

Packet Tracer Lab 17 Solution Guide

VPN Tunnel Failure Investigation

Incident ID: INC-1017

Objective

This lab focuses on identifying and restoring connectivity between headquarters and a remote office following scheduled network maintenance.

Although local network communication remains operational at both sites, users are unable to access corporate resources located across the WAN.

The objective is to troubleshoot the issue using a structured methodology, identify the root cause, restore communication between sites, and validate successful end-to-end connectivity.

Root Cause

The GRE tunnel on **R-EDGE** was configured with an incorrect tunnel destination address during scheduled maintenance.

Instead of using the correct destination:

172.16.0.2

The tunnel was configured with:

172.16.0.3

As a result:

- Communication between headquarters and the remote office failed.
- Internal corporate resources became unreachable from the remote office.
- Headquarters systems could no longer communicate with remote office devices.

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Symptoms Observed

- Local network connectivity functioning normally.
- Default gateways reachable.
- Headquarters users unable to reach remote office systems.
- Remote office users unable to access internal corporate resources.
- WAN communication unavailable.

Troubleshooting Process

Step 1 — Verify Local Connectivity

From PC-REMOTE, verify local communication.

Example:

```
ping 192.168.30.1
```

This should succeed.

This confirms:

- Local LAN connectivity is operational.
 - Default gateway is reachable.
 - The issue is not isolated to the local network.
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Step 2 — Test Headquarters Connectivity

From PC-REMOTE, attempt to reach headquarters resources.

Examples:

```
ping 192.168.10.10
```

```
ping 192.168.20.100
```

Both should fail.

This indicates communication between sites is unavailable.

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Step 3 — Verify Routing

Access R-EDGE.

Review the route to the remote office network.

Example command:

```
show ip route 192.168.30.0
```

Verify that traffic destined for the remote office network is routed through the tunnel.

Step 4 — Review Tunnel Configuration

Access R-EDGE.

Review the tunnel configuration.

Example commands:

```
show running-config
```

or

```
show running-config | section interface Tunnel0
```

(If Packet Tracer does not support the second command, review the tunnel configuration using show running-config.)

Compare the configured tunnel destination with the expected peer address. The configured destination should not match the remote router's WAN interface:

```
tunnel destination 172.16.0.3
```

This is the primary indicator of the issue.

Step 5 — Correct the Tunnel Configuration

Update the tunnel destination with the correct peer address.

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Commands Used

```
ping
show ip route
show running-config
show ip interface brief
configure terminal
interface Tunnel0
tunnel destination 172.16.0.2
write memory
```

Resolution

Access **R-EDGE** and correct the GRE tunnel destination.

```
conf t
interface Tunnel0
tunnel destination 172.16.0.2
end
write memory
```

This restores communication between headquarters and the remote office.

Validation

Successful resolution should include:

- Successful ping from **PC-REMOTE** to **192.168.10.10**.
- Successful ping from **PC-REMOTE** to **192.168.20.100**.
- Successful ping from **PC-HR** to **192.168.30.10**.
- Headquarters and remote office communication restored.
- GRE tunnel operating normally.
- Bidirectional communication between headquarters and the remote office restored.

Key Takeaways

- GRE tunnels rely on accurate tunnel endpoint configuration.
- Small configuration errors can completely disrupt WAN communication.

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- Local connectivity should always be validated before troubleshooting WAN issues.
- Routing and tunnel configuration should be reviewed together during WAN investigations.
- Follow a structured troubleshooting methodology before making configuration changes.
- Always validate connectivity after completing repairs.
- Small configuration errors introduced during maintenance can have organization-wide impact.