



7.2.3 Testing Redundancy in the Network Design Test Plan

	Start Date	End Date
Network Build (Setup)		
Testing Date		

Table of Contents

ATTENDEES	3
INTRODUCTION	4
EQUIPMENT	4
DESIGN AND TOPOLOGY DIAGRAM	5
TEST 1. NETWORK REDUNDANCY TEST	6
TEST 1. PROCEDURES:	7
TEST 1. EXPECTED RESULTS AND SUCCESS CRITERIA:	7
TEST 1. CONCLUSIONS	9
APPENDIX	11

Attendees

Name	Company	Position

Introduction

An introduction to the testing explaining briefly what the purpose of the test is, and what should be observed. Include a brief description of testing goals. List all tests you intend to run.

The purpose of this test plan is to demonstrate that the network can recover from failed links due to its redundant design. This prototype network is used to test various aspects of the proposed design.

- Test 1: Network Redundancy Test
 - Verify that redundant links allow successful recovery from failed links.
 - Compare the operation of static routes with the operation of a dynamic routing protocol when a link fails.

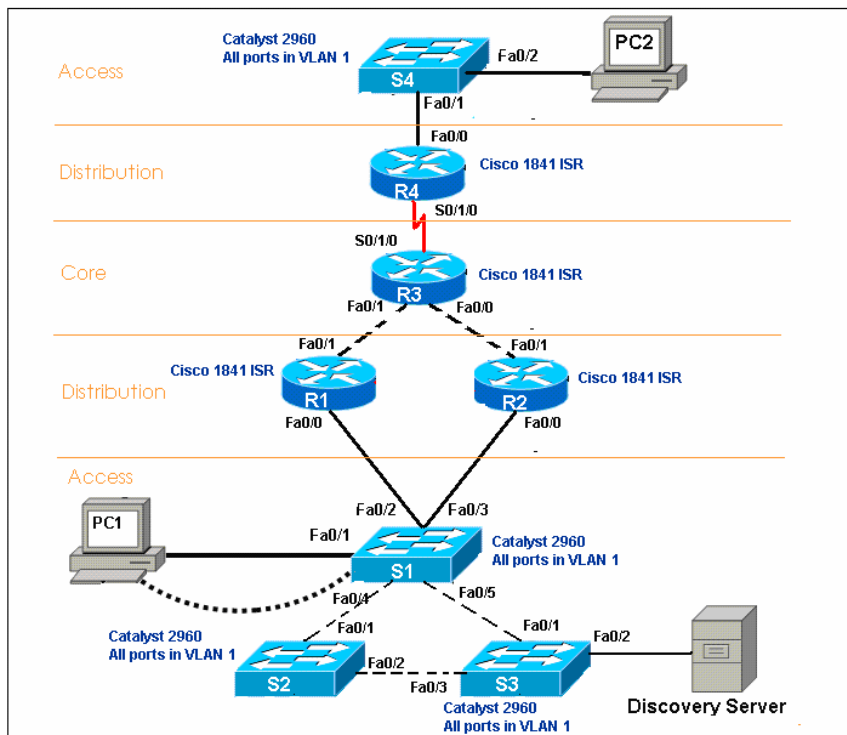
Equipment

List all of the equipment needed to perform the tests. Be sure to include cables, optional connectors or components, and software.

Qty. Req	Model	Any additional options or software required	Substitute	IOS Software Rev.
4	2960 Layer 2 switch	none	Any 2950 or 2960 model switch	12.2 or above
4	1841 ISR routers with 2 FastEthernet ports and 2 Serial ports	none	Any multilayer switch or router with minimum 2 FastEthernet ports and one serial port.	12.2 or above
2	Personal Computer end-devices	FastEthernet NIC	At least one PC and any other IP end-device (camera, printer, etc.)	Windows, MAC or Linux operating system.
1	Personal Computer Server	FastEthernet NIC	Any PC with web server software loaded	Windows, MAC, or Linux operating system
6	Cat 5 or above straight-through patch cables.	none	none	n/a
5	Cat 5 or above cross-over patch cables	none	none	n/a
1	V.35 DTE Serial Cables	None	None	n/a
1	V.35 DCE Serial Cables	None	None	n/a

Design and Topology Diagram

Place a copy of the prototype network topology in this section. This is the network as it should be built to be able to perform the required tests. If this topology duplicates a section of the actual network, include a reference topology showing the location within the existing or planned network. Initial configurations for each device must be included in the Appendix.



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Description	Author	Version	Page
		1	1 of 1

Device Designation	Interface	IP Address	Subnet mask
R1	Fa0/0	172.18.4.1	255.255.255.0
R1	Fa0/1	172.18.0.5	255.255.255.252
R2	Fa0/0	172.18.4.2	255.255.255.0
R2	Fa0/1	172.18.0.13	255.255.255.252
R3	Fa0/0	172.18.0.14	255.255.255.252
R3	Fa0/1	172.18.0.6	255.255.255.252
R3	S0/1/0 *	172.18.0.17	255.255.255.252
R4	Fa0/0	172.18.8.1	255.255.255.0
R4	S0/1/0 *	172.18.0.18	255.255.255.252
S1	VLAN1	172.18.4.3	255.255.255.0

S2	VLAN1	172.18.4.4	255.255.255. 0
S3	VLAN1	172.18.4.5	255.255.255. 0
S4	VLAN1	172.18.8.2	255.255.255.0
PC1		172.18.4.10	255.255.255.0
PC2		172.18.8.10	255.255.255.0
Discovery Server		172.18.4.25	255.255.255.0

Figure 1: Topology - Prototype test topology.

Add a description about this design here that is essential to provide a better understanding of the testing or to emphasize any aspect of the test network to the reader.

For each test to be performed state the goals of the test, the data to record during the test, and the estimated time to perform the test.

Test 1. Description: Network Redundancy Test

Goals of Test:

The goal of the test is to verify network recovery after a failed link in both a switched and a routed environment and to compare the speed of recovery.

Data to Record:

Configurations
Routing Tables
Spanning Tree Output
CPU & Memory
Ping Test Output
Trace Route Output

Estimated Time:

120 minutes

Test 1. Procedures:

Itemize the procedures to follow to perform the test.

Step 1: Verify the configuration and operation of EIGRP.

1. Console into one of the devices in the topology and ping all of the other devices in the topology. Record any anomalies.
2. Telnet to router **R1** and examine the `show running-config`, and `show ip route` output. Copy and paste the results into a document for later use.
3. Telnet to all of the other routers and get the same information.
4. Use the `tracert` between PC1 and PC2 to verify the path that the traffic is taking through the network.
5. Verify EIGRP configuration using `show ip protocols`, `show ip eigrp topology`, and `show ip eigrp interfaces`.
6. Record the results of this step in the Test1: Results and Conclusions section of this test plan.

Step 2: Verify the configuration and operation of Spanning Tree Protocol.

1. Telnet to switch **S1** and examine `show running-config` output. Copy and paste the results into a document for later use.
2. Telnet to switches **S2** and **S3** and get the same information.
3. Wait a few seconds for the Spanning Tree topology to converge.
4. Verify Spanning Tree operation using `show spanning-tree vlan 1`.
5. Record the results of this step in the Test1: Results and Conclusions section of this test plan.

Step 3: Simulate a failure in the switched portion of the network and verify and observe recovery.

1. From PC1 issue the command `ping -n 1000 172.18.4.25` to ping the Discovery server through the switched network.
2. To simulate a link failure, remove the link between S1 and S3.
3. Observe the output of the extended ping and when it begins to succeed again, press **Ctrl-C** to interrupt it.
4. Telnet to all three switches and issue the command `show spanning-tree vlan 1`.
5. Record the results of this step in the Test1: Results and Conclusions section of this test plan.

Step 4: Simulate a failure in the routed portion of the network and verify and observe recovery.

1. From PC1 issue the command `ping -n 1000 172.18.8.10` to ping PC2 through the routed

network.

2. To simulate a link failure, remove the link between R2 and R3.
3. Observe the output of the extended ping and after several more iterations, press **Ctrl-C** to interrupt it.
4. Use the `tracert` command from PC1 to PC2 to verify the path that the traffic is taking through the network.
5. Telnet to all of the routers and issue the command `show ip route`.
6. Record the results of this step in the Test1: Results and Conclusions section of this test plan.

Test 1. Expected Results and Success Criteria:

List all of the expected results. Specific criteria that must be met for the test to be considered a success should be listed. An example of specific criteria is: "A requirement that ping response times cannot exceed 100 ms."

1. Both the switched and routed portion of the network should automatically recover from the loss of a redundant link.
2. The routed portion of the network should provide faster recovery after the failure of a redundant link.

Test 1. Results and Conclusions

Record the results of the tests and the conclusions that can be drawn from the results.

Appendix

Record the starting configurations, any modifications, log file or command output, and any other relevant documentation.