bmcsoftware

WHITE PAPER

# Best Practices for Monitoring Roundtrip Response Times in Microsoft Exchange with PATROL for Microsoft Exchange Servers

Contents

## INTRODUCTION

E-mail and messaging applications are mission-critical tools in today's business environments. Business productivity and effective communication require that these applications offer 24X7 availability and perform at mach speeds. Microsoft Exchange is the leading collaboration tool offering mail and messaging capabilities. Now, more than ever, Exchange is being deployed in the most demanding environments including large organizations with thousands of users.

Managing these demanding environments is a challenge. PATROL for Microsoft Exchange Servers can help administrators simplify this challenge. PATROL for Microsoft Exchange Servers is a comprehensive monitoring solution that can help ensure the performance and availability of your mission-critical Microsoft Exchange environment.

One of the key features of the PATROL for Microsoft Exchange Servers solution is its ability to monitor Roundtrip response times. Understanding the time it takes for a message to reach its intended recipient and respond is critical for an administrator to understand the performance of their Exchange environment and report on their service-level agreeements. PATROL for Microsoft Exchange Servers can help an administrator more accurately gauge baseline or typical response times and allow the administrator to take proactive actions when response times seem to be slowing or when events occur that may impact response times.

PATROL for Microsoft Exchange Servers monitors the following types of e-mail Roundtrip response times by using synthetic transactions:

- Server Roundtrip monitoring measures the response time for delivery between Exchange Servers that are running PATROL for Microsoft Exchange Servers.
- Client Roundtrip monitoring measures the response time for delivery between an Exchange client, like Microsoft Outlook, and an Exchange server; end-user performance can also be obtained.
- Internet Server Roundtrip monitoring measures the response time for delivery between an Exchange server and a foreign mail server.

You can monitor the following information:

| Type of Monitoring | Measurements Monitored |
|---|---|
| Client Roundtrip | > The time required to send messages between the Exchange server and the client<br>> The time required to log on to and off of the Exchange server<br>> The time required by the server to respond to the client's request to create a new message<br>> The time required by the server to respond to the client's request to open a message<br>> The time required by the server system attendant to receive a message that the client has sent<br>> The time required by the server to respond to the client's request to delete a message |
| Server Roundtrip | The time required to send messages round-trip between two Exchange servers in your organization |
| Internet Server Roundtrip | The time required to send messages round-trip between the Exchange server and a foreign mail server or between the Exchange server and an Internet mail server |

## SERVER-SERVER ROUNDTRIP RESPONSE TIME MONITOR (SERVER RTRT MONITOR)

The Server-Server RTRT Monitor lets you test messaging connectivity (messaging capability and network connectivity) between Exchange Servers in an organization. At a defined polling interval, the monitor sends a mail message from the source Exchange server (containing the monitor) to a target Exchange server specified in the monitor. Upon receipt of this message, the Server-Server RTRT Monitor component on the target Exchange Server responds to the e-mail message by sending a reply to the source Exchange server. If the e-mail message returns to the source Exchange Server, you know the message transport is operational. Sending an e-mail message is different from sending a ping message using the TCP/IP Ping utility. Sending a TCP/IP ping message to a remote server shows only network connectivity; it doesn't verify that the Routing Engine (MTA or SMTP) is working. A Server-Server RTRT Monitor e-mail message confirms that both servers are messaging-capable as well as network-connected.

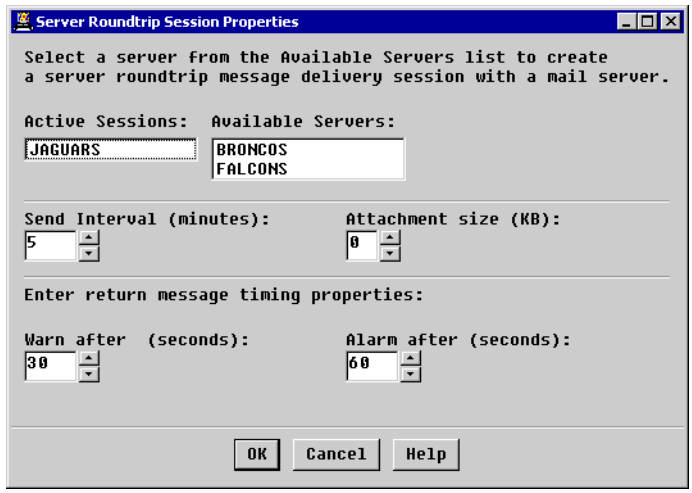
### Configuring Server-Server RTRT Monitor

The Server-Server RTRT Monitor can be configured from within a PATROL console connected to a PATROL Agent (on an Exchange Server) running PATROL for Microsoft Exchange Servers. Use the following steps:

1. Expand the Exchange icon beneath the host service icon.

2. Access the Roundtrip Responses application class menu.

3. Choose the **Create Session =>Exchange =>Server** menu command to display the Server Roundtrip Session Properties dialog box which is shown below.




- The Active Sessions field contains a list of target Exchange servers whose links are being monitored from the source Exchange server.

- The Available Servers field contains a list of Exchange servers within this Exchange organization whose link to the source Exchange server can be tested.

***Note:*** By default, the source Exchange server is not listed. If you want the source Exchange server to be listed, giving you the capability to get responses times to and from the source server, set the Agent Configuration variable *enableLocalE2E* to 1 using the wpconfig utility.

- The Send Interval field displays the interval that synthetic e-mail messages are sent from the source Exchange server to the target Exchange server. The default interval is 5 minutes, but you must determine the usual message transit time (baseline) between the two servers and consider special circumstances.

***Example.*** If the usual roundtrip transit time for a message is 6 minutes, you may want to increase the send interval to a value higher than the default setting of 5 minutes; otherwise messages will continue to be sent from the source server before they have been responded to by the target server, resulting in additional load on the Exchange server.

A very high value for the send interval is not recommended because PATROL for Microsoft Exchange Servers may not be able to gauge the status of the link accurately.

***Example .*** If the send interval is set to two hours, and the first message was sent at 1:00pm, the next message will be sent at 3:00pm. If the link between the Exchange servers is down from 1:09 pm until 2:59pm, no error will be reported. The status of the link will be reported as functional because it was up during both polling times.

Conversely, a very low value for the send interval will increase the load on your Exchange server excessively.

If a scheduled messaging connector is typically down at night, disable monitoring the link when it's not operating. Similarly, disable monitoring a server while it's performing a scheduled maintenance operation such as an offline backup. Ensure that all your target Exchange servers are up and running and load the PATROL Agent with PATROL for Microsoft Exchange Servers.

- The Warn after field displays the interval that the source Exchange server waits to receive a response message from the target Exchange server. If the response exceeds this time interval, the monitor flags a warning; the default is 30 seconds.

- The Alarm after field displays the interval that the source Exchange server waits to receive a response message from the target Exchange server. If the response exceeds this time interval the monitor flags an alarm; the default is 60 seconds.

To determine an acceptable Warn or Alarm interval, benchmark what you consider a normal round-trip time interval (baseline value) and set the Warn and Alarm intervals accordingly. A return message from the target Exchange server depends on many factors, such as Exchange server load, network bandwidth, network topology, and the number of hops through routers.

- The Attachment Size field displays the size of the attachment (an ASCII text file) to be sent with each message from the source Exchange server to the target Exchange server. Obtain baseline values of the average size of attachments sent from the source Exchange server to the receiving Exchange server to determine an appropriate value for attachment size.

### Exchange Architectural Overview of Server-Server RTRT Monitor

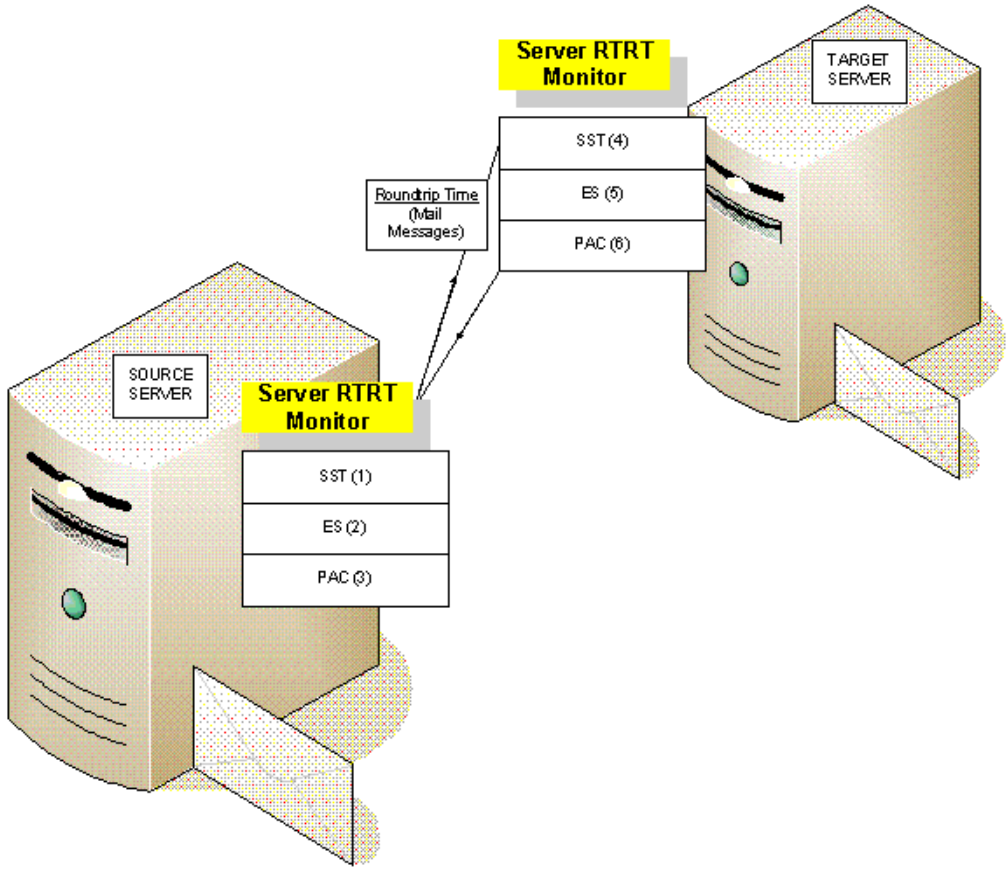
The major components of the Server RTRT Monitor are

- Session, Send and Timer component (**SST**): This component contains session information for all the Server RTRT sessions that are currently active; three sets of timers for the send interval, alarm interval, and warn interval; and a module to send e-mail messages to the target server.

- Event Sink component (**ES**): This component registers with the Microsoft Message Notification system and is notified whenever a mail message has arrived at a particular mailbox on the server.

- PATROL Agent Communication/Data Multiplexer-Demultiplexer component (**PAC**): This component handles communication between the SST and ES components and the PAROL Agent and also multiplexing and demultiplexing of various data streams.

The interaction between the various components is depicted below for an active Server-Server RTRT session between the source Exchange server and the target Exchange server:




[a] The Send Interval timer for the active session expires and a component (1) on the source Exchange server sends an e-mail message to the target Exchange server.

[b] A component (5) on the target Exchange server is notified of the arrival of the e-mail message from the source Exchange server.

[c] The component (5) on the target Exchange server responds to the message from the source Exchange server by sending a reply.

[d] The component (2) on the source Exchange server is notified of the arrival of the reply e-mail message from the source Exchange server. Once it parses the reply message, it calculates the Roundtrip response time. If a reply message does not arrive at the source Exchange server within the Alarm or Warn interval, the corresponding Alarm or Warn timers as in component (1) time out.

[e] The component (3) on the source Exchange Server notifies the PATROL Agent with the calculated Roundtrip times if they were obtained or sends an Alarm or Warn notification if a response from the target server was not obtained within the Alarm or Warn intervals.

***Note:***

1. All the components listed above are contained in the processes **MSEXCHE2E.exe** and **MSEXCHRoundtrip.exe** on the source and target server machines.

2. You can create Roundtrip server sessions between Exchange servers

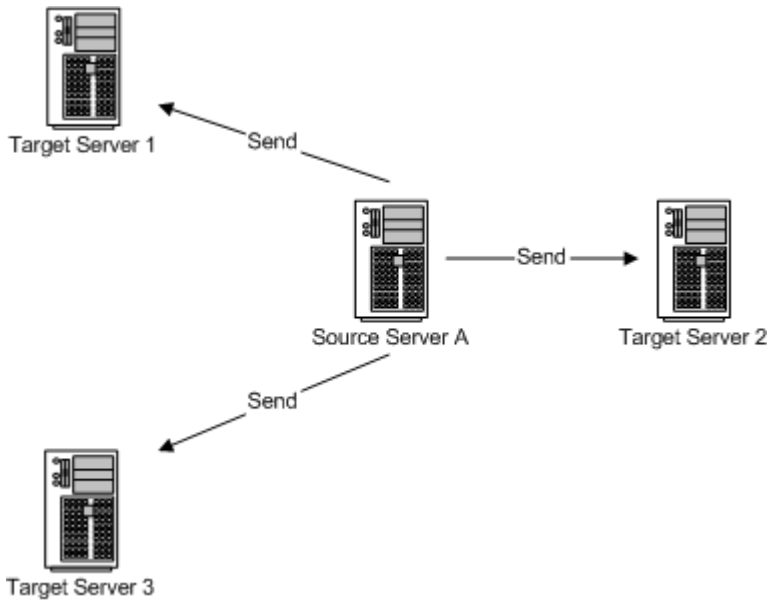
- in the same Exchange organization
- running the same version of PATROL for Microsoft Exchange Servers

### Server-Server RTRT Configurations

There are several ways that a Roundtrip session can be set up to monitor Exchange Server response times.

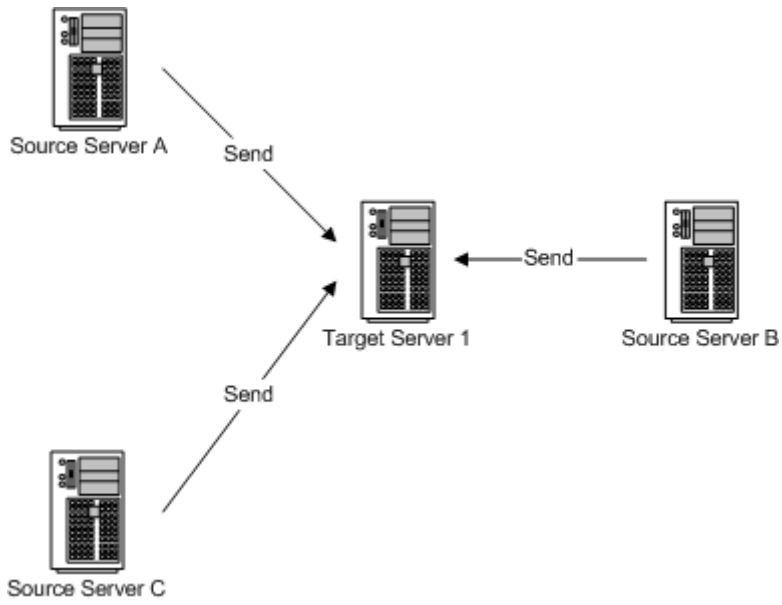
### *Outward Star.*

In the outward star configuration, a single server is used as the source server, and it initiates Roundtrip messages to many target servers. Use this configuration to monitor the response time of a central office and several remote offices. The outward star is displayed in the following figure:



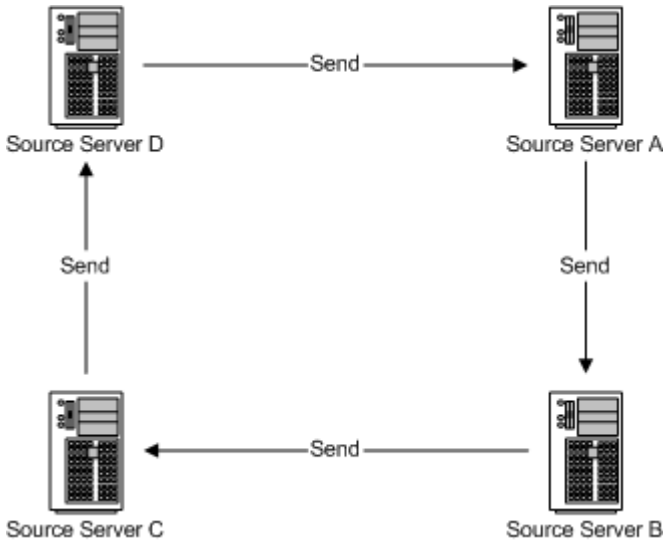
### *Inward Star.*

In the inward star configuration, many servers act as source servers to a single target server. This configuration is similar to the outward star but has the advantage of reducing the resources used on the single target server. The practical limit to the number of servers acting as targets from a single source is 10 to 15 target servers per source server. When this limit is reached, the resources needed to process messages from all the target servers interferes with KM parameter updates. The inward star configuration is displayed in the following figure:



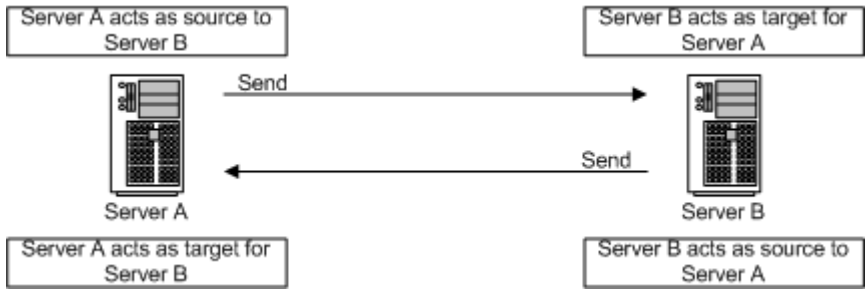
### *Circular.*

In a circular configuration, Roundtrip sessions are established between servers in a series. Each server acts as a source server to a different target server, eventually looping back to the original source server. This is a useful configuration if e-mail must pass through an intermediate server while in route to another server. The following figure depicts a circular configuration, where e-mail from Server A to Server C must first pass through Server B.



### *Two-Way.*

In a two-way configuration, Server A acts as the source server to Server B, and Server B acts as a source server to Server A. There is little advantage to performing two-way Roundtrip monitoring because there should be no difference between a Roundtrip session from Server A to Server B versus a Roundtrip session from Server B to Server A. In both cases, e-mail is sent from one to the other and a reply is sent from one to the other. However, if the Send interval, Warn after, and Alarm after time periods are short, this is one of the best methods for determining that an Exchange server is experiencing problems. If the Roundtrip intervals are shorter than the polling cycles for service and process monitoring, then Roundtrip will go into alarm. It is not always advisable to set Roundtrip parameters to very short intervals because you could be prone to false alarms. The two-way configuration is displayed in the following figure:




## CLIENT-SERVER ROUNDTRIP RESPONSE TIME MONITOR (CLIENT RTRT MONITOR)

The Client-Server RTRT Monitor lets you test the performance and availability of the Exchange server from an end-user perspective and test messaging connectivity (messaging capability and network connectivity) between an e-mail client within any site in an Exchange organization and the Exchange server. To ensure that end-users within the Exchange organization are effectively supported, administrators need to monitor the Exchange server from an end-user perspective for maximum performance. At a defined polling interval, the Client RTRT Monitor (which emulates an e-mail client) on a client machine queries the Exchange server and obtains statistics such as logon time, logoff time, time to create a message, time to delete a message, and time to send a message. During this polling interval, the Client RTRT Monitor also sends e-mail to the Exchange server which inturn replies to the message, verifying that the link between the two machines is operational.

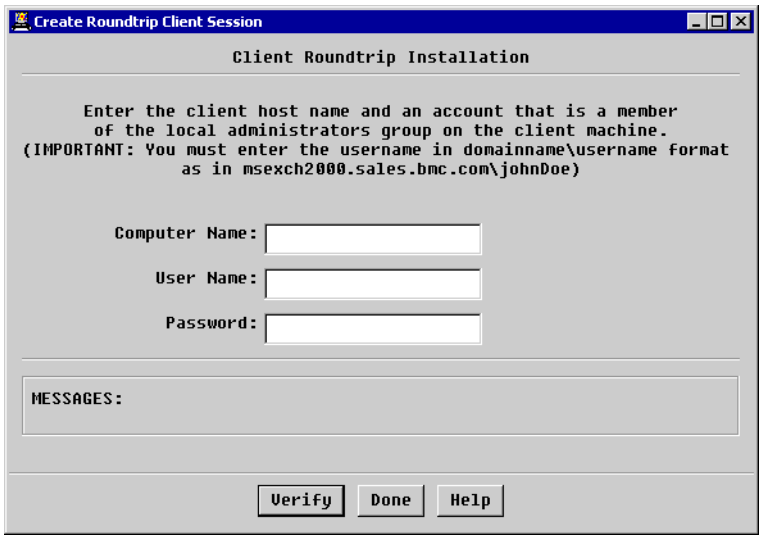
### Configuring Client-Server RTRT Monitor

The Client-Server RTRT Monitor can be configured from within a PATROL console connected to a PATROL Agent (on an Exchange Server) running PATROL for Microsoft Exchange Servers. Use the following steps:

1. Expand the Exchange icon beneath the Host Server icon.

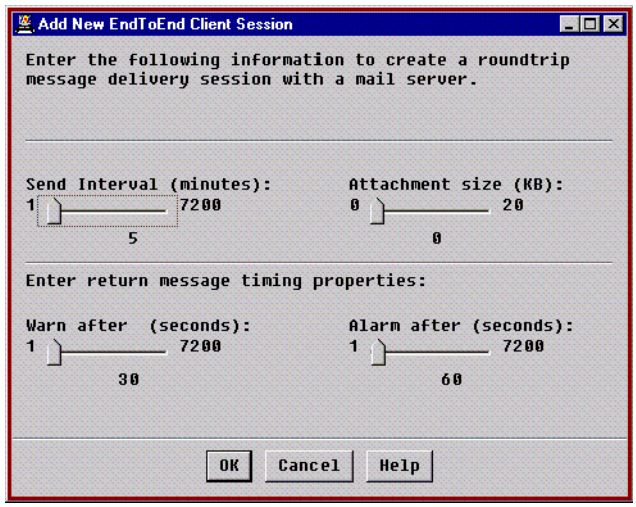
2. Access the Roundtrip Response application class menu.

3. Choose the **Create Session => Exchange => Client** menu command to display The Create Roundtrip Client Session dialog box, which is shown below.




4. Enter the name of the client machine (from which the end user experience needs to be measured) in the **Computer Name** field. Enter a domain user that has administrative privileges on the client machine in the **User Name** field. Enter the domain user's password in the **Password** field.

5. Click **Verify** and then click **Done** to display the Add New EndToEnd Client Session dialog box which is shown below.




- The Send Interval field displays the periodic interval that the source client machine queries the target Exchange server to obtain end-user statistics. Also, this is the interval during which synthetic e-mail messages are sent from the source client machine to the target Exchange Server in the calculation of roundtrip times. The default interval is 300 seconds or 5 minutes.

- The Warn Interval field displays the interval that the source client machine waits to receive a response message from the target Exchange server . If the response time exceeds this time interval the monitor issues a warning; the default interval is 30 seconds.

- The Alarm Interval field displays the latest interval that the source client machine waits to receive a response message from the target Exchange server. If the response time exceeds this time interval the monitor issues an alarm; the default interval is 60 seconds.

***Note:*** To determine an acceptable Warn or Alarm interval, benchmark what you consider a normal Roundtrip time interval (baseline value) and set the Warn and Alarm intervals accordingly. A return message from the target Exchange server depends on many factors such as Exchange server load, network bandwidth, network topology, and the number of hops through routers.

- The Attachment Size field displays the size of the attachment to be sent with each message from the source client machine to the target Exchange server.

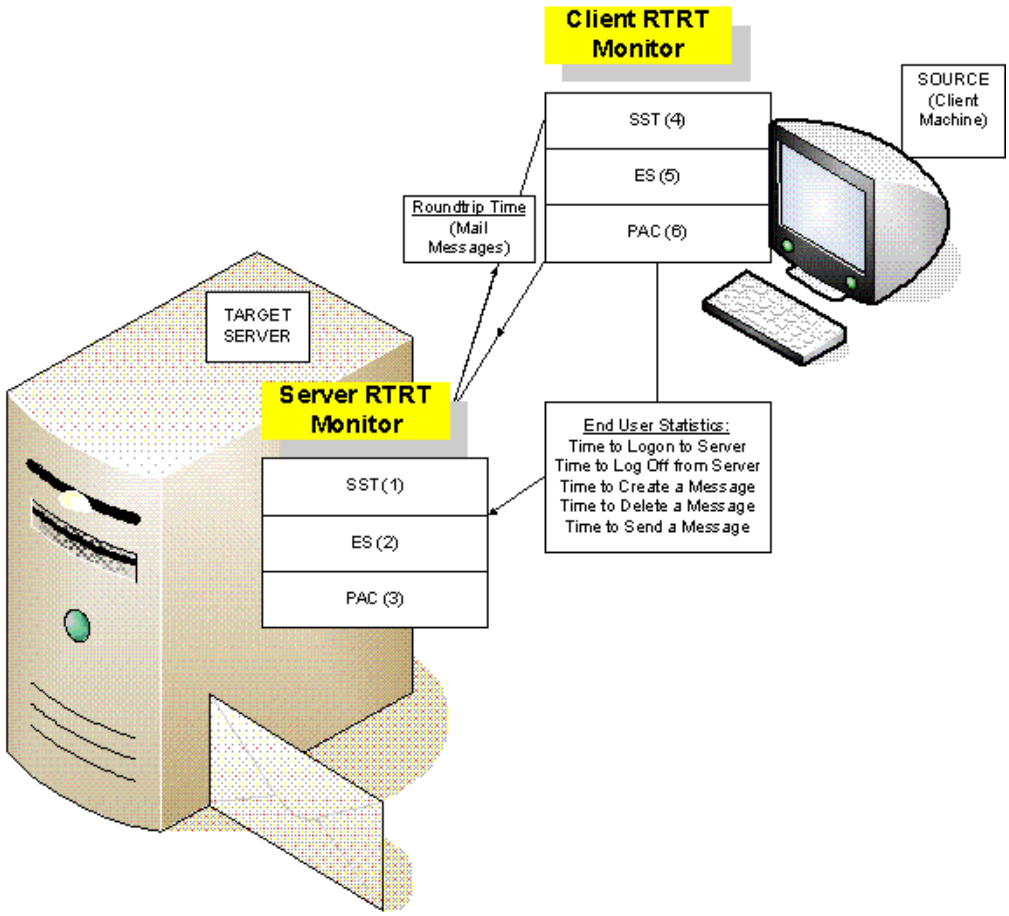
## Architectural Overview of Client-Server RTRT Monitor

The major components of the Client-Server RTRT Monitor are

- Session, Send and Timer component (**SST**): This component contains session information for all the Server RTRT sessions that are currently active, three sets of timers for the send interval, alarm interval, and warn interval, and a module to send e-mail messages to the target server

- Event Sink Component (**ES**): This component registers with the Microsoft Message Notification system and gets notified whenever an e-mail message has arrived at a particular mailbox on the server

- PATROL Agent Communication /Data Multiplexer-Demultiplexer component (**PAC**): This component handles communication between the SST and ES components and the PAROL Agent and also multiplexing and demultiplexing of various data streams



The interaction between the various components is depicted for an active Server-Server RTRT session between the source Exchange server and the target Exchange server:

[a] A Client-Server RTRT session is initated from the Exchange Server. A Component (3) deploys the Client RTRT monitor to the client machine.

[b] The Send Interval timer for the active session expires and a Component (4) on the source client machine sends an e-mail message to the target Exchange server.

[c] A Component (2) on the target Exchange server receives notification of the e-mail message arrival from the source client machine.

[d] Component (2) on the target Exchange server responds to the message from the source client machine by sending a reply.

[e] Component (5) on the source client machine receives notification of the reply e-mail message arrival from the target Exchange server. After it parses the reply message, it calculates the Roundtrip response time. Also, end-user statistics such as logon time, logoff time, time to create a message, time to delete a message, and time to send a message are obtained. If a reply message does not arrive at the source client machine within the Alarm or Warn interval, the corresponding Warn or Alarm timers in Component (4) time out.

[f] Component (6) on the source client machine sends the PATROL Agent (on the target Exchange server) the end-user statistics and calculated Roundtrip times if they were obtained, or sends an Alarm or Warn notification if the response from the target server was not obtained within the Alarm or Warn intervals.

***Note:*** ·

- All the components listed above are contained in the processes **MSEXCHE2E.exe** and **MSEXCHRoundtrip.exe** on the source client and target server machines. On the client machine, the process **MSEXCHE2E.exe** starts up as a Windows service.

- You can monitor mail response time between an Exchange client and an Exchange server if the client meets the following requirements:

  - runs one of the following operating systems:
    - Windows NT Server 4.0 SP6a or higher
    - Windows NT Workstation 4.0 SP6a or higher
    - Windows 2000 or XP Professional
  - is an Exchange client in the same domain as the monitored Exchange server
  - the account used has Administrator privileges
  - has one of the following Messaging API (MAPI) enabled software applications installed:
    - Microsoft Outlook (Version 97, 98, 2000, or XP)
    - Exchange Client 5.0 or later (installed with Windows Messaging)

- Windows 95, Windows 98, or Windows ME Exchange clients cannot be monitored.

## SERVER-INTERNET SERVER ROUNDTRIP TIME MONITOR (INTERNET SERVER RTRT MONITOR)

The Server-Internet Server RTRT Monitor allows you to test messaging connectivity (messaging capability and network connectivity) between an Exchange Server and any foreign mail server connected to the Internet. At a defined polling interval the monitor sends an e-mail message from the source Exchange server (containing the monitor) to an invalid user on the target foreign mail server. Upon receiving a message destined to an invalid recipient, the Administrator/Postmaster on the the foreign mail server sends a Non-Delivery Report (NDR) response back to the source Exchange server. If the NDR is returned to the source Exchange server, message transport and the link between the two servers is operational.

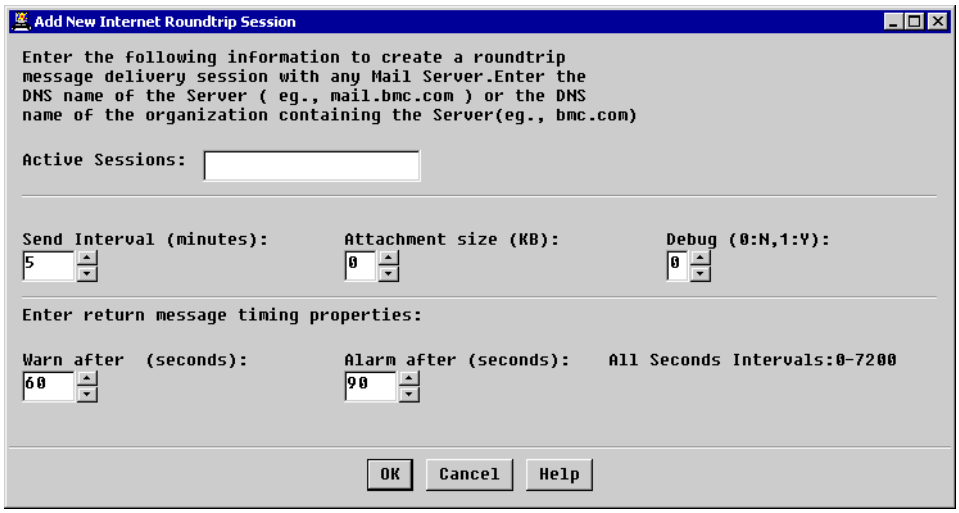
### Configuring Server-Internet Server RTRT Monitor

The Server-Internet Server RTRT Monitor can be configured from within a PATROL console connected to a PATROL Agent (on an Exchange Server) running PATROL for Microsoft Exchange Servers. Use the following steps:

1. Expand the Exchange icon beneath the host server icon.

2. Access the Roundtrip Response application class menu.

3. Choose the **Create Session => Internet Server** menu command to display the Add New Internet Roundtrip Session diaglog box, which is shown below:




4. Complete the dialog box.

- In the Active Sessions field, enter the fully qualified domain name (FQDN) of the foreign mail server (for example, mail.XXX.com) or the DNS domain of the mail server (for example, XXX.com). If you use the DNS domain, the multiplexer records contained in the DNS Server of the domain XXX.com are queried to obtain the corresponding mail server for this domain.

- The Send Interval field displays the periodic interval that synthetic e-mail messages are sent from the source Exchange server to the foreign mail server. The default interval is 5 minutes, but you must determine the usual message transit time (baseline) between the two servers and consider special circumstances.

***Example.*** If the usual roundtrip transit time for a message is 6 minutes, you may want to increase the send interval to a value higher than the default setting of 5 minutes, otherwise messages will continue to be sent from the source server before they have been responded to by the foreign mail server, resulting in additional load on the Exchange server.

Do not use a high value for the send interval because PATROL for Microsoft Exchange Servers may not be able to guage the status of the link accurately.

***Example.*** If the Send Interval is set to two hours and the first message was sent at 1:00pm ,the next message will be sent at 3:00pm. If the link between the Exchange servers is down from 1:09pm until 2:59pm, no error will be reported. The status of the link will be reported as functional because it was up during both polling times.

Conversely, do not use a low value for the send interval, as this will increase the load on your Exchange server excessively.

If a scheduled messaging connector is typically down at night, you don't want to monitor the link when it's not operating. Similarly, you don't want to monitor a server while it's performing a scheduled maintenance operation such as an offline backup. You need to ensure that the source Exchange server is capable of receiving NDR's from foreign mail servers - if not, contact your network or mail administrator.

- The Warn Interval field displays the interval that the source Exchange server waits to receive a response message from the foreign mail server. If the response exceeds this time interval the monitor flags a warning; the default interval is 30 seconds.

- The Alarm Interval field displays the interval that the source Exchange server waits to receive a response message from foreign mail server. If the response exceeds this time interval the monitor flags an alarm; the default interval is 60 seconds.

To determine acceptable Warn and Alarm intervals, benchmark what you consider a normal roundtrip time interval (baseline value) and set the Warn and Alarm intervals accordingly. A return message from the foreign mail server depends on many factors, such as server load, network bandwidth, network topology, and the number of hops through routers.

- The Attachment Size field displays the size of the attachment to be sent with each message from the source Exchange server to the foreign mail server. Obtain baseline values of the average size of attachments sent from the source Exchange server to the foreign mail server to get an appropriate value for attachment size.

- The Debug field displays the option to enable tracing (0 = No debug mode; 1 = Debug mode) for this session. It creates a file called **IE2EDEBUG_<sessionName>.txt** (for example, **IE2EDEBUG_mail.XXX.com.txt**) in the **%PATROL_HOME/bin** directory.

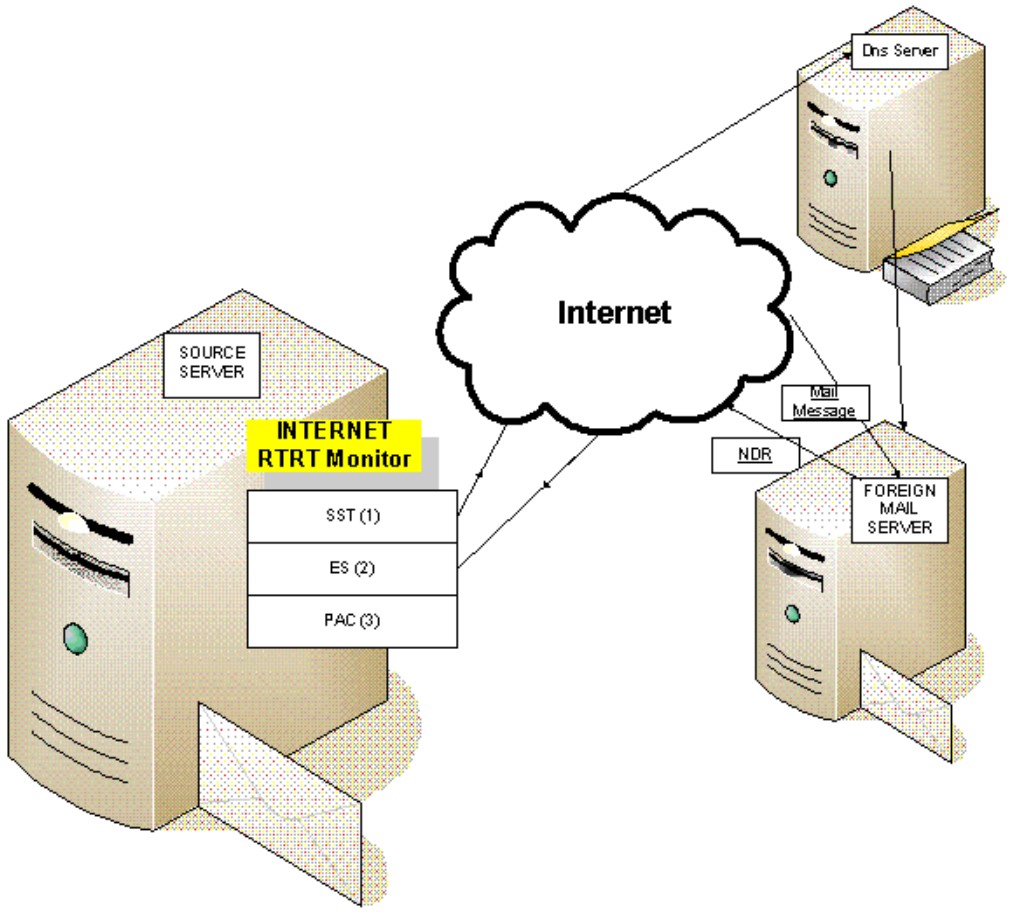
### Architectural Overview of Server-Internet Server RTRT Monitor

The major components of the Internet Server RTRT Monitor are

- Session, Send and Timer component (**SST**): This component contains session information for all the Server RTRT sessions that are currently active; three sets of timers for the send interval, alarm interval and the warn interval; and a module to send e-mail messages to the target server.

- Event Sink Component (**ES**): This component registers with the Microsoft Message Notification system (Advise Sinks in case of Exchange 5.5 and SMTP Transport Events in case of Exchage 2000/2003) and is notified whenever an e-mail message has arrived at a particular mailbox on the Server.

- PATROL Agent Communication/Data Multiplexer-Demultiplexer component (**PAC**): This component handles communication between the SST and ES components and the PAROL Agent and also multiplexing and demultiplexing of various data streams.




The interaction between the various components is depicted for an active Server-Internet Server RTRT session between the source Exchange server and the foreign mail server:

[a] The Send Interval timer for the active session expires, and a component (1) on the source Exchange server sends an e-mail message to an invalid user on the foreign mail server.

[b] If the e-mail is addressed to invalidUser@domain, the DNS Server is queried for multiplexer records pointing to the foreign mail server and the e-mail is forwarded to the foreign mail server. If the mail is addressed to invalidUser@fullyQualifiedDomainNameOfMailServer the e-mail is sent directly to the foreign mail server.

[c] The foreign mail server receives the e-mail and forwards it to the postmaster or administrator of the foreign mail server because the e-mail is addressed to an invalid user.

[d] The foreign mail server automatically sends a Non-Delivery Report to the source Exchange server.

[e] A Component (2) on the source Exchange server is notified of the arrival of the reply e-mail message from the foreign mail server. Once it parses the reply message, it calculates the Roundtrip response time. If a reply message does not arrive at the source Exchange server within the Warn or Alarm interval, the corresponding Warn or Alarm timers in component (1) time out.

[e] A Component (3) on the source Exchange server notifies the PATROL Agent with the calculated Roundtrip times, if they were obtained, or sends an Alarm or Warn notification if the response from the foreign mail server was not obtained within the Alarm or Warn intervals.

***Note:*** All of the components listed in the above interaction are contained in the following processes:

- **MSEXCHInetE2E.exe**
- **MSEXCHInetE2E_Proxy.exe**
- **MSEXCHInetE2E_EvSink.dll** (used in Exchange 2000/Exchange 2003 only)
- **MSEXCHInetE2E_SendMail.exe** (used in Exchange 2000/Exchange 2003 only)
- **MSEXCHInetE2E_Security.exe**

## CONCLUSION

Understanding what is a reasonable or typical Roundtrip response time in your Exchange environment is key to your ability to set and deliver your organization's service-level agreements (SLA). With PATROL for Microsoft Exchange Servers, you are empowered to take a more active role in determining what constitutes a reasonable SLA and ensuring that those SLAs are met by better understanding the health of your Exchange environment.

## TROUBLESHOOTING

In the event that you have issues with the Roundtrip session feature in PATROL for Microsoft Exchange Servers, in spite of following the procedures and suggestions provided in this whitepaper, the following section outlines some basic troubleshooting techniques.

### A Client Roundtrip Session is Constantly in Alarm

A client Roundtrip session can go into alarm for many reasons. If the Status parameter goes into alarm and does not recover, one of the following problems may be present.

***Local Queue .*** The local queue may be blocked.

Open one of the following local queues, located inside the Queues application class:

- Microsoft MDB (Exchange 5.5)
- <Fully Qualified Domain Name> (Exchange 2000/Exchange 2003)

If the Messages and OldestMsgAge parameters are in alarm, contact your Exchange administrator to diagnose the problem.

***Destination Server.*** The destination server is unreachable. A physical connection to the network may be disconnected or a server-related component may be offline.

- Open the Underlying Network application class. If BytesTotalPerSec parameter is in alarm, contact the network administrator to check the physical connections and components related to the server, such as DNS or WINS.

- Test the destination host at the transport layer, using a utility such as PING. If your test is unsuccessful, contact the network administrator to check the physical connections and components related to the server, such as DNS or WINS.

***Server Configuration.*** There is a server configuration problem or the connection between the two servers is down. The application layer of the destination host is configured incorrectly.

Test connectivity to the destination host at the application layer, using an e-mail client such as Outlook, to send e-mail to a mailbox on the destination host. If your test is unsuccessful, contact the Exchange administrator to verify that the Exchange server is configured correctly and is able to send and receive e-mail.

If you are unable to diagnose the problem with these four possible solutions, turn on RDEBUG and send the results to BMC Software Support.

### A Server Roundtrip Session is Constantly in Alarm

There are several points at which a server Roundtrip session problem can occur and cause the Roundtrip Server application class instance to go into alarm. If the Status parameter goes into alarm and does not recover, one of the following problems may be present.

***Source Server Sending.*** The source server is unable to send a message to the target server.

1. On a client server that has Outlook installed, logon as the source Exchange Mailbox account (for Exchange 2000 and Exchange 2003) or as the KM configuration account (for Exchange 5.5).

2. Create an Outlook profile for the source Exchange server and the Exchange Mailbox.

3. Open the mailbox.

4. Check the Outbox. If messages are accumulating in the Outbox, they are being created and submitted for sending, but are not being sent.

5. Check the Exchange outbound queues on the source server to see if messages are accumulating.

***Target Server Receiving.*** The source server sends the message (messages are accumulating in the Outbox), but it is never received by the target server.

1. Logon as the target Exchange Mailbox account (for Exchange 2000 and Exchange 2003) or as the KM configuration account (for Exchange 5.5).

2. Create an Outlook profile for the target Exchange server and the Exchange Mailbox.

3. Open the Inbox.

4. If the Inbox is empty, watch it for a few minutes.

5. When a message arrives, the target server reads and processes the message, then purges it. It will not appear in the Deleted box because it is purged. You may see messages appear and disappear. This would be normal processing.

6. If messages never appear in the Inbox, then check the inbound queues to see if messages are accumulating there.

***Target Server Responding.*** The message is sent by the source server and received by the target server, but the target server does not respond.

Check to see if the **MSEXCHE2E.exe** and **MSEXCHRoundtrip.exe** processes are both running.

***Source Server Receiving.*** The message is sent to, received by, and responded to by the target server, but the response never reaches the source server.

Check the target outbound queues to see if messages are accumulating there.

***Source Server Processing.*** The message is sent to, received by, responded to, and sent back by the target server, but never processed by the source server.

1. Check the source server to see if messages are accumulating there.

2. Logon to the source server as the Exchange Mailbox account (for Exchange 2000 or Exchange 2003) or the KM configuration account (for Exchange 5.5) and see if mail is accumulating in the Inbox.

3. If messages are accumulating in the Inbox, then **MSEXCHRoundtrip.exe** is not processing the mail received from the target server. This may mean that the Event Sink is no longer registered with the Exchange server.

4. Kill both the **MSEXCHE2E.exe** and **MSEXCHRoundtrip.exe** processes. They will both restart during the next discovery cycle.

***Target Server Queues.*** The queues named by the target server are blocked.

Open the destination queues application classes named as follows:

- From an Exchange 5.5 server to an Exchange 5.5 server: MTA Queues
- From an Exchange 2000/Exchange 2003 server to an Exchange 2000/Exchange 2003 server: SMTP Queues
- From an Exchange 2000/Exchange 2003 server to an Exchange 5.5 server: MTA Queues
- From an Exchange 5.5 server to an Exchange 2000/Exchange 2003 server: MTA Queues

These queues are located inside of the Queues application class.

If the Messages and OldestMsgAge parameters are in alarm, troubleshoot the queues for local queues blocked.

***Server Availability.*** A server-related component may be offline or the server may be physically disconnected.

- Open the Underlying Network application class. If the BytesTotalPerSec parameter is in alarm, contact the network administrator to check the physical connections and components related to the server, such as DNS or WINS.

- Test the destination host at the transport layer by pinging the server. If your test is unsuccessful, check the components related to the server, such as DNS or WINS, and the server's physical connections.

***Server Configuration.*** The application layer of the destination host is configured incorrectly.

Test the application layer at the target host. If your test is unsuccessful, verify that the Exchange server is configured correctly and is able to send and receive e-mail.

If you are unable to diagnose the problem with these possible solutions, turn on RDEBUG and send the results to BMC Software Support.

### An Internet Roundtrip Session is Constantly in Alarm

An Internet Roundtrip session can go into alarm for many reasons. If the Status parameter goes into alarm and does not recover, one of the following problems may be present.

***Blocked Queues.*** The queue names that correspond to the foreign mail server name are blocked.

Open one of the following foreign mail server queues, located inside of the Queues application class:

- SMTP Queues (Exchange 2000/Exchange 2003)
- MTA Queues (Exchange 5.5)

If the Messages and OldestMsgAge parameters are in alarm, contact your Exchange administrator to diagnose the problem.

***Network Problems.*** A physical connection may be disconnected or a server-related component may be offline.

Open the Underlying Network application class. If the BytesTotalPerSec parameter is in alarm, contact the network administrator to check the physical connections and components related to the server, such as DNS or WINS.

***Destination Server.*** The destination server is unreachable. A physical connection may be disconnected or a server-related component may be offline.

Test the destination host at the transport layer. If your test is unsuccessful, contact the network administrator to check the physical connections and components related to the server, such as DNS or WINS.

***Server Configuration.*** There is a server configuration problem, or the connection between the two servers is down. The application layer of the destination host is configured incorrectly.

Test the application layer of the destination host. If your test is unsuccessful, contact the Exchange administrator to verify that the Exchange server is configured correctly and is able to send and receive e-mail.

If you are unable to diagnose the problem with these four possible solutions, turn on RDEBUG and send the results to BMC Software Support.

## HELPING YOU MAINTAIN ADVANTAGE

BMC Software Professional Services helps your company maintain its competitive advantage through a comprehensive suite of services that includes service level management consulting, installation, implementation, configuration, and customization. Our professional services and education offerings are designed to ensure the ongoing availability of critical business applications, maximize product potential, reduce project risk, deliver IT value to your business, and improve your operations. For more information about BMC Software Professional Services, visit http://www.bmc.com/profserv.

## About BMC Software

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