PPP Quick Reference Guide

October 21, 1992

Frame format

Flag	Addr	Ctrl	Protocol	Data	FCS	Flag
7E	FF	03				7E

All values shown are in hexadecimal. Adjacent frames may be separated by a single flag. Address and control bytes are omitted in non-LCP frames if Address-and-Control-Field-Compression is negotiated. If the first byte of the Protocol field is zero, it is omitted in non-LCP frames if Protocol-Field-Compression is negotiated. On asynchronous links, special characters (flags, escapes and control characters selected in the negotiated remote Async-Control-Character-Map) between the flags are replaced by an escape (7D) and the original byte with bit 6 inverted (exclusive-OR'ed with 20).

Protocol Values

A Network Control Protocol (NCP) is used to establish a connection for the associated data transfer protocol.

Protocol	Value	NCP Value
Internet Protocol (IP)	0021	8021
OSI Network Layer	0023	8023
Xerox NS IDP	0025	8025
DECnet Phase IV	0027	8027
Appletalk	0029	8029
Novell IPX	002B	802B
VJ Compressed TCP/IP	002D	
VJ Uncompressed TCP/IP	002F	
Bridging PDU	0031	8031
Stream Protocol (ST-II)	0033	8033
Banyan Vines	0035	8035
reserved until 1993	0037	
802.1d Hello Packets	0201	
Luxcom	0231	
Sigma Network Systems	0233	
Link Control Protocol (LCP)		C021
Password Authentication Protocol (PAP)		C023
Link Quality Report (LQM)		C025
Challenge Handshake Authentication Protocol (CHAP)		C223

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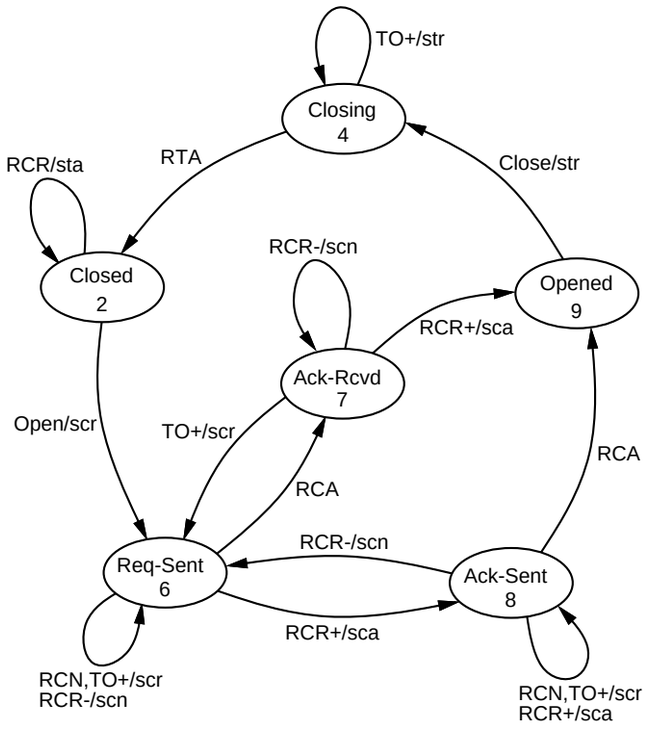
Events

Up	lower layer is Up
Down	lower layer is Down
Open	administrative Open
Close	administrative Close
TO+	Timeout with counter > 0
TO-	Timeout with counter expired
RCR+	Receive-Configure-Request (Good)
RCR-	Receive-Configure-Request (Bad)
RCA	Receive-Configure-Ack
RCN	Receive-Configure-Nak/Rej
RTR	Receive-Terminate-Request
RTA	Receive-Terminate-Ack
RUC	Receive-Unknown-Code
RXJ+	Receive-Code-Reject or Receive-Protocol-Reject (permitted)
RXJ-	Receive-Code-Reject or Receive-Protocol-Reject (catastrophic)
RXR	Receive-Echo-Request or Receive-Echo-Reply or Receive-Discard-Request

Actions

tlu	This-Layer-Up
tld	This-Layer-Down
tls	This-Layer-Start
tlf	This-Layer-Finished
irc	initialize restart counter
zrc	zero restart counter
scr	Send-Configure-Request
sca	Send-Configure-Ack
scn	Send-Configure-Nak/Rej
str	Send-Terminate-Request
sta	Send-Terminate-Ack
scj	Send-Code-Reject
ser	Send-Echo-Reply
-	illegal action

Simplified State Diagram



State Transition Table

State transitions are of the form "state" or "action(s)/new-state."

Notes: r restart option
p passive option
x crossed connection

Event	State 0 Initial	1 Starting	2 Closed	3 Stopped	4 Closing	5 Stopping	6 Req-Sent	7 Ack-Rcvd	8 Ack-Sent	9 Opened
Up	2	irc,scr/6	-	-	-	-	-	-	-	-
Down	-	-	0	tls/1	0	1	1	1	1	tld/1
Open	tls/1	1	irc,scr/6	3r	5r	5r	6	7	8	9r
Close	0	0	2	2	4	4	irc,str/4	irc,str/4	irc,str/4	tld,irc,str/4
TO+	-	-	-	-	str/4	str/5	scr/6	scr/6	scr/8	-
TO-	-	-	-	-	tlf/2	tlf/3	tlf/3p	tlf/3p	tlf/3p	-
RCR+	-	-	sta/2	irc,scr,sca/8	4	5	sca/8	sca,tlu/9	sca/8	tld,scr,sca/8
RCR-	-	-	sta/2	irc,scr,scn/6	4	5	scn/6	scn/7	scn/6	tld,scr,scn/6
RCA	-	-	sta/2	sta/3	4	5	irc/7	scr/6x	irc,tlu/9	tld,scr/6x
RCN	-	-	sta/2	sta/3	4	5	irc,scr/6	scr/6x	irc,scr/8	tld,scr/6x
RTR	-	-	sta/2	sta/3	sta/4	sta/5	sta/6	sta/6	sta/6	tld,sta,zrc/5
RTA	-	-	2	3	tlf/2	tlf/3	6	6	8	tld,scr/6
RUC	-	-	scj/2	scj/3	scj/4	scj/5	scj/6	scj/7	scj/8	tld,scj,scr/6
RXJ+	-	-	2	3	4	5	6	6	8	9
RXJ-	-	-	tlf/2	tlf/3	tlf/2	tlf/3	tlf/3	tlf/3	tlf/3	tld,irc,str/5
RXR	-	-	2	3	4	5	6	7	8	ser/9