



NRPC Mail

Lotus Mail Routing Team
May 9, 2012

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Welcome

Participant Passcode: 1624413



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AUSTRALIA	BRISBANE:	61-7-3102-0977	1-800-993-891
AUSTRALIA	CANBERRA:	61-2-6100-1977	1-800-993-891
AUSTRALIA	MELBOURNE:	61-3-9010-7746	1-800-993-891
AUSTRALIA	PERTH:	61-8-9467-5256	1-800-993-891
AUSTRALIA	SYDNEY:	61-2-8205-8111	1-800-993-891
AUSTRIA		43-1-92-80-299	0800-005-020
BELGIUM		32-2-403-1045	0800-4-9978
BRAZIL			0800-8911977
CHILE			1230-020-0254
CHINA	CHINA A:	86-400-810-4775	10800-712-1319
CHINA	CHINA B:	86-400-810-4775	10800-120-1319
COLOMBIA			01800-9-156417
CZECH REPUBLIC		420-2-25-98-56-22	800-700-227
DENMARK		45-7014-0277	8088-6033
ESTONIA			800-011-1111
FINLAND	Land Line:	106-33-142	0-800-1-13084
FINLAND	Mobile:	09-106-33-142	0-800-1-13084
FRANCE	LYON:	33-4-26-69-12-92	080-510-1036
FRANCE	MARSEILLE:	33-4-86-06-00-92	080-510-1036
FRANCE	PARIS:	33-1-70-70-74-22	080-510-1036
GERMANY		49-69-2222-7802	0800-000-3328
GREECE		30-80-1-100-0678	00800-12-6968
HONG KONG		852-3001-3847	800-930-445
INDIA	INDIA A:		000-800-852-1232
INDIA	INDIA B:		000-800-001-6218
INDIA	INDIA C:		1800-300-00465
INDONESIA			001-803-011-3781
IRELAND		353-1-431-9713	1800-932-282
ISRAEL			1-80-9214888

ITALY		39-02-3601-0952	800-986-557
JAPAN	OSAKA:	81-6-7739-4776	00531-12-1855
JAPAN	TOKYO:	81-3-5539-5169	00531-12-1855
LATVIA			8000-2931
LUXEMBOURG		352-27-000-1355	
MALAYSIA			1-800-80-2326
MEXICO			001-866-886-2374
NETHERLANDS		31-20-718-8518	0800-020-1250
NEW ZEALAND		64-9-970-4753	0800-446-096
NORWAY		47-21-59-00-54	800-10097
PANAMA			011-001-800-5072068
PERU			0800-53780
PHILIPPINES		63-2-858-3740	
POLAND			00-800-1212016
PORTUGAL			8008-60385
RUSSIA			8-10-8002-9693011
SAUDI ARABIA			800-8-110015
SINGAPORE		65-6883-9213	800-120-4336
SLOVAK REPUBLIC		421-2-322-422-32	
SOUTH AFRICA			080-09-98844
SOUTH KOREA		82-2-6744-1067	00798-14800-6849
SPAIN		34-91-414-29-40	800-098-585
SWEDEN		46-8-505-78-553	0200-890-172
SWITZERLAND		41-44-580-7529	0800-001-028
TAIWAN		886-2-2795-7363	00801-137-710
THAILAND			001-800-1206-65645
UNITED KINGDOM	BIRMINGHAM:	44-121-210-9032	0800-376-8334
UNITED KINGDOM	GLASGOW:	44-141-202-3232	0800-376-8334
UNITED KINGDOM	LEEDS:	44-113-301-2132	0800-376-8334
UNITED KINGDOM	LONDON:	44-20-7108-6315	0800-376-8334
UNITED KINGDOM	MANCHESTER:	44-161-601-1432	0800-376-8334
URUGUAY			000-413-598-3406
USA		1-210-795-1099	866-803-2145
VENEZUELA			0800-1-00-3751





Agenda

- What is NRPC?
- The MAIL.BOX
- The Router
- Notes Named Networks
- Connection Documents
- Sending a Message
- Troubleshooting
- Additional Resources

USA Toll Free 866-803-2145

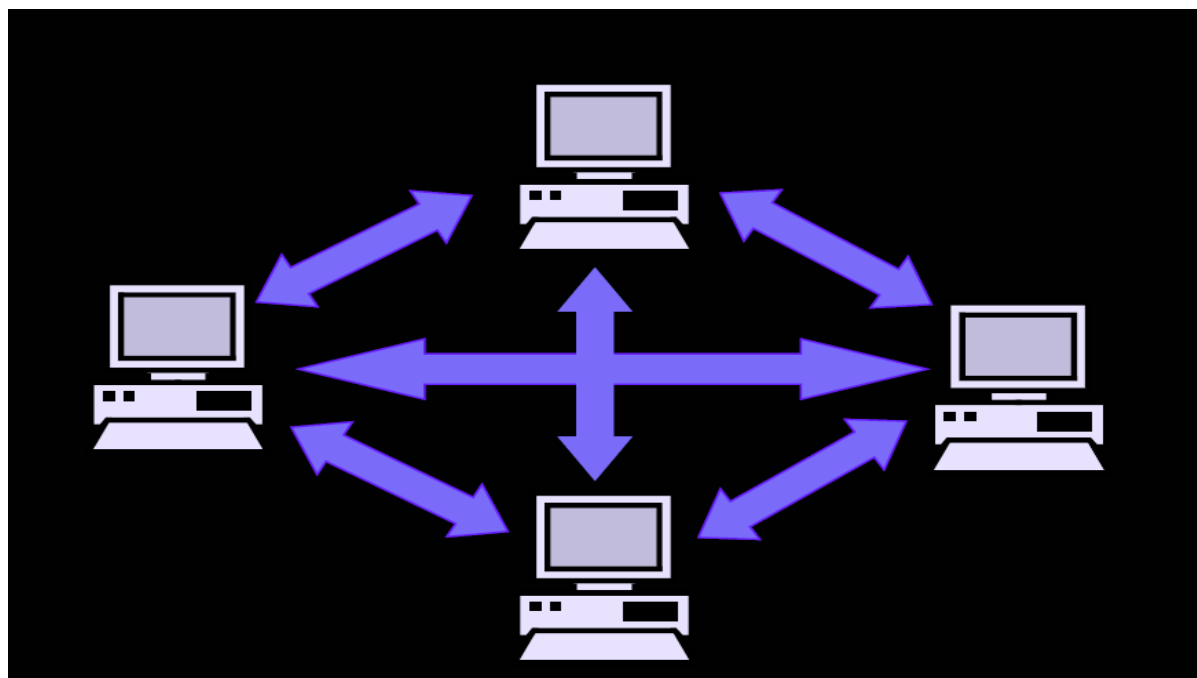
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NRPC: A Brief History

- NRPC (Notes Remote Procedure Call)
- Lotus Notes/Domino proprietary network protocol



What is the Purpose of the MAIL.BOX?

- Every Domino server must have a MAIL.BOX database(s) for mail routing to work.
- The Router scans the MAIL.BOX on the server for new messages and determines what to do with each message. The Router will either deliver them to a mail file on the local server or will transfer them to another server.
- It is recommended to always start with 2 MAIL.BOX files for mail box failover. This feature was introduced in Domino R6.



What Does the Router Do?

- Sends NRPC and SMTP mail
- Polls local MAIL.BOX for messages
- Determines whether each recipient is local (receives mail on local server) or remote
- Delivers messages to local recipients
- Calculates least-cost path to remote (destination) servers
- Performs MX record lookup for SMTP destinations and will use an A record if an MX record is not found
- Transfers messages to remote recipients including messages bound for the Internet
- Performs clean up and removes delivered and transferred messages from MAIL.BOX



The Role of Notes Named Networks (NNNs)

- On the Ports, Notes Network Ports, tab of the Server document, the server is assigned to one or more NNNs.
- A NNN is a group of servers in a given Domino domain that share a common protocol and are connected by LAN connections.
- NOTE: Servers within the same domain may or may not be in the same NNN, while servers that share a NNN are always in the same Domino domain.
- If two servers share a NNN, mail routes automatically between them without needing to create any additional connections or documents.
- If two servers do not share a NNN, connection documents between the two are needed for mail to route.



Connection Documents

- Needed for servers which are not in the same NNN and/or domain
- Local Area Network and Passthru Server connection documents are the most common types used for mail routing
- Important fields on a connection document:
 - “Routing task” should always be “Mail Routing” and not “SMTP Mail Routing” (The “SMTP Mail Routing” selection is used only for the Domino 4.6x SMTP MTA Server)
 - “Route at once if” determines the number of waiting messages to force a connection (1 is most common)
 - “Routing cost” is used to select the most efficient, least expensive way to route a message



Sending a Message Using NRPC

- A message is created on the client (Notes or iNotes)
- The client opens the mail.box on the server
- The client deposits message in mail.box
- The router dispatches to message in mail.box
- The router determines next hop or local delivery
- If hop(s) required, the router opens mail.box on next server
- The router deposits message in mail.box on next server (clients and servers behave similarly in this respect)
- This continues until destination server is reached
- For local delivery, the router delivers message to mail file



Troubleshooting NRPC

Helpful tools to use to troubleshoot NRPC issues:

- Telnet 'servername' 1352
- “Trace” from a Domino server console. Trace uses NRPC over port 1352 for Domino connections. It is also used to see if server names are resolving correctly in DNS.



Testing Using Telnet

Steps for testing using telnet:

1. Open command prompt on the source server
2. Type "`telnet (destinationServer) 1352`" and press "enter"

Please note that the above commands should be entered without the parentheses () or double quotes "".

If successful, you should see a blank command prompt window with a blinking cursor.

If not successful, you should see output similar to the following:

Connecting To (destinationServer)...Could not open connection to the host, on port 1352: Connect failed

This would indicate an underlying network connectivity issue between servers.



Testing Using Trace

Steps for testing using trace:

1. Go to Domino console in Server tab of Administrator client
2. Type "**trace (destinationServer/Org)**" and press "**enter**"

-Please note that the above commands should be entered without the parentheses () or double quotes "".

If successful, you should see output similar to the following:

Connected to server destinationServer/Org

If not successful, you should see output similar to the following:

Unable to connect to destinationServer/Org on TCPIP (The remote server is not a known TCP/IP host.)

Unable to find any path to destinationServer/Org because Unable to find path to server. Check that your network connection is working. If you have a working connection, go to Preferences - Notes Ports and click Trace to discover where it breaks down.

This would indicate an underlying network connectivity issue between servers or a problem with the connection document. Problems in a connection document would include no routing task being enabled or an incorrect optional network address.



Troubleshooting NRPC: An Outline



- 1) A Delivery Failure Report returned
- 2) No Delivery Failure Reports are returned, but the recipient never receives the message
- 3) Message is in a DEAD state in MAIL.BOX
- 4) Message is in a HELD state in MAIL.BOX
- 5) Message is PENDING: Issue a "tell router show" command at the server console
- 6) Check the console.log or Mail Routing Events view in the log.nsf to see if message was transferred to the next hop
- 7) Message is in a WAIT state.
- 8) Issue the command "show tasks" at the server console
- 9) Check the column title "Reason of last error"
- 10) DNS is unable to resolve the hostname to an IP address
- 11) Use Telnet to test connectivity to remote server on port 1352



Troubleshooting NRPC

- 1) If a Delivery Failure Report is returned to the sender, search Lotus Support KB for DFR error message. If not found or still unresolved, call into Lotus Support. [DONE]
- 2) No Delivery Failure Reports are returned, but the recipient never receives the message.

Open the MAIL.BOX file on the Domino Server

- a) If the message has a red circle icon beside it, go to Step 3.
- b) If the message has a red exclamation point (!) beside it, go to Step 4.
- c) If the message has no icons beside it, go to Step 5.
- d) If the message is not in the MAIL.BOX, go to Step 6.



Troubleshooting NRPC (continued)

- 3) Message is in a DEAD state

A message will be in a DEAD state when it cannot be routed forward or backward. This can happen when the intended recipient of the original message is unreachable and the Delivery Failure Report fails to send back to the original sender as well. This is typically seen with spoofed sender addresses (SPAM). [DONE]

- 4) Message is in a HELD state

There are only three reasons why a message may be HELD :

a) Domino is configured to hold undeliverable mail. (Enabled in the Configuration Settings document under the *Router/SMTP, Advanced, Controls* tab, in the section “Restrict name lookups to primary directory only”) [DONE]

b) There is a server mail rule configured to mark particular messages HELD (Enabled in the Configuration Settings document under the *Router/SMTP, Restrictions and Controls, Rules* tab) [DONE]

c) Third party products; particularly Anti-Virus software. (This is the most common reason) [DONE]



Troubleshooting NRPC (continued)

- 5) Message is PENDING: Issue the command "tell router show" at the server console.
 - a) If message state is WAIT, go to Step 7.
 - b) If message state is BUSY, go to Step 8.
 - c) If message state is RETRY, go to Step 9.
 - d) If message destination is not listed, go to Step 8.

- 6) Check the console.log or Mail Routing Events view in the log.nsf to see if the message was transferred to the next hop.
 - a) If next hop is a Domino server, go to Step 2.
 - b) If next hop is a non-Domino server, then Domino has done its job and the issue is non-Domino. [DONE]
 - c) If the message is not seen in the log, call Lotus Support. [DONE]



Troubleshooting NRPC (continued)

- 7) Message state is WAIT – Two possible reasons:
 - a) Message is tagged low priority and waiting for the low priority routing time range [DONE]
 - b) Connection document setting shows "Route at once if X messages pending" and the threshold of X has not yet been reached [DONE]

- 8) Issue the command "show tasks" at the server console
 - a) If there is only one router thread that shows IDLE, call Lotus Support. [DONE]
 - b) All router threads are in a state of "Connecting to ..." or "Transferring to ...". This can indicate server is simply under high load and mail is waiting for transfer threads to free up from other transfers. [DONE]
 - c) If there is one router thread that shows DISPATCHING, go to Step 10.



Troubleshooting NRPC (continued)

- 9) Check the column title "Reason of last error"
 - If it says, "Server not responding", then go to Step 10.
 - If it says, "Remote system not a known TCPIP host", then go to Step 11.
 - If it says, "No error", then call Lotus Support. [DONE]
- If the reason of last error is none of the above, call Lotus Support, or [Lotus Support Online](#) [DONE]



Troubleshooting NRPC (continued)

10) DNS is unable to resolve the hostname to an IP address

Verify that ALL NameServer keys in the registry are populated correctly

a) Launch the Registry (Start, Run, and type REGEDIT).

b) Look for the Registry key identified as:

`\HKEY_LOCAL_MACHINE\SYSTEM\CURRENTCONTROLSET\SERVICES\TCPIP\PARAMETERS\INTERFACES.`

c) Confirm "NameServer" string contains the correct IP address for DNS purposes; if it does not contain the IP address, enter it in that field and then restart the Domino Router. [DONE]



Troubleshooting NRPC (continued)

- 11) Use Telnet to test connectivity to remote server on port 1352
 - If unable to connect, then this is most likely a network or firewall problem. Please contact your network administrator. [DONE]
 - If able to connect, Domino may have been given a wrong value from DNS resolving the destination server. Go to Step 11.



Useful Server/Routing Commands

- Sh stat mail > Shows mail routing statistics
- Trace > Domino server name
- Sh task > Displays the status of the active server tasks
- Sh server > Shows server status information
- Sh nlcache reset > Clears the name lookup cache used by the router
- Route * > Routes all pending mail
- Tell router dump routing tables > Displays to console routing tables
- Restart task router > Automatically restarts the Router task, or SMTP, POP3, etc
- Tell router c > In place compaction of the mail.boxes.
- Tell router d > Shows message detail (sizes, times, and hop).
- Tell router e > Exits the router (same as tell router q).
- Tell router l > Lists the messages in queue and the routing state.



Useful Server/Routing Commands (continued)

- Tell router m > Shows memory usage by the router.
- Tell router o > Lists the out of office details.
- Tell router p > Pauses the router.
- Tell router q > Quits the router (same as tell router e).
- Tell router r > Resumes the router from a pause state.
- Tell router s > Shows the router queue state (delivery , transfer, dispatch and sweep threads).
- Tell router update config > Updates the routing tables.



Additional Resources

- Knowledge Collection: Common Lotus Notes/Domino Mail Routing problems



Questions

Press *1 on your telephone to ask a question.



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