Comm Port Redirector Software

Installation Guide

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1 - Introduction

The Comm Port Redirector is an application that allows PCs to share modems connected to an LES server using Microsoft Windows or DOS communication applications.

NOTE: *Throughout this manual both the LES servers will be referred to as **the server** unless a distinction needs to be made between the two servers.*

The Redirector allows PC users to use their communication software to dial out to a remote host through a modem available as a service on the server.

The Redirector intercepts communications to specified COM ports and sends them over either an IP or an IPX network connection to a server serial port. This enables the PC to use the server's serial port as if it were one of the PC COM ports. Figure 1-1 shows how the LES service and the Redirector emulate a PC COM port.

Figure 1-1: Using the Redirector
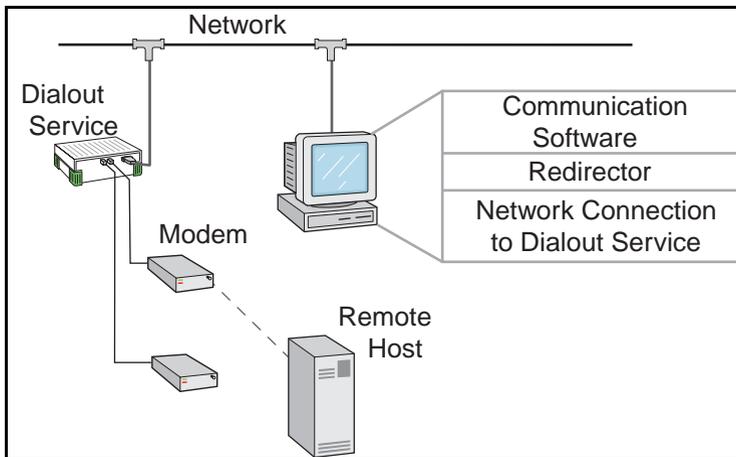
Figure 1-2 shows the line of communication for a PC that is not connected to a server.

Figure 1-2: Without Using the Redirector
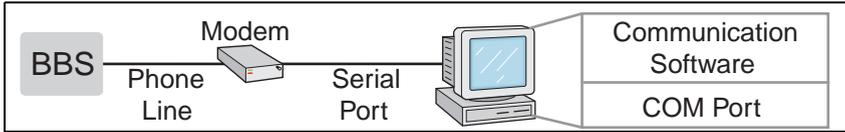
On a PC, the Redirector permits only one logical port to be active at a time. The communication software cannot establish simultaneous connections using multiple redirected ports.

1.1 Redirector Functionality

The Redirector intercepts communications to specified COM ports and sends them over either an IP or an IPX network connection to a server serial port. The following two sections explain how the Redirector works over IPX and IP networks.

NOTE: *There are separate installation and configuration procedures for the IP and IPX Windows 3.x Redirector. The procedures are described in Chapter 2.*

NOTE: *The DOS Redirector can only be used on an IPX network.*

1.1.1 IPX

To determine the available services, the Windows 3.x IPX and DOS Redirectors check the NetWare bindery. The bindery receives information about the available services from SAP packets and continually updates its list of services. The Windows 95 and Windows NT Redirectors send SAP queries over the network to find available services.

NOTE: *There is only one IPX service on the LES products, and it cannot be changed.*

1.1.2 IP

The Windows 3.x IP Redirector, Windows 95 Redirector, and Windows NT Redirector function in the same way as the IPX Redirector except that data is transferred over TCP/IP rather than IPX/SPX. Also, you will need to specify the IP address or host name and TCP port number for the server.

NOTE: *For the LES, the TCP port number is 3001.*

1.2 Redirector Requirements

To use the Redirector, you must have a server with at least one attached modem connected to your network.

Other requirements depend on the operating system being used, and are given in the appropriate chapter.

1.3 Server Configuration

1.3.1 Changing the Port Access Mode

The serial ports must be in either Remote or Dynamic access mode in order for the Redirector to connect to the servers. To check the access mode for a port, enter the **Show Port** command. To change the access mode for a port, enter the **Define Port Access** command.

Figure 1-3: Changing the Port Access Mode

```
Local>> DEFINE PORT 1 ACCESS REMOTE
```

1.3.1.1 IP Service Configuration

Create a modem pool service on the LES and enable the TCP Port characteristic for that service. The TCP port number must be in the 3000+n range where n is defined to be any number from 0 to 999.

Figure 1-4: Creating an IP Modem Pool Service

```
Local>> DEFINE SERVICE modempool PORTS 8-12 TCPPORT 3008
```

1.3.1.2 IPX Service Configuration

Create a modem pool service on the LES and enable the SPX characteristic for that service.

Figure 1-5: Creating an IPX Modem Pool Service

```
Local>> DEFINE SERVICE modempool PORTS 2-5 SPX ENABLED
```

1.4 Using this Guide

This guide is divided into chapters which correspond to the operating systems on which the Redirector works. Consult the chapter that refers to your operating system for instructions on installing and configuring the Redirector software.

Windows 3.x	For PCs running Windows 3.1 or Windows for Workgroups 3.11
Windows 95 and NT	For PCs running Windows 95, Windows NT 3.51, or Windows NT 4.0 workstation or server

NOTE: *The Windows 95 and Windows NT Redirectors are jointly referred to as the 32-bit Redirector.*

DOS	For PCs running the Disk Operating System (DOS)

2 - Windows 3.x

Two different versions of the Redirector software are available for Windows 3.x users: an IP version and an IPX version. Install the version that corresponds to your network type.

2.1 Installing the Redirector Software

2.1.1 Requirements

The following are needed to run the Redirector in a Windows 3.x environment.

- A PC running Windows 3.1 or Windows for Workgroups 3.11

- Windows 3.x communications software

- For IP, an IP or IPX protocol stack, and IP addresses defined on both the PC and the server

- For IPX, an IPX protocol stack, and a Novell NetWare 3.x or 4.x server with bindery emulation

2.1.2 Installation

Complete the following steps to install the Redirector on each PC that will share the server's modems.

1. Copy the self-extracting archive **redirect.exe** into a temporary directory on your hard drive.

2. Run **redirect.exe** to extract the Redirector files on your hard drive. One of the extracted files will be **setup.exe**.

3. Run **setup.exe** and follow the prompts to install the files.

4. Restart your computer.

5. Delete the temporary directory.

2.2 Configuring the Redirector

2.2.1 IP Configuration

1. Double-click the **Modem Redirector Configuration**
    icon. When the Redirector has launched, the **IP Redi-
    rector Setup** window will appear.

    Figure 2-1: IP Redirector Setup
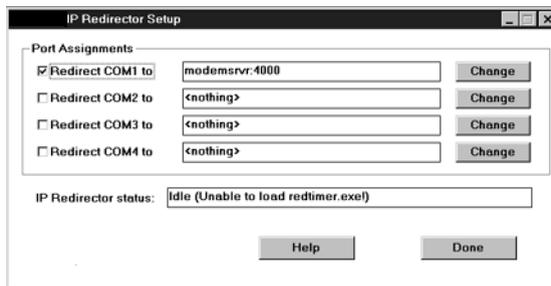
2. Click the **Change** button to the right of the port you
    wish to redirect. The **Service Selection** window will
    appear

    Figure 2-2: Service Selection Window
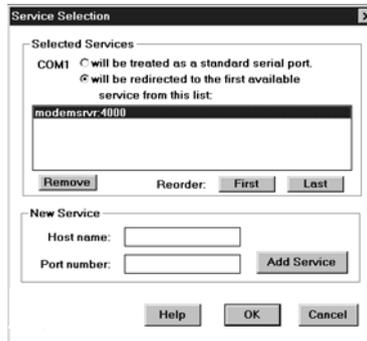
3. Add a new service. Up to four services may be associ-
    ated with each COM port.

    A. Enter the desired server IP host name or IP address
        in the **Host Name** field.

    B. Enter the port on the host to which you wish to
        connect in the **Port Number** field.

        To connect to a modem associated with the LES,
        specify port 3001.

    C. Click **Add Service**.

        As services are associated with the COM port, they
        are displayed in the **Selected Services** area. When
        configuration is complete, the Redirector will redi-
        rect data to the first available service in this area.

        To change the order of the services in the list, select
        a service name and click the **First** and **Last** buttons.
        To remove a service from the list, click the **Remove**
        button.

4. When you have finished configuring the COM port,
    click **OK**. The **IP Redirector Setup** window (Figure 2-1,
    page 2-2) will appear.

5. Click the check box to the left of the COM port number.

6. Click **Done**.

2.2.2 IPX Configuration

1.   Double-click the **Modem Redirector Configuration** icon. When the Redirector has launched, the **IPX Redirector Setup** window will appear.

Figure 2-3: IPX Redirector Setup
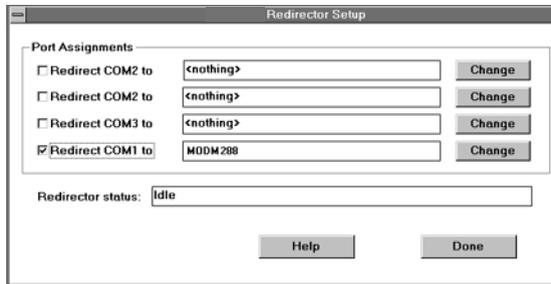
2.   Click the **Change** button to the right of the port you wish to redirect. The **Service Selection** window will appear with all available SAP services displayed in the **Known Services** area.

Figure 2-4: Service Selection Window
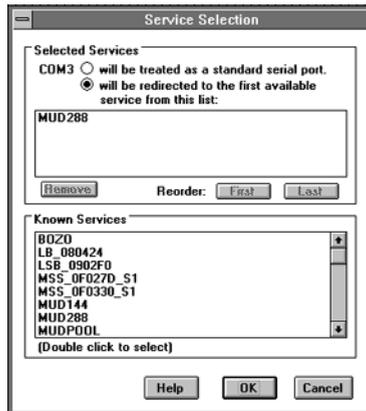
NOTE: *The service list is obtained from the NetWare bindery each time the Redirector setup utility is executed. Services that are added while the utility is running will not appear in the Known Services list until the next time the utility is used.*

3. Double-click the desired service name. Up to four services may be associated with each COM port.

    If a service is busy, the Redirector will automatically try to redirect data to another service which is associated with the COM port.

NOTE: *The IPX service for the LES is hostname_S1, for example, LES_S1.*

    As services are associated with the COM port, they will be displayed in the **Selected Services** area. When configuration is complete, the Redirector will redirect data to the first available service in this area.

    To change the order of the services in the list, select a service name and click the **First** and **Last** buttons. To remove a service from the list, click the **Remove** button.

4. When you have finished configuring the COM port, click **OK**. The **IPX Redirector Setup** window (Figure 2-3, page 2-4) will appear.

5. Click the check box to the left of the COM port number.

6. Click **Done**.

2.3 Using the Redirector

Once installed, the Redirector will load itself whenever a redirected port is accessed by a Windows communication application. A dialog box will appear when it connects to or disconnects from a service.

3 - Windows 95 and NT

The 32-bit Redirector can be used with Windows 95 and Windows NT operating systems on both IP and IPX networks. If you are using TCP/IP on your network card, you can add IP services. If you are using Microsoft's IPX/SPX-compatible protocol on your network card, you can add IPX services. You can add up to four services in any combination.

3.1 Installing the Redirector Software

3.1.1 Requirements

The following are needed to run the 32-bit Redirector in a Windows 95 environment:

• A PC running Windows 95

• Windows 95 communication software

NOTE: *It is possible to use DOS applications under Windows 95. See the Redirector release notes for more information.*

• An IP or IPX protocol stack

NOTE: *For IP users, IP addresses must be defined for both the PC and the server.*

The following are needed to run the 32-bit Redirector in a Windows NT environment:

• A PC running Windows NT 3.5.1, Windows NT 4.0 workstation, or Windows NT 4.0 server

• Windows NT communication software

• An IP or IPX protocol stack

3.1.2 Installation

Installation is the same for both Windows 95 and Windows NT.

1. Copy the self-extracting archive **red32bit.exe** into a
    temporary directory on your hard drive.

2. Run **red32bit.exe** to extract the Redirector files on your
    hard drive. One of the extracted files will be
    install.exe.

3. Run **install.exe**. The installation program has a Help
    program which will guide you through installation
    and configuration of the Redirector.

NOTE: *To configure the Redirector for use on an IPX network, you
will need the service name. To configure the Redirector for use
on an IP network, you will need the IP address of the server
and the TCP port number of the service.*

3.2 Configuring the Redirector

An on-line help program has been provided to guide you through the
configuration of the Redirector. The help program will automatically
begin when the installation program is run.

3.3 Using the Redirector

Once installed, the Redirector will load itself whenever a redirected port
is accessed by a Windows communications application. A status box will
appear when the Redirector connects to or disconnects from a service.

4 - DOS

4.1 Installing the Redirector Software

4.1.1 Requirements

The following are needed to run the Redirector in a DOS environment:

- A PC running DOS 3.0 or higher and a NetWare client

- A Novell NetWare 3.x or 4.x server with bindery emulation

- An INT14-aware or NASI-aware communication package

NOTE: *The DOS Redirector can only be used on an IPX network.*

4.1.2 Installation

Three executable files are provided:

listsrv.exe	A utility that lists the available services for Redirector connections.
int14.exe	The interrupt 14 Redirector. When the program is run, it loads itself into memory as a TSR (Terminate and Stay Resident) program. An Int14-aware communications application can then be used to talk to the Redirector rather than COM1 or COM2, thereby allowing a shared dial-out service among LAN PCs.
nasi.exe	Basically the same as the interrupt 14 Redirector, but using the NASI specification. Only enough functionality is implemented to handle a raw data stream.

To install the redirector software, copy the **listsrv.exe** file and either the **int14.exe** or **nasi.exe** file to your hard drive.

4.2 Configuring the Redirector

No additional configuration is needed.

4.3 Using the Redirector

The following example uses Kermit to show how to use the DOS Redirector. The example assumes that a modem pool service has been configured on the LES, and that at least one modem is attached to the LES.

1. Start your NetWare client and attach to a file server.

2. Run **listsrv.exe** to get a list of available services.

    One of the services should be the LES modem pool that was configured in the Creating a Modem Sharing Service section.

3. Type **INT14 modempool** and hit **Return** to connect to the modem pool service.

4. Start an INT14-aware or NASI-aware communications package. In the following example, Kermit is used.

    Figure 4-1: Starting Kermit

    ```
    c:> kermit

    MS-Kermit> set port
    bios1

    MS-Kermit> connect
    ```

NOTE: *"Bios" is how Kermit refers to an INIT14 interface. If you are using a NASI-aware package, the command is Set Port Novell.*

5. Type **AT** and hit **Return**. You should get an **OK** from the modem on the LES. The port is now dedicated to your Kermit connection.

6. Type **INT14 D** to disconnect the Redirector from the port, or type **INT14 U** to unload the TSR, and hit **Return**.

NOTE: *To switch between services, disconnect from one service and connect to another. It is not necessary to unload the TSR.*

A Technical Support

If you experience problems while using the Redirector, see Appendix B, *Troubleshooting.* If you are unable to fix the problem, contact Black Box Technical Support at (724)-746-5500.

A.1 Problem Report Procedure

If you are experiencing problems with the Redirector or have suggestions for improving the product, please contact Black Box Technical Support at (724)-746-5500.

When submitting a problem, please provide the following information:

- Your name, company name, address, and phone number

- Server product name and software version (issue the **Show Version** command on the server)

- Unit serial number

- Description of the problem

- Network configuration including the output from a **Netstat** command

- Type of PC being used

- Operating system type and version

- Protocol stack currently in use (IP or IPX)

- Redirector version (The version number can be found using either the Windows 3.x or Windows 95 configuration utilities, or by running a DOS Redirector command with no parameters)

- Type and version of communication program being used.

- **Debug** report (stack dump) if applicable

- Product status when the problem occurred; please try to include information on user and network activity at the time

B Troubleshooting

This appendix discusses different errors and symptoms that you can
quickly diagnose and fix without having to contact Black Box.

NOTE: *For the complete syntax of any of the LES commands listed in
this appendix, see the Command Reference chapter of the LES
Terminal Server or Device Server Reference Manual.*

B.1 General

The following table lists general problems that may be encountered when
using the Redirector.

Table B-1: General Troubleshooting

Problem	Possible Cause(s)	Remedy
The Redirector cannot connect to a service.	The service is unavailable.	Enter the **Show Service Local Characteristics** command on the LES. If the service has a zero rating (unavailable), logging out the port associated with the service will make it available for other users, unless there is a problem with the service's configuration.
	The port(s) assigned to the service are not in Remote or Dynamic access mode.	Enter the **Show Port** *number* command on the LES and check the Access field. If the port is in Local mode, enter the Define **Port** *number* **Access Remote/Dynamic** command. Then log out the port and try to connect to the service again.
	There are no ports assigned to the service.	Enter the **Show Service Local Characteristics** command on the LES. If there isn't at least one port listed in the Ports field, enter the **Define Service Ports** command to assign a port to the service.
	Another PC is connected to the service.	Enter the **Show Ports All** command on the LES. The port should be in Idle mode. If it is in Job Service mode, you will have to wait until it finishes the current job or log out the associated port to free the service.

B.2 IP Troubleshooting

The following table lists possible problems when using the IP Redirector, possible causes of these problems, and suggested remedies.

Table B-2: IP Troubleshooting

Problem	Possible Cause(s)	Remedy
The Redirector cannot connect to a service.	The server's IP address is not set or the PC's IP stack is not configured correctly.	Ping the LES from the PC. If this doesn't work, make sure your server has an IP address and your PC's IP stack is configured properly.
	Name resolution failed.	If you entered a host name (instead of an IP address), try to Ping the host name from your PC. If the name resolution fails, check the PC's DNS configuration. Check the DNS's host table to make sure that the host name you specified has the correct IP address for the server.
	The IP address or host name of the server is incorrect.	Telnet from your PC to the IP address or host name of the server. If the Telnet did not go to the correct server, check the LES's IP address and/or hostname.
	There is no service assigned to the TCP port.	On the LES: Telnet to the TCP port (Telnet *hostname TCPport number*). If this does not work, enter the **Show Service Local Characteristics** command on the LES. Make sure that there is a service assigned to the TCP port and that the service rating is non-zero.
		On the LES: Enter the **Show Port** command to ensure that the port is idle (available).

B.3 IPX Troubleshooting

The following table lists possible problems when using the IPX Redirector, possible causes of these problems, and suggested remedies.

Table B-3: IPX Troubleshooting

Problem	Possible Cause(s)	Remedy
The Redirector setup utility can't see any services. (DOS: Enter the **Listsrv** utility to display the advertising services. Windows 3.1, 95, and NT: Use the Configuration utility to list the available services.)	There is a problem with the NetWare bindery. The server is not advertising its services.	For NetWare 4.x, enable bindery emulation. On the LES: Enter the **Netstat** command to see which frame type the server is using. Make sure it is the same one your PC is using. On the LES: Enter the **Show IPX Static Services** command. Your service name should appear in the list as type 52c.
The Redirector can't connect to an LES service.	An LES port can't initialize its attached modem. The COM port is not configured to redirect serial data to one or more LES services.	Log out the port and make sure the modem initialization string is correct. Configure the COM port to redirect data to its list of Selected Services.
The Redirector can get a list of services from the NetWare file server, but can't connect to a service.	Your PC and the server are not using the same frame type.	DOS and Windows 3.x: Edit your PC **net.cfg** file and configure your server so they use the same frame type. Windows 95 and NT: Change the frame type in the Properties sheet for the IPX protocol so that it is using the same frame type as the server.

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Rev. A

WARNING

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against such interference when operating in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with this guide, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause interference in which case the user, at his or her own expense, will be required to take whatever measures may be required to correct the interference.

Warning: Changes or modifications to this device not explicitly approved by Black Box will void the user's authority to operate this device.

Cet appareil doit se soumettre avec la section 15 des statuts et règlements de FCC. Le fonctionnement est subjecté aux conditions suivantes:

1. Cet appareil ne doit pas causer une interférence malfaisante.

2. Cet appareil doît accepter n'importé quelle interférence reìue qui peut causer une opération indésirable.