

Vanguard Managed Solutions

**Vanguard Applications Ware
Serial Feature Protocols**

Siemens HDLC Protocol

Notice

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Overview

Introduction

This manual describes the features and functions available with the Siemens HDLC (SHDLC) Protocol.

The Siemens HDLC protocol is available in two versions:

- Siemens HDLC BAC (Balanced operation Asynchronous balanced mode Class), which can only be used on point-to-point links.
- Siemens HDLC UNC (Unbalanced operation Normal response mode Class) which can be used on point-to-point and multipoint links.

Two port types support the two protocols:

- Siemens HDLC UNC port type is based on the existing SDLC port type with a new parameter, Maximum Frame Size, configured to be 4096.
- Siemens HDLC, supports Siemens HDLC BAC.

The link protocol implementations for both the BAC and UNC protocol variants conform to Siemens HDLC standards. The remaining parameters, such as the Autocall mnemonic, can be configured as necessary. All the management and monitoring features, such as statistics, operate as they do in an SDLC application.

Alarms

For details about SHDLC alarms and reports, refer to the *Vanguard Applications Ware Alarms and Reports Manual* (T0005).

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Applications

Typical Application A typical application for this feature is in the German banking industry where the supported devices could be financial transaction terminals. Figures 1 and 2 show typical configurations for the Siemens HDLC PAD supporting the UNC or BAC protocols.

Multipoint Configuration Figure 1 shows a typical multipoint application for Siemens HDLC together with the corresponding protocol stacks running in the PADs. The UNC protocol variant must be used in this case. The UNC protocol can also be used in a simpler point-to-point configuration. Note that this example is also typical of SDLC system configurations.

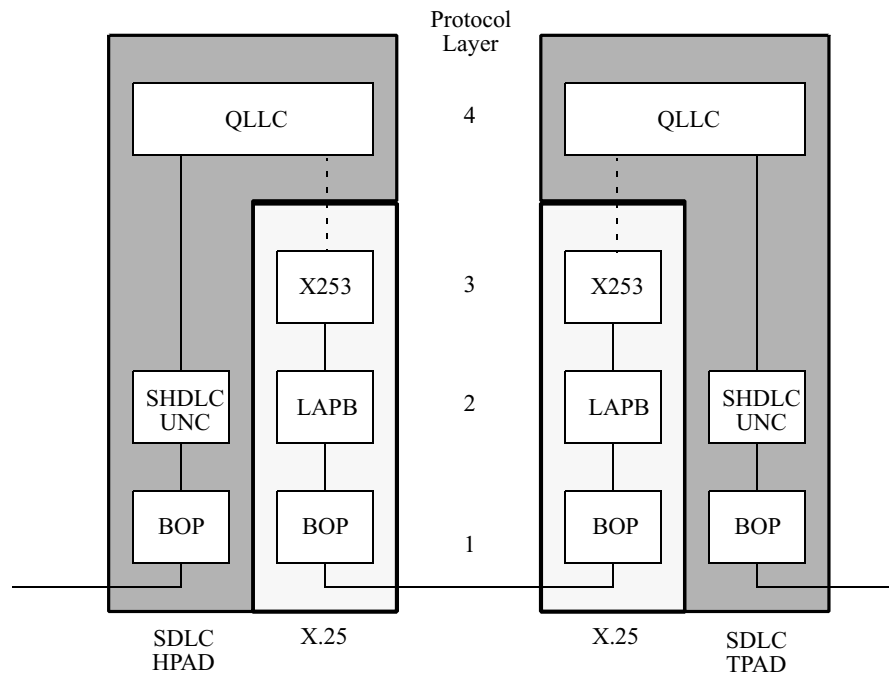
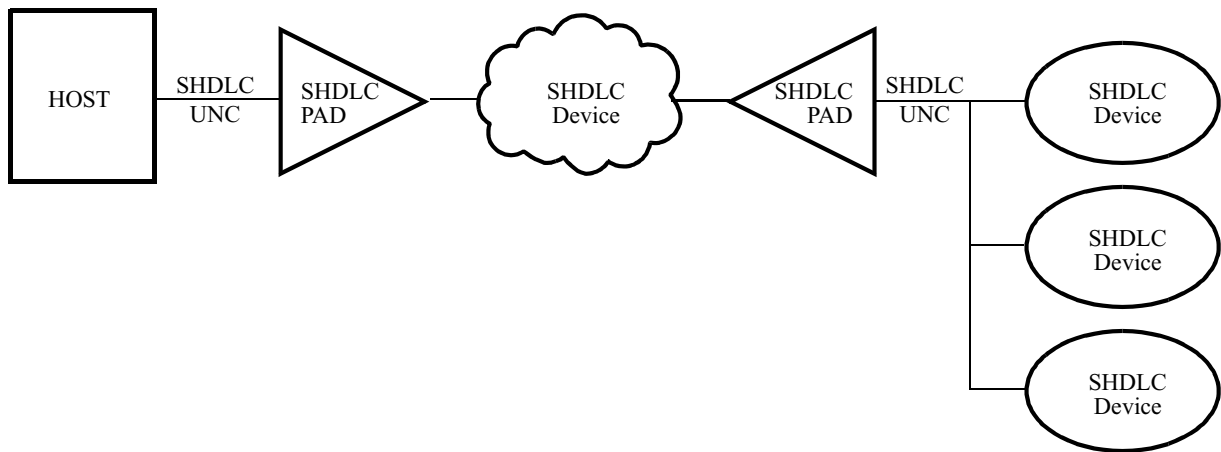


Figure 1. Siemens' UNC Protocol in a Multipoint Configuration

Point-to-Point Configuration

Figure 2 shows a typical point-to-point application for Siemens HDLC together with the corresponding protocol stacks running in the PADs. The protocol used on the link is the BAC variant, which is restricted to point-to-point connections.

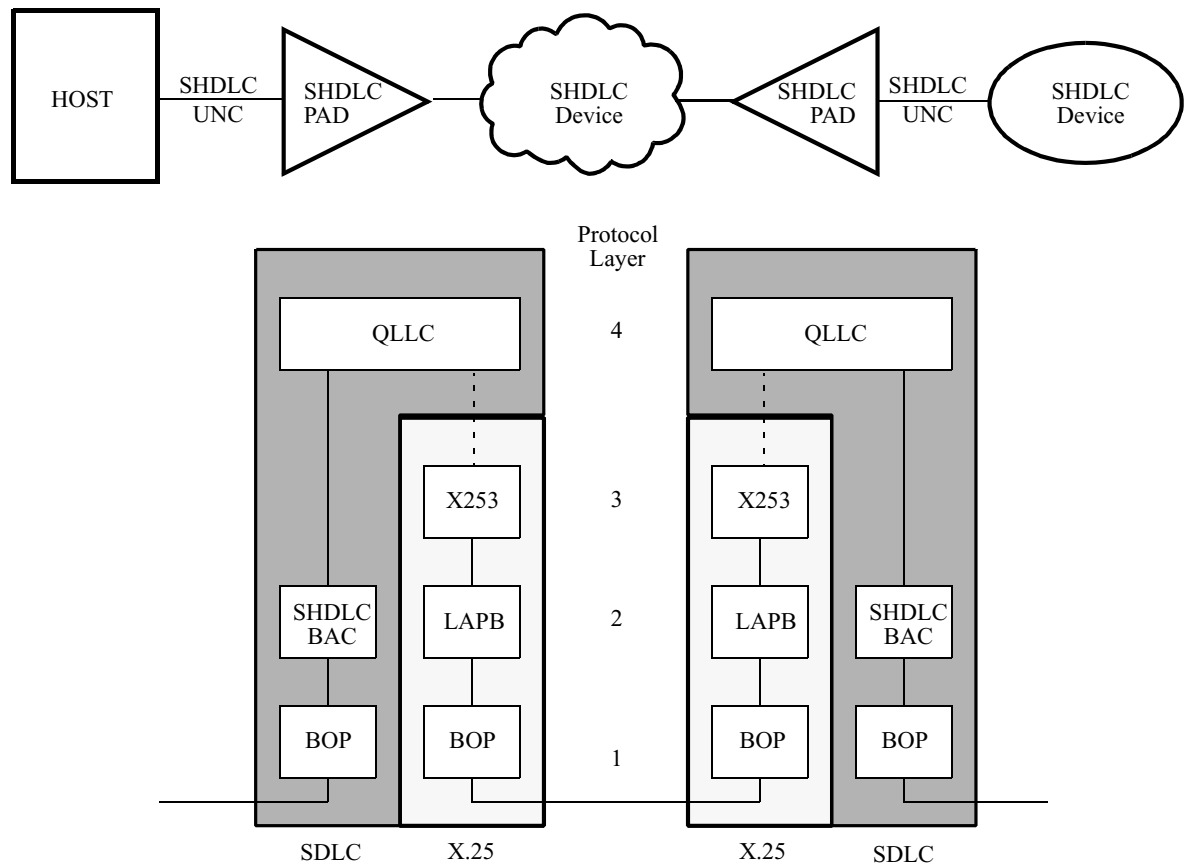


Figure 2. Siemens' BAC Protocol in a Point-to-Point Configuration

Configuring UNC Link

Features

These are the features of the Siemens HDLC UNC port:

- Poll spoofing
- Autocall with mnemonics
- 4096-byte maximum frame size
- Link speeds up to 384 kbps
- Modulo-8 frame sequencing
- TWA support on the HPAD and TPAD
- Local TEST frame handling on the HPAD
- SIMP EIA connection type

Guidelines

When you configure Siemens HDLC-UNC, select Port-type: SDLC and set the parameter TRANSMISSION ENCODING to NRZs (NRZ-Siemens), all other parameters for port and stations is straight forward as known for SDLC-port.

UNC Parameters

To configure an UNC link for operation under Siemens HDLC UNC, you must configure SDLC HPAD and TPAD ports in the same manner as for SDLC applications.

These are the UNC parameters:

Maximum Frame Size

Range	1024, 4096
Default	1024
Description	This is the maximum size of the frame that can be transmitted or received on the link, excluding frame header and CRC.

Link Speed

Range	1200 to 38,400
Default	9600
Description	Specifies the carrier's transmit/receive speed (in bps).

QLLC Options

Range	None, XIDs, DMs
Default	None
Description	Select XIDs for the Siemens HDLC applications.

Configuring BAC Links

Features

These are the features of the Siemens HDLC BAC port:

- Local handling of link control procedures
- Autocall with mnemonics, similar to SDLC
- 4096-byte maximum frame size
- Link speeds up to 384 kbps
- Modulo-8 frame sequencing
- Local TEST frame handling
- SIMP EIA connection type

Guidelines

To configure Siemens HDLC-BAC, select Port Type: SHDLC. This option works only for point-to-point operation, no stations can be defined.

BAC Parameters

For Siemens HDLC BAC operation, you must configure a Siemens HDLC port. The configuration is similar to X.25 ports, but much simpler, since no packet-level parameters exist and very few special options are supported. The parameters listed here show which setting should be selected for BAC links:

■ Note

Unless otherwise indicated, you must perform a Node boot for changes to these parameters to take effect.

Port Type

Range	MX25, SDLNULL, PAD, MUX, X25, BSC3270, C, SHDLC
Default	PAD
Description	Specifies port type.

Port Control

Range	NONE, MB
Default	NONE
Description	When set to MB and the port is disabled, raises Pin 22.

Clock Source

Range	INT, EXT
Default	EXT
Description	Specifies clocking <ul style="list-style-type: none"> • INT: internal • EXT: external

Clock Speed

Range	1200 to 384000
Default	9600
Description	Speed of the port, in bps (only when Clock Source = INT).

Link Address

Range	DCE, DTE
Default	DTE
Description	Logical DTE A (03H) or logical DCE B (01H).

Autocall Mnemonic

Range	0 to 8 characters
Default	No characters
Description	The mnemonic used to autocall when establishing a connection; blank disables autocalling.

T1 Transmission Retry Timer (1/10 sec)

Range	1 to 254
Default	30
Description	T1 link retry timer value in tenths of a second (e.g., 30 = 3.0 seconds).

T4 Poll Timer (1/10 sec)

Range	0 to 255
Default	40
Description	Sets the time an idle link is probed for assurance of connection to the remote device; a value of zero disables the timer.

N2 Transmission Tries

Range	1 to 20
Default	10
Description	Maximum number of attempts allowed to complete a transmission.

K Frame Window

Range	1 to 7
Default	7
Description	Frame level sequence number window.

Restricted Connection Destination

Range	0 to 32 characters
Default	No characters
Description	All calls entering this port are routed to the destination specified in this parameter, despite entries in the Route Selection Table.

Port Address

Range	0 to 15 hex digits
Default	No characters
Description	Inserted into the Calling Address field of call requests.

CUG Membership

Range	0-8 Two-Digit Numbers
Default	--,--,--,--, --, --,--,--
Description	You can enter up to 8 user groups; enter "--" for no groups.

Billing Records

Range	OFF, ON
Default	OFF
Description	Controls whether billing (accounting) records are created for calls on this port.

Maximum Frame Size

Range	1024, 4096
Default	1024
Description	Maximum frame size that can be transmitted or received on the link, excluding frame header and CRC.

Transmission Encoding

Range	NRZ, NRZI
Default	NRZ
Description	Specifies the data encoding mode.

Statistics

Introduction

There are no significant changes in statistics for Siemens HDLC UNC support. The statistics for Siemens HDLC UNC are the same as those provided by the SDLC port.

BAC Port Statistics

The following statistics are provided by the Siemens HDLC BAC port:

- Detailed Port Statistics
- Link Statistics

All statistics have the same interpretation, range, resolution, and associated calculations as the existing X.25 port type, unless otherwise noted.

Detailed Siemens HDLC BAC Port Statistics

Figures 3, 4, and 5 show the Siemens HDLC BAC Port Statistics screens, which are available under the CTP (Configuration Terminal Port) menu item, Statistics/ Detailed Port Statistics.

```

Node:           Address:           Date:           Time:
Detailed SHDLC Port Statistics: Port 3           Page: 1 of 3

Port Number: 3   Port Type: SHDLC           Port Status:Down
Port Speed: 0   Port State: Link Setup   Call Status: Disconnected
Port Utilization In: 0%   Port Utilization Out: 0%

Data Summary:
                IN      OUT                IN      OUT
Characters:    0      0      Characters/sec: 0      0
Frames:        0      0      Frames/sec:      0      0
Number of Packets Queued: 0

Eia Summary
                INPUT                OUTPUT
                DTR RTS MB P14   DSR DCD RI CTS
State: Connected (SIMPLE)      L  L  L  H      H  L  L  L

Press any key to continue ( ESC to exit )
    
```

Figure 3. Detailed Siemens HDLC BAC Port Statistics Screen 1 of 3

```

Node:                Address:                Date: Time:
Detailed SHDL Port Statistics: Port 3        Page: 2 of 3

Physical Summary:
  Overrun Errors: 0   Underrun Errors: 0   CRC Errors: 0
  Non Octet Aligned: 0 Frame Length Err: 0 Unknown DLCI Err: 0
  Last Unknown DLCI: 0

Frame Summary:
      IN      OUT      IN      OUT
Info   0       0      RR      0       0
RNR    0       0      REJ     0       0
SABM   0       0      DISC    0       0
DM     0       0      UA      0       0
FRMR   0       0
TEST   0       0

Press any key to continue ( ESC to exit )

```

Figure 4. Detailed Siemens HDLC BAC Port Statistics Screen 2 of 3

```

Node:                Address:                Date:                Time:
Detailed SHDL Port Statistics: Port 3        Page: 3 of 3

Time until next autocall attempt: 0         Call Status:Dis-
connected
Number of autocall attempts:1

Call Summary:
      IN      OUT      INOUT
Call Requests: 0       3      Call Accepts: 30
Clear Requests: 0       2      Clear Confirms: 20

Last Call: Outbound
  Called Address: 2000301
  Calling Address:
  Facilities: 3F01
  CUD: C3000000

Last Clear: Outbound
  Cause: 9-Called Number Out of Order
  Diagnostic: 113-Unknown Diagnostic Code

Press any key to continue (ESC to exit)...

```

Figure 5. Detailed Siemens HDLC BAC Port Statistics Screen 3 of 3

Link Statistics

For each Siemens HDLC BAC Port configured, one entry consisting of two lines is printed under the CTP menu item, Statistics/Link Statistics. Figure 6 shows the Link Statistics screen.

```

Node:           Address:           Date:           Time:
Detailed SHDL Port Statistics: Port 3           Page: 2 of 2

      Type           State   CRC   Link Anti-Exp Utilization
entity subtype  stat  speed date/time  Errors Down  in/out  in/out
=====
p3      SHDL      down   0    2-FEB-1995  0    0    0    0%
      BAC              15:15:47      0    0%
    
```

Figure 6. Link Statistics Screen

Screen Term	Tells You
Physical/Frame-Relay Summary	<ul style="list-style-type: none"> • CRC Errors: Indicates the number of errors detected by Cyclic Redundancy Check (CRC) since last node boot or reset of statistics. Indicates that a frame received contains one or more corrupted bits. • Non-Octet Aligned: Indicates an invalid frame that is not divisible by eight. • Frame Length Errors: Indicates the number of frames received with length less than five characters. • Unknown DLCI Err: Indicates the number of frames received with DLCI for which no station is configured. • Overrun Errors: Indicates that an input buffer overflowed and characters were discarded. • Underrun Errors: Indicates the number of times a buffer underrun occurred since last node boot or reset of statistics. • Last Unknown DLCI: Indicates the last unknown DLCI received in a frame.

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