

Short technical report

A.1) IP Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway	Description / Notes
HQ-Router	G0/0/0 (LAN)	10.1.10.1	255.255.255.0	N/A	HQ LAN Gateway
	S0/1/0 (WAN)	192.168.100.1	255.255.255.252	N/A	WAN to Branch A (DCE)
	S0/1/1 (WAN)	192.168.100.5	255.255.255.252	N/A	WAN to Branch B (DCE)
HQ-Switch	VLAN 1	10.1.10.2	255.255.255.0	10.1.10.1	Management IP
HQ-Server	NIC	10.1.10.11	255.255.255.0	10.1.10.1	DNS, Web, DHCP Server
BR-A-Router	G0/0 (LAN)	172.16.1.1	255.255.255.0	N/A	Branch A LAN Gateway
	S0/0/0 (WAN)	192.168.100.2	255.255.255.252	N/A	WAN to HQ
BR-A-Switch	VLAN 1	172.16.1.2	255.255.255.0	172.16.1.1	Management IP
BR-B-Router	G0/0 (LAN)	172.16.2.1	255.255.255.0	N/A	Branch B LAN Gateway
	S0/0/0 (WAN)	192.168.100.6	255.255.255.252	N/A	WAN to HQ
BR-B-Switch	VLAN 1	172.16.2.2	255.255.255.0	172.16.2.1	Management IP

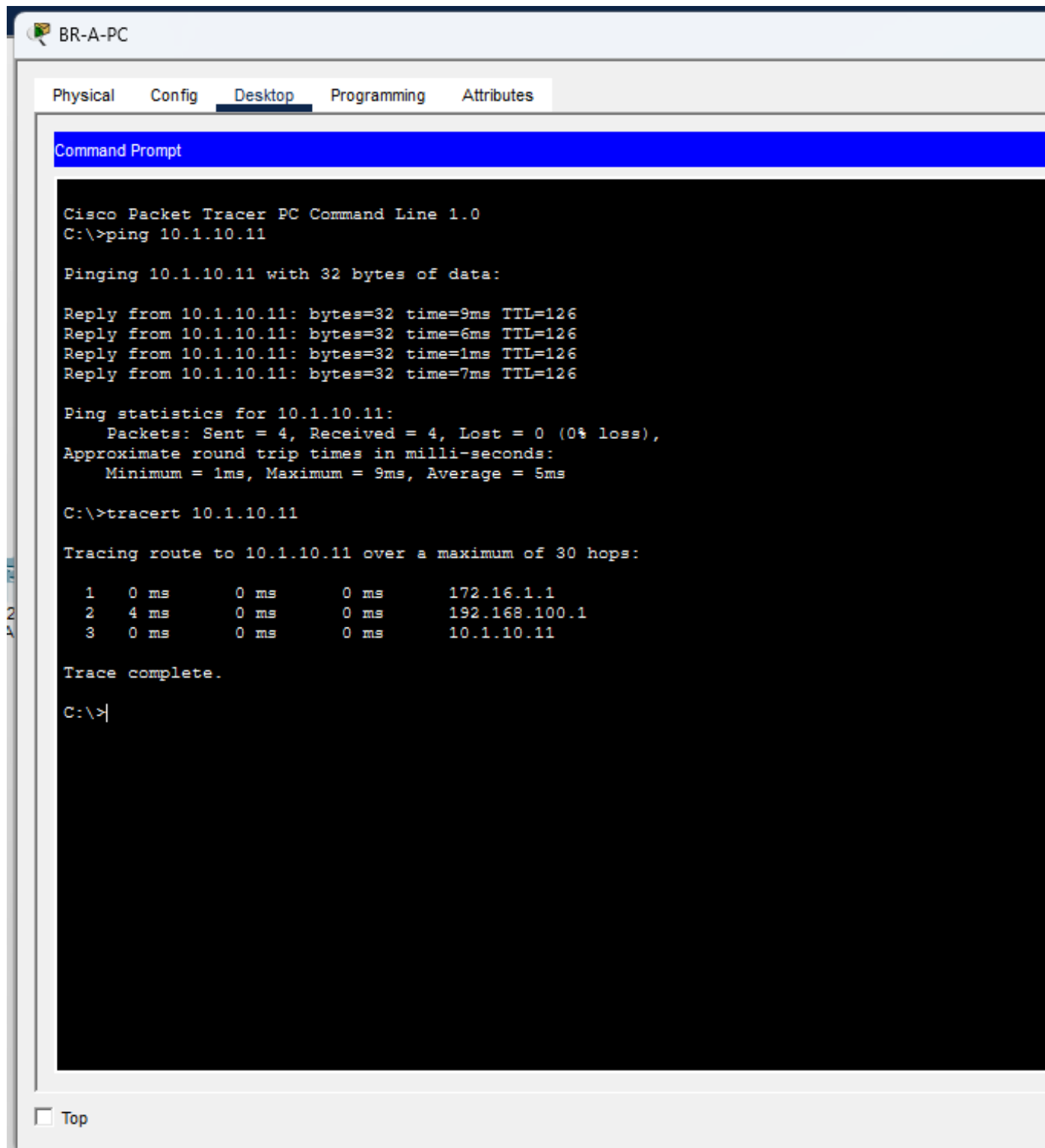
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A.2) DHCP Configuration Ranges

Pool Name	Network	Start IP Address	End IP Address	Default Gateway	DNS Server
serverPool (HQ)	10.1.10.0/24	10.1.10.21	10.1.10.200	10.1.10.1	10.1.10.11
Branch_A_Pool	172.16.1.0/24	172.16.1.10	172.16.1.254	172.16.1.1	10.1.10.11
Branch_B_Pool	172.16.2.0/24	172.16.2.10	172.16.2.254	172.16.2.1	10.1.10.11

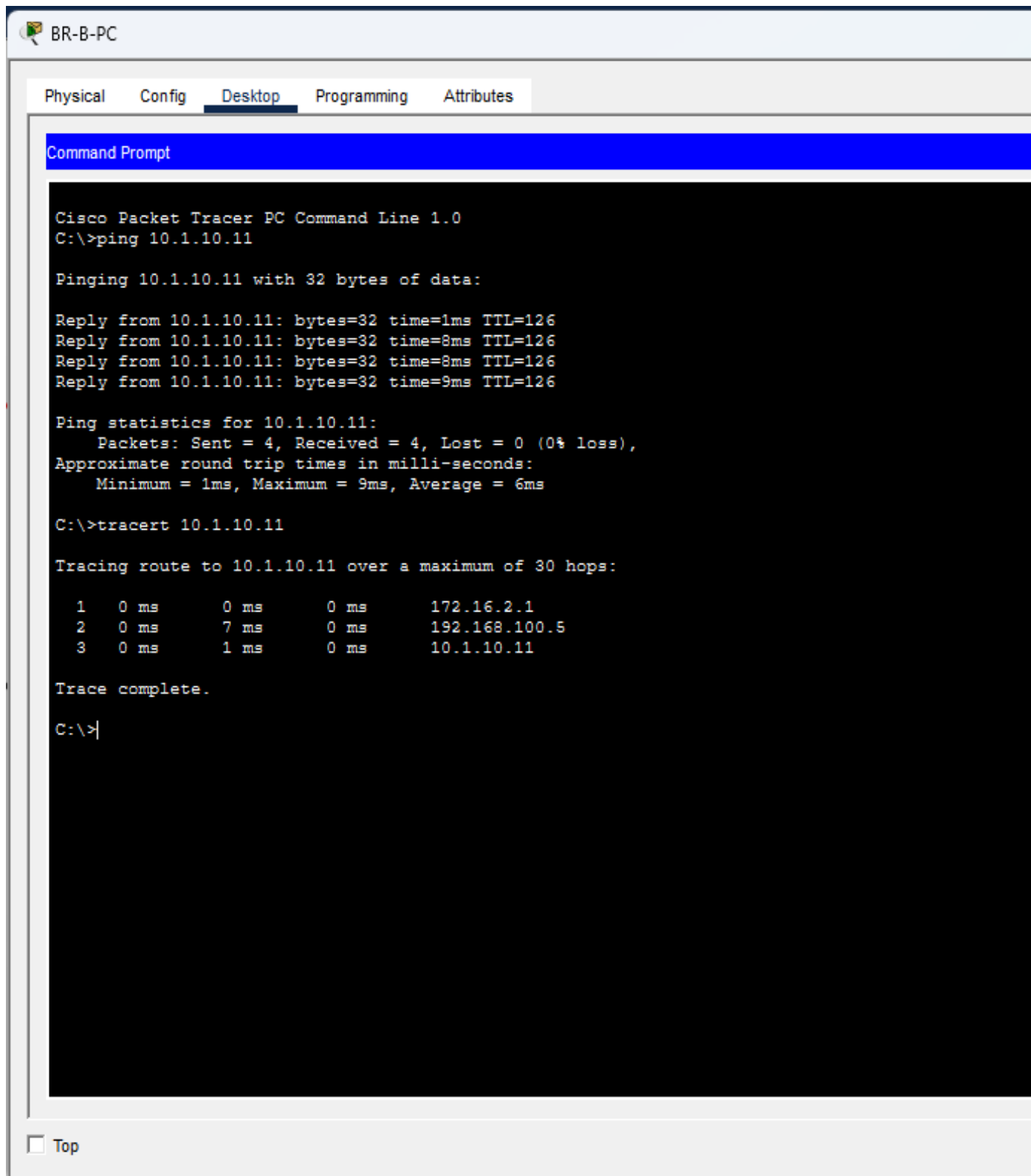
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B) Connectivity Tests PC-A



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B) Connectivity Tests PC-B



BR-B-PC

Physical Config **Desktop** Programming Attributes

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.1.10.11

Pinging 10.1.10.11 with 32 bytes of data:

Reply from 10.1.10.11: bytes=32 time=1ms TTL=126
Reply from 10.1.10.11: bytes=32 time=8ms TTL=126
Reply from 10.1.10.11: bytes=32 time=8ms TTL=126
Reply from 10.1.10.11: bytes=32 time=9ms TTL=126

Ping statistics for 10.1.10.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 9ms, Average = 6ms

C:\>tracert 10.1.10.11

Tracing route to 10.1.10.11 over a maximum of 30 hops:

  1  0 ms    0 ms    0 ms    172.16.2.1
  2  0 ms    7 ms    0 ms    192.168.100.5
  3  0 ms    1 ms    0 ms    10.1.10.11

Trace complete.

C:\>|
```

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C) Dhcp server configuration screenshoot

HQ-Server

Physical Config **Services** Desktop Programming Attributes

SERVICES

- HTTP
- DHCP**
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP
- PRP

DHCP

Interface: FastEthernet0 Service: ☒ On ☐ Off

Pool Name: serverPool

Default Gateway: 10.1.10.1

DNS Server: 10.1.10.11

Start IP Address: 10.1.10.21

Subnet Mask: 255.255.255.0

Maximum Number of Users: 200

TFTP Server: 0.0.0.0

WLC Address: 0.0.0.0

Buttons: Add Save Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	10.1.10.1	10.1.10.11	10.1.10.21	255.255.255.0	200	0.0.0.0	0.0.0.0
BRANCH_B_POOL	172.16.2.1	10.1.10.11	172.16.2.10	255.255.255.0	246	0.0.0.0	0.0.0.0
BRANCH_A_POOL	172.16.1.1	10.1.10.11	172.16.1.10	255.255.255.0	246	0.0.0.0	0.0.0.0

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D) DNS server service configuration screenshoot

The screenshot shows the HQ-Server configuration window with the 'Services' tab selected. The left sidebar lists various services, with 'DNS' highlighted. The main area displays the DNS configuration, including a toggle for 'DNS Service' (set to 'On'), a 'Resource Records' section with a 'Name' field and a 'Type' dropdown (set to 'A Record'), and an 'Address' field. Below these fields are 'Add', 'Save', and 'Remove' buttons. A table lists the current resource records, showing one record for 'www.firm.com' of type 'A Record' with IP address '10.1.10.11'. At the bottom, there is a 'DNS Cache' button and a 'Top' link.

HQ-Server

Physical Config **Services** Desktop Programming Attributes

SERVICES

- HTTP
- DHCP
- DHCPv6
- TFTP
- DNS**
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP
- PRP

DNS

DNS Service ☒ On ☐ Off

Resource Records

Name Type **A Record**

Address

Add Save Remove

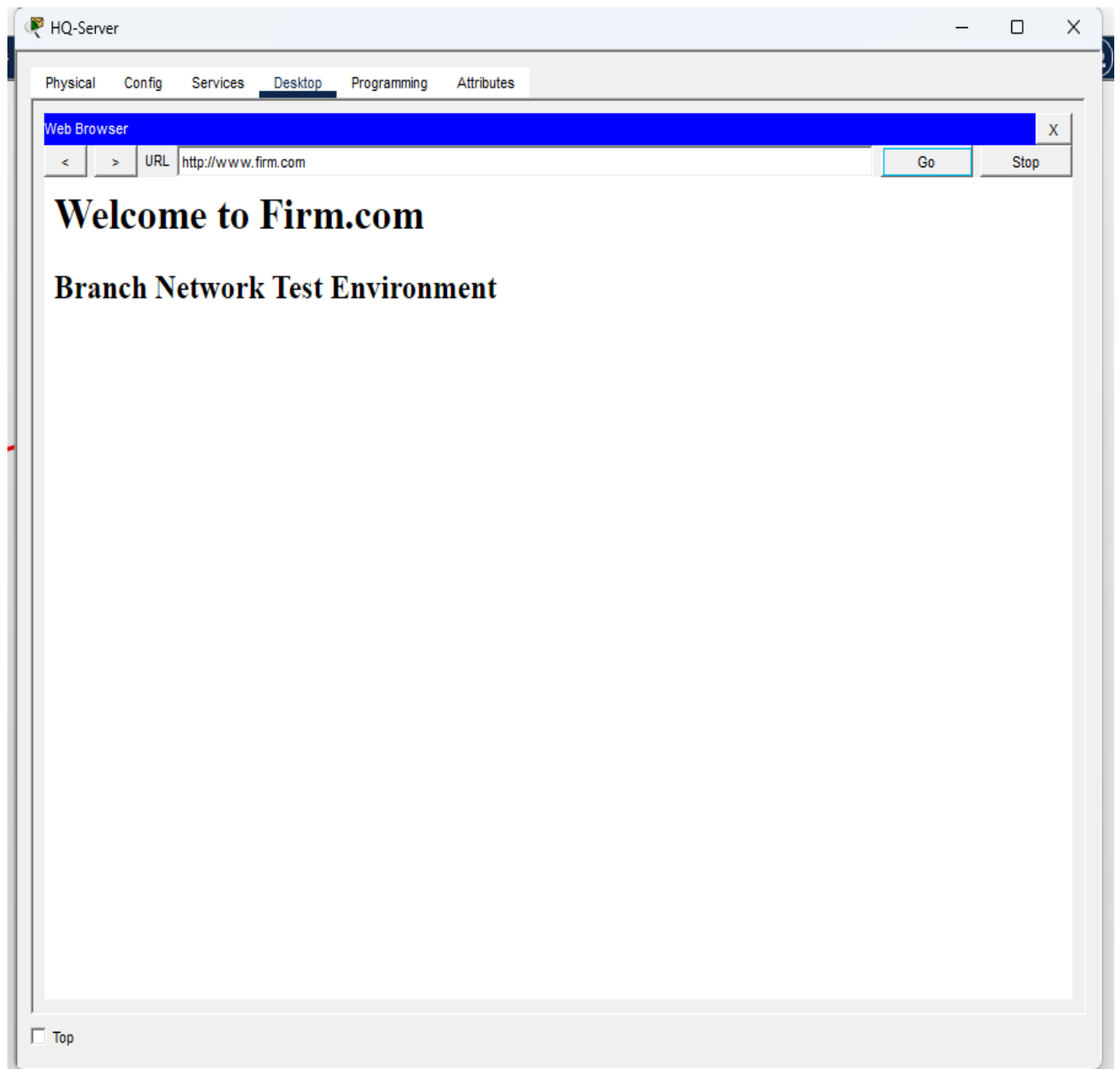
No.	Name	Type	Detail
0	www.firm.com	A Record	10.1.10.11

DNS Cache

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E) web server service configuration screenshot



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F) Successful SNMP polling with SNMP mib browser screenshot sysName

The screenshot shows the MIB Browser application window. The 'Address' field is set to 192.168.100.1 and the 'OID' field is set to .1.3.6.1.2.1.1.5.0. The 'Operations' dropdown is set to 'Get'. The 'GO' button is highlighted. The 'SNMP MIBs' tree on the left shows the hierarchy: MIB Tree > router_std MIBs > .iso > .org > .dod > .internet > .mgmt > .mib-2 > .system > sysName. The 'Result Table' on the right displays the following data:

Name/OID	Value	Type
.1.3.6.1.2.1.1.5.0 (.iso.org.dod.internet.mgmt.mib-2.system...	HQ-Router	OctetString

Below the Result Table, there is a section for the selected OID with the following fields:

Name :	sysName
OID :	.1.3.6.1.2.1.1.5.0
Syntax :	
Access :	
Description :	

The status bar at the bottom shows the path: .iso.org.dod.internet.mgmt.mib-2.system.sysName.0.

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F) Successful SNMP polling with SNMP mib browser screenshot sysUpTime

The screenshot shows the MIB Browser application window. The 'Address' field is set to 192.168.100.1 and the 'OID' field is set to 1.3.6.1.2.1.1.3.0. The 'Operations' dropdown is set to 'Get' and the 'GO' button is visible. The left pane shows the SNMP MIB tree with the path 'router_std MIBs' expanded. The right pane shows the 'Result Table' with the following data:

Name/OID	Value	Type
.1.3.6.1.2.1.1.3.0 (.iso.org.dod.internet.mgmt.mib-2.system...	2 hours 57 minutes 30 seconds	TimeTicks

Below the result table, there is a detailed view of the selected OID:

Name :	.sysUpTime
OID :	.1.3.6.1.2.1.1.3.0
Syntax :	
Access :	
Description :	

The status bar at the bottom shows the full path: .iso.org.dod.internet.mgmt.mib-2.system.sysUpTime.0.

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F) Successful SNMP polling with SNMP mib browser screenshot ifDescr

The screenshot shows the MIB Browser application window. The 'Address' field is set to 192.168.100.1 and the 'OID' field is set to .1.3.6.1.2.1.2.2.1.2. The 'Operations' dropdown is set to 'Get'. The 'Result Table' displays the following data:

Name/OID	Value	Type
.1.3.6.1.2.1.2.2.1.2.1 (.iso.org.dod.internet.mgmt.mib-2.interfac...	Vlan1	OctetString
.1.3.6.1.2.1.2.2.1.2.2 (.iso.org.dod.internet.mgmt.mib-2.interfac...	GigabitEthernet0/0/0	OctetString
.1.3.6.1.2.1.2.2.1.2.3 (.iso.org.dod.internet.mgmt.mib-2.interfac...	GigabitEthernet0/0/1	OctetString
.1.3.6.1.2.1.2.2.1.2.4 (.iso.org.dod.internet.mgmt.mib-2.interfac...	Serial0/1/0	OctetString
.1.3.6.1.2.1.2.2.1.2.5 (.iso.org.dod.internet.mgmt.mib-2.interfac...	Serial0/1/1	OctetString
.1.3.6.1.2.1.2.2.1.2.6 (.iso.org.dod.internet.mgmt.mib-2.interfac...	Serial0/2/0	OctetString
.1.3.6.1.2.1.2.2.1.2.7 (.iso.org.dod.internet.mgmt.mib-2.interfac...	Serial0/2/1	OctetString

The 'ifDescr' field is highlighted in the 'MIB Tree' on the left. The 'Result Table' also shows the 'ifDescr' field with its value.

iso.org.dod.internet.mgmt.mib-2.interfaces.ifTable.ifEntry.ifDescr

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