



Spectrum24[®] High Rate

CB 2000 Client Bridge

802.11b | 11 Mbps

Quick Install Guide



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To the User

This Quick Setup Guide contains:

- Basic installation and configuration procedures
- Product information for the Symbol Technology Spectrum24 CB2000 Client Bridge.

Refer to this guide and the documentation on the CDROM for information on installing, configuring, and using the client bridge.

Document Conventions

Before operating the CB2000, review this document for any hazards associated with installation and use of the device. Also, review standard practices for preventing accidents.



Note

Indicates tips, hints and special requirements.



Caution

Care is required. Disregarding cautions can cause data loss or equipment damage.



Warning

Indicates a potentially dangerous condition or procedure that only Symbol-trained personnel should attempt to correct or perform.



Warnings

- Read all installation instructions and site survey reports, and verify correct equipment installation before connecting the system to its power source.
- Verify any device connected to this unit is properly wired and grounded.
- Attach only approved cables to this device.
- Verify adequate ventilation around the device, and ambient temperatures meet equipment operation specifications.
- Verify uninterruptible power sources, if equipment is carrying emergency traffic.

Introduction

The *Spectrum24® High Rate CB2000 Client Bridge* from Symbol Technologies is a wireless network bridge allowing up to four devices to connect to a Wi-Fi IEEE 802.11b wireless local area network (LAN), or communicate directly with other mobile devices enabled for wireless LAN connectivity.

Features include:

- Compatible with NBX® communication systems to deploy fully managed voice and data networks
- Hub connections for up to four users per bridge provide affordable wireless connections
- Client tools for open networks with DHCP
- Remote manageability using a standard web browser or SNMP management tool
- Auto Network Connect keeps roaming users connected with a choice of ad hoc or infrastructure networks
- Support for 40-bit and 128-bit wired equivalent privacy (WEP) and Kerberos encryption.

Preparation

Before beginning the installation, verify the hardware package contains:

- A Spectrum24 CB2000 Client Bridge
- A power adapter and power cord.
- A standard Category 5 unshielded twisted pair (UTP) Ethernet cable.
- A Spectrum24 CB2000 Client Bridge Software and Documentation CDRom.

The following items (which are not included) are also required:

- A computer with network access to a Wi-Fi compliant wireless LAN access point. The computer requires one of the following operating systems and one of the following browsers to use the CB2000 Device Manager. Use the administration tool to select Spectrum24 CB2000 devices and launch their configuration management systems.
 - *Operating Systems* Windows XP, Windows 2000, Windows NT 4.0, Windows Me, Windows 98
 - *Browsers* Netscape 4.7 or later, Internet Explorer 5.0 or later



Note

Windows 95 is not supported. If configuring the CB2000 using a non-Windows computer, see the readme file on the install CD.

- An Ethernet crossover cable to connect the CB2000 to a hub that does not have an uplink (MDIX) port.

Obtaining Product Updates and Tools

Symbol periodically updates firmware and user documentation. Symbol also provides downloadable tools to assist with installing and configuring the CB2000.

Go to the Symbol Technology Web site at

http://www.symbol.com/services/downloads/dwnload_spec24_select.html

to download firmware updates, drivers, tools and documentation.

Installation Steps

The following steps outline installation and configuration for the CB2000.

Step 1 - Connect the CB2000

The CB2000 is designed to be connected to an Ethernet client device such as a hub, telephone, computer or printer. Before connecting the bridge, decide where to place it and whether or not the default configuration is to be accepted. Place the bridge in a dry, clean location near the hub, telephone, computer or printer connected to the bridge. The location must have a power source and be within 300 feet (100 meters) of a Wi-Fi compliant wireless LAN access point. The location should be away from transformers, heavy-duty motors, fluorescent lights, microwave ovens, refrigerators or other equipment that could cause radio signal interference.

The CB2000 supports up to four specific Ethernet client devices. It uses a client list of MAC addresses to keep track of specific devices connected to the device. Each time a new device is connected to the bridge, either directly or through a hub, that device's MAC address is added to the client list. After connecting four different devices, the client list is full. To connect another new device, clear the device to be replaced from the client list before the next new device can associate with the network through CB2000. To clear the device from the list, access the bridge's configuration management system. See the CB2000 User Guide for details.

Step 2 - Install the Device Manager

The Spectrum24 CB2000 Device Manager is an administration tool to select Spectrum24 CB2000 devices and launch their configurations in the Web browser. To configure a CB2000, the device manager is required to be installed on a computer that has an Ethernet adapter and is running one of the Windows operating systems and Web browsers listed in Preparation section.

If the IP address of the unit is known, the user can browse to it from another computer on the same subnet without the use of the Device Manager.

The Device Manager can display multiple CB2000s on a subnet, as well as the properties of each one. Click the Configure button to open a Web browser used for device configuration.

Step 3 - Configure the CB2000

The type of network and level of security used with the CB2000 dictates the steps necessary to configure the device.

- **Open system, DHCP server, no special security requirements**

Use the CB2000 as it ships from the factory. After connecting the device and verifying network access, use the administration tool to obtain specific information, such as ip and MAC addresses, which are necessary for relocating the device in a network. The following table shows the CB2000 factory default configuration.

Property	Default Setting
<i>IP Network Setting</i>	Default IP address = 10.1.1.3
<i>IP Address</i>	Obtained automatically
<i>Subnet Mask</i>	Obtained automatically
<i>Gateway IP Address</i>	Obtained automatically
<i>Channel Selection</i>	Automatically select the best channel; uses access point setting.
<i>Channel</i>	Uses access point channel.
<i>Wireless LAN Service Area</i>	Attach to any WLAN Service Area automatically
<i>Network Mode</i>	Access Point (infrastructure)
<i>Access Point Privacy Mode</i>	Off
<i>Antenna Selection</i>	Diversity
<i>Network Traffic Accelerator</i>	Off (802.11b)
<i>Data Preamble</i>	N/A (Not applicable)
<i>Security Setting</i>	No Security (Open System)
<i>Administration Password</i>	None
<i>TFTP Server IP Address</i>	None (Uses TFTP port 69.)

- **Closed network with security requirements**

Use the administration tool to locate and configure the CB2000 and organize devices to manage the wireless LAN and keep it secure.

Step 4 - Verify Operation

Perform visual verification that operating LEDs are working properly and the device is communicating with the network.

Connect the CB2000

The CB2000 is designed to be connected to an Ethernet client device such as a hub, telephone, computer, or printer.

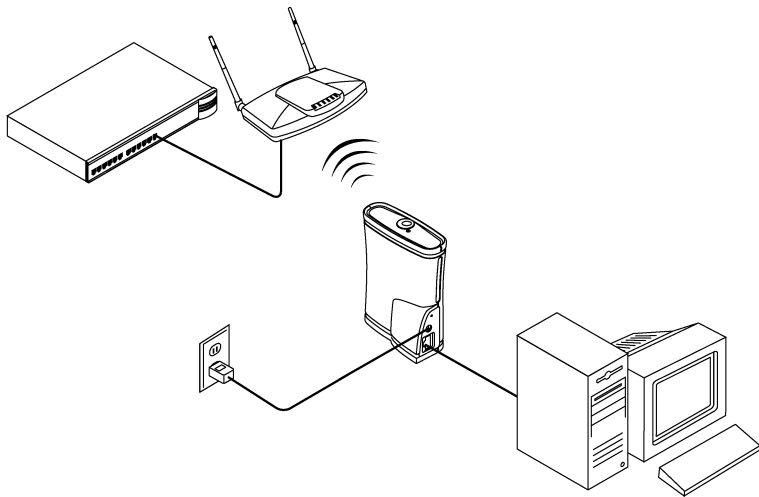


Caution

Do not connect a CB2000 set in Access Point (Infrastructure) mode directly to the LAN (for example, through a wall port). Such a connection could cause a transmission loop between the CB2000 and an access point, which could disrupt network operation.

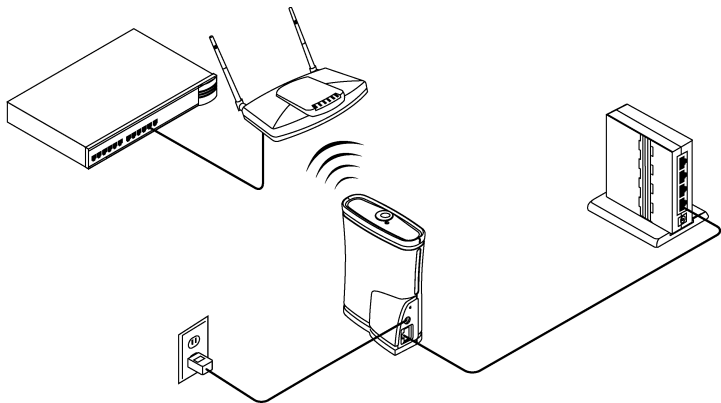
Computer Connection

The CB2000 can be connected directly to a computer. The CB2000 can convert a desktop computer to a wireless computer. Use this type of connection to configure the CB2000 before connecting it to another device or location on the wireless LAN.



Hub Connection

Supply network connections for up to four devices, such as computers and network printers, by connecting the CB2000 to an Ethernet hub. Use a hub connection to configure the CB2000 in the location it will reside.



Note

Make sure that the CB2000 Ethernet cable is plugged into the hub uplink (MDIX) port. If the hub does not have an uplink port, use an Ethernet crossover cable (not provided), which can be connected in any port.

Install the CB2000 Device Manager

To install the Spectrum24 CB2000 Device Manager on the computer:

1. After verifying the computer is operational, insert the Software and Documentation CDROM in the CD-ROM drive.

The setup menu appears. If it does not appear, start the setup menu from the Windows Start menu. For example: Start/Run/D:setup.exe.

2. In the menu, click Install the Tools and Documentation.
3. Follow the instructions on the screens to complete the installation.
If prompted, reboot the computer.

Configure the CB2000

If installing the CB2000 on an open network with DHCP, skip this section and go to Verify Operation to ensure the device is operating correctly. Launch the Device Manager tool to record IP and subnet settings for the newly installed CB2000. These settings are needed for relocating the device on the network.

To configure the CB2000 for a closed network or a network with any type of security, change the default configuration settings with the Spectrum24 CB2000 Device Manager.



Note

When initially configuring the CB2000, it is recommended to use the supplied standard Category 5 UTP Ethernet cable to connect it directly to the computer where the device manager is installed. Once the CB2000 is configured to associate with the wireless network, remove the supplied Ethernet cable and change its configuration at any time from any location on the network.

To launch the Device Manager and configure the CB2000:

1. Select *Start/Programs/Symbol Wireless/CB2000 Device Manager*.

If more than one network adapter is installed on the computer, the user could be prompted to choose a network adapter. Choose the appropriate adapter and click *OK*.

The Wireless Network Tree appears in the Spectrum24 CB2000 Device Manager window. The tree lists all WLAN service areas on the network and expands to show the Spectrum24 LAN devices associated with each service area. Devices in a different subnet are identified with exclamation points (!). To refresh this display, click *Refresh*.

Refresh the display, for example, after changing a device IP address.

2. In the Wireless Network Tree, select the device to configure.

If more than one wireless LAN device appear in the tree, determine the right one by clicking *Properties* and checking the MAC address (serial number, located on the bottom of the device) to verify it is correct.

3. Click *Configure*.
4. If the selected device is on the same subnet as the computer, the Configuration Management System main page appears in the Web browser. (If a password is set on the device, enter it when prompted.)
5. If the selected device is on a different subnet, the Pre-IP Configuration Wizard is activated automatically. Use this wizard to configure the IP settings for the selected CB2000. It proposes IP address and subnet mask settings derived from the computer's settings, so the selected device resides on the same subnet as the computer. Accept the suggested settings or change them as required. For more information, see Using the Pre-IP Configuration Wizard in the Spectrum24 CB2000 Client Bridge Reference Guide.
6. The next window prompts for an administrative password to allow the new IP address to be set. When the units are shipped from the factory, there is no administration password. Set an administration password and click Next. The Configuration Management System main page appears in the Web browser.
7. Enter configuration parameters necessary for communicating with the network. See online help and the Spectrum24 CB2000 Client Bridge User Guide for additional information on setting and changing configuration settings.

8. After saving the configuration, disconnect the bridge from the computer and connect it in its permanent place in the network. The default installation is complete. For advanced configuration alternatives, refer to the user guide.

Verify Operation

When the bridge is connected to power, verify operation through two LEDs.

LED Indicator	Location	Description
<i>Wireless Association</i>	On the top of the bridge	<i>On</i> -- Unit is receiving power. <i>Off</i> -- Unit is not receiving power. <i>Blinking</i> -- The unit is transmitting or receiving.
<i>Ethernet Connection</i>	At the RJ45 Ethernet Connector	<i>On</i> -- Unit has an Ethernet connection. <i>Off</i> -- Unit does not have an Ethernet connection. <i>Blinking</i> -- Wired LAN traffic is detected. Faster blinking indicates heavier traffic.

In addition to LED operation, verify proper operation by accessing a network resource using a computer connected to the CB2000.

If the LEDs do not function and network resources cannot be accessed, verify the following:

- All physical connections, including power.
- Configuration settings.
- Verify there is a working 802.11b access point within 100 meters.

If the CB2000 is not operating, consult the Troubleshooting section of the Spectrum24 CB2000 Client Bridge User Guide for additional information.

Customer Support

Symbol Technologies provides its customers with prompt and accurate customer support. Use the Symbol Support Center as the primary contact for any technical problem, question or support issue involving Symbol products.

If the Symbol Customer Support specialists cannot solve a problem, access to all technical disciplines within Symbol becomes available for further assistance and support. Symbol Customer Support responds to calls by email, telephone or fax within the time limits set forth in individual contractual agreements.

When contacting Symbol Customer Support, please provide the following information:

- Device serial number
- product name and/or model number
- software type and version number.

North American Contacts

Inside North America, contact Symbol at:

Symbol Technologies, Inc.

One Symbol Plaza

Holtsville, New York 11742-1300

Telephone: 1-631-738-2400/1-800-SCAN 234

Fax: 1-631-738-5990

Symbol Support Center (for warranty and service information)

telephone: 1-800-653-5350

fax: (631) 563-5410

Email: support@symbol.com

International Contacts

Outside North America, contact Symbol at:

Symbol Technologies, Inc.

Symbol Place

Winnersh Triangle, Berkshire, RG41 5TP

United Kingdom

0800-328-2424 (Inside UK)

+44 118 945 7529 (Outside UK)

Symbol Developer Program Web Site

<http://software.symbol.com/devzone>

Symbol Knowledge Base

<http://kb.symbol.com/register.asp>

Additional Information

Obtain additional information by contacting Symbol at:

1-800-722-6234, inside North America

+1-631-738-5200, in/outside North America

<http://www.symbol.com/>

Regulatory Information

All Symbol devices are designed to comply with rules and regulations in locations they are sold and will be labeled as required. Any changes or modifications to Symbol Technologies equipment, not expressly approved by Symbol Technologies, could void the user's authority to operate the equipment.

Applying the Regulatory Country Stamp

A regulatory label is applied to signify the device is approved for use in the following countries: United States, Canada, Europe, Czech Republic, Japan, Korea, Malaysia, Mexico, Philippines, Romania, Singapore and Taiwan.

Note: Europe includes: Austria, Belgium, Croatia, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

Note: For France, channel usage is restricted to channels 10-13. The use of other channels is prohibited.

In addition to the list above other countries may require a regulatory stamp to be affixed to the product. Please refer to www.symbol.com/regulatory for the list of countries where mandatory stamps are required.

For countries that require regulatory label, a sheet of stamps may be enclosed within the package. If the appropriate stamp is not provided, please contact your supplier.

To apply the country stamp:

1. Peel the stamp appropriate to the country where this device is to be used.
2. Apply the country stamp in the space provided on the regulatory label.



Operation of the device without a regulatory label or the correct country stamp is illegal.

FCC RF Exposure Guidelines



To comply with FCC RF exposure requirements, antennas that are mounted externally at remote locations or operating near users at stand-alone desktop or similar configurations must operate with a minimum separation distance of 20 cm from all persons.

Radio Frequency Interference Requirements

Symbol Technologies Inc.



Tested to Comply
With FCC Standards

For Home or Office Use

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference

in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected

- Consult the dealer or an experienced radio/TV technician for help.

Radio Frequency Interference Requirements - Canada

This device complies with RSS 210 of Industry & Science Canada. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesirable operation.

Label Marking: The Term "IC:" before the radio certification only signifies that Industry Canada technical specifications were met.

CE Marking and European Economic Area (EEA)

RLAN's (2.4GHz) for use through the EEA have the following restrictions:

- Maximum radiated transmit power of 100 mW EIRP in the frequency range 2.400-2.4835 GHz
- France, equipment is restricted to 2.4465-2.4835 (Channels 10-13) GHz frequency range
- Belgium outside usage, the equipment is restricted to 2.460-2.4835 GHz frequency range
- Italy requires a user license for outside usage.

Statement of Compliance

Symbol Technologies, Inc., hereby, declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

A Declaration of Conformity may be obtained from <http://www2.symbol.com/doc/>

Copyright

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Patents

This product is covered by one or more of the following U.S. and foreign Patents: U.S. Patent No.

4,593,186; 4,603,262; 4,607,156; 4,652,750; 4,673,805; 4,736,095; 4,758,717; 4,760,248;
4,806,742; 4,816,660; 4,845,350; 4,896,026; 4,897,532; 4,923,281; 4,933,538; 4,992,717;
5,015,833; 5,017,765; 5,021,641; 5,029,183; 5,047,617; 5,103,461; 5,113,445; 5,130,520;
5,140,144; 5,142,550; 5,149,950; 5,157,687; 5,168,148; 5,168,149; 5,180,904; 5,216,232;
5,229,591; 5,230,088; 5,235,167; 5,243,655; 5,247,162; 5,250,791; 5,250,792; 5,260,553;
5,262,627; 5,262,628; 5,266,787; 5,278,398; 5,280,162; 5,280,163; 5,280,164; 5,280,498;
5,304,786; 5,304,788; 5,306,900; 5,324,924; 5,337,361; 5,367,151; 5,373,148; 5,378,882;
5,396,053; 5,396,055; 5,399,846; 5,408,081; 5,410,139; 5,410,140; 5,412,198; 5,418,812;
5,420,411; 5,436,440; 5,444,231; 5,449,891; 5,449,893; 5,468,949; 5,471,042; 5,478,998;
5,479,000; 5,479,002; 5,479,441; 5,504,322; 5,519,577; 5,528,621; 5,532,469; 5,543,610;
5,545,889; 5,552,592; 5,557,093; 5,578,810; 5,581,070; 5,589,679; 5,589,680; 5,608,202;
5,612,531; 5,619,028; 5,627,359; 5,637,852; 5,664,229; 5,668,803; 5,675,139; 5,693,929;
5,698,835; 5,705,800; 5,714,746; 5,723,851; 5,734,152; 5,734,153; 5,742,043; 5,745,794;
5,754,587; 5,762,516; 5,763,863; 5,767,500; 5,789,728; 5,789,731; 5,808,287; 5,811,785;
5,811,787; 5,815,811; 5,821,519; 5,821,520; 5,823,812; 5,828,050; 5,848,064; 5,850,078;
5,861,615; 5,874,720; 5,875,415; 5,900,617; 5,902,989; 5,907,146; 5,912,450; 5,914,478;
5,917,173; 5,920,059; 5,923,025; 5,929,420; 5,945,658; 5,945,659; 5,946,194; 5,959,285;
6,002,918; 6,021,947; 6,029,894; 6,031,830; 6,036,098; 6,047,892; 6,050,491; 6,053,413;
6,056,200; 6,065,678; 6,067,297; 6,082,621; 6,084,528; 6,088,482; 6,092,725; 6,101,483;
6,102,293; 6,104,620; 6,114,712; 6,115,678; 6,119,944; 6,123,265; 6,131,814; 6,138,180;
6,142,379; 6,172,478; 6,176,428; 6,178,426; 6,186,400; 6,188,681; 6,209,788; 6,209,789;
6,216,951; 6,220,514; 6,243,447; 6,244,513; 6,247,647; 6,308,061; 6,250,551; 6,295,031;
6,308,061; 6,308,892; 6,321,990; 6,328,213; 6,330,244; 6,336,587; 6,340,114; 6,340,115;
6,340,119; 6,348,773; D305,885; D341,584; D344,501; D359,483; D362,453; D363,700;
D363,918; D370,478; D383,124; D391,250; D405,077; D406,581; D414,171; D414,172;
D418,500; D419,548; D423,468; D424,035; D430,158; D430,159; D431,562; D436,104.

Invention No. 55,358; 62,539; 69,060; 69,187 (Taiwan); No. 1,601,796; 1,907,875;
1,955,269 (Japan); European Patent 367,299; 414,281; 367,300; 367,298; UK 2,072,832;
France 81/03938; Italy 1,138,713

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