

DAYANANDA SAGAR COLLEGE OF ENGINEERING

(An Autonomous Institute affiliated to VTU, Belagavi, Approved by AICTE & ISO 9001:2008 Certified)

Accredited by National Assessment & Accreditation Council (NAAC) with 'A' grade
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Minor Project Report

On

“Internet Service Provider Configuration”

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in

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Sl. No.	Contents	Page
1	Abstract	2
2	Introduction	3
3	Design and Configuration	3
4	Topology	7
5	Real time Results	7
6	Simulation Mode Results	8
6	Conclusion and Future Enhancement	8

Abstract

An ISP (internet service provider) is a company that provides individuals and organizations access to the internet and other related services. An ISP has the equipment and the telecommunication line access required to have a point of presence on the internet for the geographic area served. ISPs make it possible for customers to access the internet while also providing additional services such as email, domain registration and web hosting. ISPs may also provide different internet connection types, such as cable and fiber. Connections can also come in the form of high-speed broadband or non-broadband.

ISPs are connected to one or more high-speed internet lines. Larger ISPs have their own high-speed leased lines, so they are less dependent on telecommunications services and can provide better service to their customers. ISPs also keep thousands of servers in data centers -- the number of servers depends on their internet service area. These large data centers manage all customer traffic. Multiple ISPs are also connected to large backbone routing centers.

Introduction

An Internet Provider (also referred to as Internet Service Provider (ISP), is the industry term for a company that provides access to the Internet. It is an organization that provides service for accessing, using, or participating in the internet. It serves as the access point or the gateway that provides a user access to everything available on the internet.

ISPs can be organized in various forms such as commercial, committee-owned, non-profit, or privately owned. ISPs are responsible for making sure efficient routing of Internet traffic, resolving domain names, and maintaining the network infrastructure that makes Internet access possible.

Examples:

- Google Fiber
- Vodafone
- Jio
- Airtel

Design and Configuration

1. Router IP Configuration:

ISP Router:

GigabitEthernet0/0 - 200.2.3.1 255.255.255.0

GigabitEthernet0/1 - 200.2.4.1 255.255.255.0

GigabitEthernet0/2 - 200.2.6.1 255.255.255.0

ISP Router A:

GigabitEthernet0/0 - 200.2.4.2 255.255.255.0

GigabitEthernet0/1 - 200.2.5.1 255.255.255.0

ISP Router B:

GigabitEthernet0/0- 200.2.6.2 255.255.255.0

GigabitEthernet0/2 - 200.2.12.1 255.255.255.0

ISP Router C:

GigabitEthernet0/0 - 200.2.12.2 255.255.255.0

GigabitEthernet0/1 - 200.2.13.1 255.255.255.0

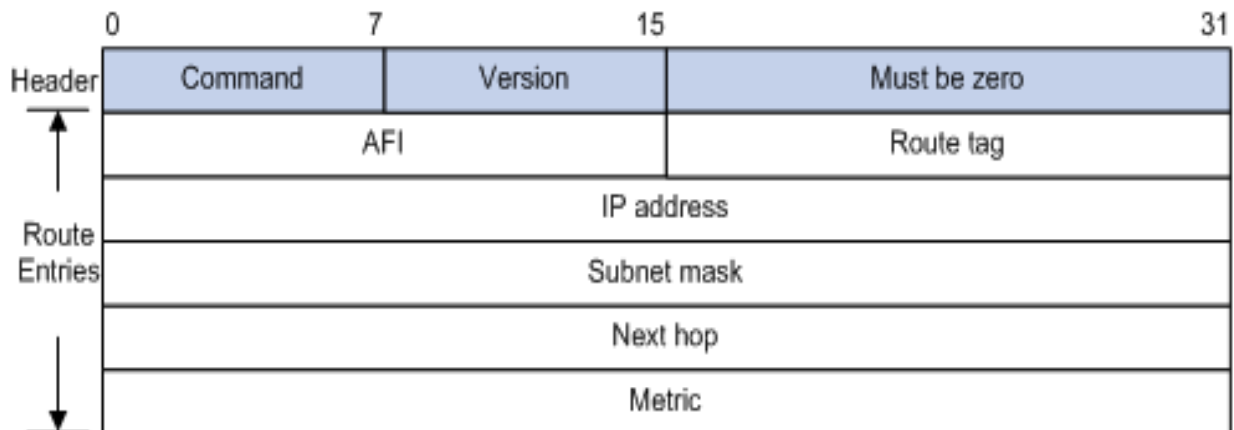
Company Router:

GigabitEthernet0/0 - 200.2.13.2 255.255.255.0

3. RIP (Routing Information Protocol) Configuration:

RIP (Routing Information Protocol) is one of the oldest distance vector routing protocols.

RIP Header:



The image shows two side-by-side screenshots of network configuration interfaces. The left window is titled 'ISP router' and the right window is titled 'ISP Router A'. Both windows have tabs for 'Physical', 'Config', 'CLI', and 'Attributes'. The 'Config' tab is active in both.

In the 'Config' tab, there is a 'RIP Routing' section. Under 'RIP', the 'Network' field is set to '200.2.3.0' in the left window and '200.2.4.0' in the right window. The 'Add' button is visible in both. Below the 'Network' field, there is a list of 'Network Address' entries: '200.2.3.0', '200.2.4.0', and '200.2.6.0' in the left window, and '200.2.4.0' and '200.2.5.0' in the right window. A 'Remove' button is at the bottom right of this list.

Below the 'RIP Routing' section, there is a 'Equivalent IOS Commands' section. The commands for the left window are:

```
Router(config-if)#  
Router(config-if)#exit  
Router(config)#interface GigabitEthernet0/1  
Router(config-if)#  
Router(config-if)#exit  
Router(config)#interface GigabitEthernet0/0  
Router(config-if)#  
%SYS-5-CONFIG I: Configured from console by console  
  
Router(config-if)#exit  
Router(config)#router rip  
Router(config-router)#
```

The commands for the right window are:

```
companyA(config-if)#exit  
companyA(config)#interface GigabitEthernet0/0  
companyA(config-if)#  
companyA(config-if)#exit  
companyA(config)#interface GigabitEthernet0/1  
companyA(config-if)#  
companyA(config-if)#exit  
companyA(config)#interface GigabitEthernet0/0  
companyA(config-if)#  
companyA(config-if)#exit  
companyA(config)#router rip  
companyA(config-router)#
```

ISP Router B

Physical **Config** CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0

GigabitEthernet0/1

GigabitEthernet0/2

RIP Routing

Network

Add

Network Address

200.2.6.0

200.2.7.0

200.2.8.0

200.2.12.0

Remove

Equivalent IOS Commands

```
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/2
Router(config-if)#ip address 200.2.12.1 255.255.255.0
Router(config-if)#
Router(config-if)#exit
Router(config)#
Router(config)#
Router(config)#router rip
Router(config-router)#
```

☐ Top

ISP Router C

Physical **Config** CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0

GigabitEthernet0/1

GigabitEthernet0/2

RIP Routing

Network

Add

Network Address

200.2.12.0

200.2.13.0

Remove

Equivalent IOS Commands

```
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#
Router(config-router)#end
Router#configure terminal
Enter configuration commands, one per line. End with CNIL/2.
Router(config)#router rip
Router(config-router)#
```

☐ Top

Company Router

Physical **Config** CLI Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0

GigabitEthernet0/1

GigabitEthernet0/2

RIP Routing

Network

Add

Network Address

200.2.9.0

200.2.10.0

200.2.11.0

200.2.13.0

Remove

Equivalent IOS Commands

```
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/2
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#
```

☐ Top

4. Web, DNS and DHCP Server Configuration:

Web Server - 200.2.3.4 255.255.255.0 (tech.com)

200.2.3.5 255.255.255.0 (school.com)

DNS Server – 200.2.3.2 255.255.255.0

DNS Server Configuration:

DNS Server

Physical Config **Services** Desktop Programming Attributes

SERVICES

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

DNS

DNS Service ☒ On ☐ Off

Resource Records

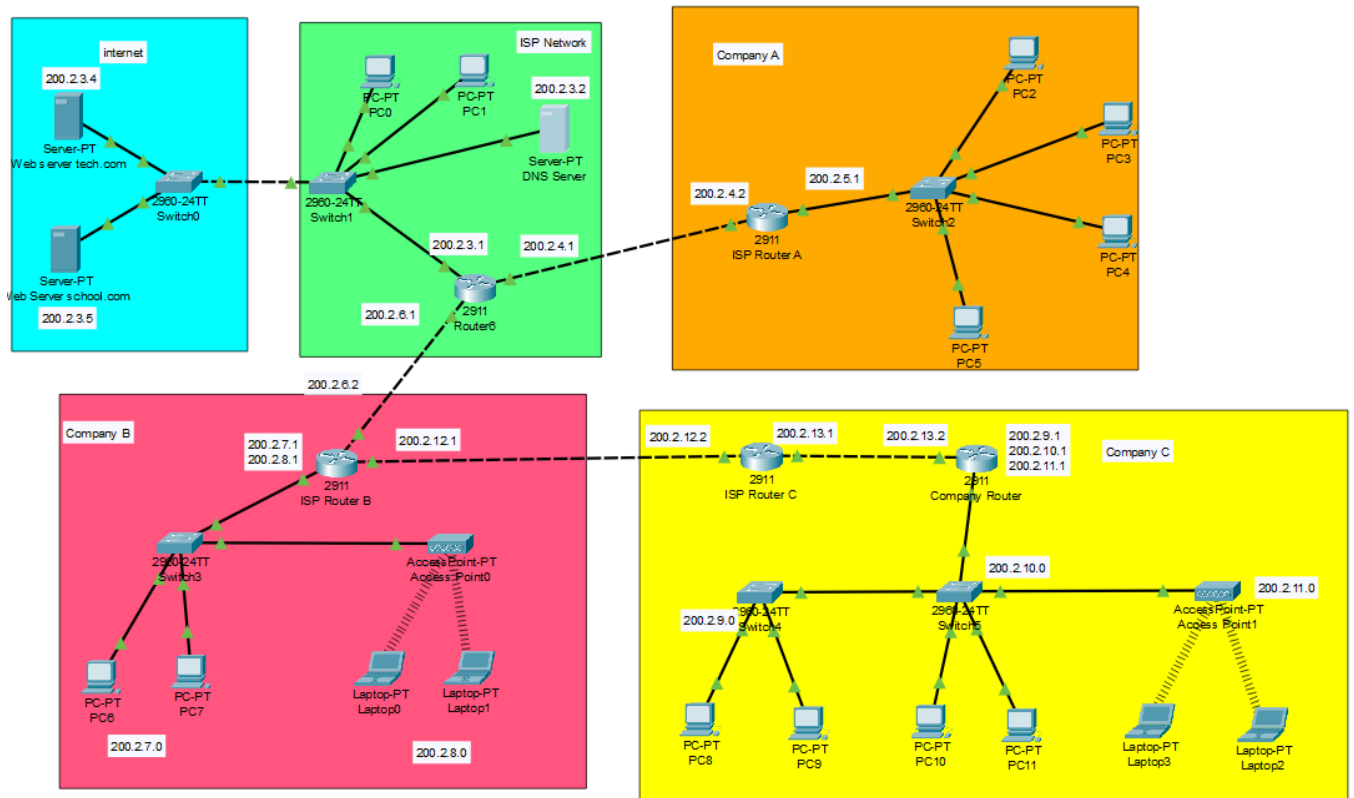
Name Type **A Record** ▼

Address

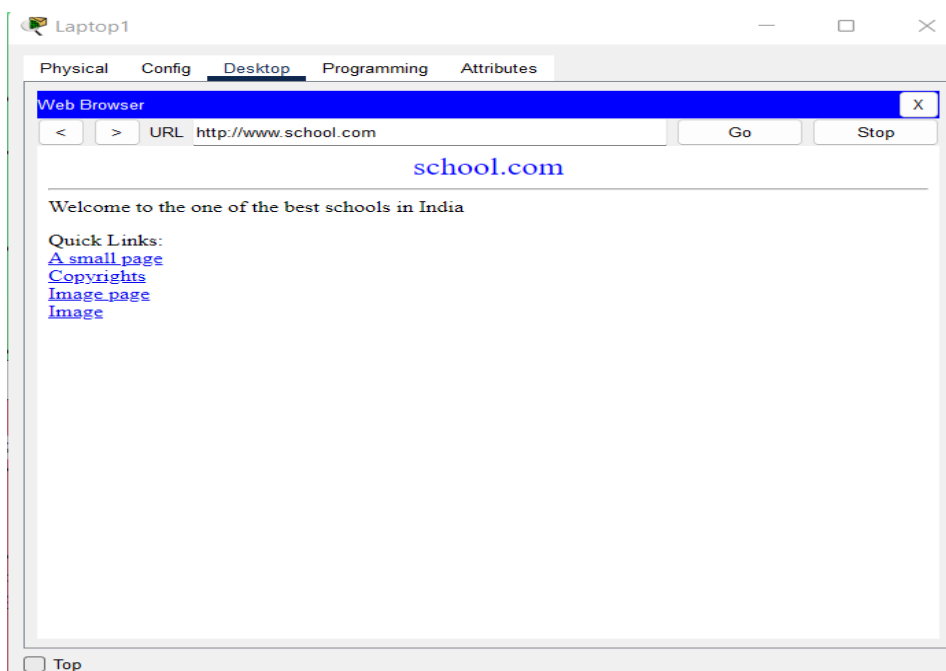
No.	Name	Type	Detail
0	www.school.com	A Record	200.2.3.5
1	www.tech.com	A Record	200.2.3.4

☐ Top

Topology



Real time Results



Simulation Mode Results

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type
	1.797	--	Switch5	STP
	1.797	--	Switch5	STP
	1.798	Switch5	Company Router	STP
	1.798	Switch5	PC10	STP
	1.798	Switch5	PC11	STP
	1.798	--	Switch5	STP
	1.799	Switch5	Company Router	STP
	1.799	--	Switch5	STP
	1.800	Switch5	Company Router	STP
	1.814	--	Switch0	STP
	1.815	Switch0	Web server tech.com	STP
	1.815	Switch0	Web Server school.com	STP
	1.815	Switch0	Switch1	STP
	1.816	Switch1	DNS Server	STP
	1.816	Switch1	PC1	STP
	1.816	Switch1	Router6	STP
	1.816	Switch1	PC0	STP
	1.840	--	Switch3	STP

Reset Simulation ☒ Constant Delay Captured to: 1.840 s

Play Controls

Event List Filters - Visible Events
ACL Filter, ARP, BGP, Bluetooth, CAPWAP, CDP, DHCP, DHCPv6, DNS, DTP, EAPOL, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPSec, ISAKMP, IoT, IoT TCP, LACP, LLDP, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, PPP, PPPoE, PTP, RADIUS, REP, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP

Edit Filters Show All/None

Event List Realtime Simulation

Conclusion and Future Enhancement :

An ISP can be configured for various devices including services, PCs and routers to provide access to the internet to various companies and users.

We can configure various subnets of Internet service provider using DHCP and even allow the client to send requests to an ISP and send the information back to the users.