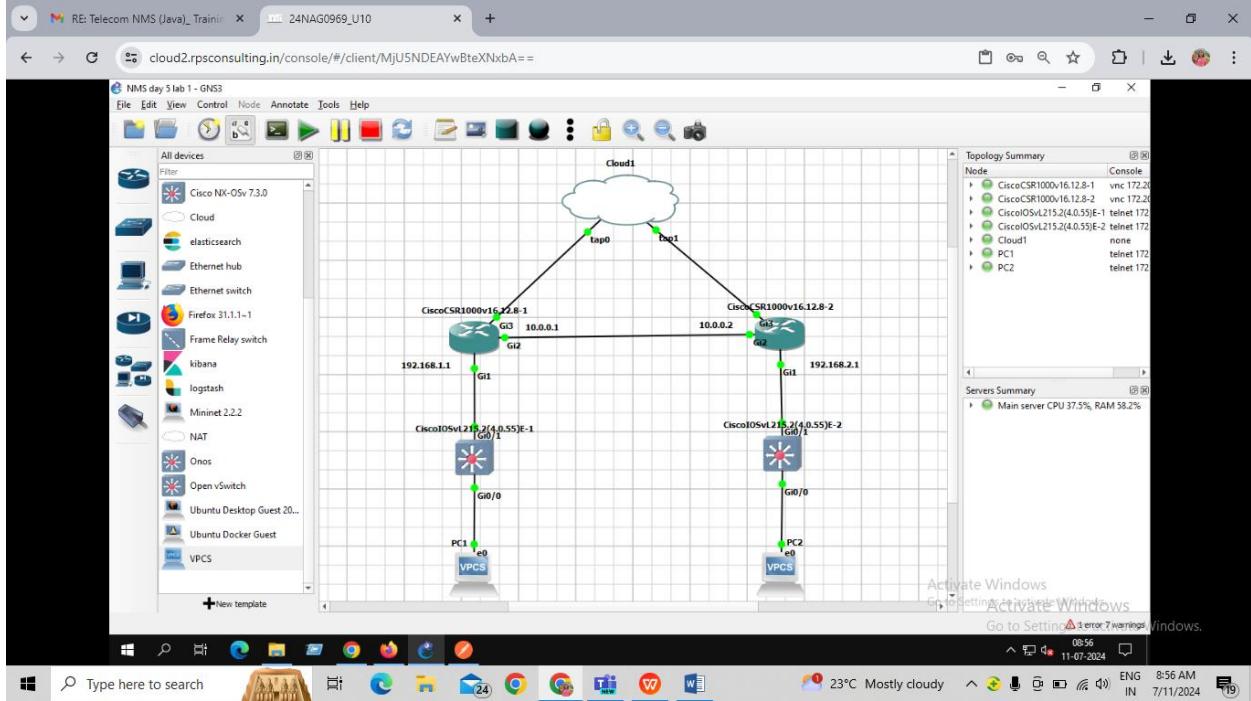
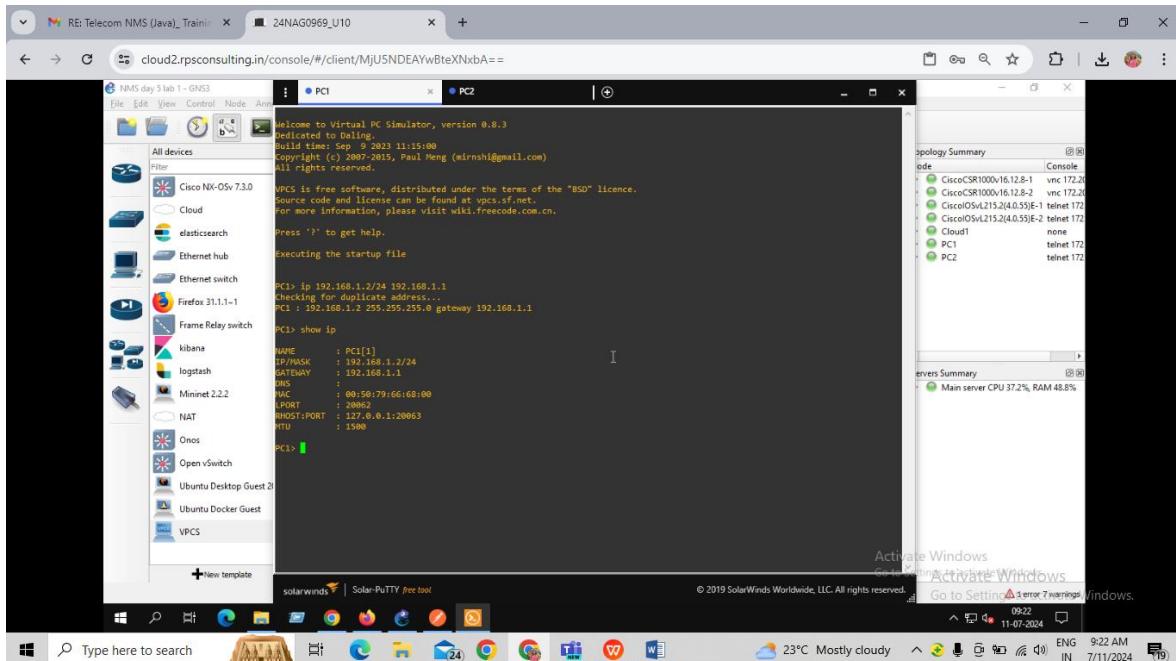


OPEN NMS LAB 1

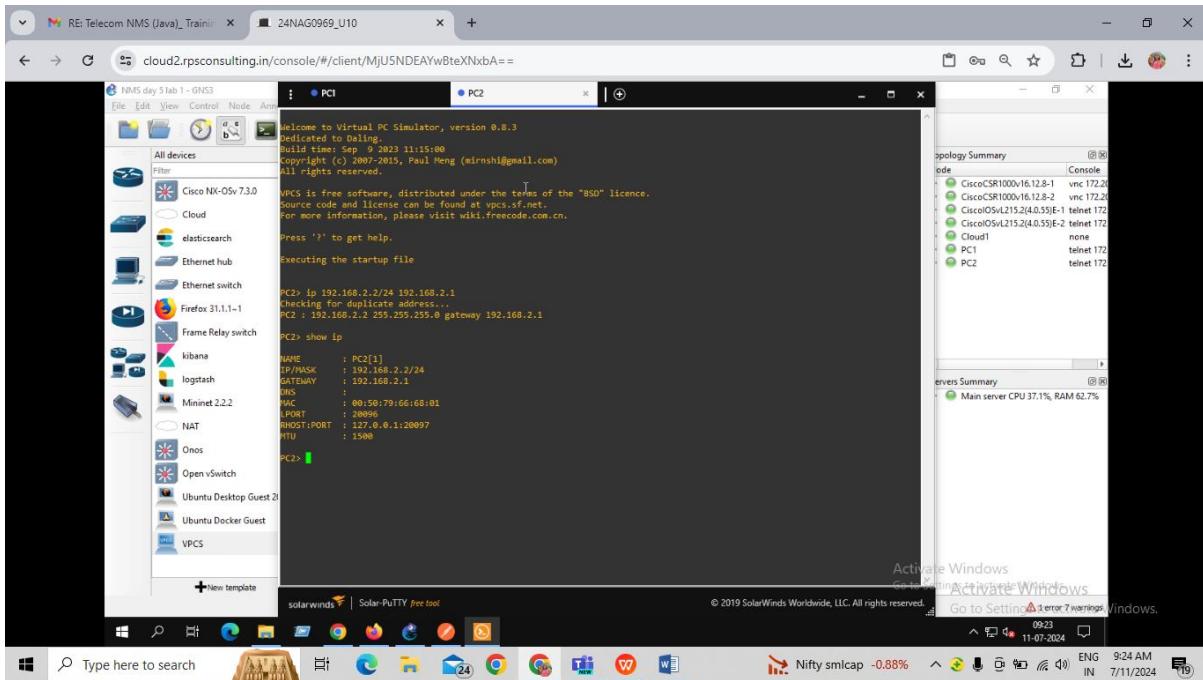
Topology:



PC1 Configuration:

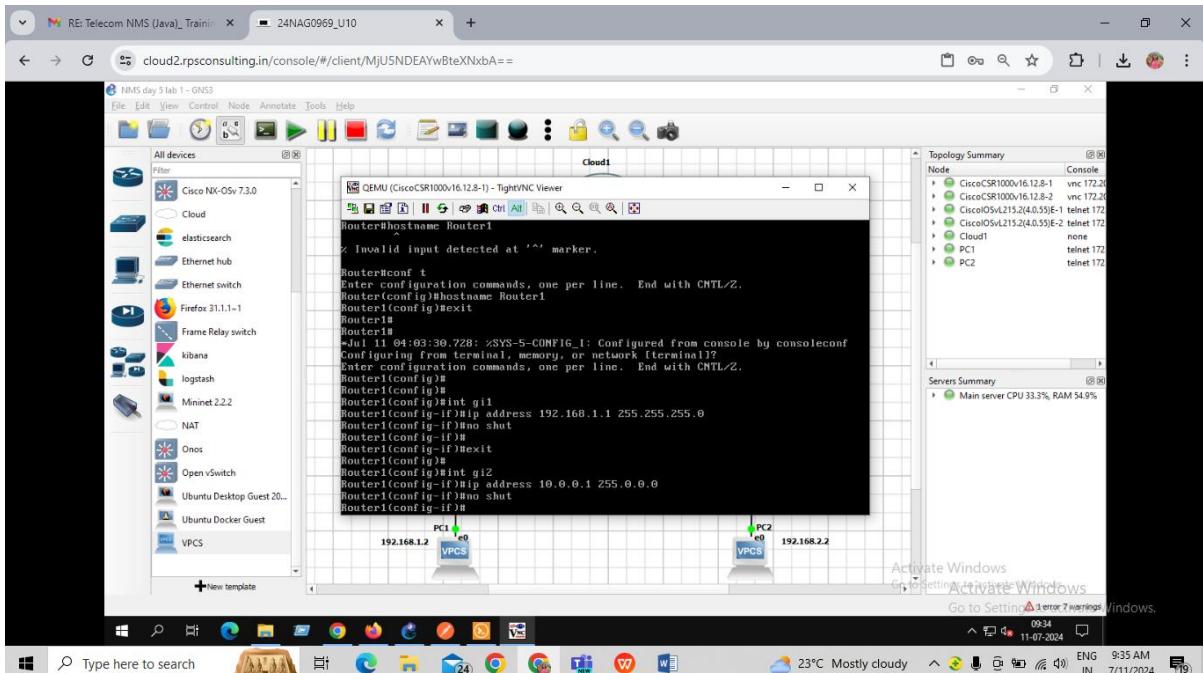


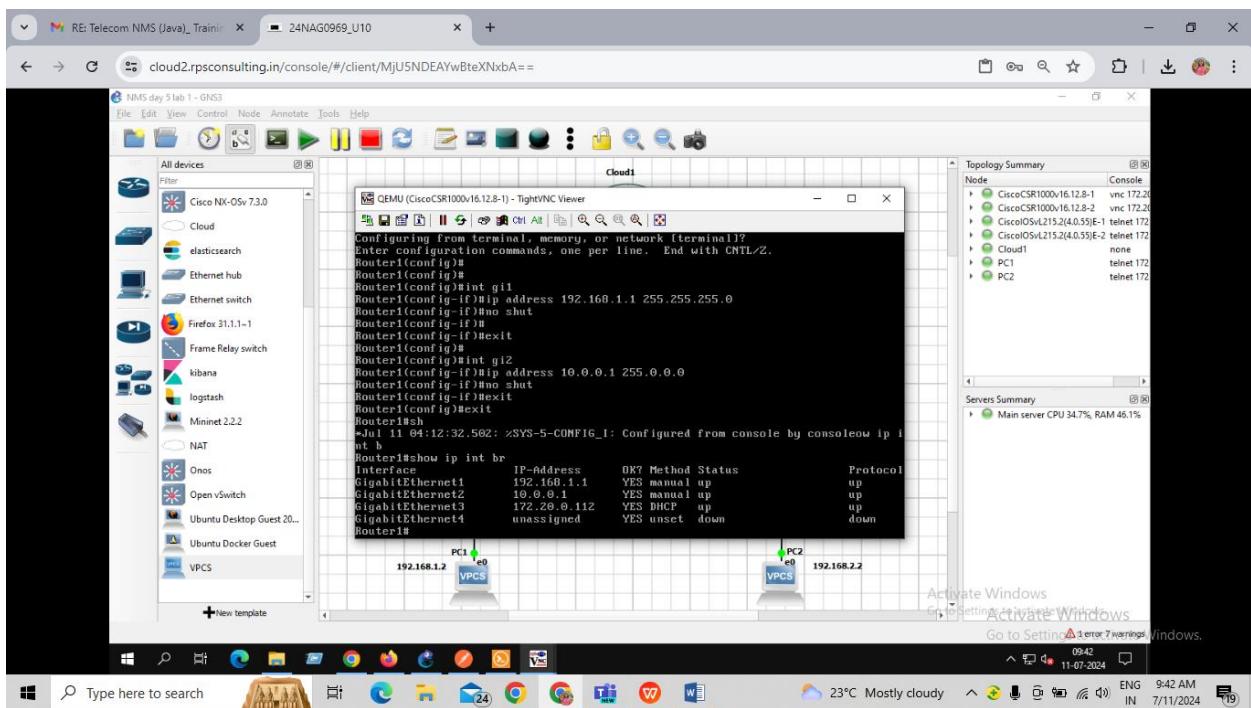
PC2 Configuration:



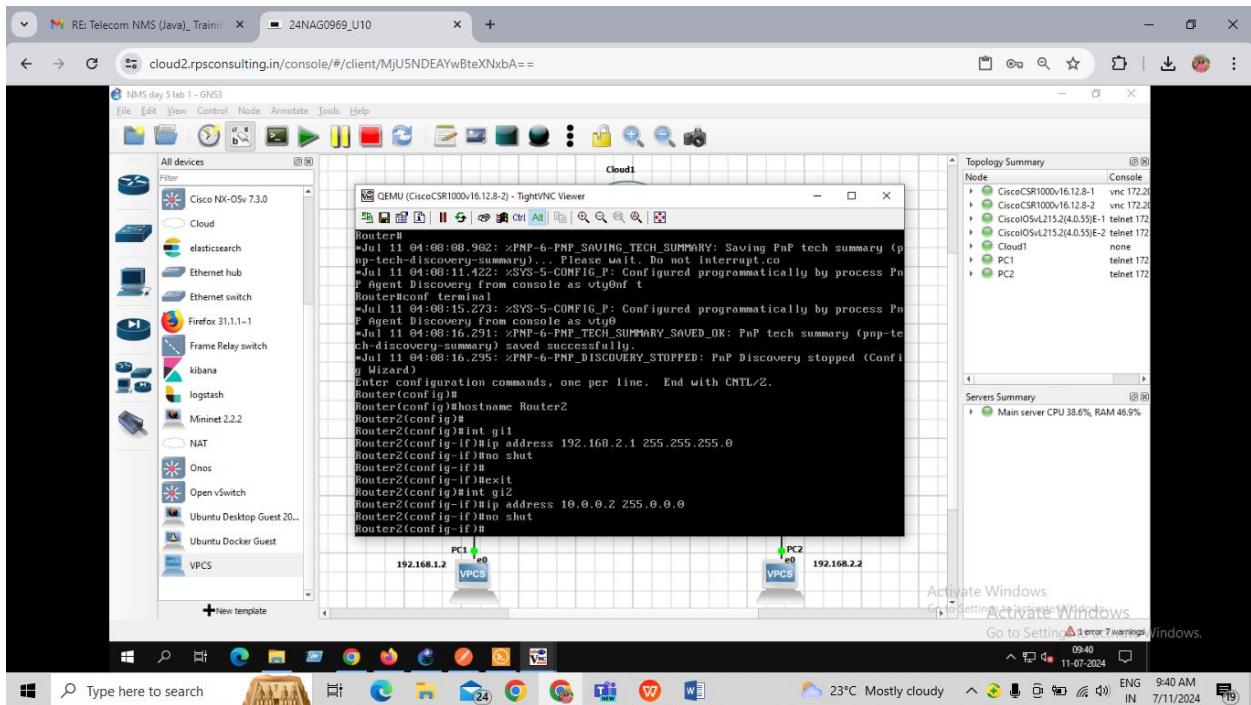
Assign the IP address to R1 Gi1 (192.168.1.1) , Gi2 (10.0.0.1) and R2 Gi1 (192.168.2.1), Gi2 (10.0.0.2)

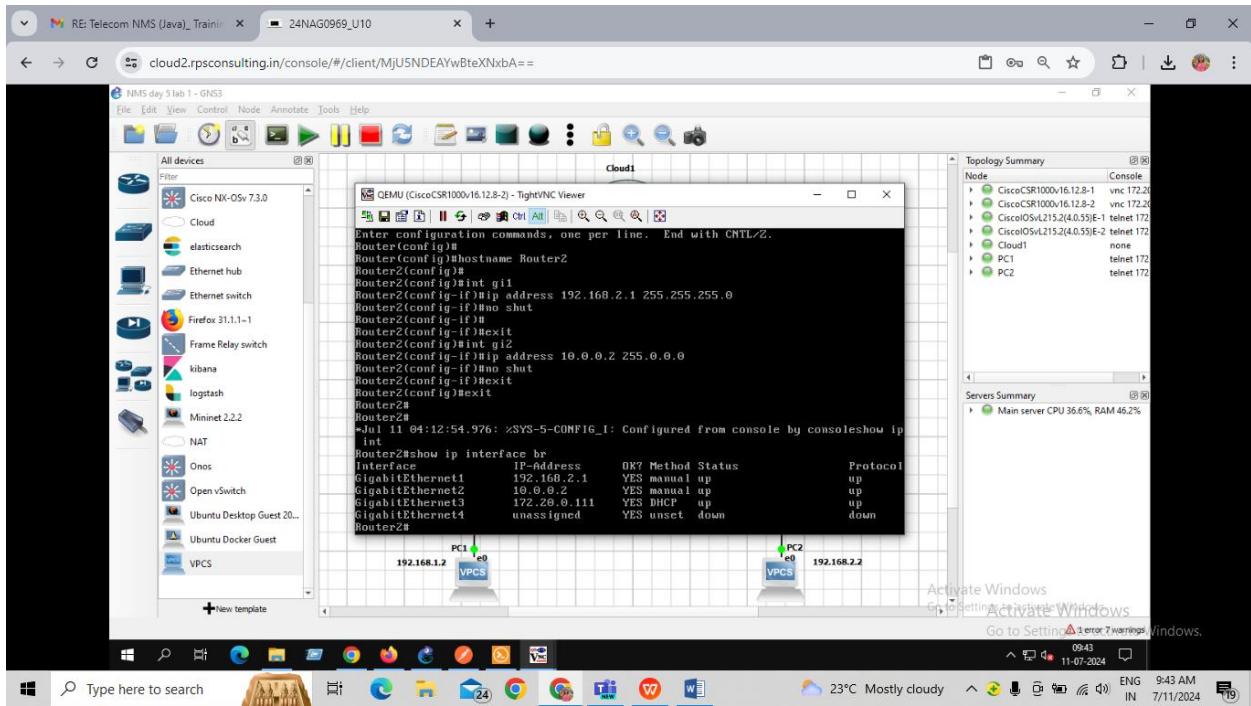
Router 1:





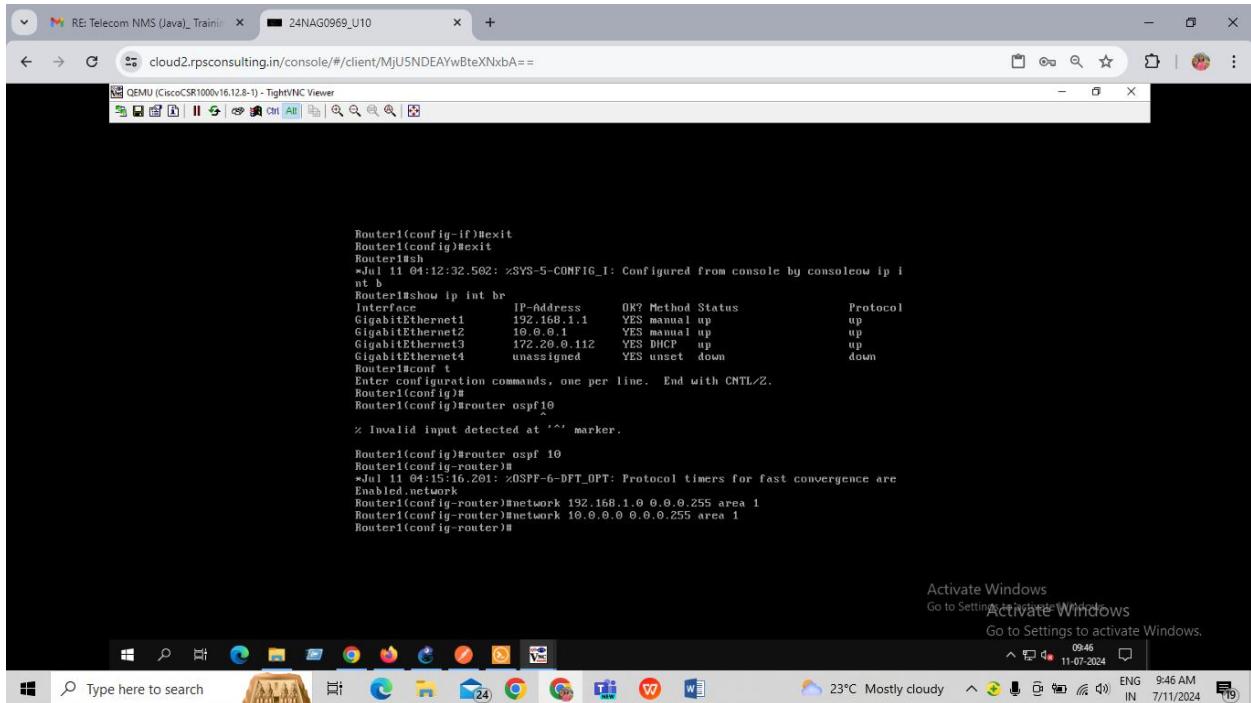
Router 2:



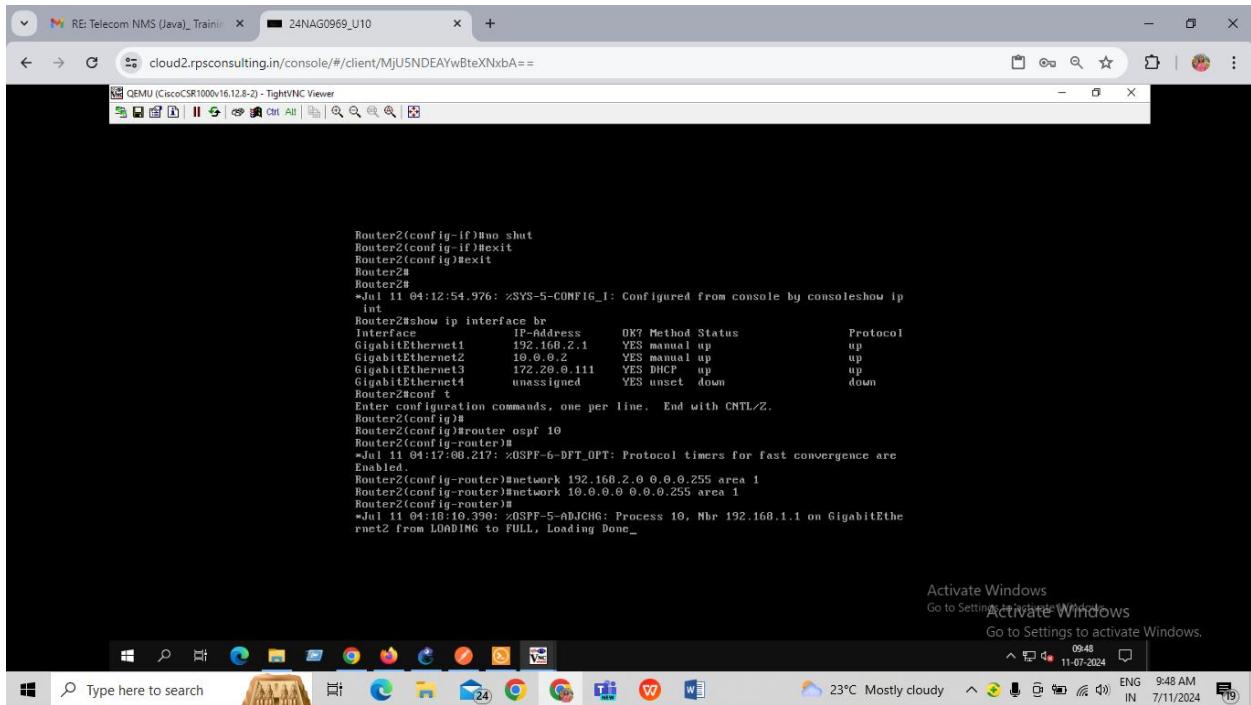


Run the OSPF protocol and advertise the routes

Router 1



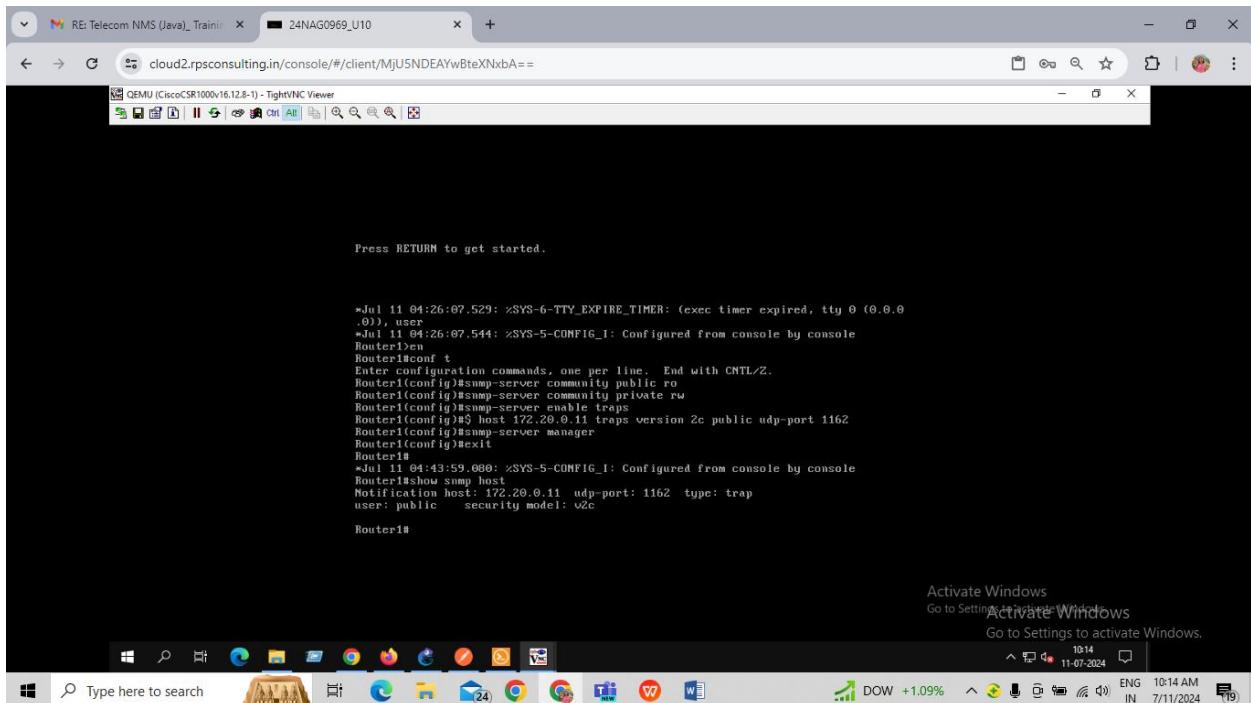
Router 2



```
Router2(config-if)#no shut
Router2(config-if)#exit
Router2(config)#exit
Router2#
Router2#
*Jul 11 04:12:54.976: %SYS-5-CONFIG_I: Configured from console by console
show ip int
Router2#show ip interface br
Interface          IP Address      OK? Method Status      Protocol
GigabitEthernet1   192.168.2.1    YES manual up
GigabitEthernet2   10.0.0.2      YES manual up
GigabitEthernet3   172.20.0.111   YES DHCP up
GigabitEthernet4   unassigned     YES unset down
Router2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router2(config)#
Router2(config)router ospf 10
Router2(config-router)#
*Jul 11 04:17:00.217: %OSPF-6-DFT_OPT: Protocol timers for fast convergence are
Enabled.
Router2(config-router)network 192.168.2.0 0.0.0.255 area 1
Router2(config-router)#
*Jul 11 04:18:10.390: %OSPF-5-ADJCHG: Process 10, Nbr 192.168.1.1 on GigabitEth
rnet2 from LOADING to FULL, Loading Done_
Activate Windows
Go to Settings to activate Windows.
Activate Windows
Go to Settings to activate Windows.
9:48 AM 11-07-2024 ENG IN 9:48 AM 7/11/2024
```

Configure the SNMP in both the router R1 and R2

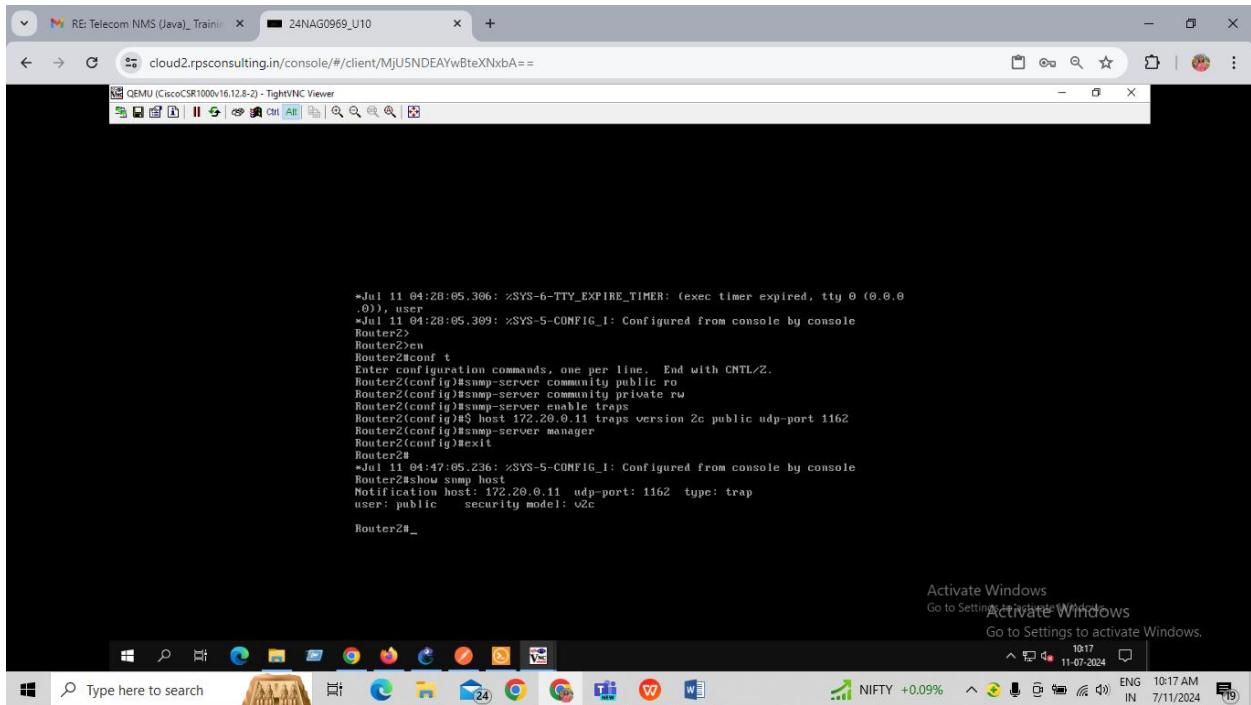
Router 1



```
Press RETURN to get started.

*Jul 11 04:26:07.529: %SYS-6-TTY_EXPIRE_TIMER: (exec timer expired, tty 0 (0.0.0
), user
*Jul 11 04:26:07.544: %SYS-5-CONFIG_I: Configured from console by console
Router1#en
Router1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router1(config)#snmp-server community public ro
Router1(config)#snmp-server community private rw
Router1(config)#snmp enable traps
Router1(config)#snmp host 172.20.0.11 traps version 2c public udp-port 1162
Router1(config)#snmp-server manager
Router1(config)#
Router1#
*Jul 11 04:43:59.000: %SYS-5-CONFIG_I: Configured from console by console
Router1#show snmp host
Notification host: 172.20.0.11  udp-port: 1162 type: trap
user: public  security model: v2c
Router1#
Activate Windows
Go to Settings to activate Windows.
Activate Windows
Go to Settings to activate Windows.
10:14 AM 11-07-2024 DOW +1.09% ENG IN 10:14 AM 7/11/2024
```

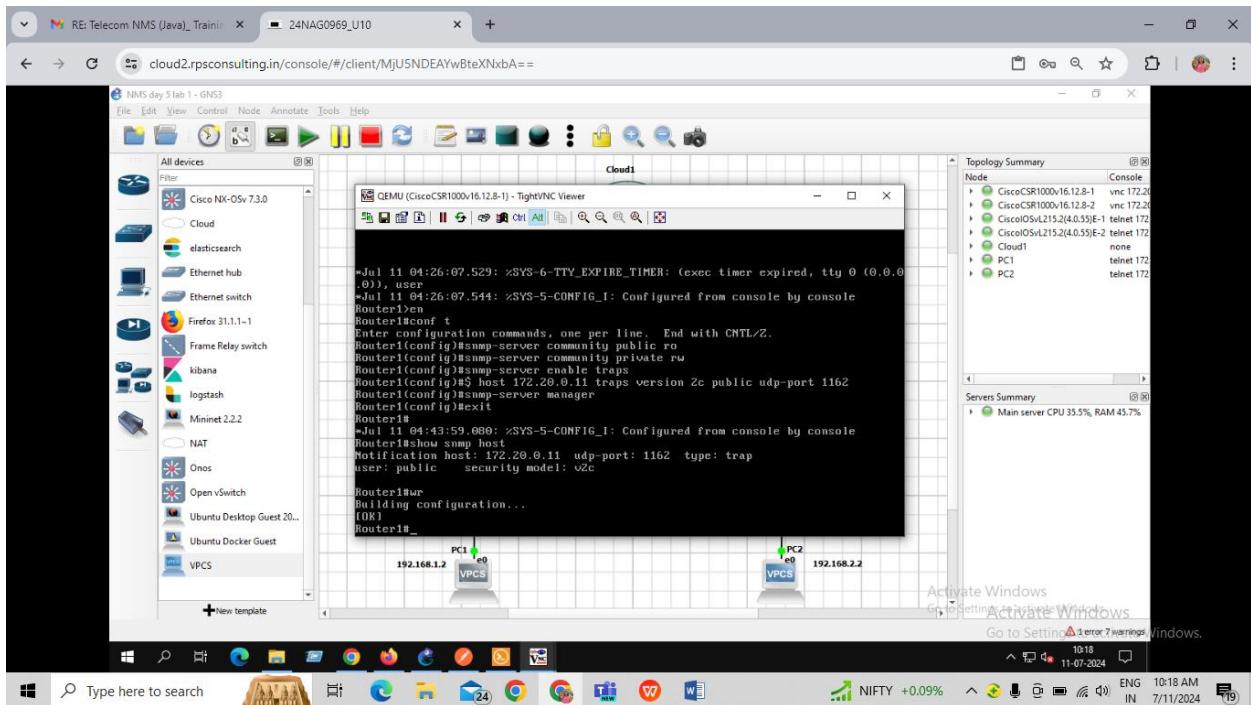
Router 2



```
*Jul 11 04:28:05.306: %SYS-6-TTY_EXPIRE_TIMER: (exec timer expired, tty 0 (0.0.0
.0)), user
*Jul 11 04:28:05.309: %SYS-5-CONFIG_I: Configured from console by console
Router2>en
Router2>conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router2(config)#snmp-server community public ro
Router2(config)#snmp-server community private rw
Router2(config)#$ host 172.20.0.11 traps version 2c public udp-port 1162
Router2(config)#snmp-server manager
Router2(config)exit
Router2#
*Jul 11 04:47:05.236: %SYS-5-CONFIG_I: Configured from console by console
Router2#show snmp host
Notification host: 172.20.0.11 udp-port: 1162 type: trap
user: public security model: v2c
Router2#
Router2#
```

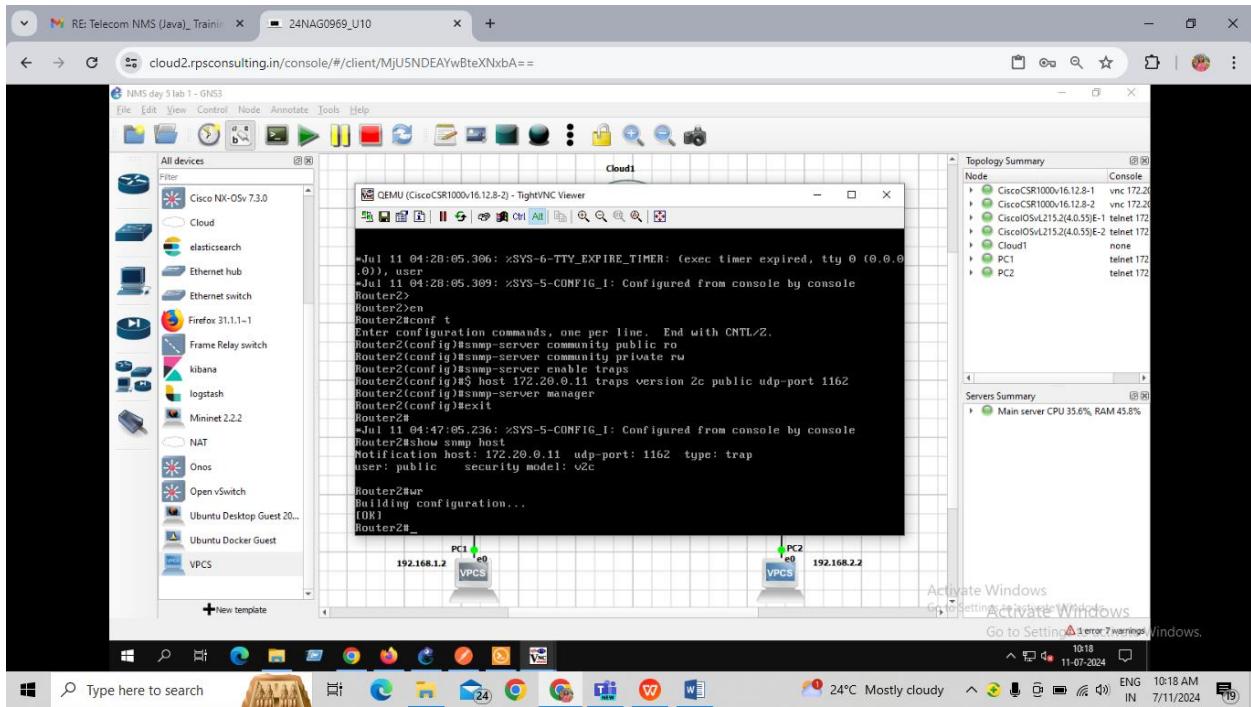
Save the configuration

Router1

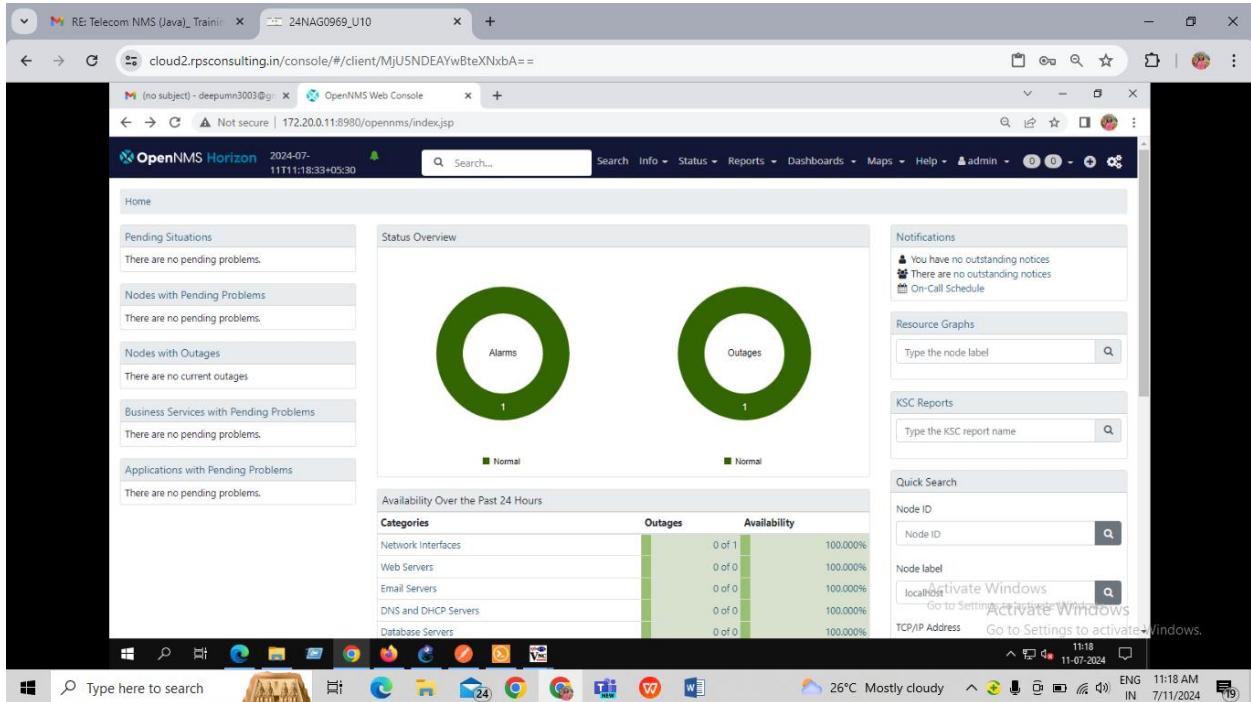


```
*Jul 11 04:26:07.529: %SYS-6-TTY_EXPIRE_TIMER: (exec timer expired, tty 0 (0.0.0
.0)), user
*Jul 11 04:26:07.544: %SYS-5-CONFIG_I: Configured from console by console
Router1>en
Router1>conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router1(config)#snmp-server community public ro
Router1(config)#snmp-server community private rw
Router1(config)#$ host 172.20.0.11 traps version 2c public udp-port 1162
Router1(config)#snmp-server manager
Router1(config)exit
Router1#
*Jul 11 04:43:59.000: %SYS-5-CONFIG_I: Configured from console by console
Router1#show snmp host
Notification host: 172.20.0.11 udp-port: 1162 type: trap
user: public security model: v2c
Router1#
Router1#wr
Building configuration...
[OK]
Router1#
```

Router 2



Node Discovery on OpenNMS



The screenshot shows the 'SNMP Configuration | Admin' page. In the 'General Parameters' section, the 'Version' is set to 'v2c'. The 'First IP Address' and 'Last IP Address' fields both contain '172.20.0.110'. The 'Location' field is set to 'Default'. On the right side, there is a 'Descriptions' panel with instructions for 'SNMP Config Lookup' and 'Updating SNMP Configuration'. A status bar at the bottom indicates 'Activate Windows' and shows the date and time as 11:35 AM 11-07-2024.

The screenshot shows the 'SNMP Configuration | Admin' page. In the 'v1/v2c specific parameters' section, the 'Read Community String' is set to 'public' and 'Write Community String' is set to 'private'. Under 'Save Options', 'Send Event' is checked (Default: enabled) and 'Send Locally' is unchecked (Default: disabled). A status bar at the bottom indicates 'Activate Windows' and shows the date and time as 11:35 AM 11-07-2024.

The screenshot shows the OpenNMS Horizon web interface. The main title bar says "RE: Telecom NMS (Java) Trainin" and "24NAG0969_U10". The browser address bar shows "cloud2.rpsconsulting.in/console/#/client/MjU5NDEAYwBteXnbA==". The page title is "SNMP Configuration | Admin". The sub-page title is "Configure SNMP by IP". A green banner at the top says "Finished configuring SNMP. OpenNMS does not need to be restarted." On the left, there's a "SNMP Config Lookup" panel with fields for "IP Address" and "Location" (set to "Default"). A "Lock up" button is present. To the right, there's a "Descriptions" panel with text about SNMP config lookup and updating SNMP configuration. Below these are sections for "Updating SNMP Configuration" and "General Parameters" (Version set to V2c). The Windows taskbar at the bottom shows various pinned icons and the date/time as 11:42 AM 7/11/2024.

The screenshot shows the OpenNMS Horizon web interface. The main title bar says "RE: Telecom NMS (Java) Trainin" and "24NAG0969_U10". The browser address bar shows "cloud2.rpsconsulting.in/console/#/client/MjU5NDEAYwBteXnbA==". The page title is "Provisioning Requisitions | Admin". The sub-page title is "Provisioning Requisitions". A table titled "Requisitions (1)" lists one entry: "selfmonitor" with Last Update at 2023-12-11T03:19:10+05:30, Last Import as Never, Nodes Defined as 1, and Nodes in Database as 1. Action buttons include Refresh, Quick Add Node, Edit Default FS, Reset Default, and Add Requisition. The Windows taskbar at the bottom shows various pinned icons and the date/time as 11:46 AM 7/11/2024.

RE: Telecom NMS (Java)_Trainin 24NAG0969_U10

cloud2.rpsconsulting.in/console/#/client/MjU5NDEAYwBteXnbA==

M (no subject) - deepum3003@gmail.com Provisioning Requisitions | Admin

Not secure | 172.20.0.11:8980/opennms/admin/ng-requisitions/index.jsp#/requisitions

OpenNMS Horizon 2024-07-11T11:46:24+05:30

Please enter the name for the new requisition

Core Network

Cancel OK

Requisitions (1)

Requisition Name	Last Update	Last Import	Nodes Defined	Nodes in Database	Actions
selfmonitor	2023-12-11T03:19:10+05:30	Never	1	1	

Search/Filter Requisitions

Add Node Edit Default FS Reset Default + Add Requisition

Page size

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Activate Windows
Go to Settings to activate Windows.
Activate Windows
Go to Settings to activate Windows.

11:51 11-07-2024

Type here to search

NIFTY -0.27% ENG IN 11:51 AM 7/11/2024

RE: Telecom NMS (Java)_Trainin 24NAG0969_U10

cloud2.rpsconsulting.in/console/#/client/MjU5NDEAYwBteXnbA==

M (no subject) - deepum3003@gmail.com Provisioning Requisitions | Admin

Not secure | 172.20.0.11:8980/opennms/admin/ng-requisitions/index.jsp#/requisitions

OpenNMS Horizon 2024-07-11T11:46:24+05:30

Search... Search/Filter Requisitions

Requisitions (2)

Requisition Name	Last Update	Last Import	Nodes Defined	Nodes in Database	Actions
selfmonitor	2023-12-11T03:19:10+05:30	Never	1	1	
Core Network	2024-07-11T11:51:21+05:30	Never	0	0	

Refresh Quick Add Node Edit Default FS Reset Default + Add Requisition

Page size

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Activate Windows
Go to Settings to activate Windows.
Activate Windows
Go to Settings to activate Windows.

11:51 11-07-2024

Type here to search

26°C Partly sunny ENG IN 11:51 AM 7/11/2024

Foreign Source Definition for Requisition Core Network

FS Definition

Last Modified 2024-07-11T12:07:09+05:30

Scan Interval: 1d

Name	Class	Parameters	Actions
HTTP	org.opennms.netmgt.provision.detector.simple.HttpDetector	[No parameters]	
HTTPS	org.opennms.netmgt.provision.detector.simple.HttpsDetector	[No parameters]	
ICMP	org.opennms.netmgt.provision.detector.icmp.IcmpDetector	[No parameters]	
SNMP	org.opennms.netmgt.provision.detector.snmplib.SnmpDetector	[No parameters]	
SSH	org.opennms.netmgt.provision.detector.ssh.SshDetector	[No parameters]	
OpenNMS-JVM	org.opennms.netmgt.provision.detector.jmx.Jsr160Detector	port : 18980 factory : PASSWORD_CLEAR	 Activate Windows Go to Settings to activate Windows. ACTIVATE WINDOWS Go to Settings to activate Windows.

Discovery configuration to discover the Router 1 & Router 2

Discovery | Admin | OpenNMS V

Save and Restart Discovery

General Settings

Initial sleep time (seconds)	30
Restart sleep time (hours)	24
Timeout (milliseconds)	2000
Retries	1
Requisition	Core Network
Location	Default

Advanced configuration

Task chunk size	100
-----------------	-----

Specific Addresses

No specifics found.

RE: Telecom NMS (Java) Trainin 24NAG0969_U10

cloud2.rpsconsulting.in/console/#/client/MjU5NDEAYwBteXNbA==

Admin | OpenNMS Web Console - Google Chrome

Not secure | 172.20.0.11:8980/opennms/admin/discovery/add-ir.jsp?mode=config&nobreadcrumbs=true

Add Include Range to Discovery

Add a range of IP addresses to include in discovery.
Begin and End IP addresses are required.

You can set the number of Retries and Timeout. If these parameters are not set, default values will be used.

Begin IP Address: 172.20.0.110

End IP Address: 172.20.0.113

Timeout (milliseconds): 2000

Retries: 1

Foreign Source: Core Network

Location: Default

Action: Add New

Activate Windows
Go to Settings to activate Windows.
ACTIVATE WINDOWS
Go to Settings to activate Windows.

12:16 11-07-2024 ENG IN 12:16 PM 7/11/2024

RE: Telecom NMS (Java) Trainin 24NAG0969_U10

cloud2.rpsconsulting.in/console/#/client/MjU5NDEAYwBteXNbA==

(no subject) - deepumr3003@gmail.com | Discovery | Admin | OpenNMS Web Console

Discovery | Admin | OpenNMS Web Console

No specifics found.

Add New

Include URLs

No include URLs found.

Add New

Exclude URLs

No exclude URLs found.

Add New

Include Ranges

Begin Address	End Address	Timeout (milliseconds)	Retries	Foreign Source	Location	Action
172.20.0.70	172.20.0.80	2000	1	Use Default	Use Default	Delete
172.20.0.110	172.20.0.113	2000	1	Use Default	Use Default	Delete

Add New

Exclude Ranges

No exclude ranges found.

Add New

Activate Windows
Go to Settings to activate Windows.
ACTIVATE WINDOWS
Go to Settings to activate Windows.

12:17 11-07-2024 ENG IN 12:17 PM 7/11/2024

Go to Manage provisioning requisition

The screenshot shows the OpenNMS Horizon web interface. The URL is cloud2.rpsconsulting.in/console/#/client/MjU5NDEAYwBteXNxbA==. The page title is "Provisioning Requisitions | Admin". The navigation bar includes "Search", "Info", "Status", "Reports", "Dashboards", "Maps", "Help", and "admin". The main content area displays a table titled "Requisitions (2)". The columns are "Requisition Name", "Last Update", "Last Import", "Nodes Defined", "Nodes in Database", and "Actions". Two entries are listed: "Core Network" (Last Update: 2024-07-11T12:29:47+05:30, Last Import: Never, Nodes Defined: 2, Nodes in Database: 2) and "selfmonitor" (Last Update: 2023-12-11T03:19:10+05:30, Last Import: Never, Nodes Defined: 1, Nodes in Database: 1). Below the table, a note says "OpenNMS Copyright © 2002-2023 The OpenNMS Group, Inc. OpenNMS® is a registered trademark of The OpenNMS Group, Inc. - Version: 32.0.5". At the bottom right, there is an "Activate Windows" watermark.

Node Management on Open NMS

The screenshot shows the OpenNMS Horizon web interface. The URL is cloud2.rpsconsulting.in/console/#/client/MjU5NDEAYwBteXNxbA==. The page title is "Node: 172.20.0.111 | Core Network | Default". The navigation bar includes "Search", "Info", "Status", "Reports", "Dashboards", "Maps", "Help", and "admin". The main content area displays node details for "Router2.localdomain" (sysObjectID: .1.3.6.1.4.1.9.1.1537). It shows sections for "SNMP Attributes", "General (Status: Active)", "Surveillance Category Memberships (Edit)", "Notifications", and "Recent Events". The "Recent Events" section lists several log entries, including:

- 508 2024-07-11T12:35:57+05:30 Normal The hardware discovery (SnmpMetadataProvisioningAdapter) on node 172.20.0.111 (IP address 172.20.0.111) has been completed successfully.
- 507 2024-07-11T12:35:56+05:30 Normal The Node with Id: 8; ForeignSource: Core Network; ForeignId:8 has completed.
- 506 2024-07-11T12:35:56+05:30 Warning SNMP information on 172.20.0.111 is being refreshed for data collection purposes.
- 503 2024-07-11T12:35:56+05:30 Normal The hardware discovery (SnmpMetadataProvisioningAdapter) on node 172.20.0.111 (IP address 172.20.0.111) has been completed successfully.

At the bottom right, there is an "Activate Windows" watermark.

The screenshot shows the OpenNMS web console for node 172.20.0.111. The main dashboard includes:

- Availability:** A chart showing availability over the last 24 hours for various ports (HTTP, HTTPS, ICMP, SNMP, SSH) and the node itself.
- Node Interfaces:** A table listing IP and SNMP interfaces. The table includes columns for IP Address, IP Host Name, SNMP ifIndex, and Managed status.
- Recent Events:** A list of recent events with details like timestamp, severity, and description. Examples include hardware discovery completion and scheduled scans.
- Recent Outages:** A section indicating no recent outages.

Go to Status → Events → All Events

The screenshot shows the 'Events' page in the OpenNMS web interface, displaying a list of recent events:

ID	Severity	Time	Source Location	System-ID	Node	Node Location	Interface	Service	Alarm ID
508	Normal	2024-07-11T12:35:57+05:30	Default	201b71ed-8a7c-4f6c-a5e3-d00f151cd56a2	172.20.0.111	Default	172.20.0.111		
507	Normal	2024-07-11T12:35:56+05:30	Default	201b71ed-8a7c-4f6c-a5e3-d00f151cd56a2	172.20.0.111	Default			
506	Warning	2024-07-11T12:35:56+05:30	Default	201b71ed-8a7c-4f6c-a5e3-d00f151cd56a2	172.20.0.111	Default	172.20.0.111		

Each event row contains a link to its details and edit notifications options.

Go to Status → Notifications → All outstanding notices and acknowledges notices

RE: Telecom NMS (Java)_Training 24NAG0969_U10

cloud2.rpsconsulting.in/console/#/client/MjU5NDEAYwBteXNbA==

M (no subject) - deepurnr3003@gmail.com Notice List | OpenNMS Web Console

Not secure | 172.20.0.11:8980/opennms/notification/browse?acktype=unack

OpenNMS Horizon 2024-07-11T12:54:39+05:30

Search Info Status Reports Dashboards Maps Help admin

Home / Notifications / Notice List

Currently showing only **outstanding** notices. [Show acknowledged]

Results 1-2 of 2, Show: 20 Items

ID	Event ID	Severity	Sent Time	Source Loc.	Responder	Respond Time	Node	Node Loc.	Interface	Service
15	477	Warning	2024-07-11T12:29:47+05:30	Default			172.20.0.112	Default		
14	463	Warning	2024-07-11T12:27:22+05:30	Default			172.20.0.111	Default		

2 notices Reset Select All Acknowledge Notices

Results 1-2 of 2, Show: 20 Items

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Activate Windows Go to Settings to activate Windows. ACTIVATE WINDOWS Go to Settings to activate Windows.

12:54 11-07-2024 ENG IN 12:54 PM 7/11/2024 20

Go to Reports → Resource Graphs → select Node and select all

RE: Telecom NMS (Java)_Training 24NAG0969_U10

cloud2.rpsconsulting.in/console/#/client/MjU5NDEAYwBteXNbA==

M (no subject) - deepurnr3003@gmail.com Choose | Resource Graphs | Reports

Not secure | 172.20.0.11:8980/opennms/graph/chooseresource.jsp?reports=all&parentResourceId=node[Core%20Network]&endUrl=graph/results.htm

OpenNMS Horizon 2024-07-11T12:57:07+05:30

Search Info Status Reports Dashboards Maps Help admin

Home / Reports / Resource Graphs / Choose

Node: 172.20.0.111

Resources

SNMP Node Data

SNMP Interface Data

Response Time

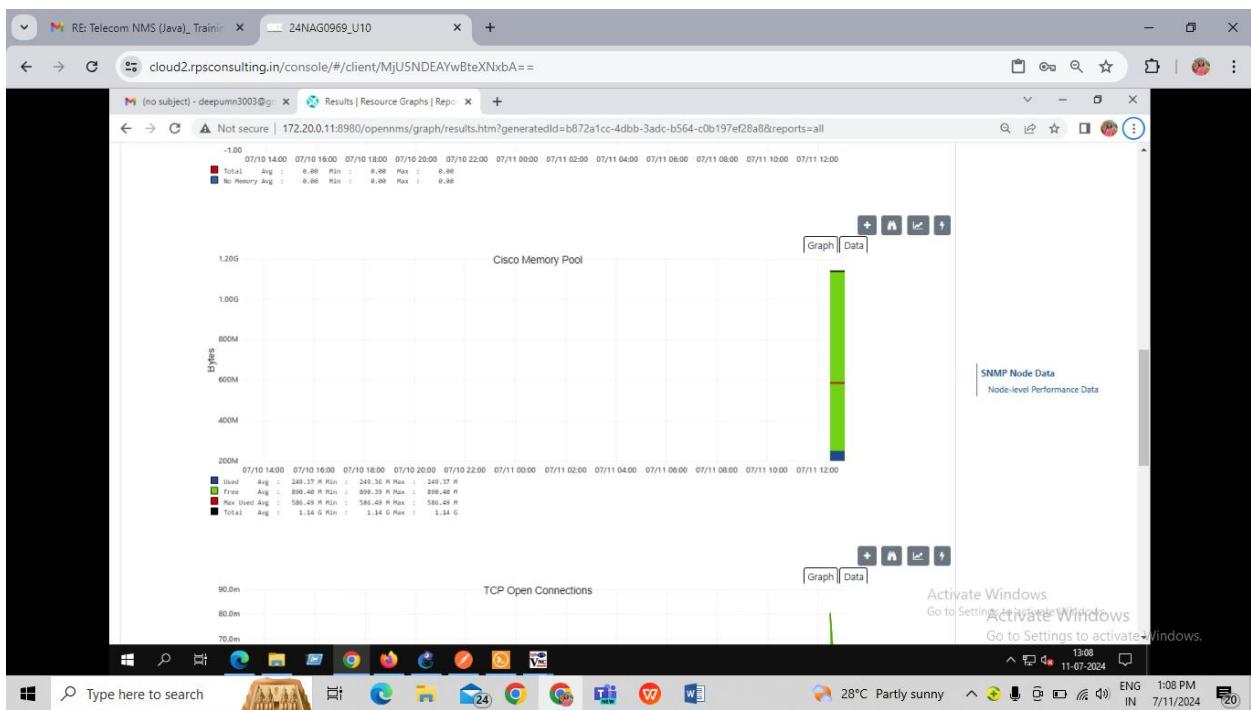
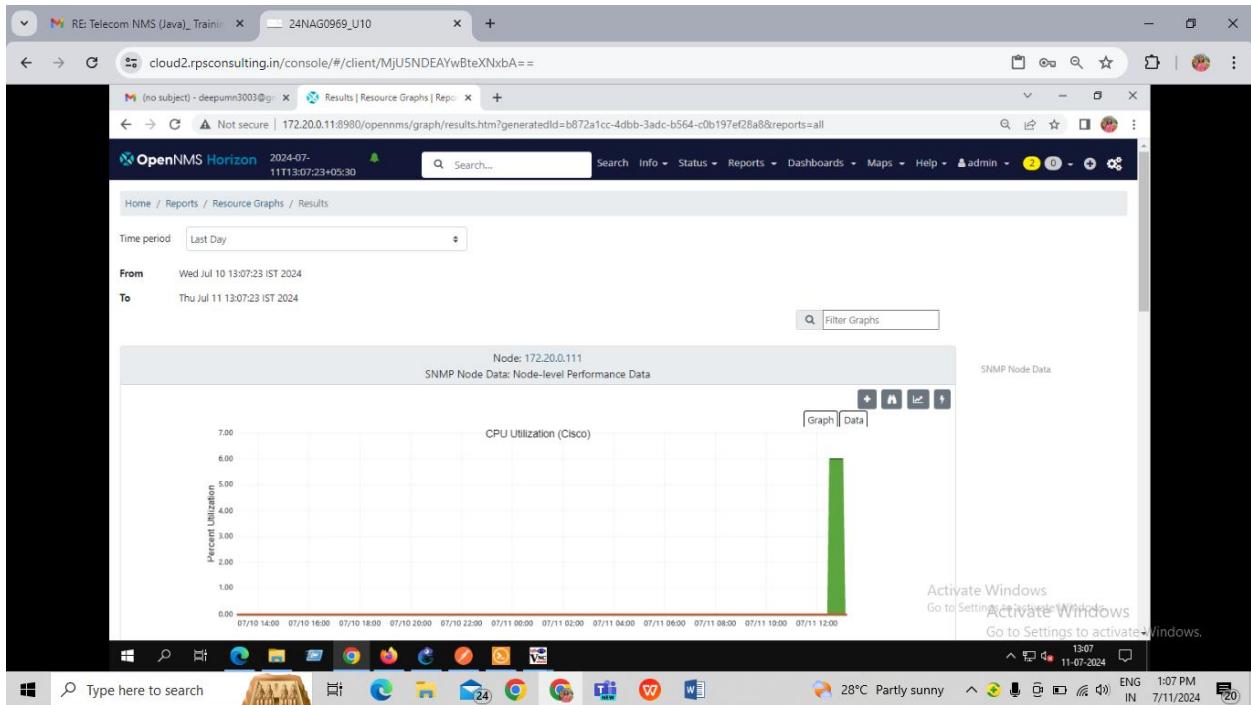
Service Status

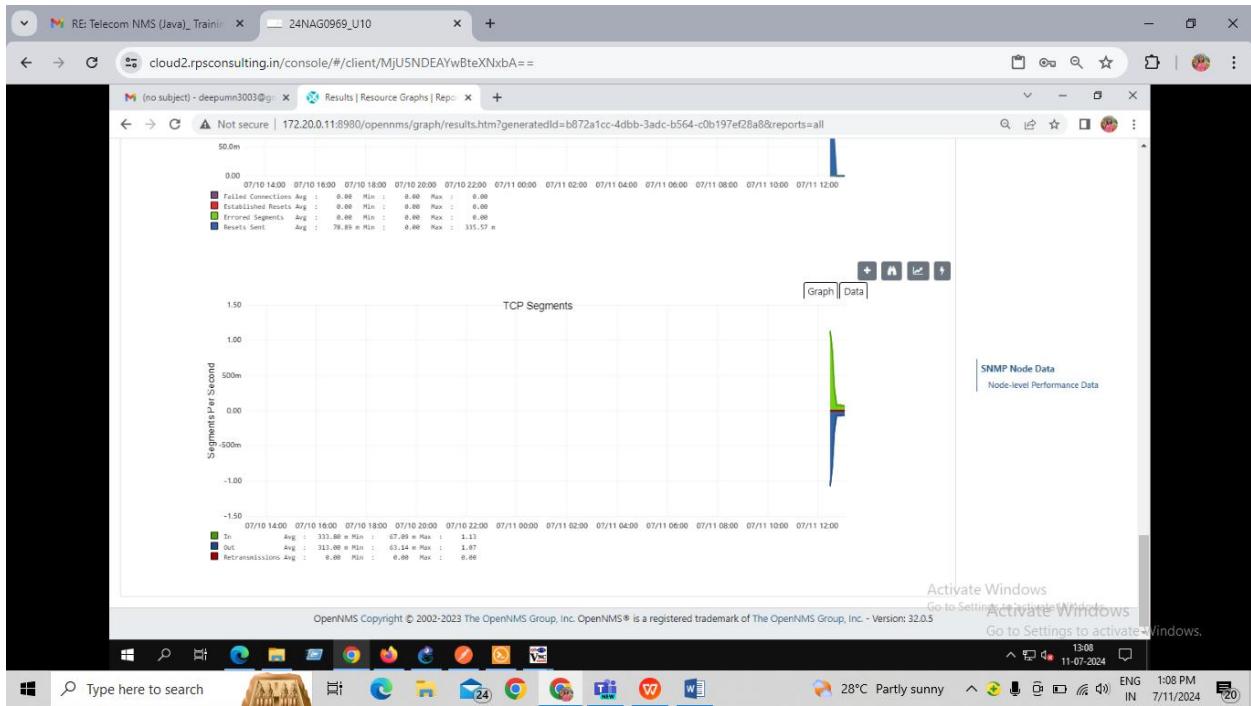
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Activate Windows Go to Settings to activate Windows. ACTIVATE WINDOWS Go to Settings to activate Windows.

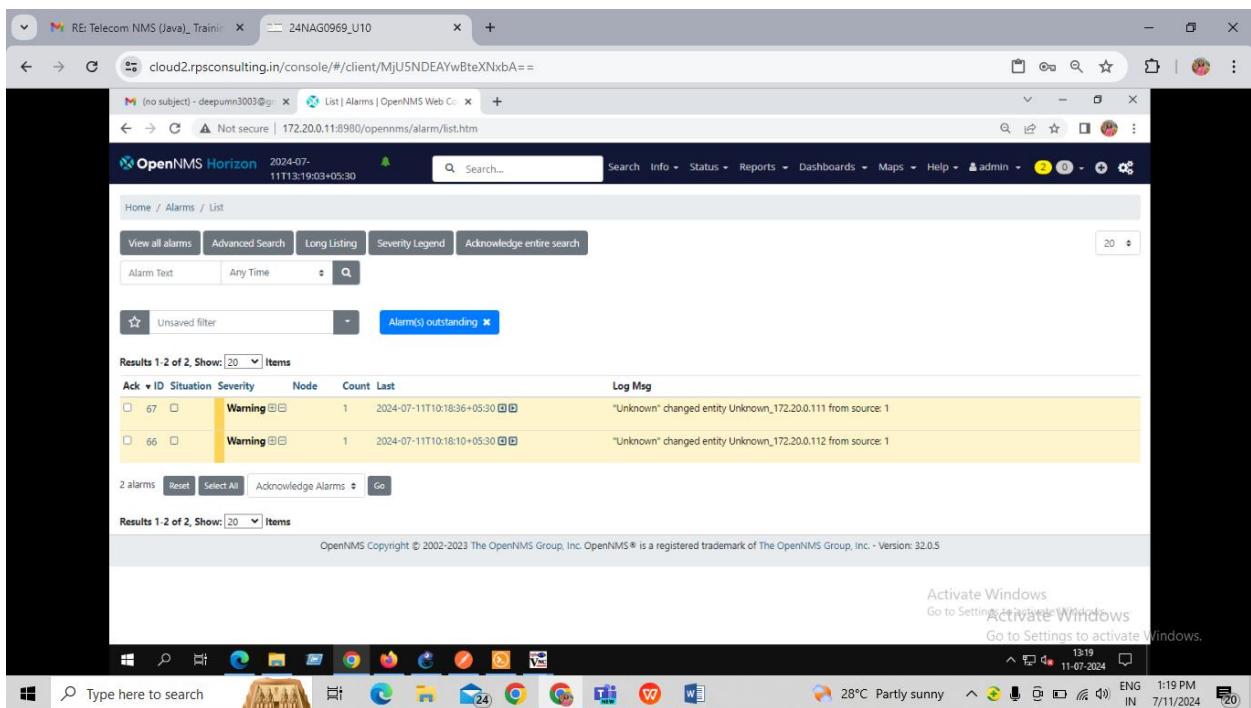
12:57 11-07-2024 ENG IN 12:57 PM 7/11/2024 20

Click on Graph Selection and select time period last hour





ALARMS

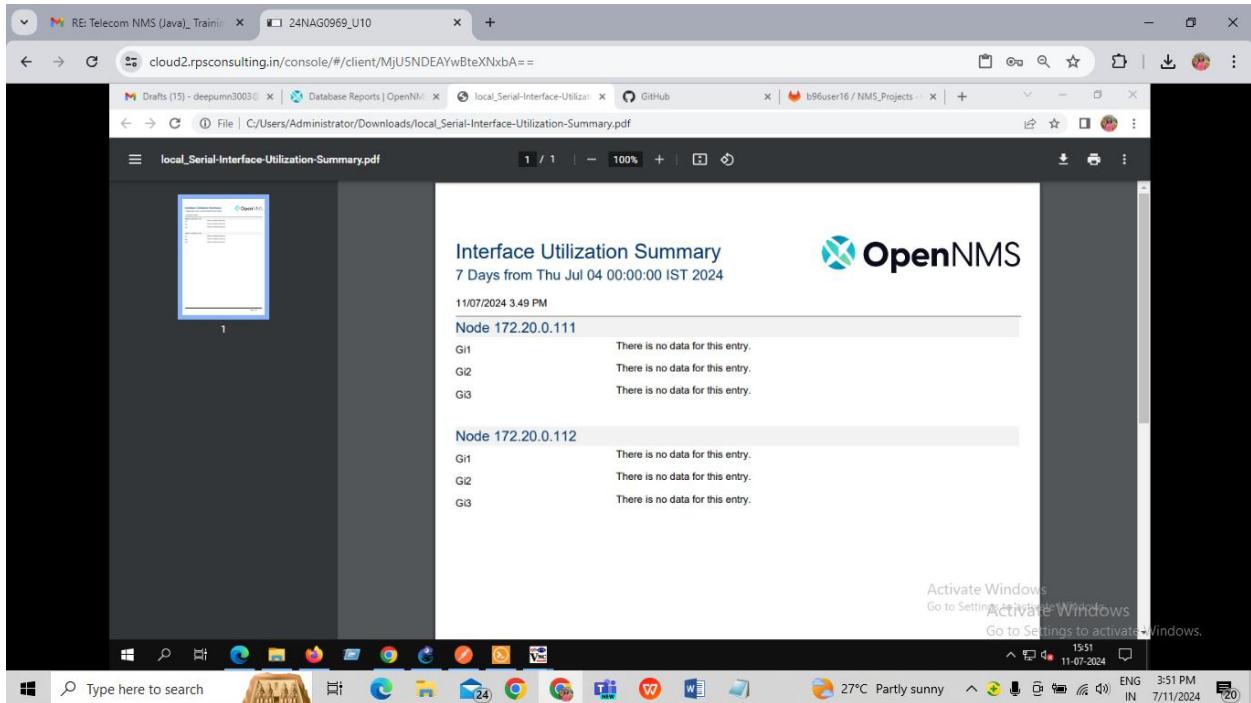


Ping PC1 to PC2 and observe more packets bits in Out

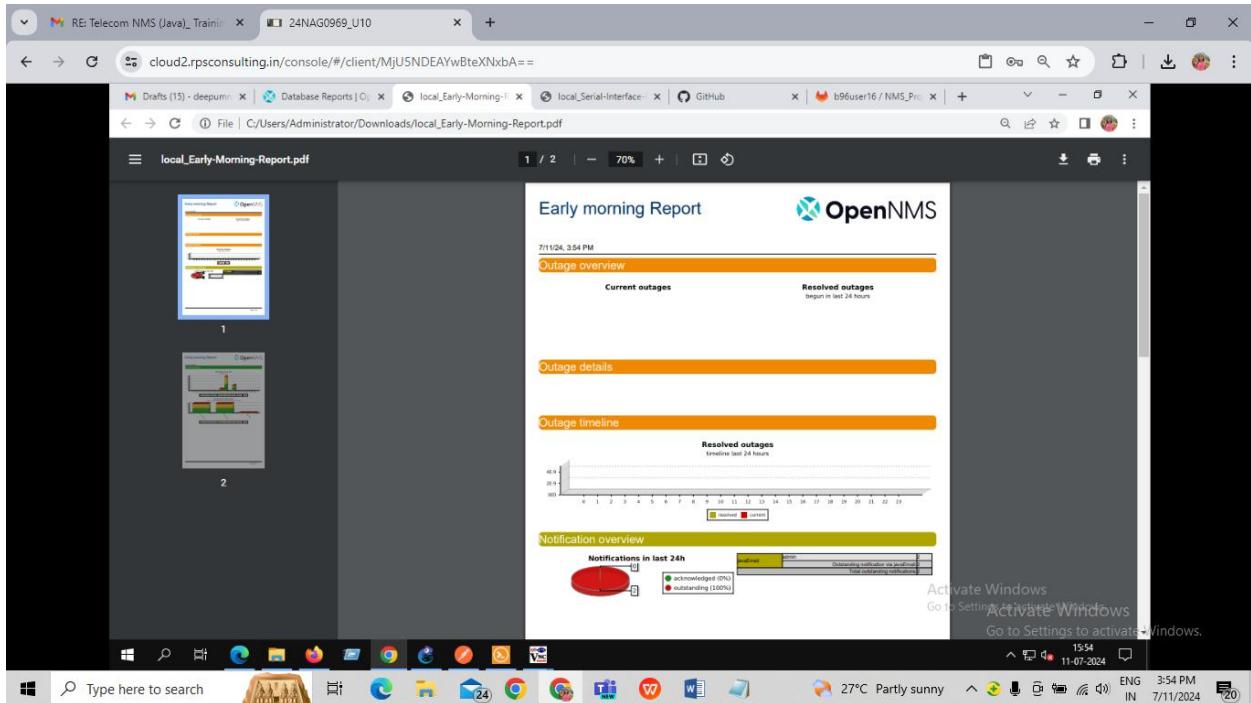
The screenshot shows the OpenNMS Horizon interface. The main window displays a bar chart titled "CPU Utilization (Cisco)" for Node 172.20.0.112. The Y-axis represents "Percent Utilization" from 0.00 to 9.00. The X-axis shows time from 07/10 16:00 to 07/11 14:00. A single green bar is visible between 07/11 12:00 and 07/11 14:00, reaching approximately 7.5%. To the right of the chart, there are tabs for "Graph" and "Data". On the far right, there is a sidebar with links for "SNMP Node Data", "SNMP Interface Data", "Response Time", and "Service Status". The status bar at the bottom indicates "Activate Windows" and "Windows 10 Pro".

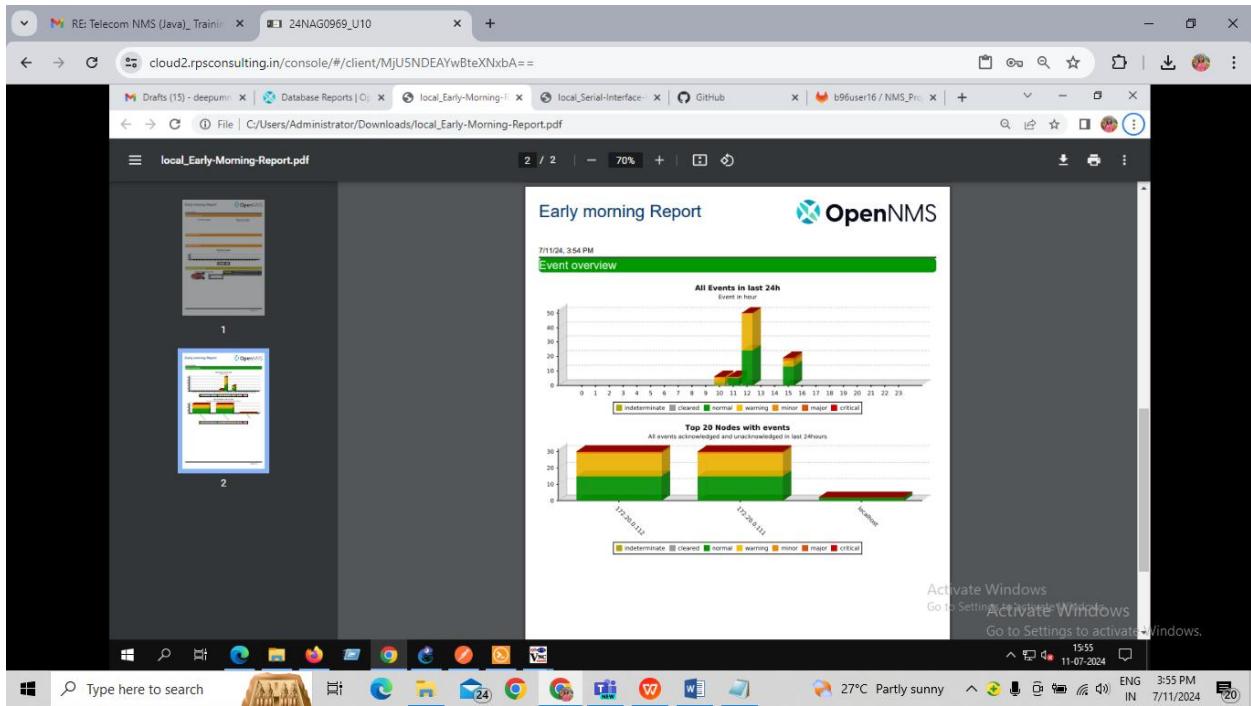
The screenshot shows the OpenNMS Horizon interface. The main window displays a table titled "Buffer Failures" for Node 172.20.0.112. The table has columns for "Date/Time" and various percentage ranges (0-10%, 11-20%, etc.) followed by "CPU average busy 5 min in %". The data shows several entries with values like 6.00, 6.00, 6.00, etc. To the right of the table, there are tabs for "Graph" and "Data". On the far right, there is a sidebar with links for "SNMP Node Data", "SNMP Interface Data", "Response Time", and "Service Status". The status bar at the bottom indicates "Activate Windows" and "Windows 10 Pro".

Go to Reports → Dashboard Reports → Serial Interface utilization summary
Select the Start data and generate the report

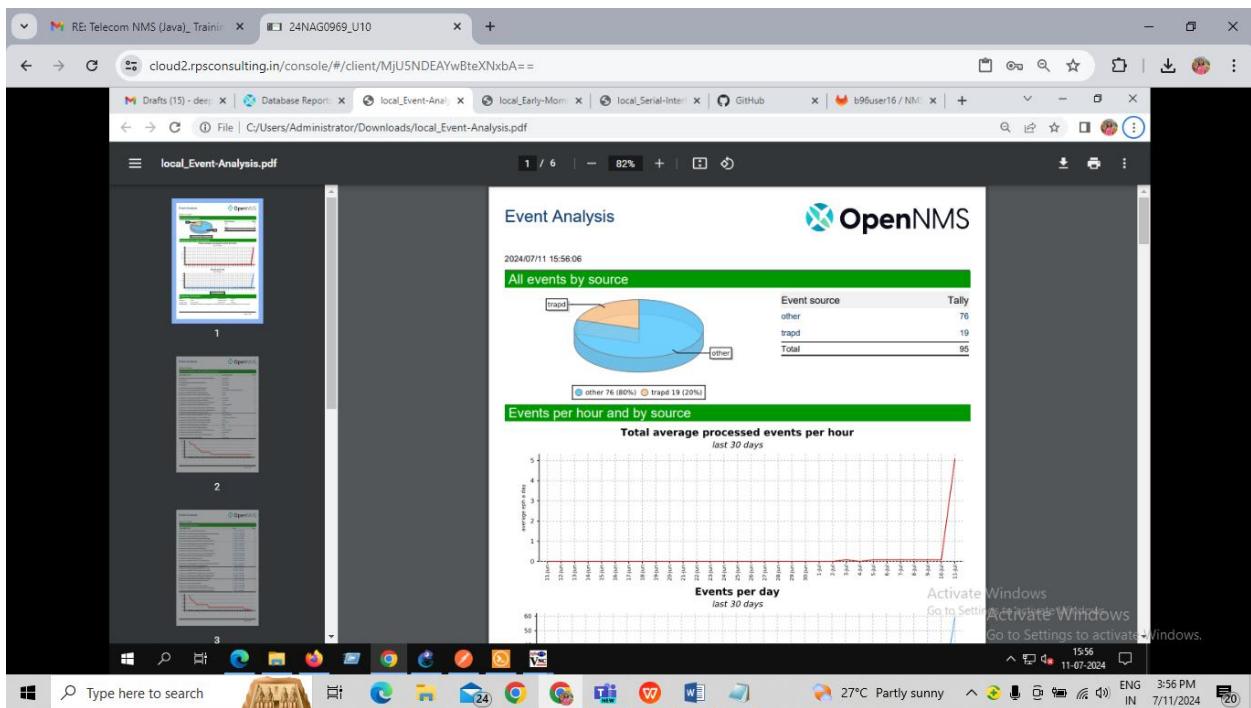


Go to Reports → Dashboard Reports → Early Morning report
Check Outages, Alarm, Notifications and events summary reports.





Go to Reports → Dashboard Reports → Event analysis report
Validate the event based on source and hour



RE: Telecom NMS (Java)_Training

cloud2.rpsconsulting.in/console/#/client/MjU5NDEAYwBteXNxbA==

local_Event-Analysis.pdf

Events per day (last 30 days)

Database information

Uptime: 0 years 0 months 0 days 4 hours 10 minutes Database name: opennms
 Tablespace: 17 MB Database schema: public
 Postgres socket: 122.16.0.2:5432 Database user: opennms
 Postgres version: PostgreSQL 13.5 (Debian 13.5-1.pgdg120+1) on x86_64-pc-linux-gnu, compiled by gcc (Debian 12.2.0-14) 12.2.0; 64-bit

Event Analysis

OpenNMS

2024/07/11 15:56:06

Top 25 events by UEI and event source

OpenNMS UEI Event Source Tally

Activate Windows Go to Settings Activate Windows Go to Settings to activate Windows.

15:57 11-07-2024

27°C Partly sunny ENG IN 3:57 PM 7/11/2024

RE: Telecom NMS (Java)_Training

cloud2.rpsconsulting.in/console/#/client/MjU5NDEAYwBteXNxbA==

OpenNMS Horizon 2024-07-11T15:57:40+05:30

Home

View Device Simulate

Nodes: NetworkRouter: Router2.localdomain

NetworkRouter

This Topology Provider displays Sub Networks and Routers informations discovered by Enhanced Link.

Selection Context

Provider:	nodes:NetworkRouter	Vertices	Edges
Focus	1	0	
Selection	0	0	
Context	4	3	
Total	7	5	

Alarms Nodes

ID	Severity	Node	UEI	Count	Last Event Time	Log Message
88	Cleared	172.20.0.111	uei.opennms.org:translator/traps/SNMP_Link_Down	1	2024-07-11T15:39:28+05:30	Agent Interface Up (linkUp Trap)
28	Cleared	172.20.0.111	uei.opennms.org:iETF/OSPF/ospfStateChange	1	2024-07-11T15:40:11+05:30	<--> ospfStateChange trap received ospfRouterId=192.168.2.1 ospfIpAddress=10.0.0.2 ospfAddressLess=0 ospfState=5</p>

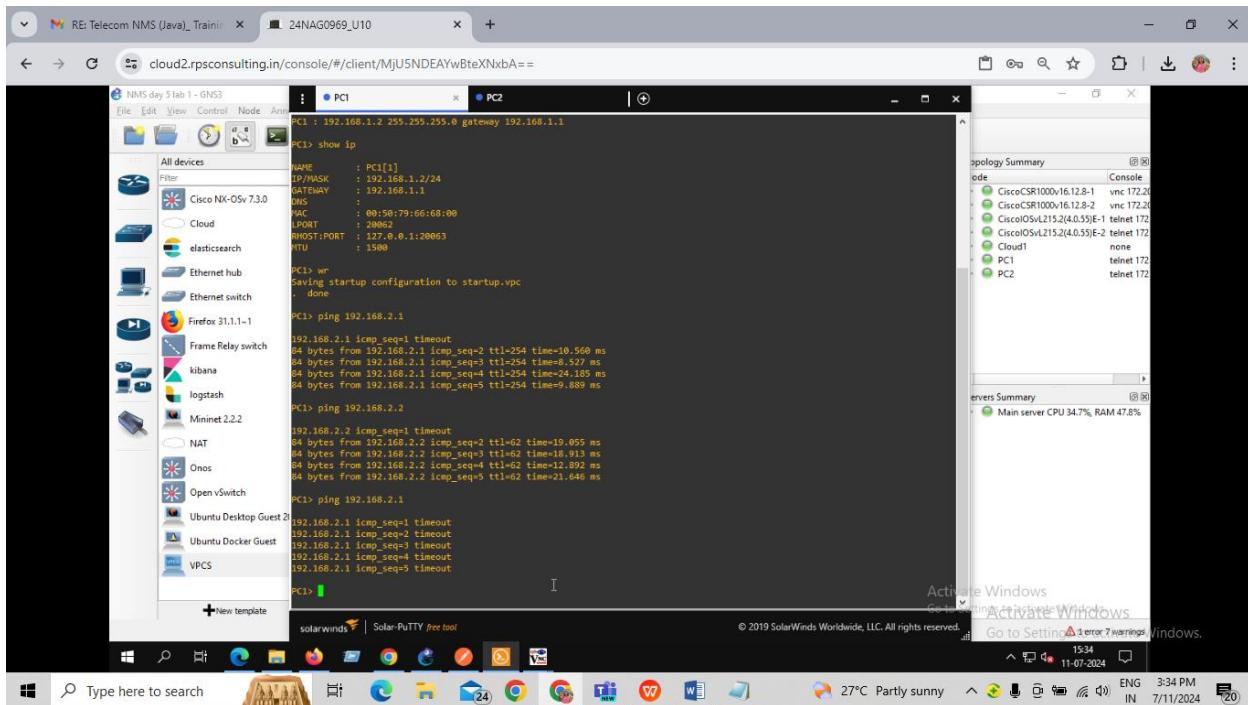
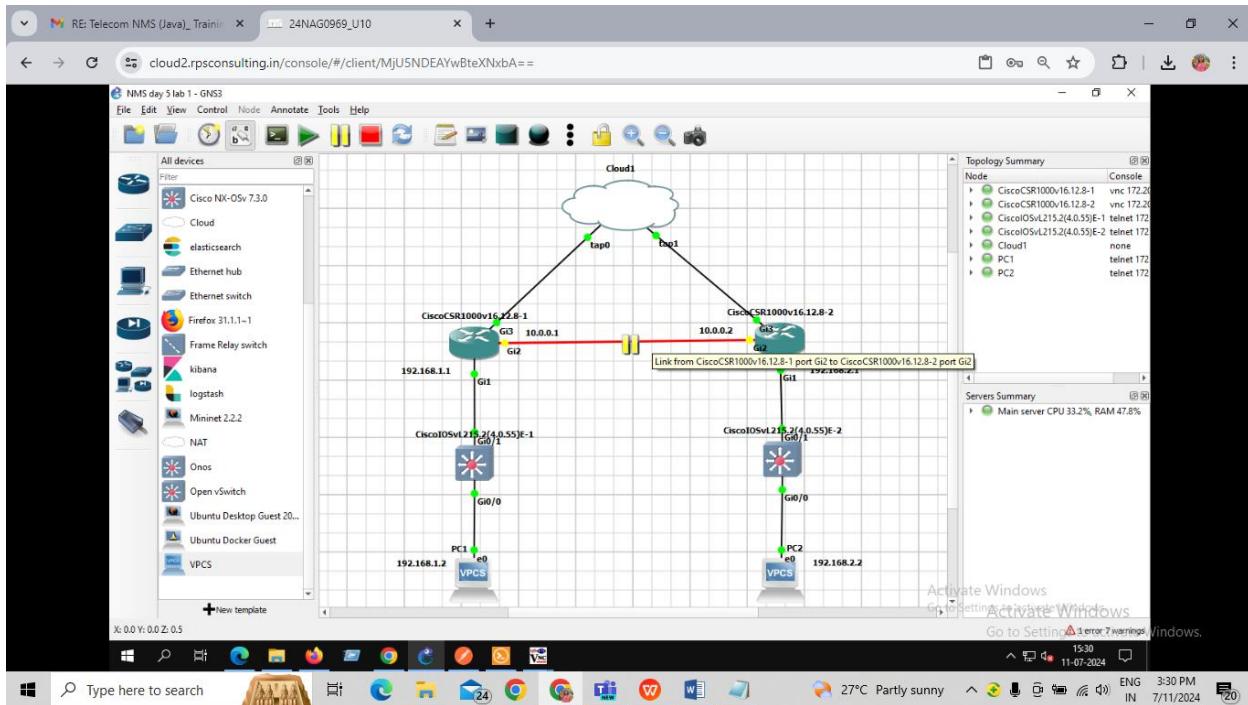
Select All Deselect All Acknowledge Submit

Activate Windows Go to Settings to activate Windows.

16:12 11-07-2024

27°C Partly sunny ENG IN 4:13 PM 7/11/2024

Generate the SNMP Traps



Status Overview

Categories	Outages	Availability
Network Interfaces	0 of 5	100.00%
Web Servers	0 of 4	100.00%
Email Servers	0 of 0	100.00%
DNS and DHCP Servers	0 of 0	100.00%
Database Servers	0 of 0	100.00%

Check the alarms in NMS , Interface down and OSPF state change alarms would be appeared on NMS.

ID	Severity	Time	Source Location	System ID	Node	Node Location	Interface	Service	Alarm ID
519	Minor	2024-07-11T15:30:21+05:30	Default	201b71ed-8a7c-4f6c-a5e3-d00f51cd56a2	172.20.0.111	Default	172.20.0.111		80
518	Normal	2024-07-11T15:30:21+05:30	Default	201b71ed-8a7c-4f6c-a5e3-d00f51cd56a2	172.20.0.111	Default	172.20.0.111		79
517	Warning	2024-07-11T15:30:20+05:30	Default	201b71ed-8a7c-4f6c-a5e3-d00f51cd56a2	172.20.0.111	Default	172.20.0.111		78
516	Normal	2024-07-11T15:30:20+05:30	Default	201b71ed-8a7c-4f6c-a5e3-d00f51cd56a2	172.20.0.111	Default	172.20.0.111		77
515	Normal	2024-07-11T15:30:20+05:30	Default	201b71ed-8a7c-4f6c-a5e3-d00f51cd56a2	172.20.0.111	Default	172.20.0.111		76

Click on Advance alarm search and select Minor and Warning alarm

The screenshot shows the OpenNMS Horizon web interface. The URL is <http://cloud2.rpsconsulting.in/console/#/client/MjU5NDEAYwBteXNbA==>. The page title is "OpenNMS Horizon". The search bar contains "Search...". The top navigation menu includes "Search", "Info", "Status", "Reports", "Dashboards", "Maps", "Help", and "admin". The main content area shows a table of alarms:

Ack	ID	Situation	Severity	Node	Count	Last	Log Msg
<input type="checkbox"/>	80	<input type="checkbox"/>	Minor	172.20.0.111	1	2024-07-11T15:30:21+05:30	Agent Interface Down (linkDown Trap)
<input type="checkbox"/>	78	<input type="checkbox"/>	Warning	172.20.0.111	1	2024-07-11T15:30:20+05:30	ospfifStateChange trap received ospfRouterId=192.168.2.1 ospfifipAddress=10.0.0.2 ospfAddressLessIf=0 ospfifState=1
<input type="checkbox"/>	74	<input type="checkbox"/>	Minor	172.20.0.112	1	2024-07-11T15:30:09+05:30	Agent Interface Down (linkDown Trap)
<input type="checkbox"/>	72	<input type="checkbox"/>	Warning	172.20.0.112	1	2024-07-11T15:30:09+05:30	ospfifStateChange trap received ospfRouterId=192.168.1.1 ospfifipAddress=10.0.0.1 ospfAddressLessIf=0 ospfifState=1
<input type="checkbox"/>	67	<input type="checkbox"/>	Warning		1	2024-07-11T10:18:36+05:30	"Unknown" changed entity Unknown_172.20.0.111 from source: 1
<input type="checkbox"/>	66	<input type="checkbox"/>	Warning		1	2024-07-11T10:18:10+05:30	"Unknown" changed entity Unknown_172.20.0.112 from source: 1

At the bottom of the search bar, the filter "Severity OR Filter: [WARNING, MINOR]" is selected. The status bar at the bottom right shows "Activate Windows" and "Go to Settings to activate Windows".

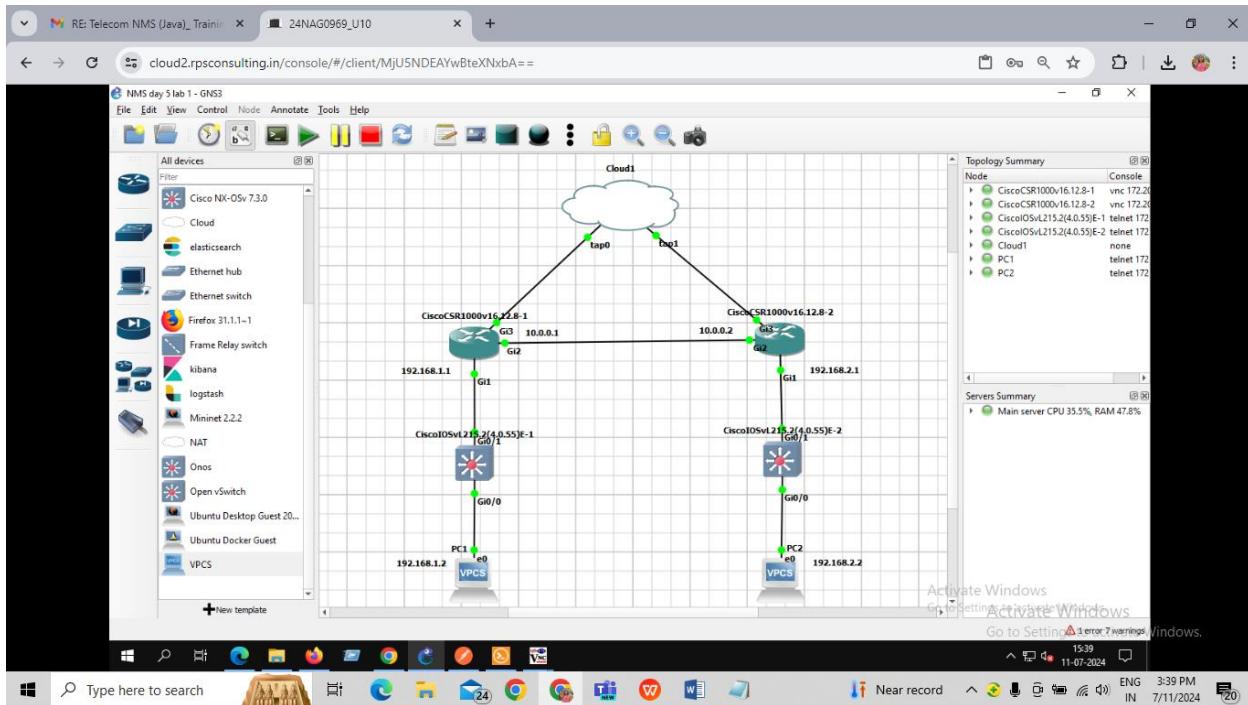
Acknowledge all the alarms

The screenshot shows the OpenNMS Horizon web interface. The URL is <http://cloud2.rpsconsulting.in/console/#/client/MjU5NDEAYwBteXNbA==>. The page title is "OpenNMS Horizon". The search bar contains "Search...". The top navigation menu includes "Search", "Info", "Status", "Reports", "Dashboards", "Maps", "Help", and "admin". The main content area shows a table of alarms:

UnAck	ID	Situation	Severity	Node	Count	Last	Log Msg
<input type="checkbox"/>	80	<input type="checkbox"/>	Minor	172.20.0.111	1	2024-07-11T15:30:21+05:30	Agent Interface Down (linkDown Trap)
<input type="checkbox"/>	78	<input type="checkbox"/>	Warning	172.20.0.111	1	2024-07-11T15:30:20+05:30	ospfifStateChange trap received ospfRouterId=192.168.2.1 ospfifipAddress=10.0.0.2 ospfAddressLessIf=0 ospfifState=1
<input type="checkbox"/>	74	<input type="checkbox"/>	Minor	172.20.0.112	1	2024-07-11T15:30:09+05:30	Agent Interface Down (linkDown Trap)
<input type="checkbox"/>	72	<input type="checkbox"/>	Warning	172.20.0.112	1	2024-07-11T15:30:09+05:30	ospfifStateChange trap received ospfRouterId=192.168.1.1 ospfifipAddress=10.0.0.1 ospfAddressLessIf=0 ospfifState=1
<input type="checkbox"/>	67	<input type="checkbox"/>	Warning		1	2024-07-11T10:18:36+05:30	"Unknown" changed entity Unknown_172.20.0.111 from source: 1
<input type="checkbox"/>	66	<input type="checkbox"/>	Warning		1	2024-07-11T10:18:10+05:30	"Unknown" changed entity Unknown_172.20.0.112 from source: 1

At the bottom of the search bar, the filter "Alarm(s) acknowledged" is selected. The status bar at the bottom right shows "Activate Windows" and "Go to Settings to activate Windows".

Recover the link status



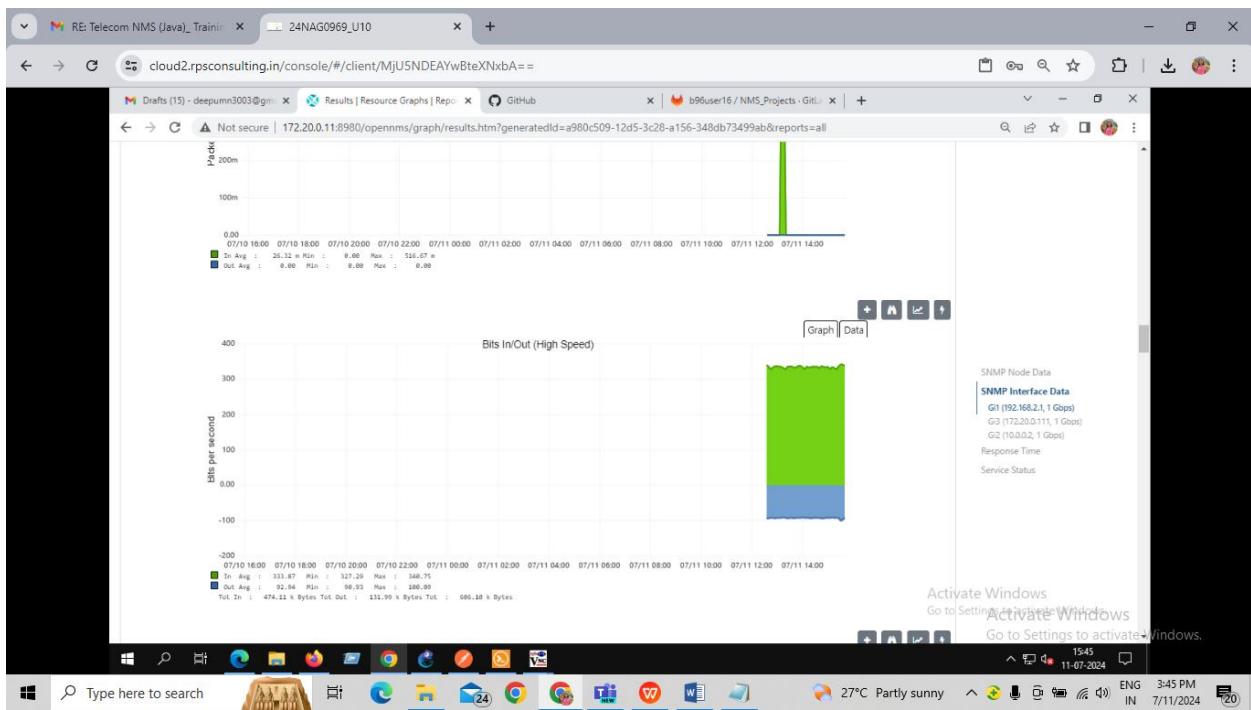
Check the alarms in NMS, all the alarms will be cleared

The screenshot shows the OpenNMS Horizon web interface at the URL <http://172.20.11.8980/opennms/alarm/list?sortby=id&acktype=ack&limit=10>. The page displays a list of alarms:

UnAck	ID	Situation	Severity	Node	Count	Last	Log Msg
	80	Cleared	Info	172.20.0.111	1	2024-07-11T15:39:28+05:30	Agent Interface Up (linkUp Trap)
	78	Cleared	Info	172.20.0.111	1	2024-07-11T15:40:19+05:30	ospfStateChange trap received ospfRouterId=192.168.2.1 ospfIfpAddress=10.0.0.2 ospfAddressLessIf=0 ospfIfState=5
	74	Cleared	Info	172.20.0.112	1	2024-07-11T15:39:26+05:30	Agent Interface Up (linkUp Trap)
	72	Cleared	Info	172.20.0.112	2	2024-07-11T15:40:19+05:30	ospfStateChange trap received ospfRouterId=192.168.1.1 ospfIfpAddress=10.0.0.1 ospfAddressLessIf=0 ospfIfState=6
	67	Warning	Info		1	2024-07-11T10:18:36+05:30	"Unknown" changed entity Unknown_172.20.0.111 from source: 1
	66	Warning	Info		1	2024-07-11T10:18:10+05:30	"Unknown" changed entity Unknown_172.20.0.112 from source: 1

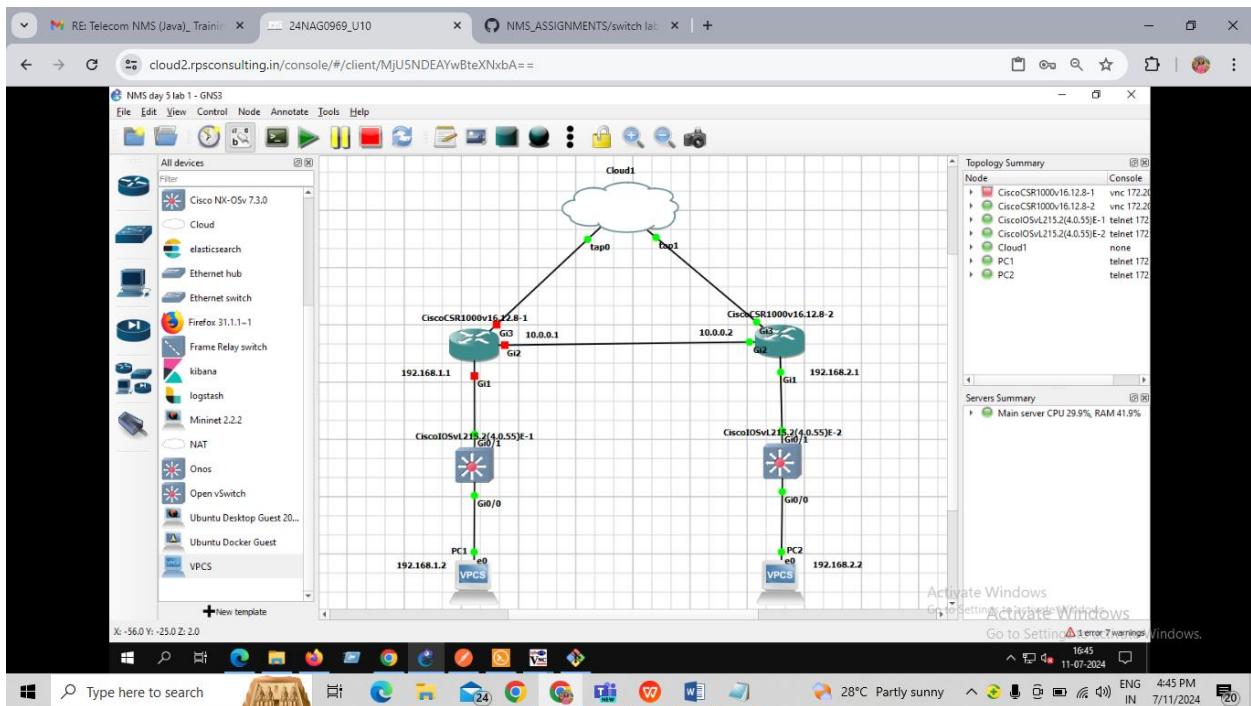
The interface includes navigation buttons for "View all alarms", "Advanced Search", "Long Listing", "Severity Legend", and "Unacknowledge entire search". It also shows a filter for "Unsaved filter" and a button for "Alarm(s) acknowledged". The Windows taskbar at the bottom shows the date and time as 7/11/2024, 3:42 PM.

Ping PC1 and PC2 and observe the Bits In/Out reports



Generate the Outage:

Stop the Router 1, communication between Node and NMS server get stopped



The screenshot shows the OpenNMS Horizon web interface. At the top, there are several tabs and a search bar. Below the header, the main content area displays a list of alarms. There are two entries:

- Minor**: Log Msg: "SNMP data collection on interface 172.20.0.112 failed." (Timestamp: 2024-07-11T16:49:53+05:30)
- Major**: Log Msg: "Node 172.20.0.112 is down." (Timestamp: 2024-07-11T16:46:34+05:30)

At the bottom of the interface, there is a note: "OpenNMS Copyright © 2002-2023 The OpenNMS Group, Inc. OpenNMS® is a registered trademark of The OpenNMS Group, Inc. - Version: 32.0.5".

Check the SNMP availability for the node, it get reduced from 100% and keep decreasing

The screenshot shows the OpenNMS Horizon interface for the node 172.20.0.112. The top navigation bar includes links for View Events by IP Address, View Events by ifindex, HTTP, Response Time Graphs, SNMP Interface Data Graphs, Meta-Data, Delete, Rescan, and Schedule Outage.

The main content area is divided into sections:

- General** information: Node 172.20.0.112, Polling Status Managed, Polling Package cassandra-via-jmx, device-config, example1: HTTP, HTTPS, ICMP, SNMP, SSH, Interface Index 3, Last Service Scan 7/11/24, 12:33:32 PM.
- Availability**: A chart showing the availability of various services over a 24-hour period. The services shown are HTTP, HTTPS, ICMP, SNMP, and SSH. All services show availability at 97.147%.
- Recent Events (Using Filter IP Address: 172.20.0.112)**:
 - 542 2024-07-11T16:49:53+05:30: Minor: "SNMP data collection on interface 172.20.0.112 failed."
 - 536 2024-07-11T15:40:19+05:30: Normal: "ospfOriginateLsa trap received ospfRouterId=192.168.1.1 ospfLsdbAreaid=0.0.0.1 ospfLsdbType=1 ospfLsdbLsid=192.168.1.1 ospfLsdbRouterId=192.168.1.1"
 - 535 2024-07-11T15:40:19+05:30: Normal: "ospfStateChange trap received ospfRouterId=192.168.1.1 ospfIfipAddress=10.0.0.1 ospfAddressLessIfid=0 ospfIfState=6"
 - 531 2024-07-11T15:40:11+05:30: Normal: "ospfMsgAgeLsa trap received ospfRouterId=192.168.1.1 ospfLsdbAreaid=0.0.0.1 ospfLsdbType=2 ospfLsdbLsid=10.0.0.1 ospfLsdbRouterId=192.168.1.1"
 - 534 2024-07-11T15:39:38+05:30: Warning: "ospfNbrStateChange trap received ospfRouterId=192.168.1.1 ospfNbrIpAddr=10.0.0.2 ospfNbrAddressLessIndex=0 ospfNbrRtid=192.168.2.1 ospfNbrState=4"
- Recent Outages**: Shows a single entry for ICMP with a timestamp of 2024-07-11T16:46:34+05:30.

Click on Status → Outages → all outages

The screenshot shows a browser window with multiple tabs open. The active tab is 'cloud2.rpsconsulting.in/console/#/client/MjU5NDEAYwBteXNxbA=='. The page title is 'OpenNMS Horizon' and the URL is 'Not secure | 172.20.0.11:8980/opennms/outage/list.htm?outtype=both'. The page displays a table of current outages:

ID	Foreign Source	Node	Node Location	Interface	Service	Down	Up	Perspective
29	Core Network	172.20.0.112	Default	172.20.0.112	ICMP	2024-07-11T16:46:34+05:30	DOWN	none
28	Core Network	172.20.0.112	Default	172.20.0.112	HTTP	2024-07-11T16:46:34+05:30	DOWN	none
27	Core Network	172.20.0.112	Default	172.20.0.112	SSH	2024-07-11T16:46:34+05:30	DOWN	none
26	Core Network	172.20.0.112	Default	172.20.0.112	SNMP	2024-07-11T16:46:34+05:30	DOWN	none
25	Core Network	172.20.0.112	Default	172.20.0.112	HTTPS	2024-07-11T16:46:34+05:30	DOWN	none

At the bottom of the table, it says 'Results 1-5 of 5, Show: 20 Items'. Below the table, a note reads: 'OpenNMS Copyright © 2002-2023 The OpenNMS Group, Inc. OpenNMS® is a registered trademark of The OpenNMS Group, Inc. - Version: 32.0.5.'

The taskbar at the bottom shows various application icons and the system clock.

Click on Status → Trend

The screenshot shows a browser window with multiple tabs open. The active tab is 'cloud2.rpsconsulting.in/console/#/client/MjU5NDEAYwBteXNxbA=='. The page title is 'OpenNMS Horizon' and the URL is 'Not secure | 172.20.0.11:8980/opennms/trend/index.jsp'. The page displays a dashboard titled 'Trend' with several monitoring metrics:

- Nodes with Outages:** 1 Nodes with Outage(s)
- Severity Distribution:** Go to Alarms Page
- Alarms Occurrence:** 2 New Alarm(s)
- Alarms Unacknowledged:** 2 Unacknowledged Alarm(s)
- Outages Occurrence:** 5 New Outage(s)
- Outages Current:** 5 Current Outage(s)
- Business Services Problem Occurrence:** 0 New Problem(s)
- Business Services Current Problems:** 0 Current Problem(s)

At the bottom of the dashboard, a note reads: 'OpenNMS Copyright © 2002-2023 The OpenNMS Group, Inc. OpenNMS® is a registered trademark of The OpenNMS Group, Inc. - Version: 32.0.5.'

The taskbar at the bottom shows various application icons and the system clock.

Go to Reports → Dashboard Reports → Early Morning report

The screenshot shows the 'Early morning Report' dashboard from the OpenNMS application. The main title is 'Early morning Report' with the OpenNMS logo. The date is 7/11/24, 5:42 PM. The dashboard includes the following sections:

- Outage overview:** A pie chart showing current outages by type: node (100%), interface (0%), service (0%), and management (0%).
- Outage details:** A table showing one current node outage for IP 172.20.0.112.
- Outage timeline:** A bar chart showing resolved outages over the last 24 hours, with a single red bar at hour 16.

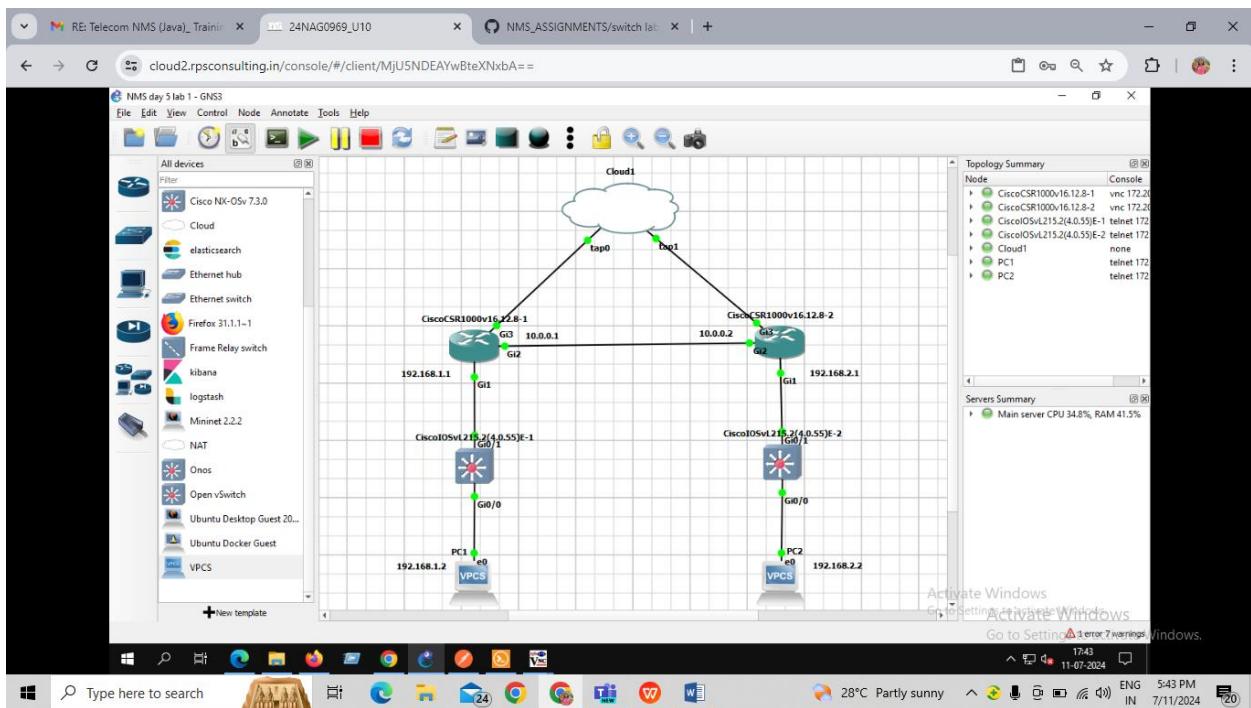
The bottom status bar shows 'Activate Windows' and the system clock at 5:42 PM on 11-07-2024.

The screenshot shows the 'Event overview' dashboard from the OpenNMS application. The main title is 'Event overview' with the OpenNMS logo. The date is 7/11/24, 5:42 PM. The dashboard includes the following sections:

- All Events in last 24h:** A stacked bar chart showing event counts per hour (0-23) for various severity levels: indeterminate, cleared, normal, warning, minor, major, and critical.
- Top 20 Nodes with events:** A stacked bar chart showing the top 20 nodes with event counts for the same seven severity levels.

The bottom status bar shows 'Activate Windows' and the system clock at 5:42 PM on 11-07-2024.

Recover the Faults



The screenshot shows the OpenNMS Horizon web interface at the URL <http://172.20.0.11:8980/opennms/alarm/list.htm>. The interface displays the following information:

OpenNMS Horizon 2024-07-11T17:54:24+05:30

Home / Alarms / List

Results 1-3 of 3, Show: 20 Items

Ack	ID	Situation	Severity	Node	Count	Last	Log Msg
<input type="checkbox"/>	89	Normal	Info	172.20.0.111	4	2024-07-11T17:49:26+05:30	ospfOriginateLsa trap received ospfRouterid=192.168.2.1 ospflSdbAreaId=0.0.0.1 ospflSdbType=1 ospflSdbLsid=192.168.2.1 ospflSdbRouterid=192.168.2.1
<input type="checkbox"/>	87	Cleared	Info	172.20.0.112	1	2024-07-11T17:49:52+05:30	SNMP data collection on interface 172.20.0.112 previously failed and has been restored.
<input type="checkbox"/>	86	Cleared	Info	172.20.0.112	1	2024-07-11T17:53:34+05:30	Node 172.20.0.112 is up.

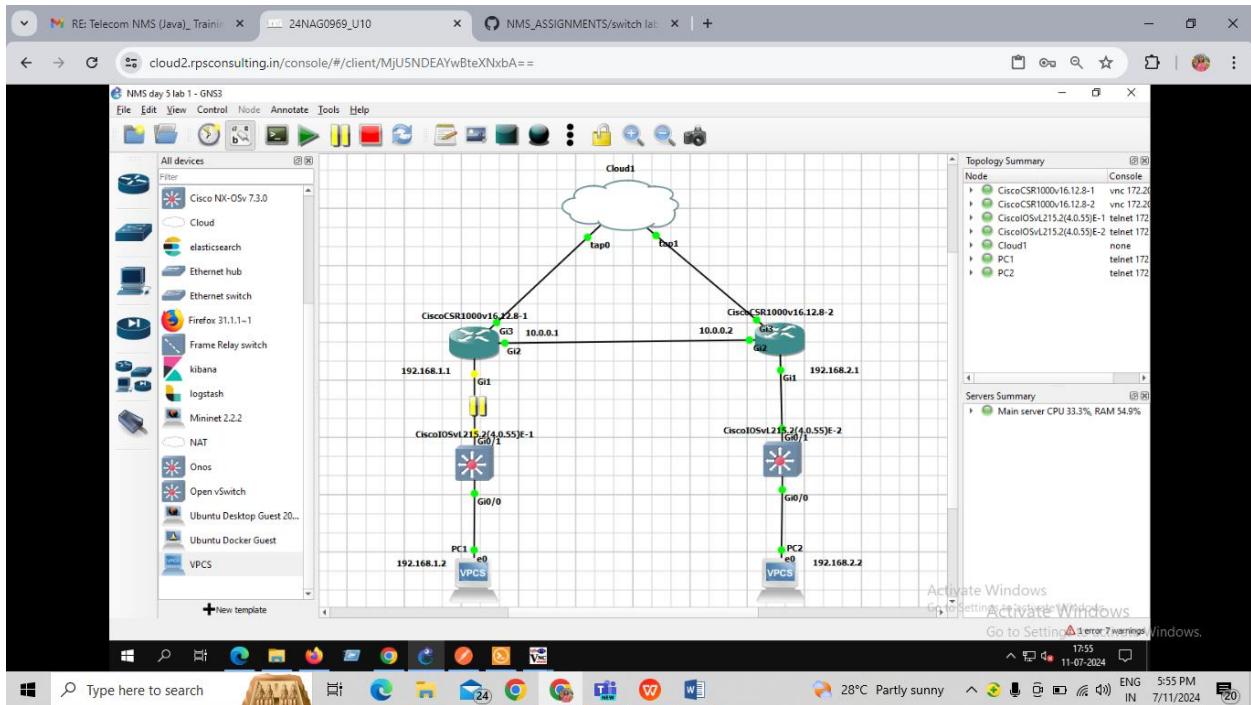
3 alarms [Reset](#) [Select All](#) [Acknowledge Alarms](#) [Go](#)

Results 1-3 of 3, Show: 20 Items

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Activate Windows
Go to Settings to activate Windows.
Activate Windows
Go to Settings to activate Windows.
Activate Windows
Go to Settings to activate Windows.

Generate Trap by suspending link between router and SW



The screenshot shows the OpenNMS Horizon web interface with the following details:

- Header**: Shows the URL <http://172.20.0.11:8980/opennms/alarm/list.htm> and the date/time 2024-07-11T17:57:08+05:30.
- Search Bar**: Includes a search input and navigation links for Search, Info, Status, Reports, Dashboards, Maps, Help, and admin.
- List View**: Displays a table of alarms:

Ack	ID	Situation	Severity	Node	Count	Last	Log Msg
	93	Minor	Minor	172.20.0.112	1	2024-07-11T17:55:44+05:30	Agent Interface Down (linkDown Trap)
	92	Normal	Normal	172.20.0.112	1	2024-07-11T17:55:43+05:30	ospfInterfaceSa trap received ospfRouterId=192.168.1.1 ospfLsbAreaId=0.0.0.1 ospfLsbType=1 ospfLsbLsid=192.168.1.1 ospfLsbRouterId=192.168.1.1
	91	Warning	Warning	172.20.0.112	1	2024-07-11T17:55:43+05:30	ospfStateChange trap received ospfRouterId=192.168.1.1 ospfIfpAddress=192.168.1.1 ospfAddressLessIf=0 ospfIfState=1
	90	Normal	Normal	172.20.0.112	1	2024-07-11T17:55:43+05:30	ospfStateChange trap received ospfRouterId=192.168.1.1 ospfIfpAddress=192.168.1.1 ospfAddressLessIf=0 ospfIfState=7
	86	Cleared	Cleared	172.20.0.112	1	2024-07-11T17:53:34+05:30	Node 172.20.0.112 is up.
- Footer**: Shows system status including CPU (33.3%), RAM (54.9%), and network connectivity.

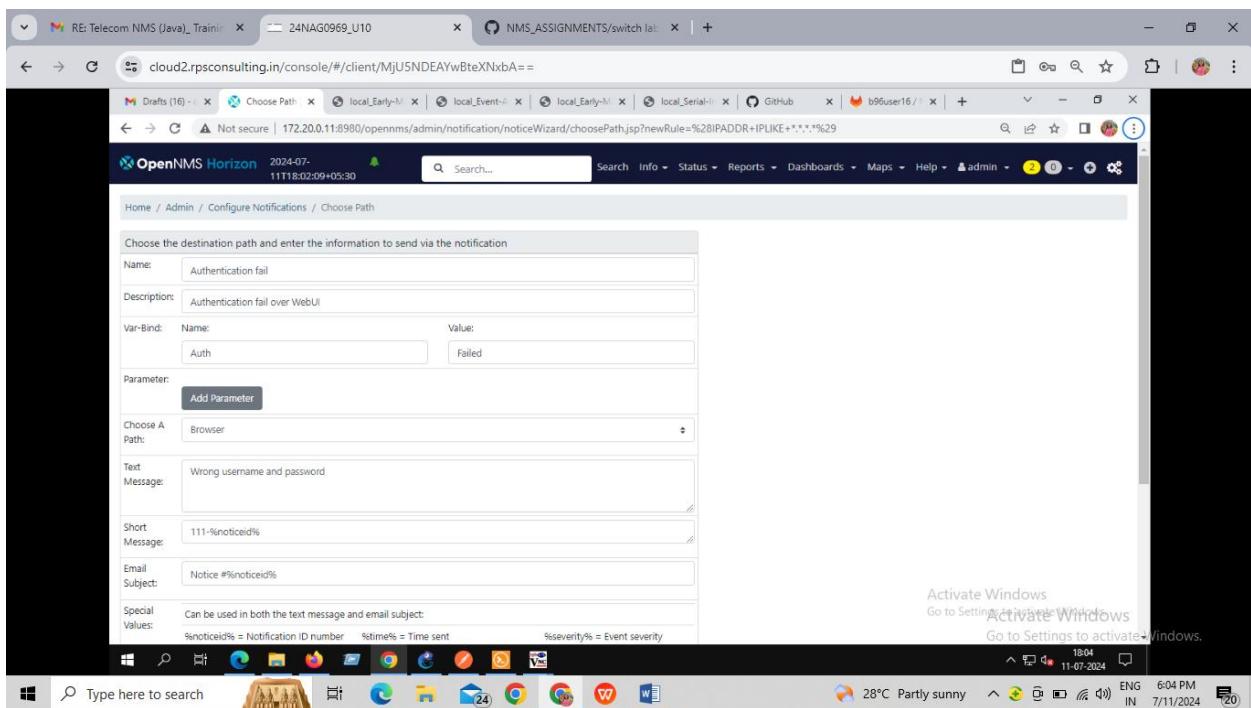
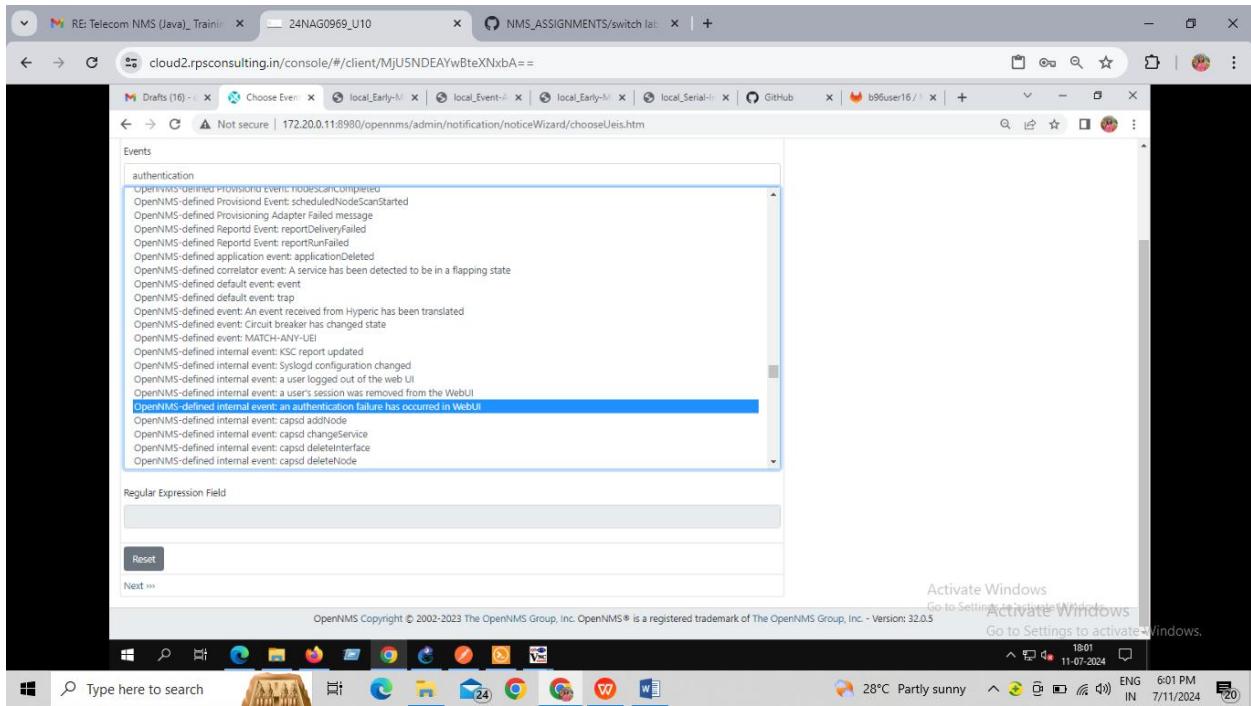
Recover the Fault

Configure Notification - Event notification to be generated when some one try accessing OpenNMS with incorrect credentials on WebUI

The screenshot shows the OpenNMS Horizon WebUI interface. The URL in the address bar is `172.20.0.11:8980/opennms/admin/notification/index.jsp`. The main content area displays sections for 'Event Notifications', 'Destination Paths', and 'Path Outages'. A sidebar on the left lists 'Configure Notifications', 'Configure Event Notifications', 'Configure Destination Paths', and 'Configure Path Outages'. At the bottom of the page, there is a copyright notice: 'OpenNMS Copyright © 2002-2023 The OpenNMS Group, Inc. OpenNMS® is a registered trademark of The OpenNMS Group, Inc. - Version: 32.0.5'. The Windows taskbar at the bottom shows various pinned icons and the system tray.

The screenshot shows the 'Event Notifications' configuration page within the OpenNMS Horizon WebUI. The URL in the address bar is `172.20.0.11:8980/opennms/admin/notification/noticeWizard/eventNotices.htm`. The page lists various event notifications with columns for 'Actions', 'Notification', 'Event', and 'UEI'. Each row includes 'Edit' and 'Delete' buttons. The events listed include 'High Threshold', 'High Threshold Rearmed', 'Low Threshold', 'Low Threshold Rearmed', 'interfaceDeleted', 'interfaceDown', 'nodeAdded', 'nodeDown', and 'nodeLostService'. The Windows taskbar at the bottom shows various pinned icons and the system tray.

Event Notifications			
Actions	Notification	Event	UEI
Edit Delete	Off <input checked="" type="radio"/> On	High Threshold	OpenNMS-defined threshold event: highThresholdExceeded uei.opennms.org/threshold/highThresholdExceeded
Edit Delete	Off <input checked="" type="radio"/> On	High Threshold Rearmed	OpenNMS-defined threshold event: highThresholdRearmed uei.opennms.org/threshold/highThresholdRearmed
Edit Delete	Off <input checked="" type="radio"/> On	Low Threshold	OpenNMS-defined threshold event: lowThresholdExceeded uei.opennms.org/threshold/lowThresholdExceeded
Edit Delete	Off <input checked="" type="radio"/> On	Low Threshold Rearmed	OpenNMS-defined threshold event: lowThresholdRearmed uei.opennms.org/threshold/lowThresholdRearmed
Edit Delete	Off <input checked="" type="radio"/> On	interfaceDeleted	OpenNMS-defined node event: interfaceDeleted uei.opennms.org/nodes/interfaceDeleted
Edit Delete	Off <input checked="" type="radio"/> On	interfaceDown	OpenNMS-defined node event: interfaceDown uei.opennms.org/nodes/interfaceDown
Edit Delete	Off <input checked="" type="radio"/> On	nodeAdded	OpenNMS-defined node event: nodeAdded uei.opennms.org/nodes/nodeAdded
Edit Delete	Off <input checked="" type="radio"/> On	nodeDown	OpenNMS-defined node event: nodeDown uei.opennms.org/nodes/nodeDown
Edit Delete	Off <input checked="" type="radio"/> On	nodeLostService	OpenNMS-defined node event: nodeLostService uei.opennms.org/nodes/nodeLostService



The screenshot shows the OpenNMS Horizon web interface. The main page displays a table of event notifications:

Action	Notification	Event	UEI
Edit Delete	<input type="radio"/> Off <input checked="" type="radio"/> On	Authentication fail	uei.opennms.org/internal/authentication/failure
Edit Delete	<input type="radio"/> Off <input checked="" type="radio"/> On	High Threshold	uei.opennms.org/threshold/highThresholdExceeded
Edit Delete	<input type="radio"/> Off <input checked="" type="radio"/> On	High Threshold Rarmed	uei.opennms.org/threshold/highThresholdRarmed
Edit Delete	<input type="radio"/> Off <input checked="" type="radio"/> On	Low Threshold	uei.opennms.org/threshold/lowThresholdExceeded
Edit Delete	<input type="radio"/> Off <input checked="" type="radio"/> On	Low Threshold Rarmed	uei.opennms.org/threshold/lowThresholdRarmed
Edit Delete	<input type="radio"/> Off <input checked="" type="radio"/> On	interfaceDeleted	uei.opennms.org/nodes/interfaceDeleted
Edit Delete	<input type="radio"/> Off <input checked="" type="radio"/> On	interfaceDown	uei.opennms.org/nodes/interfaceDown
Edit Delete	<input type="radio"/> Off <input checked="" type="radio"/> On	nodeAdded	uei.opennms.org/nodes/nodeAdded
Edit Delete	<input type="radio"/> Off <input checked="" type="radio"/> On	nodeDown	uei.opennms.org/nodes/nodeDown
Edit Delete	<input type="radio"/> Off <input checked="" type="radio"/> On	nodeLostService	uei.opennms.org/nodes/nodeLostService

A modal dialog at the bottom left shows the 'Notification Status' with the 'On' radio button selected and an 'Update' button.

Try accessing Open NMS WebUI with incorrect username/password and event would be generated.

Go to Status → Events → all events

ID	Severity	Time	Source Location	System-ID	Node	Node Location	Interface	Service	Alarm ID
563	Minor	2024-07-11T17:55:44+05:30	Default	201b71ed-8a7c-4f6c-a5e3-d00f51cd56a2	172.20.0.112	Default	172.20.0.112		93

Details for the event:
 uei.opennms.org/translator/traps/SNMP_Link_Down
 Edit notifications for event
 Agent Interface Down (linkDown Trap)