

Chapter 9 Point-to-Point Protocol

GENERAL

Point-to-Point Protocol (PPP) provides a standard method of transporting multi-protocol datagrams (a unit of transmission in the network layer such as IP) over point-to-point links. PPP is a popular protocol standard used in the equipment employed by many Internet Service Providers (ISP). The PPP feature allows the BitSURFR Pro (in asynchronous mode) to connect with a remote synchronous PPP device over the ISDN.

PPP can be either single-link (using one B-channel to permit throughput up to 64 kbps) or multilink (using two B-channels to permit throughput greater than 64 kbps).

An Internet access package is required to use PPP. You may configure PPP using AT commands or LocalMenu. Both the calling party and the answering party must be set to run the same protocol--single-link or multilink otherwise, the call will disconnect.

DYNAMIC CHANNEL ALLOCATION (DCA)

The BitSURFR Pro Multilink PPP Protocol DCA feature allows you to dynamically drop one of the channels used for the multilink PPP call for use by voice port 1 only. Voice port 2 cannot be used for DCA.

 **Note**

If you need support for DCA, you must have an NI-1 line with the "additional call offering" feature enabled.

If you have configured the BitSURFR Pro for Multilink PPP and your ISDN line is provisioned to allow *Additional Call Offerings*, an incoming call on the Voice 1 directory number will be indicated by ringing the phone.

 **Note**

If a voice call is received while both channels are in use with a Multilink PPP call, Caller ID information for the voice call will not be delivered to a Caller ID box. The Caller ID information will be logged if logging is enabled.

If you answer the phone, the BitSURFR Pro will automatically use only one B-channel for PPP allowing the other B-channel to be used for the voice call. PPP throughput will be reduced while the voice call is active. When the voice call is complete, the BitSURFR Pro will then resume using both B-channels for PPP. Similarly, if you place a call on Voice Port 1, the BitSURFR Pro will use only one B-channel for PPP and likewise resume using both B-channels when the call is complete.



Note

While your BitSURFR Pro controls the channels allotted to outgoing calls, the control of channels allotted to incoming calls involves your telephone company's switch equipment. If you have an AT&T custom configuration (as opposed to AT&T NI-1), your BitSURFR Pro will not be able to provide Dynamic Channel Allocation for incoming calls during a Point-to-Point connection if your ISDN provider is AT&T. In this case, incoming calls will receive a busy signal as long as you are using both B-channels for a multilink PPP call.

CONFIGURATION USING AT COMMANDS

To configure the BitSURFR Pro for single-link PPP:

1. Enter the command: **AT%A2=95**
2. Set the rate multiplier to 1 by entering the command:
AT@B0=1
3. If Password Authentication Protocol is required, enter the command: **AT@M2=P**

You can also enter these commands as part of the initialization string.



Note

The Quick Setup factory profile &F1 can be used to quickly and easily configure for single-link PPP operation and can be used in combination with @B0=2 to configure for Multi-link PPP operation.

To configure the BitSURFR Pro for multilink PPP:

1. Enter the command: **AT%A2=95**

2. Set the rate multiplier to 2 by entering the command:
AT@B0=2
3. If Password Authentication Protocol is required, enter the command: **AT@M2=P** . To disable Password Authentication Protocol, enter the command: **AT@M2=N**



Note

Bi-directional RTS/CTS flow control (\Q3) is the only flow control supported by the PPP protocol; XON / XOFF is not supported.

PLACING A PPP CALL

You can place a PPP call using any normal call placement method. Both the answering party and the calling party must be set to run PPP, and the protocols must match--they must both be single-link or multilink. Otherwise, the call will disconnect.

To place a single-link call, only one telephone number is required.

To place a multilink call, *two* telephone numbers separated by an ampersand (&) are required as in the following example:

ATD5551212&5551313

The telephone numbers are provided by the service you will connect with. Typically, only one number is provided for multilink PPP; in this case, simply enter the number twice, and make sure the numbers are separated by an ampersand as shown above.



Note

During Multilink PPP sessions you will lose Caller ID capability to the POTS ports.

When a multilink call is established, the DTE status LED indicates the number of channels connected. The DTE status LED will flash fast when only one channel is connected; specifically during the setup of the second channel or when the second channel is dropped to answer or place a voice call. Any time two channels are connected, the DTE status LED will be on steady green. Note that during initial call setup, the

second channel may be added so fast that the fast-flash is not noticeable. When a single-link call is established, the DTE status LED will be on steady (not flashing) green.

DISCONNECTING A PPP CALL

Disconnecting a data call disconnects all channels associated with PPP. If either channel of a multilink PPP call is disconnected by the switch (service provider equipment), the entire call is disconnected.

AUTHENTICATION PROTOCOLS (PAP & CHAP)

The BitSURFR Pro supports two authentication methods in conjunction with the Point-to-Point protocol: Password Authentication Protocol (PAP) and Challenge-Handshake Authentication Protocol (CHAP).

CHAP supports multiple authentication algorithms, and the BitSURFR Pro supports two of these algorithms: CHAP-MD5 and CHAP-MS. CHAP-MD5 is widely used in the industry as the standard CHAP algorithm. CHAP-MS is a version of the algorithm developed by Microsoft and is used on Microsoft NT RAS servers.

PAP and CHAP are enabled using the AT command @M2. See the “Authentication Protocols (PAP and CHAP) @M2” section on page 4-13 for a full description of these commands.

The CHAP feature supports two message modes: Pass-through and Respond. In Pass-through mode the BitSURFR Pro passes all challenge messages to the DTE. In Respond mode the BitSURFR Pro responds to all challenge messages by using the provided password and the built-in algorithm. The Respond feature is necessary for proper operation of Windows 95 Dial-up Networking when used with MD5 CHAP.

Your BitSURFR Pro defaults to the Pass-through mode. Respond mode is invoked either by entering the AT command @M20="password" or the dial-string modifier >P="password". If you provide the dial-string modifier and also use the @M20="password" command, the password in the dial-string modifier takes precedence and will be used by the BitSURFR Pro. See the “CHAP Respond Mode @M20” section on page 4-13 for a full description of this command.