

User Guide

Remote Network
Accelerator[™]

The logo for Remote Network Accelerator features the text "Remote Network Accelerator" in a sans-serif font. The word "Accelerator" is bolded and italicized. To the right of the text is a stylized graphic consisting of two overlapping, curved lines that form a partial circle, suggesting motion or acceleration.

LapLink[®] Remote Network Accelerator[™]
High Performance Tools for Remote Networking

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Patents

SpeedSync® U.S. Patent Number 5,446,888

LapLink® Remote Network Accelerator

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LapLink® Remote Network Accelerator User's Guide

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1 Introducing LapLink Remote Network Accelerator

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What is LapLink Remote Network Accelerator (RNA)?

LapLink RNA accelerates the connection to your office network from remote locations without changing the way you work. Running in the background on your computer, the LapLink RNA client software communicates with the LapLink RNA Server on the office network to improve performance by reducing the amount of data transferred over the connection. You can benefit from LapLink RNA whether you connect over a remote access server or a virtual private network (VPN) connection over the Internet.

Accelerates remote access

Like an increasing number of business people, you can no longer do without the network when you leave your office. Whether from home, a hotel, or some other remote location, you dial in to your office network as a matter of routine. Unfortunately these remote access connections typically are so slow that they reduce productivity and often incur unnecessary costs.

As a remote access accelerator, LapLink RNA uses sophisticated technologies to minimize the amount of data transferred and transfer it more efficiently. The result is that you can access your network resources faster and more efficiently.

LapLink RNA works regardless of how you connect to your office network; it improves connections whether you connect over a remote access server (RAS) or a virtual private network (VPN) over the Internet.

Works in the background

When you dial in to your office network you work much as you do when connected directly to the network in the office. Adding LapLink RNA accelerates your work, but nothing else changes: you don't have to learn new routines or change the way you work. Except for the improved performance, you aren't even aware that LapLink RNA is running.

Client/Server software solution

LapLink RNA consists of two services:

- LapLink RNA (the client service)
- LapLink RNA Server

The client runs on the computer you use to connect to the office. The server runs on any computer on your office network, either a network server or your workstation. The client and the server work together to accelerate connections.

LapLink RNA is entirely a software solution; there is no need to buy new equipment. And it works with a variety of remote access servers, including software (Windows NT RAS, for example) and hardware (such as Cisco 3000).

How does LapLink RNA work?

LapLink RNA speeds up remote access to your office network by compressing data and transmitting it more efficiently. In addition, it stores copies of network files locally, on your computer, and accesses this cache instead of the network whenever possible. When you update a file, LapLink RNA sends only the parts that have changed since the last update.

LapLink RNA speeds up remote access to your office network through a combination of technologies:

- Local storage of network files (caching)
- Incremental updates using SpeedSync
- Compression of data and more efficient transfer

As a result of these technologies, less data is transmitted, data is transmitted more efficiently, and remote network access is faster.

How caching works

When you access a network file from a remote location, LapLink RNA places a copy of the file in a cache on your local hard disk. While working on the file, you work from the cached copy. When you save the file, you update both copies. When you open the file again, LapLink RNA compares the network copy with the cached copy and opens the cached copy whenever they are identical. When the files are not identical, the cache is updated and then opened.

How SpeedSync works

When you are updating files, SpeedSync shortens transfer times by sending only the parts of the files that have changed since the last update.

SpeedSync works with your local cache to reduce the amount of data transferred. When you save a network file, for example, only the most recent changes are sent back to the network, not the entire file. The same thing happens when you reopen a network file that has been changed since the last time you accessed it from your remote location.

How transmissions are shortened

Compression speeds the transmission of data by “shrinking” files before they are sent and restoring them to their original sizes on arrival. For even greater efficiency, it also groups and compresses requests for data from the other computer.

Monitoring and customizing LapLink RNA

By double-clicking the LapLink RNA Service Manager icon in the Windows taskbar, you can monitor LapLink RNA and view a log tracking acceleration activity.

In addition, you can change the size and location of the cache, empty the cache, stop and restart acceleration, and perform such advanced operations as encrypting the cache to secure it.

Before installing LapLink RNA

Before you install LapLink RNA, make sure that your computer has the required hardware and software. Your office network must also meet certain requirements, including a network server or workstation running the LapLink RNA Server.

Install LapLink RNA Accelerator on the computer from which you connect to your office network. For the fastest remote access, a LapLink RNA server must be running on the office network you connect to. The LapLink RNA server can be run on a network server, or a workstation (for example, your desktop).

General system requirements

The office network must meet these requirements:

- A Microsoft or Novell NetWare network
- A computer running Microsoft Windows NT 4.0/Windows 2000 Server or Workstation, or Windows XP on which the LapLink RNA Server is installed.
- A VPN connection over the Internet or to a remote access server (RAS) (such as those available from Microsoft or Cisco).

Requirements for LapLink RNA clients

A computer on which the LapLink RNA client is installed must meet these requirements:

- Microsoft Windows 98, Windows NT 4.0/Windows 2000 Workstation, or Windows XP
- Intel or Intel-compatible processor that meets the requirements of your Windows operating system
- 8 MB RAM plus the RAM that meets the requirements of your Windows operating system
- 5 MB disk space free for the program files and at least 5 MB disk space free for the cache

LapLink RNA provides the most benefit when running in Windows 2000 or Windows XP.

See the *Installation and Quick Start Guide* for information on installing the LapLink RNA client to your computer, or contact your network administrator.

2 Getting Started: Your first LapLink RNA session

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Making an accelerated connection

You don't have to change the way you work to use LapLink RNA; just connect to your network as usual. Speed up your access over a slow connection by connecting to a LapLink RNA server. You only need to choose a LapLink RNA server once. After that, the connection occurs automatically.

Once you install LapLink RNA on your computer, acceleration occurs automatically whenever you connect to your network and start working with files.

Connecting to your network

Connect to your network as you normally do.

When you're connecting directly over a phone line to the network, this usually involves three steps:

- Dialing up the network using Microsoft Dial-Up Networking
- Logging on to the remote access server (RAS) on the network
- Logging on to your network

When you're connecting over the Internet to the network, this usually involves three steps:

- Connecting to the Internet through your Internet Service Provider (ISP)
- Logging on to the network VPN server.
- Logging on to your network

Depending on how these connections are setup, you may not see each specific step occur.

LapLink RNA accelerates even when you're locally connected to a network, but you'll notice the greatest improvements when you connect over a phone line.

To connect to your network using Dial-Up Networking, protocols that are used on your network (like TCP/IP) must be installed on your remote computer. Contact your system administrator for help.

When acceleration starts

LapLink RNA starts working as soon as you begin accessing files on the network. For instance, if you open a file in a word processor, or drag a file from the network to your desktop using Windows Explorer, LapLink RNA accelerates your access, opening and saving the file much faster than normal. To receive maximum acceleration benefits, connect to a LapLink RNA server.

Connecting to a LapLink RNA server

The first time you access network files over a slow connection, you're asked whether you want to connect to a LapLink RNA server. LapLink RNA does not necessarily connect to a LapLink RNA server when you work on a fast connection like a local network; local networks are usually fast enough not to require a server for acceleration, although LapLink RNA still accelerates using caching.

If a LapLink RNA server is available on your network (if you do not know, ask your network administrator), click Yes. A list of available servers on your network appears; browse your network to find the correct server. If you don't see the server you want, or if the server is not currently running on the network, add it by typing the server name or IP address. Click OK to connect to the server you specify and add it to your preferred server list. This server is used whenever you connect to your network over a slow connection and access files.

If you don't know which server to connect to, or don't plan to connect to a server, click No. You can specify a server to use for future sessions using the LapLink RNA Service Manager. Until you specify a server to connect to (or tell LapLink RNA you don't want to connect to a server), you are asked to specify a server every time you access network files over a slow connection. For information on designating and changing LapLink RNA servers, see chapter 4, "Managing server connections."

Alternatively, you may use the Connect button to select a server and create a connection. Click the Connect button twice. If a server is not designated, you will be asked to select a server or type in the IP address. When a server is designated, click OK. LapLink RNA will do the rest.

If you have disabled the LapLink RNA service, you must use the Connect button to create a connection after re-enabling the service.

Working with files on the network

LapLink RNA works 'behind the scenes' whenever you're connected to your network; files are opened and saved faster than before, and when you access a file that you've worked on before, you always work faster. Try performing the same steps with and without acceleration enabled to see how LapLink RNA speeds up your work on the network.

LapLink RNA provides statistics that help you see how much acceleration you're receiving. For information on understanding LapLink RNA statistics, see page 16.

Acceleration is usually perceptible immediately, but you might want to time each task in step three and step five to see exactly how much improvement you get.

Since some of the files you worked with might still be stored in memory, restarting Windows ensures that you get true acceleration results when performing this demonstration.

Acceleration in action

You're likely to notice improvements right away when you open and save files remotely with LapLink RNA running. However, you can get a better sense of how much improvement you're really getting with LapLink RNA by working with and without it enabled. Try the demonstration below to see how much faster you can work using LapLink RNA.

Acceleration is more noticeable over a remote connection; it is recommended that you try this demonstration over a phone line.

Step one: Disable LapLink RNA.

- 1 Double-click the LapLink RNA Service Manager icon on the Windows taskbar.
- 2 Click LapLink RNA and click the Disable button on the toolbar.

Step two: Connect to the network as you usually do.

Step three: Perform the steps below and note how long each step takes.

- 1 Copy a file from the network to your desktop.
- 2 Open a different file on your network, one that you can make changes to and save. A large file (one megabyte or larger) is recommended. For instance, you can use a word processing document containing several graphics.
- 3 Once the file is open, examine the file by scrolling or paging through it until you see all of the file. Note how long it takes to view the whole file.
- 4 Make a change to the file and save it, and then close the file.
- 5 Open the file again.
- 6 Close the file, and restart Windows.

Since LapLink RNA is disabled, these steps are performed without any caching or compression.

Step four: Enable LapLink RNA.

- 1 Double-click the LapLink RNA Service Manager icon on the Windows taskbar.
- 2 Click LapLink RNA and click the Enable button on the toolbar.

Step five: Repeat the steps in step three, noting how long each step takes now that LapLink RNA is enabled.

- 1 Copy the first test file from the network to your desktop.
- 2 Open the second test file.
- 3 Once the file is open, examine the file by scrolling or paging through it until you see all of the file. Note how quickly you can view the whole file.

For information on connecting to a LapLink RNA server, see page 9.

If you're connected to a LapLink RNA server, LapLink RNA uses compression to transfer the file, and the entire file is transferred faster using acceleration.

- 4 Make a change to the file and save it, and then close the file.

LapLink RNA transfers only the changed part of the file to the network (using SpeedSync), so saving the file is much faster than before.

- 5 Open the file again.

Since you just saved the file and there have been no changes to it, LapLink RNA opens it directly from the cache, without accessing the network.

- 6 Close the file.

If you often work with the same files, much of your speed improvement comes from caching. Be sure your cache is big enough for all the files you access. For more information on caching, see page 18.

After you've tried these steps, experiment with different types of files. Acceleration performance varies according to the types of files you're transferring, the speed of your connection, and your cache size.

3 Changing acceleration settings

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Overview of LapLink RNA settings

Customize LapLink RNA by changing the LapLink RNA settings. Manage acceleration and change cache and logging settings in the LapLink RNA Properties dialog box. Access the service's properties by double-clicking the LapLink RNA service in the LapLink RNA Service Manager. Click the General, Cache, Logging, or Advanced tabs to access different properties.

LapLink RNA settings determine how to accelerate remote network activity from your computer. They let you control the LapLink RNA cache and determine how to log acceleration activity. LapLink RNA settings affect your computer only; they do not affect the LapLink RNA server or other computers on your network.

Accessing the LapLink RNA Properties dialog box

View and change LapLink RNA settings in the LapLink RNA Properties dialog box. This dialog box runs independently of the LapLink RNA Service Manager. You can keep it open even after you close the LapLink RNA Service Manager, and you can work in the LapLink RNA Service Manager without closing the dialog box.

To access the LapLink RNA Properties dialog box:

- 1 Open the LapLink RNA Service Manager by double-clicking its icon on the Windows taskbar.
- 2 Do one of the following:
 - Double-click LapLink RNA.
 - Click LapLink RNA and click the Properties button.
 - Click LapLink RNA and click Properties on the Service menu.
 - Right-click LapLink RNA and click Properties on the shortcut menu.

To close the LapLink RNA Properties dialog box without applying changes, click the Cancel button.

Accessing different types of properties

The LapLink RNA Properties dialog box is made up of four tabs: General, Cache, Logging, and Advanced. Each tab contains different information about the LapLink RNA service.

The buttons at the bottom of the dialog box affect the entire dialog box, not just the current tab. For example, if you click the Apply button when the Cache tab is active, you apply any changes you made on the General, Logging, and Advanced tabs as well.

To access different types of properties:

- Click the tabs at the top of the LapLink RNA Properties dialog box.

Monitoring acceleration and resetting statistics

Acceleration statistics show how your remote network access benefits from LapLink RNA. View the total amount of data passing over the connection, the average speed at which it is transferred, and how much of it is accelerated. Statistics are persistent between sessions. Click the Reset Statistics button to set all values to zero and start recording them again.

Monitor acceleration statistics to learn details about how you are benefiting from LapLink RNA's network acceleration. LapLink RNA displays acceleration statistics on the General tab in the LapLink RNA Properties dialog box. The statistics show details about the information passed between your remote computer and the network.

All statistics are persistent between sessions. They show accumulated or average values since you installed LapLink RNA or since you last clicked the Reset Statistics button. This lets you monitor performance over a long period of time.

What do the statistics mean?

Total Bytes Sent and Received shows the total number of bytes that your computer has requested to receive from or send to the network.

Unaccelerated and **Accelerated** indicate how much of the information transferred over the remote connection is accelerated. LapLink RNA first looks in the cache to see if it can use data stored there. If possible, it uses SpeedSync to transfer only information that is not cached. It compresses the remaining data to the smallest size possible to transfer it quickly. All data that is found in the cache or compressed is *accelerated* data. The actual data that transfers across the connection is *unaccelerated*. The more accelerated bytes, the faster the transfer.

Saved by Compression and **Saved by Caching/SpeedSync** break down the accelerated statistic to show how that total was reached. If you access the same network files regularly, you will see a higher value in the Saved by Caching/SpeedSync statistic. Otherwise, most acceleration is a result of LapLink RNA's compression.

Acceleration Ratio represents the level of acceleration achieved. A value of 300% means that LapLink RNA is making file access three times faster than it would be without acceleration.

Average Speed shows the average speed of data traveling across the connection when files are opened or transferred.

Check the acceleration ratio for a quick look at how much faster LapLink RNA makes remote access.

Resetting statistics

Reset statistics if you want to closely monitor specific network activity. For example, if you want to learn the details about how a particular file is accelerated, reset the statistics before you transfer the file. You

can then check to see how much of the file was accelerated, and how much faster you can actually work with LapLink RNA.

To reset statistics:

- 1 Open the LapLink RNA Service Manager by double-clicking its icon on the Windows taskbar.
- 2 Double-click LapLink RNA.
- 3 Click the Reset Statistics button.

Managing the cache

LapLink RNA keeps a cache of network files to reduce the amount of information passing between the network and your remote computer. Change the cache location by typing or selecting a new path. Drag the Max Cache Size slider to change the allowed size of the cache. LapLink RNA automatically removes the oldest information from the cache when it reaches the set size limit.

How does the cache work?

The cache is storage space on the hard disk of the computer you're using. When you access a network file away from the office, LapLink RNA places a copy of the file in the cache.

The next time you access the remote file, LapLink RNA compares the version of the file in your cache with the version on the network. If the cached copy is the same, LapLink RNA opens the cached copy instead of the network file. This is much faster than accessing the file using the remote connection.

LapLink's patented SpeedSync technology works with your cache to reduce the amount of information passed between the remote computer and the network. It cuts file transfer times by sending only the parts of a file that have changed since your last update.

When you copy, move, or edit a file, SpeedSync searches the target location (the network directory or the cache) for a file with the same name. If it finds one, SpeedSync compares the two versions to locate changes in the source file. It then copies, moves, or applies only the changes, not the entire file, to the target location. This means that far less information travels across your connection.

Setting the cache location and size

Determine where LapLink RNA stores the cache by setting the location on the Cache tab in the LapLink RNA Properties dialog box. The cache can reside on any local hard disk drive, not on a network, CD-ROM, or floppy disk drive.

Set the maximum size of the cache to specify how much disk space it can take up. LapLink RNA does not reserve the allotted space for its cache. You can set the cache to take up a large percentage of your disk, but still use that space for other purposes until LapLink RNA needs it.


The LapLink RNA cache automatically removes its oldest files as it becomes full. There is no need to monitor or clear the cache contents manually to preserve space.

To set the cache location and size:

- 1 Open the LapLink RNA Service Manager by double-clicking its icon on the Windows taskbar.
- 2 Double-click LapLink RNA.
- 3 Click the Cache tab.

To empty the cache, click the Clear Cache Now button on the Cache tab in the LapLink RNA Properties dialog box.

LapLink RNA
monitors the cache
on disks as large as
4 GB.



- 4 Type a path in the Location box, or click the Browse button to search for a folder where you want to store the cache.
Be sure you specify a local hard drive (normally C: or D:).
- 5 Drag the Max Cache Size slider to the right or left to allow the cache to take up more or less disk space.
- 6 Click OK.

Managing the cache

Changing advanced caching options

System administrators and advanced users can change advanced caching options to further customize how the LapLink RNA cache works. To view or change advanced caching options, click the Advanced tab in the LapLink RNA Properties dialog box. Use Encrypt Cache Data to secure the information in the LapLink RNA cache. Check Use Write-behind Caching to speed up network access, or clear it to protect your data in case of system failure.

For more information about advanced caching options, see the *LapLink RNA Administrator's Guide*.

The advanced caching options let system administrators and advanced users customize how the cache works. These options affect speed and security, and should not be changed without a full understanding of their results.

Securing the cache

Encrypt the data in the LapLink RNA cache to secure any important or restricted network files that LapLink RNA caches on your local hard disk. If you do not encrypt the cache data, it is possible that someone with access to your remote computer could read the cached information through the cache database.

The Encrypt Cache Data option is off by default.

Data encryption has only a minor effect on network acceleration. More time is required to encrypt and unencrypt the data in the cache as you store and access it.

To secure the cache:

- 1 Open the LapLink RNA Service Manager by double-clicking its icon on the Windows taskbar.
- 2 Double-click LapLink RNA and click the Advanced tab.
- 3 Click Encrypt Cache Data so that it is checked, and then click OK.

Deciding whether to use write-behind caching

For the fastest remote network access, use write-behind caching but not encryption.

Write-behind caching uses the LapLink RNA cache to speed up write operations as well as read operations. Using write-behind caching when you make changes to a network file, LapLink RNA places information in your cache instead of constantly sending it to the network. LapLink RNA accumulates the changes in the cache until either your program requests it or you close the file. LapLink RNA then sends the changes to the network together in the background of your computer.

Write-behind caching improves your program's response time because the application does not have to wait while changes are written to the network drive. The speed increase depends on many factors, including the programs you are using, the type of file you are editing, your hardware and software configurations, and how busy your system is.

The Use Write-behind Caching option is on by default.

Using write-behind caching slightly increases the risk of data loss. Because changes are sent to the network less frequently, if you are disconnected from the network while you are moving or saving a file, you could lose information.

Stopping and restarting acceleration

LapLink RNA automatically starts network acceleration in the background of your computer while you work. However, you can also manually start and stop network acceleration for testing or special circumstances. Stop acceleration by clicking the Disable button in the LapLink RNA Properties dialog box. Restart acceleration by clicking the Enable button.

LapLink RNA runs in the background of your computer. It starts automatically when you connect to a network server remotely. There is no need to start LapLink RNA yourself except in testing circumstances.

Stopping network acceleration

Stop network acceleration in special circumstances only, such as when your system administrator is performing tests. Stopping network acceleration disconnects you from the LapLink RNA server and stops the LapLink RNA service from running. You remain connected to the network server.

To stop network acceleration:

- 1 Start the LapLink RNA Service Manager by double-clicking its icon on the Windows taskbar.
- 2 Double-click LapLink RNA.
- 3 Click the Disable button.

!TIP You can also stop network acceleration from the LapLink RNA Service Manager: click LapLink RNA and click the Disable button on the toolbar.

Stopping LapLink RNA disables all acceleration benefits. Expect your remote network activity to be slower.

Restarting network acceleration

Restart network acceleration if you have stopped the service and want to resume acceleration. Restarting returns acceleration benefits, speeding up remote network access again.

To restart network acceleration:

- 1 Start the LapLink RNA Service Manager by double-clicking its icon on the Windows taskbar.
- 2 Double-click LapLink RNA.
- 3 Click the Enable button.

!TIP You can also restart network acceleration from the LapLink RNA Service Manager: click LapLink RNA and click the Enable button on the toolbar.

If you have disabled the LapLink RNA service, you must use the Connect button to create a connection after re-enabling the service.

4 Managing Server Connections

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Overview of server connections

LapLink RNA connects to a server automatically when you access the network over a slow connection. The LapLink RNA server acts as a proxy, managing your file requests and speeding up the transfer of information. Choose a server the first time you use LapLink RNA. In some circumstances, LapLink RNA's caching speeds up network activity without an acceleration server.

LapLink RNA servers are not the same as file servers. The files you need to access are located on file servers. A LapLink RNA server is a proxy, or secondary server, that accelerates access to the file servers.

LapLink RNA connections occur in the background. You typically do not need to think about them unless there are changes to your system.

LapLink RNA is client/server software. It works best when the client (your computer) is connected to a LapLink RNA server (a computer on the network running LapLink RNA Server). This computer acts as a proxy server by handling your network file requests. It communicates with your computer and your network file server to achieve the fastest possible acceleration.

After you install LapLink RNA you choose a server for acceleration. From then on, LapLink RNA automatically connects to this server each time you access the network over a slow connection. You don't need to manually connect to a server each time you want acceleration, and you don't need to disconnect from the server when you're done.

!TIP Your system administrator can designate a server for you in the installation. In that case you never need to pick a server.

Managing connections involves changing the server you want to connect to for network acceleration. You should work with server connections only with the guidance of your system administrator, who balances user load on different LapLink RNA servers for optimum performance.

Connecting to the LapLink RNA server

LapLink RNA automatically connects to the designated LapLink RNA Server computer when you begin working with files on the network over a slow connection, such as Dial-Up Networking. (To connect manually, click the Connect button in the Service Manager.) Whenever LapLink RNA senses a slow network connection, it makes sure that LapLink RNA is connected for the best acceleration benefit.

The connection occurs in the background of your computer. It does not interrupt your regular work flow. If there is no LapLink RNA server designated for LapLink RNA (for example, after you first install), LapLink RNA prompts you to choose one. The server you choose becomes your designated server. The next time you access the network over a slow connection, LapLink RNA automatically connects to it.

Alternatively, you may use the Connect button to select a server and create a connection. Click the Connect button twice. If a server is not designated, you will be asked to select a server or type in the IP address. When a server is designated, click OK. LapLink RNA will do the rest.

You don't connect to a LapLink RNA server until you actually list or access network files.

You can tell which server you're connected to by reading the description in the LapLink RNA Service Manager. When you are connected, the LapLink RNA line reads "Connected to" and the name of the server.

What happens if I already have a fast connection?

LapLink RNA connects to an acceleration server only if you have a slow network connection. If you establish a fast connection such as a direct network connection, you can still benefit from LapLink RNA caching your data, but LapLink RNA cannot accelerate your data any faster than a direct network connection and so does not connect to an acceleration server.

Changing servers

Connect to the Laplink RNA server designated by your system administrator. To change servers, click Designate Servers on the Service menu and pick a server from your preferred server list. Connect to the same server every time, unless you know the server will not always be available. Find at Connect lets you choose your server when you connect to the network.

Your network may be running more than one LapLink RNA server. Choose a different server if the server you normally connect to is unavailable, and by the advice of your system administrator. It is important to talk with your system administrator whenever you work with server connections.

If you are already connected to a LapLink RNA server and you choose a different server, LapLink RNA stores the change for next time. LapLink RNA does not disconnect from the current server and reconnect to the new server.

Choosing a server from the preferred server list

To make LapLink RNA prompt you for a server the next time you access the network remotely, click Find at Connect in the Preferred Server List box. If you don't want to connect to a server, click None.

The preferred server list is a stored list of one or more computers you can use as your LapLink RNA server. It is similar to an address book, providing information about the server name and location. Your system administrator can create a preferred server list for you before or after installation, or you can create one yourself. Once you connect to a server, it is added to your preferred server list.

When you change servers you can select one from your preferred server list. This is the safest way to change servers.

To choose a server from the preferred server list:

- 1 Open the LapLink RNA Service Manager by double-clicking its icon on the Windows taskbar.
- 2 Click Designate Servers on the Service menu.
- 3 Click a server in the Preferred Server List box and click OK.

Adding a new server

Add a new server to the preferred server list so that you can connect to it now or later. There are two ways to add a server: by browsing or by specifying its IP name or address. Browsing lets you easily find a server that is available on your network now. You can specify a server by IP name or address regardless of whether it is currently available.

To add a new server:

- 1 Open the LapLink RNA Service Manager by double-clicking its icon on the Windows taskbar.
- 2 Click Designate Servers on the Service menu.

To remove a server, click Designate Servers on the Service menu. Click the server in the Preferred Server List box and click the Remove button.

- 3 Click the Add button.
- 4 Specify the server:
 - To specify a server by browsing, use the plus signs to expand the Servers Available Now list and click the server you want.
 - To specify a server by IP name or address, type the IP name or address in the IP Name or Address box.
- 5 In the Descriptive Name box, type a description for the server to identify it in the preferred server list.
- 6 Click OK.

5 Troubleshooting

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Introduction to troubleshooting

This chapter provides suggestions for solving problems and improving performance. These suggestions are designed as a quick overview of possible solutions, with enough information to guide experienced users to solutions.

For detailed, step-by-step information, consult the troubleshooters in LapLink RNA Help. The troubleshooters are designed to solve problems you can encounter configuring, monitoring, and connecting LapLink RNA services.

To use a troubleshooter, open a troubleshooting book in Help Topics and display one of the topics. Then answer the questions about your problem and try the suggested remedies. In some cases you will find shortcut buttons to dialog boxes; use these buttons to resolve the problem faster.

Troubleshooting LapLink RNA

General concerns

The status description for LapLink RNA displays the message *Client only: using cache for acceleration*. What does this mean?

This message is displayed whenever LapLink RNA is not connected to a LapLink RNA server (and when you're not connected to a network at all). LapLink RNA only connects to a server when required for acceleration, so if you have not yet listed or opened network files, you won't be connected to a server, and this message displays.

If you are on a fast connection such as a network (not working remotely over a dial up connection), this message is normal; LapLink RNA only connects to a LapLink RNA server when you're working over a slow connection. Since your connection is already very fast, LapLink RNA only accelerates using caching.

If you are working over a dial up connection, however, and are copying and moving files, this message indicates you are not getting full acceleration. If you've never connected to a LapLink RNA server, you should designate a server to connect to, if one is available; for more information, see chapter 4, "Managing server connections."

The status description for LapLink RNA displays the message *Not accelerating. The cache disk is full*. What does this mean?

This message means that your hard drive is full, and LapLink RNA can't provide acceleration because it can't successfully cache network files. Free some space on the disk where LapLink RNA stores

the cache (the cache location is specified on the Cache tab in the LapLink RNA Properties dialog box).

To open the LapLink RNA Properties dialog box, double-click the LapLink RNA Service Manager icon in the Windows taskbar, and then double-click LapLink RNA.

If the description doesn't change after a few seconds, disable LapLink RNA (click the Disable button on the Service Manager toolbar) and then enable it again (click the Enable button on the Service Manager toolbar).

The status description for LapLink RNA displays the message *Communications error <number> occurred*. What does this mean?

This description appears when an RPC error occurs. Make a note of the error number in case you need to contact your support representative.

If you are running Windows NT, try stopping and restarting the LapLink RNA service using the Services option in Control Panel.

If the error remains, or if you are running Windows 95, try restarting Windows. If this still does not solve the problem, uninstall LapLink RNA and then reinstall.

Problems connecting to a server

I don't get prompted to connect to a LapLink RNA server.

Unless the preferred server for LapLink RNA is set to *<find at connect>*, you'll never be prompted to connect to a server; the connection happens automatically when you connect to the network and start working with files (unless you have *<none>* selected).

To verify whether you're connected to a server, open the Service Manager and look at the Description for LapLink RNA; if it reads *Connected to <server name>*, you are already connected. If it reads *Client only: using cache for acceleration*, you are not connected to the server; see "LapLink RNA can't locate the server computer" on page 31.

I'm not connected to a server, but I want to connect to one.

LapLink RNA only connects to a server when required to for acceleration, so if you have connected to the network but have not yet listed or opened network files, LapLink RNA won't yet be connected to a LapLink RNA server. LapLink RNA only connects to a server if your connection is slow enough to require use of a LapLink RNA server for acceleration.

If you're connected over a slow connection, and you're still not connected to a server, you probably have your preferred server set to

<none> or the server you want is not available. Designate the server you want to connect to using the Designate Servers command on the Service menu in the Service Manager. For information on designating a server, see page 30.

When I try to designate a server, the server computer isn't in my preferred server list.

You can add any server to your preferred server list. In the Designate Servers dialog box (accessed by clicking Designate Servers on the Service menu), click Add, and select the server from the listed servers. If you aren't connected to the network, you'll have to add the server manually; type the server's name or address in the IP Name or Address box. Click OK to add the server.

When I try to add the server computer I want, it doesn't show up in the list of available servers.

Servers are only listed in the Servers Available Now list when you are connected to the network. Be sure that you are connected to the network, and have fully browsed all of the workgroups and domains on your network; there may be several LapLink RNA servers available in different places on your network.

Some computer/network configurations (such as Windows NT computers running on a TCP/IP network) do not list available LapLink RNA servers. If this is the case, you need to add the server manually. You might also need to add a server manually if the server is temporarily unavailable (or if you're not connected).

Add the server by typing the server IP name or address in the IP Name or Address box, and clicking OK. When you add a server manually, you should verify that you are correctly connecting to the server the next time you connect to the network by opening the Service Manager and checking the Status for LapLink RNA.

Contact your network administrator to get the IP name or address of the LapLink RNA server. If you need to determine the IP address yourself, information is available in LapLink's online knowledge base. Use this URL: <http://www.laplink.com/support/kb/article.asp?id=204>

LapLink RNA can't locate the server computer.

LapLink RNA only connects to a server when required to for acceleration, so if you have connected to the network but have not yet listed or opened network files, LapLink RNA won't yet be connected to a LapLink RNA server. Also, LapLink RNA only connects to a server if your connection is slow enough to require use of a LapLink RNA server for acceleration.

If you are connected to the network over a slow connection and accessing files, but still aren't connected to a server, make sure you have access to the network itself—can you access any files on the

network? If you can't, then the problem is with the network, not with the LapLink RNA server.

Contact your system administrator to find out whether the server computer is enabled and running properly.

Performance concerns

I'm not sure my remote network access is accelerated.

You can examine LapLink RNA's performance statistics to see how much acceleration you're receiving. Double-click the Service Manager icon in the Windows taskbar, and then double-click LapLink RNA. Click the General tab to view the statistics.

If there is a number next to the Total Bytes Sent and Received statistic, that means data is being sent and received, and LapLink RNA is working properly.

If the Accelerated statistic shows a high percentage, LapLink RNA has either compressed data before sending it over the connection, or found data in the cache file. In either case, less data had to be sent, and so your access is definitely faster, thus, *accelerated*.

If the Unaccelerated statistic shows a high percentage, the data was already compressed as much as possible, and most of the data had to be sent to the network as is. This might happen with files that are already compressed like ZIP or JPEG format files.

For more information about statistics, click the Help button on the General tab.

The statistics indicate that some of my transferred data isn't accelerated. Is that okay?

Yes. Sometimes data is already compressed as much as possible, and hasn't been cached yet. Most or all of the file had to be sent over the connection as is.

How can I be sure I'm getting the most benefit from LapLink RNA?

LapLink RNA automatically determines the best methods for accelerating transfers. However, you can often improve acceleration by making the allowed cache size as large as possible: on the Cache tab of the LapLink RNA Properties dialog box, drag the Max Cache Size slider to the right. To open the LapLink RNA Properties dialog box, double-click the Service Manager icon in the Windows taskbar, and then double-click LapLink RNA.

There are some other advanced features that might improve performance; contact your system administrator for information on the best setup for your environment.

Cache concerns

The cache is full. What should I do?

When the cache is full, it automatically removes the least-recently accessed data and adds any new cached information, so you rarely need to worry about the cache size. However, if you have disk space available, you might be able to improve acceleration performance by increasing the cache size. This might be necessary if you frequently access very large files.

Cache settings are changed on the Cache tab of the LapLink RNA Properties dialog box. To open the LapLink RNA Properties dialog box, double-click the Service Manager icon in the Windows taskbar, and then double-click LapLink RNA.

No matter how big I make my cache, it keeps filling up.

It's okay for the cache to fill up. When it becomes full, it automatically removes the least-recently accessed data, making room to cache new information. A large cache size means that many files that you access frequently are accelerated.

The cache isn't taking up as much space as I specified.

The cache only takes up as much space as it needs. The value you specify is the space LapLink RNA is *allowed* to use for the cache. Even if LapLink RNA isn't using all the cache, you don't need to decrease the cache size, because unused space is still used by your computer if necessary.

I think a file I'm accessing is coming from the network instead of the cache.

If you access many different, large files, your cache might not be big enough to store all of them. When the cache gets full, it removes files you haven't accessed in a while to make room for new ones. So if you haven't worked with a file for some time, and you've accessed other large network files since then, it's possible that the "older" file is no longer cached. To avoid this, allow as much space as possible for the cache.

Another reason a file might not come from the cache is if the file name or network location changed since it was stored in the cache. When LapLink RNA checks to see if a network file you want to access is stored in your cache, it uses the current file name and location.

