

Superseded



As of February 25, 1998 the Gigabit Ethernet Consortium Clause 31 802.3x Flow Control Conformance Test Suite version 1997 has been superseded by the release of the Clause 31 1000BaseX Flow Control Conformance Test Suite version 1.0. This document along with earlier versions, are available on the Gigabit Ethernet Consortium test suite archive page.

Please refer to the following site for both current and superseded test suites:

<http://www.ioi.unh.edu/testsuites/ethernet/archive.html>

Ethernets

802.3x FLOW CONTROL TEST SUITE

Version 1997

Technical Document



Last Updated: 1997

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Test #1.31 - Pause Frame Reception Test

Test Label: rx_pause.fc.1000base-x

Purpose: To verify that the device under test detects flow control pause frames and waits the number of slot times specified by pause_timer before continuing transmission of frames.

References:

- IEEE 802.3x December 16, 1996 - subclause 31B.3.3, and Figure 31B-2: PAUSE operation receive state diagram.

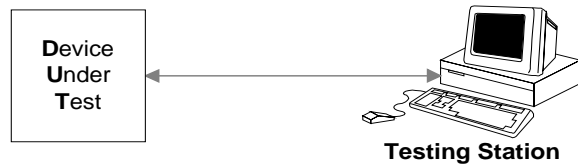
Resource Requirements:

- A testing station capable of encoding (decoding) data octets to (from) ten-bit code_groups as specified in clause 36 and sending (receiving) these code_groups using the signaling method of clause 38 or clause 39.

Last Modification: June 23, 1997

Discussion: If a station is transmitting and it detects a MAC control PAUSE frame, the transmitting station should cease transmission of data frames until the pause_timer expires. Once the pause_timer expires the station can resume transmitting data. The length of the pause_timer is specified by the MAC control PAUSE frame and is in units of 512 bit times.

Test Setup: Set up the devices as shown. Connect the station under test to the testing station with appropriate cabling, i.e. fiber or copper. Ensure the DUT is in Full-Duplex mode.



Procedure:

1. The testing station is instructed to transmit two properly encapsulated, valid, 64-byte ICMP echo request frames at line rate. This will cause the DUT to transmit two ICMP echo replies.
2. Measure the time difference between reception of the two ICMP echo replies at the testing station, call this time t_0 .
3. The testing station is instructed to send two properly encapsulated, valid, 64-byte ICMP echo request frames and a properly encapsulated MAC control PAUSE frame at line rate. When the testing station detects the MAC control frame the second ICMP echo reply should be delayed by the time specified by the pause_timer.
4. Measure the time difference between reception of the two ICMP echo replies at the testing station, call this time t_p .
5. The time difference ($t_0 - t_p$) should be pause_timer specified in the MAC control PAUSE frame.

Observable results:

- a. The testing station should capture two complete, valid, ICMP echo reply indicating successful transmission.
- b. The second ICMP echo reply should be delayed by the time specified by the pause_timer within the MAC control PAUSE frame.

Possible Problems: None.

Test #2.31 - Pause Frame Transmission Test

Test Label: tx_pause.fc.1000base-x

Purpose: To verify that the device under test transmits properly encapsulated MAC control PAUSE frames.

References:

- IEEE 802.3x December 16, 1996 - subclause 31B.3.1, and Figure 31B-1: PAUSE operation transmit state diagram.

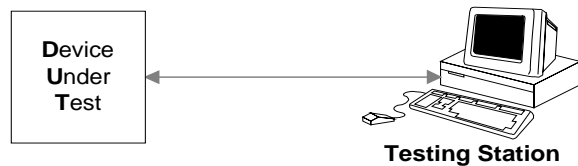
Resource Requirements:

- A testing station capable of encoding (decoding) data octets to (from) ten-bit code_groups as specified in clause 36 and sending (receiving) these code_groups using the signaling method of clause 38 or clause 39.

Last Modification: June 23, 1997

Discussion: If a station is being overwhelmed by network traffic it may transmit MAC control PAUSE frames to inform the other station on the network to stop transmitting frames for a specified amount of time. This will allow the station to "catch up" and process the frames in its receive buffer. The length of the pause_timer is specified by the MAC control PAUSE frame and is in units of 512 bit times.

Test Setup: Set up the devices as shown. Connect the station under test to the testing station with appropriate cabling, i.e. fiber or copper. Ensure the DUT is in Full-Duplex mode.



Procedure:

1. The testing station is instructed to transmit an infinite number of encapsulated, valid, 64-byte data frames at line rate. This will cause the DUT's receive buffers to become overloaded.
2. Instruct the testing station to cease transmission of data frames.
3. The activity captured by the testing station and the statistics gathered by the DUT are observed.

Observable results:

- a. The testing station may capture MAC control PAUSE frames.
- b. Ensure that the MAC control PAUSE frames are properly constructed:
 - Multicast address 01-80-C2-00-00-01
 - Pause OP code
 - request_operand pause_time is 0 to 65535 bit times.

Possible Problems: DUT may not transmit MAC control PAUSE frames.