**
   Enter the commands you wish to run, one line at a time.
   Entries are run from the terminal configuration prompt.
   For example, you must enter ‘do show run’ or ‘int eth 0/1’.
   When finished, type 'exit' on a new line to end
   #do show ip route
   #do show clock
   #exit
   (config-mail-client-MyClient)#

   The commands specified in this command will be the body of the email notification. The output from these commands will be captured when the mail agent is triggered to do so.

   > NOTE
   >
   > *The terminal configuration mode is enabled by default for the **capture commands** command, making it necessary to use the keyword **do**. In addition to using this command to specify command output for viewing, the unit’s configuration can also be changed.*
   >
   > *It is necessary to capture at least one command so that the email body is not blank. If the email body is blank, the mail client will not send the email.*

6. Use the **capture trigger** command to configure the trigger the mail agent will use to capture the command output. The captured output is concatenated with the current pending email body. The command allows for no trigger to be specified, or for a track state change to be specified as the trigger.

If no trigger is specified, the mail agent will immediately run the specified commands. Running this command will not change any current running configuration settings. To specify that no trigger is used, and the command output is immediately captured, enter the command as follows:

(config-mail-client-MyClient)**#capture trigger**

If a track is specified as the capture trigger, the command output will be captured every time the track switches specified states. The track used can be a preconfigured track with an associated schedule as explained in the *Creating a Trigger* section of this document, or it can be a track without a schedule (such as a track associated with an Internet Control Message Protocol (ICMP) echo probe). To specify using a track as the mail agent trigger, enter the **capture trigger track** <*name*> **[pass | fail]** command as follows:

(config-mail-client-MyClient)**#capture trigger track mail pass**

The **pass** keyword specifies that when the track changes states from a fail state to a pass state, the mail agent will run the specified commands and capture their output. The **fail** keyword specifies that when the track changes from a pass state to a fail state, the mail agent will run the specified commands and capture their output. The track will change states when its associated schedule becomes active or inactive.

By default, tracks will change states at the rising edge of any test (when it goes from inactive to active). Therefore, if you set up a periodic schedule to occur from 9:00 a.m. to 5:00 p.m. on the weekdays, the mail agent will send an email at 9:00 a.m. every morning. If you wish the email to occur on the falling edge (5:00 p.m.), you can either negate it on the track using the ***test if not schedule*** *command or negate the track on the mail agent using the* ***send trigger track*** *<name>* ***fail*** *command. This generic configuration allows the same schedule used for the mail agent to be used for ACL timers. Refer to the* ***AOS Command Reference Guide*** *for specific command descriptions.*

7. Use the **send trigger** command to configure when email notification of command output will be sent (assuming that the text body is not empty). This command, like the **capture trigger** command, also allows for no trigger to be specified, or for a track state change to be specified as the trigger. By default, this command is set to never send an email.

   If no trigger is specified, the mail agent will immediately send the email. To specify that no trigger is used, and the email is immediately sent, enter the command as follows:

   (config-mail-agent-MyClient)**#send trigger**

   If a track is specified as the send trigger, the email will be sent every time the track switches specified states. The track used can be a preconfigured track with an associated schedule as explained in the *Creating a Trigger* section of this document, or it can be a track without a schedule (such as a track associated with an ICMP echo probe). To specify a track is used as the send-email trigger, enter the **send trigger track** <*name*> **[pass | fail]** command as follows:

   (config-mail-client-MyClient)**#send trigger track mail pass**

The **pass** keyword specifies that when the track changes from a fail state to a pass state, the mail agent will send an email of command output. The **fail** keyword specifies that when the track changes from a pass state to a fail state, the mail agent will send an email of command output. The track will change states when its associated schedule becomes active or inactive. If neither **pass** nor **fail** is specified, the track will use the **pass** state change as the default.

*If only the **send trigger** command is used, and not the **capture trigger** command, the **send trigger** command will also function as a capture trigger. By only using the **send trigger** command, the command output is immediately captured and an email of command output is sent. If both commands are used, the command output is captured at the time the capture trigger occurs, and then an email is sent at the time the send trigger occurs.*

8. Enter the **no shutdown** command as follows:

   (config-mail-client-MyClient)**#no shutdown**

The mail agent is now configured in its most basic operation. At this level of configuration, the mail agent will capture specified command output upon a specified trigger and will email the command output to the specified address at a specified time. More configuration options are discussed in the next section.

Optional Mail Agent Commands

Optional commands are available for mail agent configuration and are described in this section. These commands are entered from the mail agent configuration mode, prior to the **capture trigger** and **send trigger** commands.

- (config-mail-agent-MyClient)**#capture header**

  The **capture header** command adds header information every time output is captured. The header adds a capture timestamp and simple ASCII demarcation between captures. The capture header is enabled by default, but can be turned off by using the **no capture header** command.

- (config-mail-agent-MyClient)**#address cc** <*email address(es)*>

  The **address cc** command sets the CC field in the email. By default, the CC field is empty. Multiple email addresses, separated by a semicolon, may be entered. The CC field can be cleared by using the **no address cc** command.

- (config-mail-agent-MyClient)**#address from** <*email address*>

  The **address from** command sets the From field in the email. By default, the From field is filled with the value set by the **logging email sender** command. To return the From field to its default value, use the **no address from** command.

- (config-mail-agent-MyClient)**#subject** <*text*>

  The subject command sets the Subject field in the generated email. Setting the subject value can be beneficial when multiple mail agents are configured. By default, the Subject field of the email is empty. To return the Subject field to its default value, use the **no subject** command.

- (config-mail-agent-MyClient)**#body size** <*bytes*>

  Use the **body size** command to set the maximum buffer size for the body text of the email message. All output generated after this buffer size has been reached will be ignored. The default buffer size is set at 4048 bytes. To return the buffer size to its default value, use the **no body size** command.

- (config-mail-agent-MyClient)**#server** <*dns-name* | *ip address*>

  Use the **server** command to configure the SMTP server for sending the email. By default, the server is set to the value from the **logging email receiver-ip** command. To return the server setup to the default value, use the **no server** command.

Mail Agent Troubleshooting Commands

There are a few useful mail agent troubleshooting commands that allow you to see specific mail agent statistics and configurations to aid in diagnosing mail agent issues. These commands are described in the following section.

- (config-mail-agent-MyClient)**#send test**

  The **send test** command is issued from the mail agent configuration mode. The command appends “This is a test message” onto the current message buffer and sends an email to the configured addresses. This command is used to test that the agent is sending emails to the proper addresses. The test email is sent using your SMTP settings, even if your mail client is currently shut down.

- **#debug mail-client** <*agent name*>

  The **debug mail-client** command displays debug statements that a named mail agent generates and is issued from the Enable mode prompt (#). These debug messages can be helpful in diagnosing mail agent problems.

- **#debug system**

  The **debug system** command displays debug statements for the system configuration and is issued from the Enable mode prompt (#). These debug messages can be helpful in viewing the SMTP messages between the AOS device and the SMTP server.

- **#clear mail-client counters** *<agent name>*

  The **clear mail-client counters** command resets any statistical counters for a specified mail agent. The command is issued from the Enable mode prompt (#). If no name is specified, all mail agent counters are reset.

- **#clear mail-client body** *<agent name>*

  The **clear mail-client body** command clears the body text of the pending email messages for the named mail agent. The command is issued from the Enable mode prompt (#).

- **#show mail-client** *<agent name>*

  The **show mail-client** command shows a mail agent's statistical summary information. The command is executed from the Enable mode prompt (#), and shows the summary information for all configured mail agents if a name is not specified.

- **#show mail-client body** *<agent name>*

  The **show mail-client body** command shows the current buffer for the body of the email message in the queue of a specified mail agent. The command is issued from the Enable mode prompt (#).

The body of the email is blank if no output is shown when this command is entered.

Mail Agent Configuration Examples

The following is a basic mail agent configuration example. This example creates a schedule named **EXAMPLE**, set to run every day from 8:00 a.m. to 5:00 p.m.; a track named **mail**, set to change states when the schedule **EXAMPLE** becomes active; and a mail agent named **MyClient**, set to capture command output from the **show ip route** commands and send an email of the output at 8:00 a.m. as the track changes states.

Each of the parameters in this example are for illustration purposes only; specific parameters should be tailored to your purpose and usage.

```
!
schedule EXAMPLE
    periodic daily 08:00 to 17:00
!
track mail
    test if schedule EXAMPLE
!
logging email receiver-ip 172.5.67.99
logging email sender myUnit@myNetwork.com
!
mail-client MyClient
    address to joesmith@company.com
    capture commands
        do show ip route
        exit
    send trigger track mail pass
    no shutdown
!
```

The following is a configuration example in which the mail agent is used to email output from the **show ip interfaces brief** command when a pinged device fails to respond to three consecutive pings. In this example, a device with the IP address of **192.168.1.30** is pinged at a set interval, and an email is sent to a specified address to a Yahoo! account when the device fails three consecutive pings. Because SMTP default port, port **25**, is typically blocked by local ISPs, port **587** is used to read the Yahoo! SMTP server. The Yahoo! SMTP server also requires authentication credentials, so the user name and password must be supplied in the **logging email receiver-ip** command.

Each of the parameters in this example are for illustration purposes only; specific parameters should be tailored to your purpose and usage.

```
!
logging email receiver-ip smtp.mail.yahoo.com port 587 auth-username
user@yahoo.com auth-password password
!
probe PROBE icmp-echo
    destination 192.168.1.30
    period 5
    tolerance consecutive fail 3 pass 3
    no shutdown
!
track mail
    log-changes
    test if probe PROBE
    no shutdown
!
mail-client MAIL
    address to person@domain.com
    address from user@yahoo.com
    subject Ping Failed
    capture commands
        do show ip interfaces brief
        exit
    capture trigger track mail fail
    send trigger track mail fail
    no shutdown
!
```

Mail Agent Command Summary

The following table is a summary of the commands used with the AOS mail agent feature.

Table 1. Mail Agent Command Summary

Access Prompt	Command	Command Description
#	**clear mail-client counters** <*agent name*>	Resets any statistical counters for a mail agent. If no name is specified, all agents are reset.
#	**clear mail-client body** <*agent name*>	Clears the body text of the pending email message for a specified mail agent.
#	**show mail-client** <*agent name*>	Shows statistical summary information for a mail agent. If no name is specified, information for all agents is displayed.
#	**show mail-client body** <*agent name*>	Shows the current buffer content for the body of the email message in queue for a specific mail agent.
#	**debug mail-client** <*agent name*>	Shows debug messages that the specified mail agent generates.
(config)#	**logging email receiver-ip** <*ip address* | *hostname*> **[port** <*port*> | **auth-username** <*username*> **auth-password** <*password*>**]**	Specifies the IP address or host name of the email server used to send email notification. Sets the default for the **server** command.
(config)#	**logging email sender** <*email address*>	Specifies the sender of the outgoing email. Sets the default for the **address from** command.
(config)#	**mail-client** <*agent name*>	Creates a new mail agent and enters the mail agent configuration mode.
(config-mail-agent-name)#	**[no] shutdown**	Takes the mail agent out of the default state of shutdown.
(config-mail-agent-name)#	**[no] capture commands**	Specifies commands for mail agent to run when triggered. The output of these commands creates the body of the email message.

Table 1. Mail Agent Command Summary *(Continued)*

Access Prompt	Command	Command Description
(config-mail-agent-name)#	**[no] capture header**	Optional. Specifies that header information is included when output is captured. Enabled by default.
(config-mail-agent-name)#	**[no] capture trigger [track** *<name>* **[<pass | fail>]]**	Specifies the trigger used to capture the command output.
(config-mail-agent-name)#	**[no] send trigger [track** *<name>* **[<pass | fail>]]**	Specifies the trigger for sending the email notification. The email will never be sent by default.
(config-mail-agent-name)#	**send test**	Sends a test email message to the configured email addresses.
(config-mail-agent-name)#	**[no] address to** *<email address(es)>*	Specifies the To field in the email. By default, this value is set by the **logging email address-list** command.
(config-mail-agent-name)#	**[no] address cc** *<email address(es)>*	Specifies the CC field in the email. By default, this value is empty.
(config-mail-agent-name)#	**[no] address from** *<email address>*	Specifies the From field in the email. By default, this value is set by the **logging email sender** command.
(config-mail-agent-name)#	**[no] subject** *<text>*	Specifies the Subject field in the email. By default, this value is empty.
(config-mail-agent-name)#	**[no] body size** *<bytes>*	Specifies the maximum buffer size for storing the body text of the email message. Default size is 4048 bytes.
(config-mail-agent-name)#	**[no] server** *<dns-name | ip address>*	Specifies the SMTP server for sending the email. By default, this value is set by the **logging email receiver-ip** command.