PPP Persuasion (Instructor Version)

**Instructor Note**: Red font color or Gray highlights indicate text that appears in the instructor copy only.

1. Objectives

Describe the benefits of using PPP over HDLC in a WAN.

This activity can be completed individually or in small groups of 2-3 students per group.

1. Scenario

Your network engineering supervisor recently attended a networking conference where Layer 2 protocols were discussed. He knows that you have Cisco equipment on the premises, but he would also like to offer security and advanced TCP/IP options and controls on that same equipment by using the Point-to-Point Protocol (PPP).

After researching the PPP protocol, you find it offers some advantages over the HDLC protocol, currently used on your network.

Create a matrix listing the advantages and disadvantages of using the HDLC vs. PPP protocols. When comparing the two protocols, include:

* Ease of configuration
* Adaptability to non-proprietary network equipment
* Security options
* Bandwidth usage and compression
* Bandwidth consolidation

Share your chart with another student or class. Justify whether or not you would suggest sharing the matrix with the network engineering supervisor to justify a change being made from HDLC to PPP for Layer 2 network connectivity.

1. Resources

* Internet access to the World Wide Web
* Word processing or spreadsheet software

1. Instructor - Suggested Model Example and Resources

Internet Sites/Resources:

* [3 WAN Protocols You Should Know](http://www.petri.co.il/csc_3_wan_protocols_you_should_know.htm)
* [RFC 1661](http://www.faqs.org/rfcs/rfc1661.html)

HDLC and PPP Comparison Chart

|  |  |  |
| --- | --- | --- |
| Criteria | HDLC | PPP |
| Ease of Configuration | Standard or default for all Cisco equipment | Can be simple or more involved, depending upon the PPP options chosen to implement |
| Adaptability to Non-Proprietary Network Equipment | Not adaptable to other non-Cisco devices | Adaptable to other non-proprietary devices |
| Security Options | Not offered | CHAP (encrypted and secure link passwords) or PAP (non-encrypted link passwords) |
| Bandwidth Usage and Compression | Standard TDM and no compression | Compression available |
| Bandwidth Consolidation | Standard serial bandwidth used on one connection | Different connections can be bundled to offer higher bandwidth and traffic throughput |

1. Identify elements of the model that map to IT-related content:

* PPP
* HDLC
* CHAP
* PAP
* TDM
* STDM
* Bandwidth compression
* Bandwidth consolidation