

To: FC WG
From: Dal Allan

The following information is a summary of the test results (suitably sanitized to remove any company identification) at the FCLC interoperability testing in January.

FCLC TEST PERIOD (JAN. 12 – 16, 1998)

TEST RESULTS FORM

Phase I: Loop Stability

L₁ and L₂ are L_Ports. All combinations of L_Ports are to be tested.

Test 1:

Setup: L₁ and L₂ are powered off and connected in a Loop.

Procedure: Power on L₁ and wait until it is fully powered up. Power on L₂. Verify that the Loop is initialized.

Test 2:

Setup: Same as in Test 1.

Procedure: Power on L₂ and wait until it is fully powered up. Power on L₁. Verify that the Loop is initialized.

Test 3:

Setup: L₁ and L₂ are powered up, connected in a Loop and the Loop is initialized.

Procedure: Disconnect L₁ from the Loop and then reconnect it. Verify proper recovery of the Loop.

Test 4:

Setup: Same as in Test 3.

Procedure: Disconnect L₂ from the Loop and then reconnect it. Verify proper recovery of the Loop.

Test 5:

Setup: Same as in Test 3.

Procedure: Disconnect the receiver of L₁. Power cycle L₁. Reconnect the receiver after L₁ is fully powered up. Verify proper recovery of the Loop.

Test 6:

Setup: Same as in Test 3.

Procedure: Disconnect the receiver of L₂. Power cycle L₂. Reconnect the receiver after L₂ is fully powered up. Verify proper recovery of the Loop.

L ₁	L ₂	Hub	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6
R	N	H	Pass	Pass	Pass	Pass	Pass	Pass
S	D		FAIL 1	FAIL 1	N/T	N/T	N/T	N/T
N	A		Pass	Pass	Pass	FAIL 2	Pass	Pass
N	F	U	Pass	Pass	Pass	FAIL 3	Pass	FAIL 3
J	R	H	Pass	FAIL 4	Pass	Pass	Pass	Pass
P	K	H	Pass	Pass	Pass	Pass	Pass	FAIL 5
S	D	H	Pass	Pass	Pass	Pass	Pass	FAIL 6
K	N	U	Pass	Pass	Pass	Pass	FAIL 5	Pass
A	T	H	FAIL 7	Pass	Pass	Pass	Pass	FAIL 7
D	P	H	Pass	Pass	Pass	Pass	FAIL 8	Pass
K	M	H	Pass	Pass	Pass	Pass	FAIL 5	Pass

K	D	H	Pass	Pass	Pass	Pass	FAIL 5	FAIL 9
J	P	B	FAIL 10	Pass	Pass	Pass	Pass	Pass
P	M		Pass	Pass	Pass	Pass	FAIL 11	Pass
S	T	H	Pass	Pass	Pass	Pass	Pass	FAIL 7
F	K		Pass	FAIL 12	Pass	Pass	FAIL 13	FAIL 14
J	T		Pass	Pass	Pass	Pass	FAIL 15	FAIL 7
T	K		Pass	Pass	Pass	Pass	FAIL 7	FAIL 5
T	P	U	Pass	Pass	Pass	Pass	FAIL 16	Pass
F	M	U	Pass	Pass	Pass	Pass	Pass	FAIL 17
T	D	U	Pass	Pass	Pass	Pass	FAIL 17	FAIL 18
E	K	H	Pass 19	Pass 19	FAIL 19	FAIL 19	FAIL 19	FAIL 19
G	K	H	Pass	Pass	Pass	Pass	Pass	FAIL 5
G	D	H	Pass 20	Pass	Pass	Pass	Pass	FAIL 21
J	G	H	Pass	Pass	Pass	Pass	FAIL 22	Pass
G	M	U	Pass	Pass	FAIL 22	Pass	Pass	FAIL 22
E	S	H	Pass	Pass	Pass	Pass	FAIL 23	Pass
T	G		Pass	Pass	Pass	Pass	FAIL 7	Pass
E	T	H	FAIL 24	FAIL 24	N/T	N/T	N/T	N/T
E	F	H	FAIL 25	FAIL 25	N/T	N/T	N/T	N/T
L	G		FAIL 22	FAIL 26	FAIL	FAIL	FAIL	FAIL
E	R		FAIL 22	FAIL 22	N/T	N/T	N/T	N/T
T	F		Pass	Pass	Pass	Pass	FAIL 7	Pass
S	K	B	FAIL 1	FAIL 26	N/T	N/T	N/T	N/T
G	F	U	Pass	FAIL 22	Pass	Pass	Pass	Pass
G	E		Pass	Pass	Pass	Pass	Pass	Pass
L	A		Pass	Pass	Pass	Pass	Pass	Pass
L	E	H	FAIL 22	FAIL 22	N/T	N/T	N/T	N/T
S	M	H	Pass	Pass	Pass	Pass	Pass	Pass
S	F		Pass	Pass	Pass	Pass	Pass	Pass
F	D		Pass	Pass	Pass	Pass	Pass	FAIL
N	L		Pass	Pass	Pass	Pass	Pass	Pass
E	J		Pass	Pass	Pass	Pass	Pass	Pass
D	Q		Pass	Pass	Pass	Pass	Pass	Pass
N	G	H	Pass	Pass	Pass	Pass	Pass	Pass
P	A	H	Pass	Pass	Pass	Pass	Pass	Pass
P	R		Pass	Pass	Pass	Pass	Pass	Pass
P	L		Pass	Pass	Pass	Pass	Pass	Pass
N	P		Pass	Pass	Pass	Pass	Pass	Pass
K	Q	H	Pass	Pass	Pass	Pass	FAIL 5	Pass
Q	M		Pass	Pass	Pass	Pass	Pass	Pass
S	Q		Pass	Pass	Pass	Pass	Pass	Pass
Q	N	U	Pass	Pass	FAIL 28	Pass	FAIL 28	FAIL 28
G	P	H	Pass	Pass	Pass	Pass	Pass	Pass
Q	P	U	Pass	Pass	Pass	Pass	Pass	Pass
S	P	H	Pass	Pass	Pass	Pass	Pass	Pass
D	M	H	Pass	Pass	Pass	Pass	FAIL 18	Pass
F	Q	U	FAIL 29	FAIL 14	Pass	Pass	FAIL 18	Pass
L	R		FAIL 22	FAIL 22	N/T	N/T	N/T	N/T
R	A	U	Pass	FAIL 22	Pass	Pass	FAIL 22	Pass
R	T	H	Pass	FAIL 22	FAIL 22	FAIL 22	FAIL 22	FAIL 8
N	M	H	FAIL 8	FAIL 8	N/T	N/T	N/T	N/T

Comments:

1. S transmitted LIP(F8,F7) forever.
2. N transmitted various LIPs e.g., LIP(F8,01), LIP(F1,01), LIP(F3,01).
3. N transmitted only LIP(F8,xx), while F transmitted LIP(F8,xx)/Idle.
4. After waiting 8 minutes, only Idle/garbage seen from J.
5. No light was detected from K.
6. Only garbage was detected from D.
7. No light was detected from T.
8. Only Idle/garbage was detected; no Loop reinitialization.
9. D transmitted only Idle/OLS.
10. Run 1: P transmitted LISM frames continuously. Run 2: J did not power up.
11. No Loop initialization; Idle transmitted. This passed once. Note: M cannot handle additional sense data and shuts off from the Loop, the OS hangs, and does not boot. P sends only basic sense data after check condition.
12. K could not initialize the Loop by itself.
13. No light was detected from F.
14. Only Idle/garbage was observed.
15. No light was detected from J.
16. P transmitted continuous Idle/garbage. No light was detected from T.
17. F did not select an AL_PA.
18. Only garbage was observed.
19. E "blue-screens".
20. D initializes the Loop, but NT is unable to boot up completely and hangs.
21. No LIP or Loop initialization. Idle/garbage seen.
22. Continuous LISM frames observed.
23. Only S was observed to be on the Loop.
24. E crashes when T attempts PLOGI.
25. E crashes when F attempts PLOGI.
26. NOS, LRR, and Idles observed.
27. LIP(F8,F7) observed on the Loop.
28. N transmitted only LIP(F8,xx).
29. Q did not select an AL_PA.

Phase II: SCSI co-existence

I_1 and I_2 are SCSI initiators. T_1 and T_2 are SCSI targets. All combinations of initiators are to be tested. Though all combinations of targets are not required to be tested, all targets need to be included in this test.

Test 1:

Setup: All devices are powered off and connected in a Loop.

Procedure: Power on the targets and wait until they are fully powered up. Power on I_1 and wait for it to fully power up. Power on I_2 . Verify SCSI connectivity.

Test 2:

Setup: As existing at the end of Test 1.

Procedure: Disconnect I_1 and reconnect it after fifteen seconds. Verify SCSI connectivity.

Test 3:

Setup: As existing at the end of Test 1.

Procedure: Disconnect I_2 and reconnect it after fifteen seconds. Verify SCSI connectivity.

Test 4:

Setup: As existing at the end of Test 1.

Procedure: Disconnect T_1 and reconnect it after fifteen seconds. Verify SCSI connectivity.

Test 5:

Setup: As existing at the end of Test 1.

Procedure: Disconnect T_2 and reconnect it after fifteen seconds. Verify SCSI connectivity.

I_1	I_2	T_1	T_2	T_3	Hub	Test 1	Test 2	Test 3	Test 4	Test 5
E	T	G	J		H	FAIL 1	N/T	N/T	N/T	N/T
T	D	G	J		H	FAIL 2	FAIL 3	FAIL 3	FAIL 4	FAIL 4
E	Q	G	J		H	FAIL 10	FAIL 11	FAIL 11	FAIL 11	FAIL 11
D	Q	G	J		H	FAIL 12	FAIL 13	FAIL 14	FAIL 15	FAIL 16
K	M	G	J		H	Pass 22	FAIL 23	Pass 22	Pass 22	Pass 22
E	M	S	F	C		FAIL 27	FAIL 27	FAIL 27	FAIL 27	FAIL 27
M	D	S	F	C		FAIL 28	FAIL 28	FAIL 28	FAIL 28	FAIL 29
K	E	S	F	C		FAIL 31	N/T	N/T	N/T	N/T
T	Q	S	F	C		FAIL 32	FAIL 32	N/T	N/T	N/T
Q	M	P	A		H	Pass	Pass	Pass	Pass	Pass
Q	K	P	A		H	FAIL 33	Pass	Pass	Pass	Pass
K	T	P	A		H	Pass	FAIL 34	FAIL 34	FAIL 34	FAIL 34
M	T	P	A		H	Pass	FAIL 35	FAIL 35	Pass	FAIL 35
D	E	P	A		H	FAIL 36	N/T	N/T	N/T	N/T

Test 6:

Setup: All devices are powered off and connected in a Loop.

Procedure: Power on the targets and wait until they are fully powered up. Power on I₂ and wait for it to fully power up. Power on I₁. Verify SCSI connectivity.

Test 7:

Setup: As existing at the end of Test 6.

Procedure: Disconnect I₁ and reconnect it after fifteen seconds. Verify SCSI connectivity.

Test 8:

Setup: As existing at the end of Test 6.

Procedure: Disconnect I₂ and reconnect it after fifteen seconds. Verify SCSI connectivity.

Test 9:

Setup: As existing at the end of Test 6.

Procedure: Disconnect T₁ and reconnect it after fifteen seconds. Verify SCSI connectivity.

Test 10:

Setup: As existing at the end of Test 6.

Procedure: Disconnect T₂ and reconnect it after fifteen seconds. Verify SCSI connectivity.

I ₁	I ₂	T ₁	T ₂	T ₃	Hub	Test 6	Test 7	Test 8	Test 9	Test 10
E	T	G	J		H	N/T	N/T	N/T	N/T	N/T
T	D	G	J		H	FAIL 5	FAIL 6	FAIL 7	FAIL 8	FAIL 9
E	Q	G	J		H	N/T	N/T	N/T	N/T	N/T
D	Q	G	J		H	FAIL 17	FAIL 18	FAIL 19	FAIL 20	FAIL 21
K	M	G	J		H	FAIL 24	FAIL 3	FAIL 3	FAIL 25	FAIL 26
E	M	S	F	C		FAIL 27	FAIL 27	FAIL 27	FAIL 27	FAIL 27
M	D	S	F	C		FAIL 30	N/T	N/T	N/T	N/T
K	E	S	F	C		FAIL 31	N/T	N/T	N/T	N/T
T	Q	S	F	C		Pass	Pass	Pass	Pass	Pass
K	Q	P	A		H	Pass	Pass	Pass	Pass	Pass
T	K	P	A		H	Pass	N/T	N/T	Pass	N/T
T	M	P	A		H	Pass	Pass	Pass	Pass	Pass
E	D	P	A		H	FAIL 37	FAIL 38	FAIL 38	FAIL 38	FAIL 38

Comments:

1. After powering on E, E could see both Targets. However after powering on T, no light was detected from T.
2. After powering on T, T could see both Targets. However after powering on D, constant LISM frames were observed; the Loop did not initialize.
3. Constant LISM frames were observed.
4. Constant LISM frames and LIP(F7,F7) were observed.
5. After powering on D, constant LISM frames were observed; the Loop did not initialize. After powering on T, no light was observed from T.
6. No light observed from T, G transmits LR continuously, and D transmitted NOS and OLS continuously.
7. G transmitted OLS continuously, D transmitted LIP(F7,F7), OLS, NOS, and Idle continuously.
8. Constant LISM frames were observed. G transmitted OLS continuously.
9. Both D and G transmitted OLS continuously.
10. After powering on E, E could see both Targets. However, after on Q, LISM frames were seen often as the Loop initialized and reinitialized over and over.
11. LISM frames were seen often as the Loop initialized and reinitialized.

12. After powering on D, constant LISM frames were observed. After powering on Q, NOS was seen from Q, and Idle was seen from J.
13. J transmitted Idle, while Q transmitted OLS.
14. Q transmitted continuous LISM frames, while J transmitted Idle.
15. Idles and bad transmission words were observed; the Loop did not initialize.
16. Q transmitted LISM frames / LIP / OLS, while J transmitted LIP / OLS / NOS.
17. After powering on Q, J transmitted LR / Idle, while Q transmitted LIP / NOS. After powering on D, constant LISM frames were observed.
18. Q transmitted LISM frames / LIP / OLS, while J transmitted NOS.
19. Q transmitted Idle / OLS while J transmitted NOS.
20. Q transmitted LISM frames while J transmitted Idles.
21. Q transmitted LIP / OLS / LR while J transmitted NOS.
22. M saw the Targets OK, but K saw G twice.
23. K did not see J.
24. After powering on M, M could see the Targets OK. After powering on K, no light was seen from K, and constant LISM frames were observed.
25. J transmitted Idles / bad Transmission Words, while M transmitted LISM frames.
26. J transmitted Idles, while M transmitted LIP(F8,F7) / LIP(F7,F7).
27. M could not see Target S. Loop could not operate with F present; F removed for these tests.
28. M could not see Targets M or S. D was not operational (failed to boot).
29. Loop did not recover. LISM frames did not resolve.
30. Loop failed with both Initiators powered on.
31. Loop could not stabilize with K present.
32. T was unable to see the Targets (hung in Disk Administrator).
33. K could not see Target P; sent LS_RJT in response to PLOGI ACC from P.
34. K could not enter Disk Administrator (hung).
35. Only invalid transmission words on Loop; Loop was unusable.
36. E "blue screened" after receiving PLOGI; no further testing.
37. E "blue screened" after receiving PLOGI.
38. Loop did not initialize; LISM frames did not resolve.

Phase III: Fabric operation

All combinations of SCSI initiators and SCSI targets are to be tested with each switch.

Test 1:

Setup: An initiator is connected to an F_Port on the switch. A target is connected to an FL_Port on the switch. Both initiator and target are powered off.

Procedure: Power on the target and wait until it is fully powered up. Power on the initiator. Verify SCSI connectivity.

Test 2:

Setup: As existing at the end of Test 1.

Procedure: Move the initiator to a different F_Port on the switch. Verify SCSI connectivity.

Test 3:

Setup: As existing at the end of Test 2.

Procedure: Move the target to a different FL_Port on the switch. Verify SCSI connectivity.

Test 4:

Setup: Same as in Test 1.

Procedure: Power on the initiator and wait until it is fully powered up. Power on the target. Verify SCSI connectivity.

Initiator	Target	Fabric	Test 1	Test 2	Test 3	Test 4
Q	P	R	Pass	FAIL 1	FAIL 2	Pass
D	P	R	Pass 3	Pass 3	Pass 3	FAIL 4
M	C	R	FAIL 5	N/T	N/T	FAIL 5
D	C	L	FAIL 6	FAIL 7	FAIL 6	FAIL 6
M	P	L	FAIL 8	FAIL 8	FAIL 8	FAIL 8
M	C	L	FAIL 9	FAIL 9	FAIL 9	FAIL 9
D	P	L	FAIL 10	FAIL 10	FAIL 11	FAIL 11
Q	P	L	Pass	Pass	FAIL 12	FAIL 12
D	C	R	Pass	Pass	FAIL 13	Pass

Comments:

1. Unable to move Q. Could not recover link after disconnect.
2. Q could not see Target P in the nameserver.
3. Initiator D was connected to an FL_PORT.
4. D could not see Target P.
5. Initiator M could not see Target C; both were registered with the nameserver.
6. Initiator D unable to see Target C.
7. Initiator D unable to reinitialize loop when moved.
8. Both devices logged in to Fabric; Initiator M could not see Target P.
9. Both devices logged in to Fabric; Initiator M could not see Target C.
10. Both devices logged in to Fabric; Initiator D "hung" in Disk Administrator initialization.
11. Initiator D could not see Target P.
12. Initiator Q could not see Target P.
13. Initiator D received Remote State Change Notification, but could not see Target C.