7.2.4 Routing Protocol Test Plan

	Start Date	End Date
Network Build (Setup)		
Testing Date		

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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 basic connectivity and routing protocol are configured correctly. This prototype network is used to test various aspects of the proposed design.

- Test 1: Routing Protocol Test

    - Verify that EIGRP recovers successfully 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.
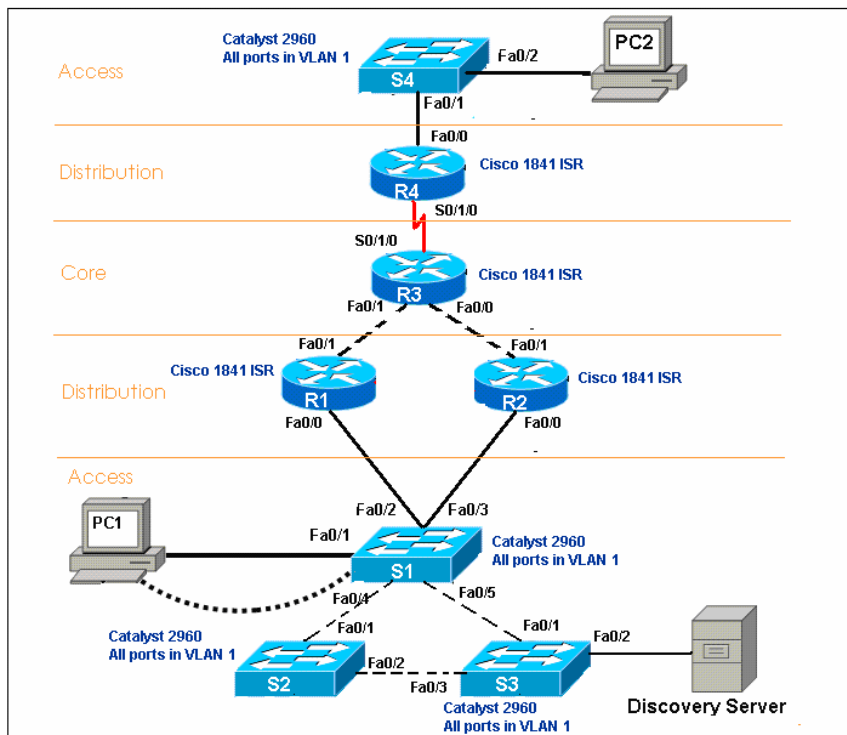
Device Designation	Interface	IP Address	Subnet mask
R1	Fa0/0	172.18.4.1	255.255.255.0
R1	Fa0/1	172.18.0.5	255.255.255.252
R2	Fa0/0	172.18.4.2	255.255.255.0
R2	Fa0/1	172.18.0.13	255.255.255.252
R3	Fa0/0	172.18.0.14	255.255.255.252
R3	Fa0/1	172.18.0.6	255.255.255.252
R3	S0/1/0 *	172.18.0.17	255.255.255.252
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: Routing Protocol Test

Goals of Test:

The goal of the test is to verify the expected operation of the EIGRP routing protocol compared to static routes.

Data to Record:

Configurations

Routing Tables
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 route, 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 that EIGRP can recover from a routed link failure.

1. Telnet to Router R2.

2. Disable the link between R2 and R3 by shutting down interface fa0/1 on R2.

3. Wait a few seconds for the EIGRP topology to converge.

4. Examine the `show ip route` output. Copy and paste the results into a document for later use.

5. Compare the command output with the previously recorded `show ip route` output for R2.

6. Use the `tracert` command on PC1 and PC2 to verify the path that the traffic is taking through the network.

7. Record the results of this step in the Test1: Results and Conclusions section of this test plan.

Step 3: Remove EIGRP from R2 and configure static routes.

1. Telnet to router R2,

2. Enable the link between R2 and R3 by activating interface fa0/1 on R2.

3. Remove EIGRP from router R2 by using the `no router EIGRP 1` command.

4. Add a static default route to Router R2 that uses Router R3 as the default gateway.

    `ip route 0.0.0.0 0.0.0.0 172.18.0.4`

5. Telnet to router R3,

6. Add a static route to router R3 using the `ip route 172.18.4.0 255.255.255.0 172.18.0.13` to enable R3 to use R2 to reach the 172.18.4.0/24 network.

7. Use the **show ip route** command on routers R2 and R3 to verify that the static routes are entered correctly.

8. Use the **tracert** and **ping** commands to verify connectivity between PC1 and PC2.

9. Record the results of this step in the Test1: Results and Conclusions section of this test plan.

Step 4: Verify that static routes can recover from a link failure.

1. Telnet to router R2.

2. Disable the link between R2 and R3 by shutting down interface fa0/1 on R2.

3. Examine the **show ip route** output. Copy and paste the results into a document for later use.

4. Compare the output with the previously recorded output from steps 1 and 2.

5. Use the **tracert** command on PC1 and PC2 to verify the path that the traffic is taking through the network.

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. EIGRP recovers dynamically from the link failure and restores connectivity between PC1 and PC2. This can be verified by the output of the `show ip route` command and a successful trace route between PC1 and PC2.

2. Static routes in Router R2 and R3 do not recover from the link failure and connectivity between PC1 and PC2 is not restored.

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.