

A project report on

Network Operations Admin

Submitted in partial fulfillment of the requirement

For the award of the degree

MASTER OF COMPUTER APPLICATIONS

Of



Visvesvaraya Technological University
Belgaum, Karnataka

By

ASTHA SINGH

1CR17MCA03



CMR INSTITUTE OF TECHNOLOGY

132, IT Park Road, Kundalahalli, Bangalore-560037

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Under the guidance of

Internal Guide

Ms. Gomathi T,
Asst.Prof & HOD
Department of MCA,
CMRIT,Bangalore

External Guide

Mr. Chandan YN Reddy
Project Manager,
Koch Industries
Bangalore.



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132, IT Park Road, Kundalahalli, Bangalore-560037

2019-2020

CMR INSTITUTE OF TECHNOLOGY



**Department of Master of Computer Applications,
Bangalore-560037**

CERTIFICATE

This is to certify that the project work entitled

Network Operations Admin

Submitted in partial fulfillment of the requirement

for the award of the degree of

Master of Computer Applications of the

Visvesvaraya Technological University, Belgaum, Karnataka

bonafide work carried out by

ASTHA SINGH

1CR17MCA03

during the academic year 2019-2020.

Signature of the Guide
Ms. Gomathi T
Asst.Prof & HoD, MCA

Signature of the HOD
Ms. Gomathi T
Asst.Prof & HoD, MCA

Signature of the Principal
Dr. Sanjay Jain
PRINCIPAL, CMRIT

External Viva

Name of the Examiners

- 1.
- 2.

Signature with date

DECLARATION

I, **ASTHA SINGH**, Student of 6th semester MCA, **CMR Institute Of Technology**, Bangalore, bearing USN **1CR17MCA03** hereby declare that the project entitled “**NETWORK OPERATIONS ADMIN**” has been carried out by me under the supervision of external guide **Mr. Chandan YN Reddy**, Project Manager and internal guide **Ms. Gomathi T, Dept. of Master of Computer Applications, CMR institute of technology**, and this project work is submitted in the partial of the needed things for the award of the degree of Master of Computer Applications. The results included in this project have not been submitted to any other University or Institute for the award of any degree or diploma.

Place: **Bangalore**

Date:

ASTHA SINGH

(1CR17MCA03)

ACKNOWLEDGEMENT

I would like to thank all those who are involved in this endeavor for their kind cooperation for its successful completion. At the outset, I wish to express my sincere gratitude to all those people who have helped me to complete this project in an efficient manner.

I would like to thank Mr. Chandan YN Reddy, Project Manager and Koch Industries Inc. Bangalore, who gave opportunity to do this project at an extreme organization, and to my Internal Project guide Ms. Gomathi T, Department of MCA, CMRIT, Bangalore without whose help and support throughout this project would not have been this success.

I am thankful to Dr. SANJAY JAIN, Principal, CMRIT, and Bangalore for his kind support in all respect during my study. Most of all and more than ever, I would like to thanks my family members for their warmness, support, encouragement, kindness and patience. I am really thankful to all my friends who always advised and motivated me throughout the course.

ASTHA SINGH

1CR17MCA03



KOCH BUSINESS SOLUTIONS INDIA PRIVATE LIMITED

Date: July 1st, 2020

INTERNSHIP COMPLETION CERTIFICATE

WHOMSOEVER IT MAY CONCERN

This is to certify that Ms. Astha Singh has successfully completed her internship with us from 16th January 2020 till 30th June 2020.

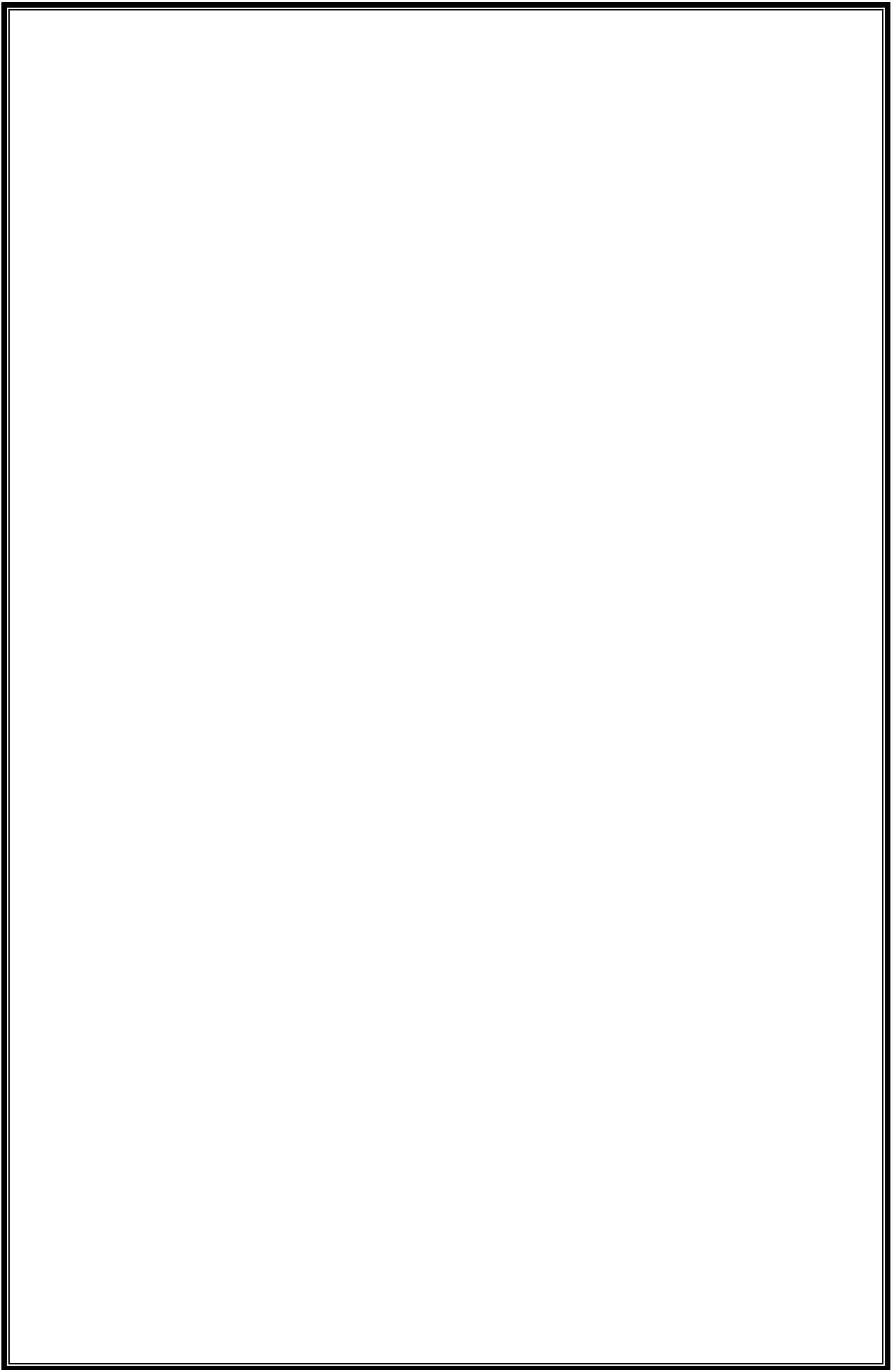
Her conduct during the Internship period was found to be satisfactory.

Sincerely,
For Koch Business Solutions India Pvt Ltd.

A handwritten signature in blue ink, appearing to read 'MS' with a flourish.

Manish Sinha
HR Leader

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CHAPTER 1

INTRODUCTION

1.1 ABSTRACT

Network helps many corporate companies for running the industries software they are using. The companies uses the large amount of the consolidated and integrated modules which is getting managed by all organization managing internally. Enterprise resources planning systems are running on the networks. There are many systems using this like finance ,HR,sales and distribution,engineering,order and procurement management,delivery teams and all the othes departments are using the network to run the business in the flow. These models works separately for managing the information and transferring it. There are several companies that essentially checks different sorts of the data transfer mechanisms like LAN and WAN and these two are considered as the most popular networking applications which is used as the intranet and VPNs.

Companies using LANs so that they can use less costly link computers so there will be no use of the terminal connecting to the mainframe systems. The LANs are mostly used in the small businesses and enterprises like for official automation, kb's management and all the other things like that. With the help of LAN many companies are cutting the staff members and they uses it for the streamlining any operations, and almost all the time reducing the processing cost as well. They can be wired connections or can be wireless connections.

- **Monitoring and Reporting**

There are several roles and responsibilities in the monitoring and reporting of the networks. The appropriate standards are measured for the monitoring, this can apparently be the option and opinion to the leadership which has the Infrastructure Manager. The Manager should have the monitoring system on site and should produce the reports on the basis of the infrastructure. The manager's responsibility is to communicate accordingly about the work that the team is doing in an appropriate manner and the value his team is creating to the business and how the business is becoming successful with their work and support. If Manager considers all these things it has the visibility to the team, the work happening behind the scenes.

- **Infrastructure Software**

There is one responsibility those are continuously monitored which ensures us that there are proper tools which is being used and managed properly to manage infrastructure. The cost is not the sole consideration for the Infrastructure Managers so the cloud solutions can be considered. Cloud solutions can be very great and agile to the infrastructure and give permission to the response to the business sooner. The cloud is the booming technology and should be considered by the infrastructure as it eases the works of the infra team and helps improvising the tools and the skills of the teammates and benefits the organizations. The very basic of this is to use of the proper tool and the people using it efficiently for the infrastructure management.

1.2 PROJECT DESCRIPTION

Our project mainly focused on Network operations. The very first task assigned was to directly communicate with the customer which is also known as DCC. Then have to trouble shoot the issues related to LAN, WAN and Wireless.

The NOC administrators are always in the proactive work of the organization. Which includes the following:

- Network monitoring process.
- Network testing for issues.
- Closely monitor for the updates.
- Uses the mails and the other filters.
- Implementation evaluation.

The project responsible for making sure that hardware and network infrastructure associated with an industries data network are effectively maintained network. There are many systems using this like finance ,HR,sales and distribution,engineering,order and procurement management,delivery teams and all the othes departments are using the network to run the business in the flow. Thse models works separately for managing the information and transferring it.

Network Operations Admin offers limitations to maintain the Network globally.

This results in the following benefits

- Access pliability.
- Cost cutting on software.
- Make use of Centrized DB.
- Secures the confidential informations.
- Maintains the performance.

These module working separately to mechanize the information transferring on the other critical information.

Main Modules

1. Process followed for troubleshooting WAN issues:-

- When the WAN devices are facing any issues, it notifies the Logic Monitor with an alert depending upon the criticality of the issue, it is differentiated into three types i.e., yellow, orange and red.
- Where yellow alerts are just the warning alerts, which means there is nothing to worry about it .It may have occurred because of small flap of the devices or may be the power issues. So for this no need to take any actions, but still have to investigate the the purpose of the alerts.

- When the orange alert is occurring means there is something wrong with the device and the complete circuit is not down but the it might be having the intermittent packet loss and the data is not received as they are sent.
- So for this case if the ticket comes we have to send the direct communication to the customer to inform them that this issue persists at your site .we use several commands to investigate the issue and do the troubleshooting.
- When the red alert occurs this alert on Logic Monitor means that is very critical and need to be acknowledged as soon as possible.
- For wan issue there are several things we need to notice i.e., first check if the entire site is down or any one of the link is down.
- If the entire site is down is very critical issue .When the complete site down means that all the circuits to the site is down which consists the MPLS, Public internet and the biz internet.
- So for that we need to send the immediate communication to the customer to notify that we are aware of the alert and ask them to check the power status and the cabling of the device.
- After communicating to the customer our next step to engage the Internet service providers (ISP), we are engaging them to check if the issue is from there end.
- Sometimes the ISP performs some maintenance so the alert comes ,sometimes there are are fibre cuts, and all so ISP needs to check all these details and we follow up with them and continuously gives the update every four hour to the customer.
- After checking the alert in LM we need to open the INC ticket in the service now tool to check the issues for which we are getting alerts.

- Then go to powerBI to check the site details like whether the site is 24*7 or not if yes means needs to addressed immediately.
- Then check circuits info sections to confirm how many circuits a particular site has so that we can understand whether it has the backup or not.
- Then check the circuit IDs or the account number to raise the ticket with the ISP for troubleshooting.
- If the complete site is down we can not login to the device but id the one is down and the other is up we can login to that and check the status of that down link.

2.Process followed for troubleshooting LAN issues:-

- When a Lan devices like switches are down we will be getting the alert in the logic monitor for the device.
- For lan devices the we first need to check with the site contact or the customer that the device has the power and the cabling to the device is proper.
- If the power and cable is proper we need to power cycle the device for next step.
- Most of the time what happens is the power supply issues persists and the device goes down.
 - So first thing notify the customer and ask them to do so .
 - If you sees the device is down for a log time ,then we need to confirm that the device decommissioning.

3.Process followed for troubleshooting Wireless issues:-

- When the ticket generates for the wireless issues the first thing we have to do is to check the association of the AP.
- For checking the wireless access points association with WLC we need to login to the Cisco prime.
- In the cisco prime if the AP is associated with the WLC then check the CDP neighbor of the AP.
- Once the CDP neighbor switch is found take the IP address of the switch and login to the switch.
- After login to the switch, run the commands to check the ports it is connected on.
- If the port shows the status as down then communicate with customer to check the AP connection physically.
- The cisco prime will be having all the cisco devices information but the cisco meraki information's will not be there for that we have to follow some different tool.

1.3 COMPANY PROFILE

Koch Industries provides the combined services of a Global Network Center (NIS), Network planning and optimization and IT integration for a holistic approach to customer-centric operations.

Network operation centers are implemented by many of the different private businesses and the public sectors. The more the networking is complex the more it needs the high availability. NOC people are responsible for the monitoring and reporting process which requires the attention which helps avoiding the performance degradation in the system and the services. The appropriate standards are measured for the monitoring, this can apparently be the option and opinion to the leadership which has the Infrastructure Manager. NOC may be operating from one organizations, they either manages the several networks of one site availability or many sites having many different unavailable or degraded performance.

Koch business many different kind of subsidiaries business and each and every business has their own data centers and the research and development sectors .But if it considers as the koch's business Research and development it has total of the three main data centers in the Wichita, Atlanta and in the Lisle. All the networking of the Koch is connected through all these data centers.

Network Operation Team

The network operations include:

- NOC
- Network Architecture
- Network Engineering
- Network Delivery
- Network Services

CHAPTER 2

LITERATURE SURVEY

2.1 EXISTING SYSTEM:

We observed previous section that the network monitoring systems are used to monitor the network. The observation was not exact but it give the clear picture of how the networking system operates and what are their strengths and what are there weeknesses. There are many tools and library that are user by these systems to get the functionality that they are having and delivering to it's customers and users. In the existing system part we are specifying the problems with the systems which is unsuited to the network monitoring purposes. By seeing these problems we can have a reasonable work to do and can deploy several network monitoring systems which has there own strength and weeknesses and their own features which provides full network coverage for managing and monitoring.

2.2 PROPOSED SYSTEM:

Initially the existing monitoring tools or the systems were used and that has no common purpose and the blue print of the monitoring tools exists which can fulfill all the requirements and important works. So for because of this reason the new technologies

and methodologies and needed to develop a blue print of the new and more efficient network monitoring tool keeping the systems behavior and the network administration in mind. This project has the goal and aim to make a system which can be called as the monitoring tool which is simple and dynamic and not static which has the configured models. There are many decisions has made by considering this in mind.

2.3 FEASIBILITY STUDY

The feasibility study defines estimate that the identified user requirements can be met by using current software and hardware requirements. It is kept in mind that the proposed system will be effective from considering the business perspective and will also examine whether it can develop within a budget constraint. The main purpose of the feasibility study is to decide whether to proceed with a more detailed analysis.

There are some objectives of feasibility study

- To examine whether the software will meet administrative requests.
- To check whether the software can be done using existing technology and in any particular budget and schedule.
- To check whether the software can be combined with other legacy software.

There are three types of Feasibilities for any project

- **Economic Feasibility**
- **Technical Feasibility**
- **Operational Feasibility**

1. Economic Feasibility

Economic feasibility determines operational costs which are acceptable, that is, to check whether it is possible to complete the project within the planned budget. Due to the use of open software available in the market, most of the time is completed within the project budget.

2. Technical Feasibility

It is used to define the technical and Configuration requirements for the project i.e., all the tools and technologies needed to develop a project should be made available within a specified budget. It goes hand in hand with other types of behavior.

3. Operational Feasibility

Operational Feasibility refers to the effectiveness of the project after it has been developed. It basically defines whether it solves the problem and also provides insight into the opportunities identified during the scope reinitialize on and the way.

2.3 TOOLS AND TECHNOLOGIES

1. Logic Monitor:

- It is a cloud based monitoring tool. LM is used to monitor our all the network.
- It generates the alerts when the network of any device is down whether it is Viptela devices, switches, AP's, WAN Routers etc.
- Logic monitor monitors the overall networks out company have across the globe from one platform, so that it can be managed easily, without any tool sprawl.
- We can adjust the number of widgets as many as we want according to our need and convenience.

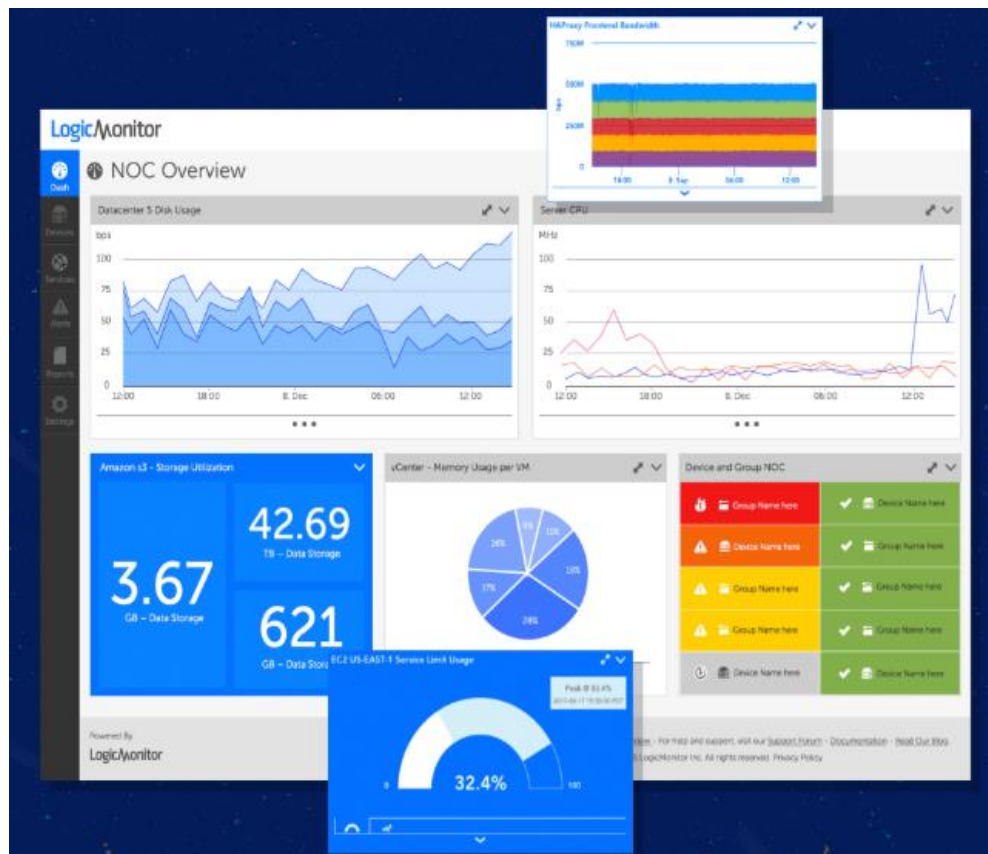


Figure 1: Logic Monitor

2. Service Now

- Service Now is used to work on the tickets and also known as the ticketing tool. It is used to maintain the technologies and the service management tasks.
- It provides all the services which is centralized and many different services sample on the individual's request for providing the information and the process the system is using.
- It allows service providers within the firm to process, manage, report and book efforts on requests pertaining to:
 1. Services
 2. Incident Tickets
 3. Problem Tickets
 4. Change Tickets
 5. Knowledge and
 6. Task Tickets

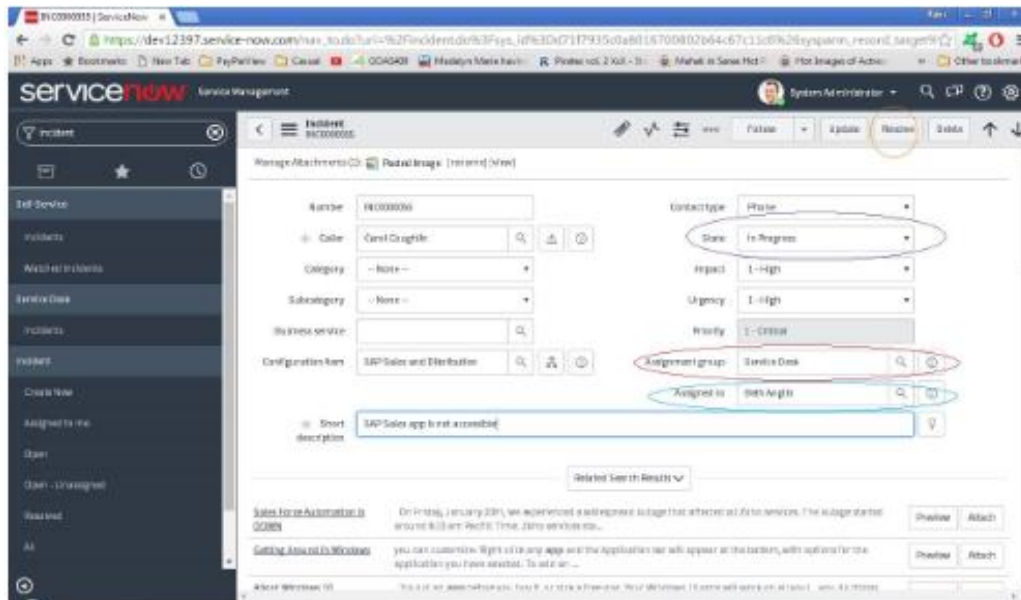


Figure 2: Service Now

3.PowerBI:

- PowerBI collects data from different sources to make interactive dashboards and reports which provides actionable insights and drive business results.
- This tool is used by business users to consume data and build BI reports.
- With the help of PowerBI the inventory can be easily accessed.
- This gives all the information about the particular sites like the location , the circuit information a site is having,the on call contact person and the site contacts details .
- These details helps to communicate with customer effectivelyand have the clear knowledge of the issue ,so that we can approach the problem in an effective way and resolve it asap.

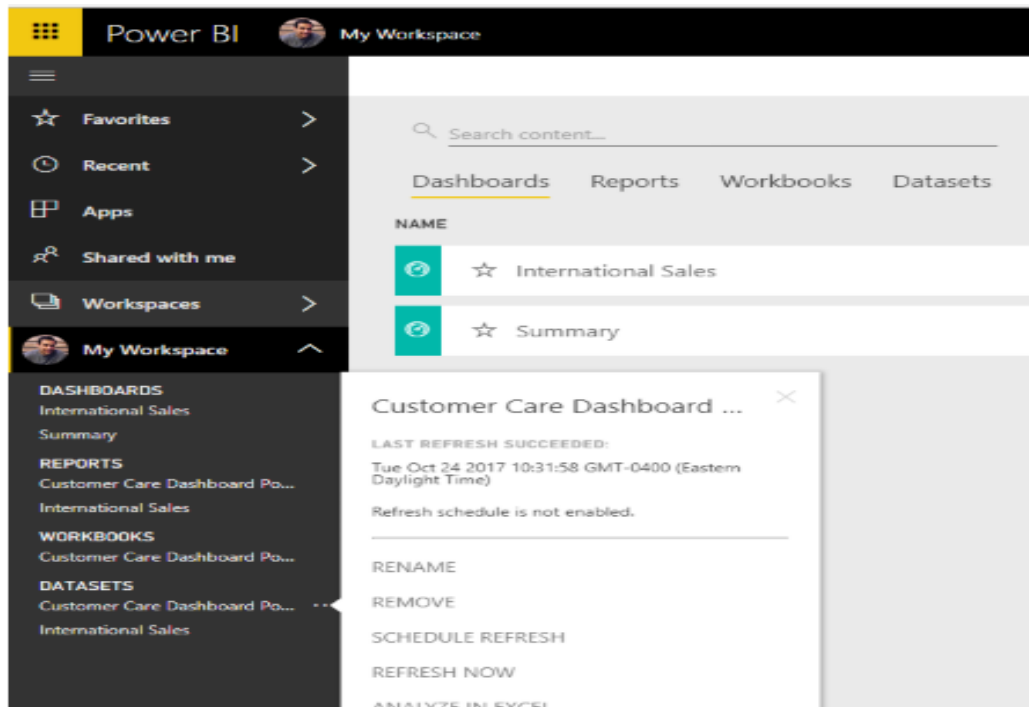


Figure 3: PowerBI

4. Cisco Prime:

- In the Cisco Prime we check the wireless network devices and perform other basic tasks related to the wireless databases:
 - ❖ Monitoring the Controllers (WLCs).
 - ❖ Monitoring Access Points details.
- In the Cisco Prime we find the details of the particular wireless device.
- Access point details like whether it is associated with WLC or not.
- If associated with it then need to communicate with contact person to check the physical status and the power at the site.
- We check the CDP neighbours of the particular AP and log in to it for checking the device status and the port with which it is connected.
- We log in to neighbour switches to check the association of the AP, because each particular AP must be connected with the switch.

The screenshot displays the Cisco Prime interface for monitoring a client with MAC address 58:ac:78:dc:f5:60. The breadcrumb navigation shows: Monitor / Monitoring Tools / Clients and Users / 58:ac:78:dc:f5:60. The interface includes tabs for Overview, Events, and Location. A diagram under 'Client Attributes Summary' shows a connection between the client (58:ac:78:dc:f5:60) and a switch (wlc-4p-23-32a-sw1.cisco.com). Below this, the 'Client Attributes' section is expanded to show two columns of data: General and Session.

General		Session	
User Name	Unknown	Switch Name	wlc-4p-23-32a-sw1.cisco.com
IP Address	Data Not Available	Switch IP Address	10.41.54.165
MAC Address	58:ac:78:dc:f5:60	Interface	GigabitEthernet2/0/25
Vendor	Unknown	Interface Description	SJC23-32A-AP25
Endpoint Type	Cisco-Access-Point	Wire Speed	1Gbps
Media Type	Wired	VLAN ID	21
Hostname	Data Not Available	VLAN Name	ALPHA-WIRELESS-AP
CDP Device ID	Data Not Available	Status	Associated
Software Version	Data Not Available	On Network	Yes
Model	Data Not Available		
UDI	Data Not Available		

Figure 4: Cisco Prime

5.Putty:

- The PUTTY supports different types of the secured terminals,that gives the user a control on the secured shell encrypting kry protocol.
- PUTTYalso emulate control sequences from emulation , and allows local, remote, or dynamic port forwarding with the help of SSH.
- The network communication layer supports IPv6 protocol. It also can be used with local interface connections.
- Software does not helps session tabs, but many wrappers available to do that.

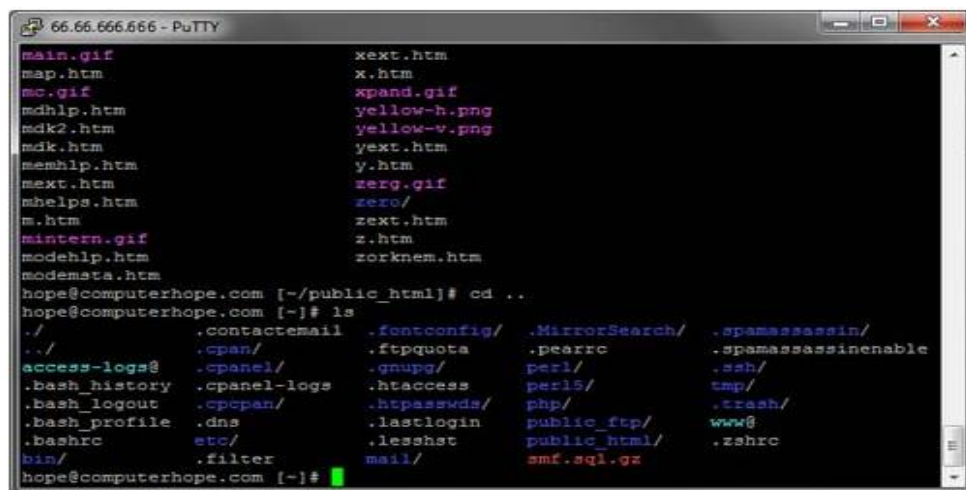
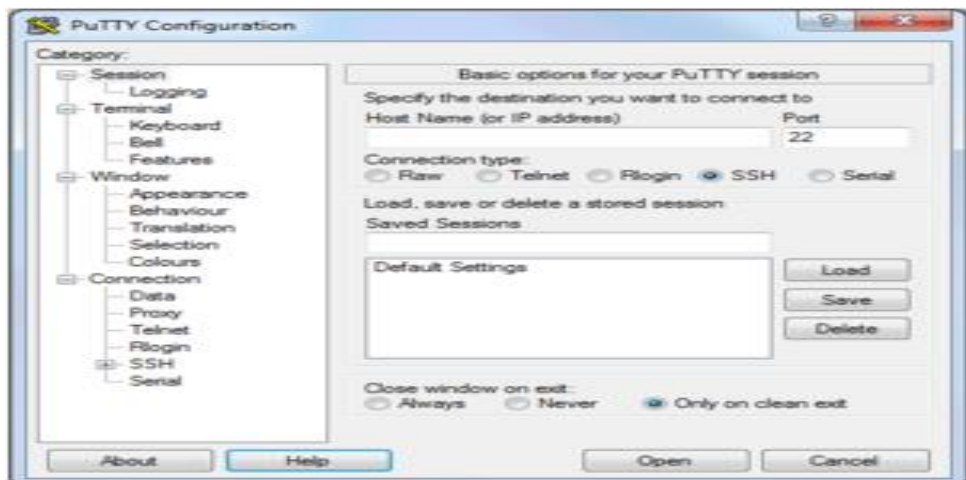


Figure5: PUTTY

2.4 HARDWARE REQUIREMENTS AND SOFTWARE REQUIREMENTS

2.4.1 Hardware Requirements

Hardware type	Specification
Computer processor	Intel Core i5 (equivalent or greater)
Computer Hard disk	100 GB (Recommended)
Computer RAM	8 GB – or greater
Speed	3.20 GHz or higher

2.4.2 Software Requirements

Operating System–OS	Windows 7 and above
Tools	Logic Monitor Service Now Power BI Cisco Putty

CHAPTER 3

SOFTWARE REQUIREMENTS SPECIFICATION

3.1 USERS

- **User /Customer**

Manually trying out isn't accurate at all times because of human error, for this reason it's miles much less reliable. Manual checking out is time-consuming, taking up human assets. Backing is required for human assets. Guide checking out is only realistic while the scenario are run once or twice, and common repetition isn't always required guide checking out allows for human remark, which can be extra useful if the aim is user-friendliness or stepped forward patron revel in and doing manually consumes more time.

3.1 FUNCTIONAL REQUIREMENTS

Functional requirements may be used to specify what the device to do. It relies upon on type of software program that is developed, the quantity of members for the software that is accustomed get entry to taken by way of the control even as writing requirements. It also defines the specific skillfulness to take delivery of by way of the management, it has been taken from the consumer necessities report and characterized that useful requirements may be written at special degrees of element. With reference to the convention, functional requirement specification of a system must be persistent where the primary defines all the offerings required by the person and the latter defines that the requirements must to now not have Conflicts.

- **Business Logic**

A Business requirement commonly relates to what ought to be finished with a view to permit or obtain a business rule. Business requirements additionally relate to reaching enterprise needs or goals, which might not relate to a commercial enterprise rule but are motivated by using these guidelines. To feature detail to commercial enterprise necessities, useful necessities need to be evolved to in reality outline how an enterprise requirement could be addressed or done. Functional requirements provide precise steps to increase and implement a commercial enterprise requirement.

3.2 NON FUNCTIONAL REQUIREMENTS

Nonfunctional requirements are those characteristics or features which is not proportional to the customize approach provided by the system. They are dependent on some of the system properties, however it define condition on the system such as the ability of the IO devices and how the data is represented using system as an interface. These are not always connected with independent system features, however these requirements include the characteristics of the system that are more crucial situation than functional requirements. Declining to fit these requirements can mean that the whole system is ineffective.

Some of the important characteristics of Non Functional Requirements

1. Efficiency

2. Reliability

3. Maintainability

4. Robustness

5. Portability

- **Efficiency**

It should be made sure that the system resources such as memory and processor cycles are not wasted.

- **Reliability**

It specifies what the conditions in which the software would fail are and what are the measures that needs to be carried on to get rid of it. For example, when there are multiple applications running the server would become busy which leads to slow response in this situation though the server is slow the data is not misused.

- **Maintainability**

It specifies the durability of the application. It checks the layout of the module and depicts the changes that has to be done.

- **Portability**

It should be made sure that the moving of the network to a different platform.

The units should be compatible with all the platforms.

CHAPTER 4

SYSTEM DESIGN

4.1 SYSTEM PERSPECTIVE

The network development process can be defined as a collection of phases portraying the various procedures in the development process. System perspective involves the performance and functionalities of the system which would describe the system.

This can be defined as an initial step for identifying the solution from the start of the problem. The design can be defined as an intermediary between the stages of implementation. The output at this stage is a design of the document. In the view of a system one should not consider the system as an isolated entity.

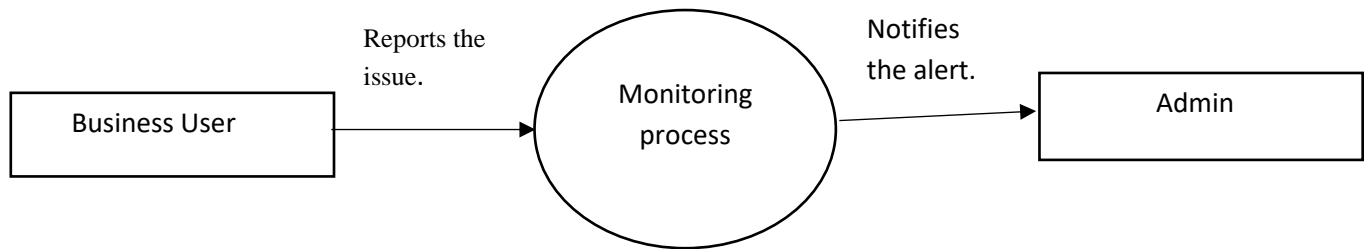
The system perspective defines the functionalities and relationships between the environment and the system. It defines how each module in the system communicates interactively to produce a complete solution to the problem which was identified.

The main goal of SDLC is identifying and upgrading the requirement of a system in to code. Here we basically define how different modules of a system communicate and what the dependencies between each modules of the system.

4.2 CONTEXT DIAGRAM/ DATA FLOW DIAGRAM

Context Diagram can be defined as a high level diagram or which indicates the relationship among the system and its foreign entities. Context diagram is also called as Context.

Level Data Flow Diagram. It gives a graphical visualization of the flow of data, between the system and other external entities. It defines all the different inputs and output of the system and the data storage.



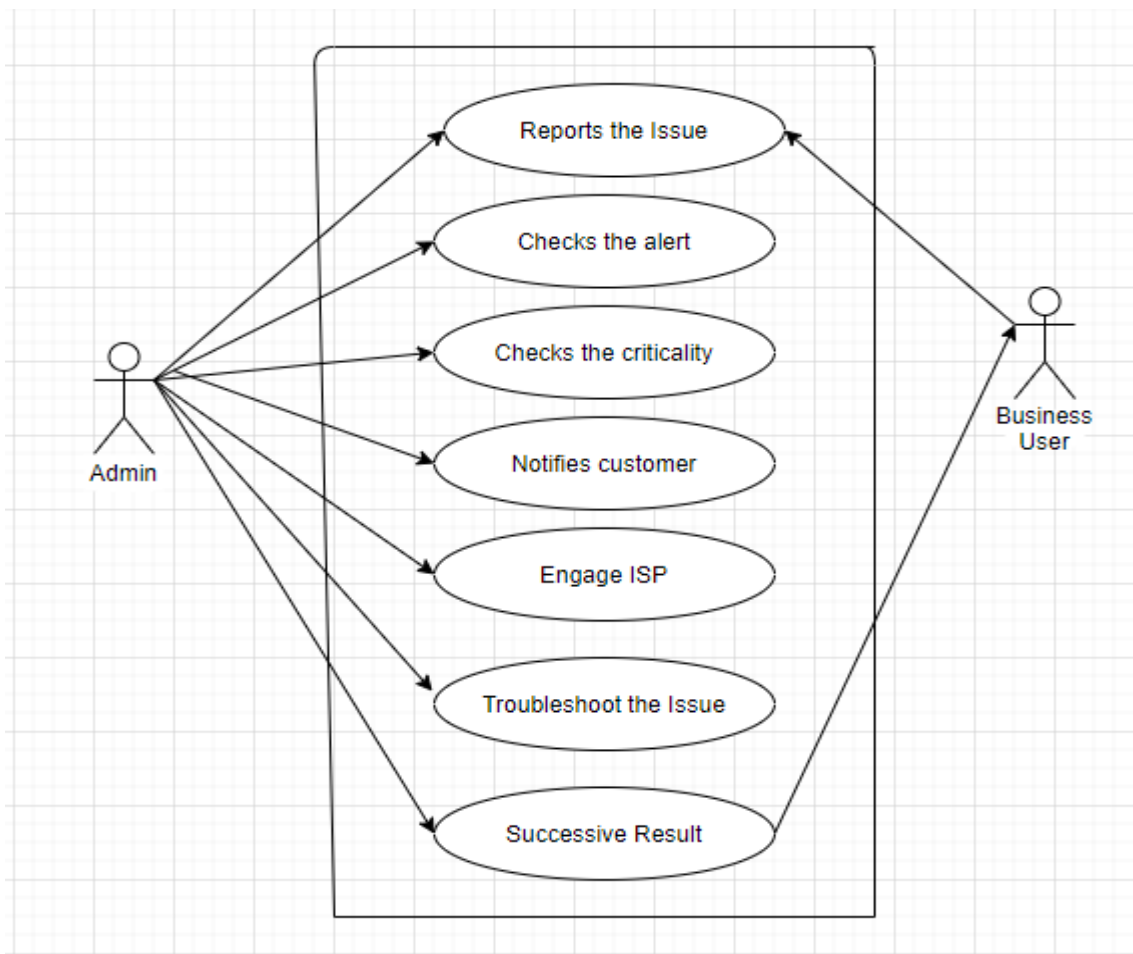
4.2(a) Context diagram for Network Monitoring

CHAPTER 5

DETAILED DESIGN

5.1 USE CASE Diagrams

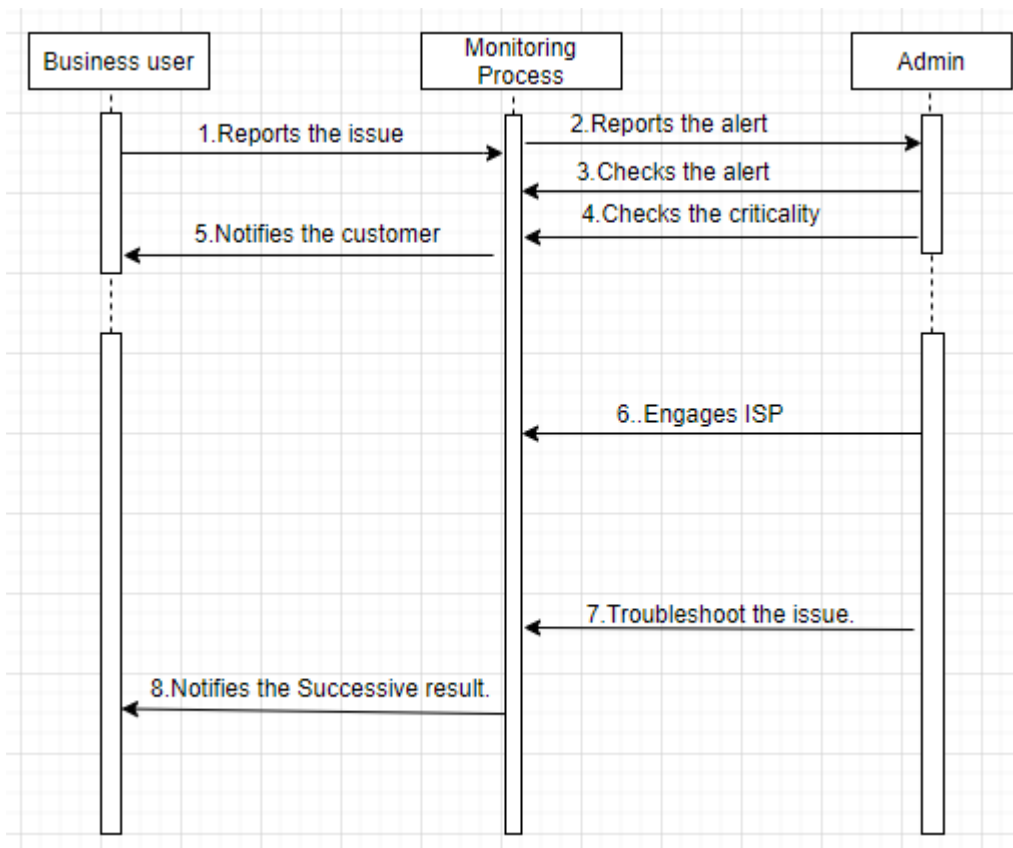
The use case diagram explains relationship among the user and the system. It mentions the use cases where the user is to be involved, they are used to gather requirements of a system. With the help of diagram the requirements of a system are observed and identify.



5.1(a) Use case diagram for Network Monitoring

5.2 Sequence Diagrams

It's far the diagram which represents the flow of interest in a sequential way. The interplay of the objects are being illustrated. The diagram represents the sequential waft of the messages which is being exchanged from one object to the alternative.

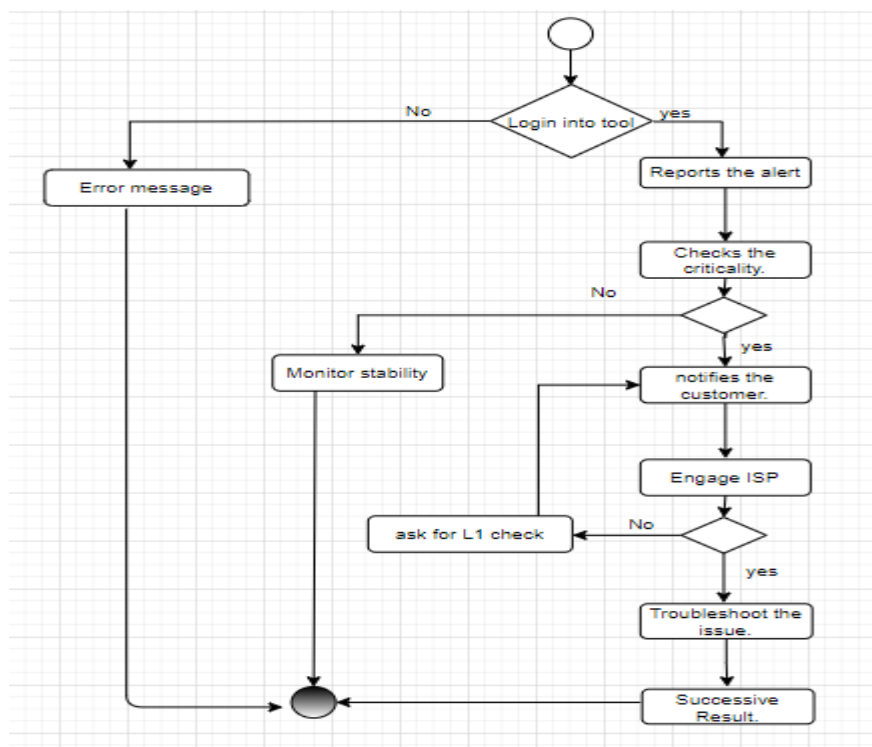


5.3(a) sequence diagram for Network Monitorin

5.4 ACTIVITY DIAGRAMS

Activity diagram may be described as a flowchart which depicts the glide from one pastime to every other pastime. It essentially defines the sequence of steps that's followed to perform an activity.

- Diamond symbol represents the action
- Begin of the manipulate go with the flow is indicated by means of the stable Circle.
- Strong circle inside the whole circle represents the termination of the control Flow.
- Arrow is used as connector among collection of activities.



- **5.3 Activity diagram for Network Monitoring and troubleshooting**

CHAPTER 6

IMPLEMENTATION

Implementation is the phase of network in which all the analysis, planning and designs come together, concluding into a product. The development testing teams sit together alongside the team involved in the analysis phase and write out plans about the implementation process. Client's requirements, deadlines, development model etc. are detailed to the both teams. There are many decisions to be made during this phase, like building components. This is supported by the selection of the right design model for instance the spiral or agile methodology.

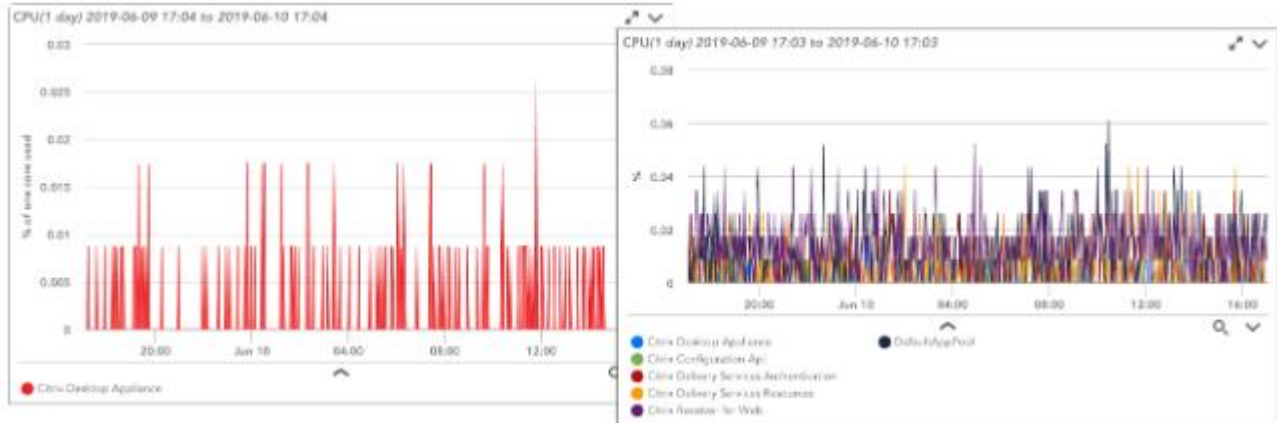
The architecture and requirement documents serve the purpose of project completion of guidelines. It also checks with issues of quality, performance, baseline, libraries, and debugging. In this regard the company's or industry coding standard guidelines are followed as per developer's choice. The final result is the product itself.

The implementation phase includes the following:

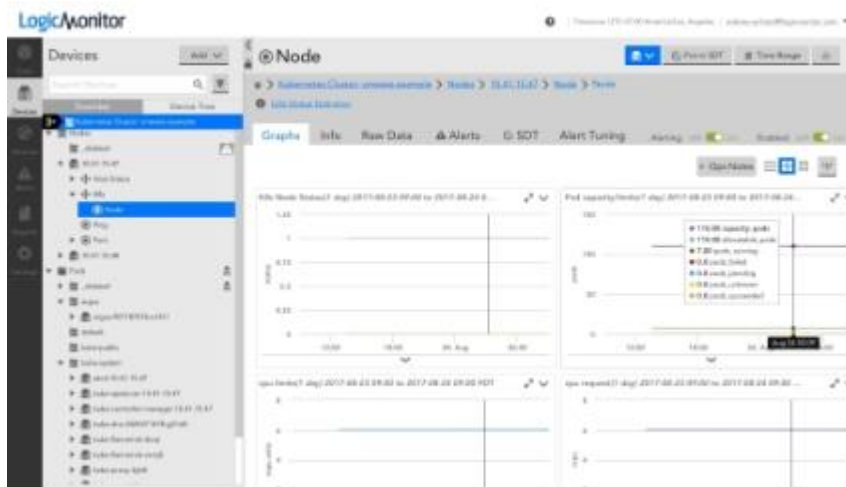
- Appropriate and proper planning
- Examine the system and system's conditions.
- Estimating the method going to use.

6.1 SCREEN SHOTS

1. Issues graph attachment:



Device and Group NOC	
Group Name here	Device Name here
Device Name here	Group Name here
Group Name here	Group Name here
Group Name here	Group Name here
Device Name here	Device Name here



2. Checks details attachments:

Power BI My Workspace > Manage access to Sample Dashboard 20171201

Sample Dashboard ...

Showing 2 recipient(s) Share

RECIPIENTS	EMAIL ADDRESS	CURRENT ACCESS
Reza Rad	Reza@RADACAD.onmicrosoft.com	Owner
Reza Rad	reza@radacad.com	Read ...

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WORKBOOKS

No related content

DATASETS

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sabisu

HDPE (HDPE SANDS) Project KPIs Project Summary Other Features HDPE Project

HDPE (HDPE SANDS)

DELIVERABLES: 12 (18 Lmt)

SCHEDULE: 4 (18 Lmt)

PROCUREMENT: 3 (18 Lmt)

COST: 12 (18 Lmt)

RISKS: 26 (18 Lmt)

ISSUES: 12 (18 Lmt)

DOCUMENTATION: 0

STATUS REPORTING: 0

CAPITAL PROJECTS - SPECIFIC - CHART - EARNED VALUE ANALYSIS FOR PROJECT - HDPE

Earned Value Graph for HDPE

Year	ACWP	BCWP	BCWS
Jul 2012	0	0	0
Oct 2012	5000	5000	5000
Jan 2013	15000	15000	15000
Apr 2013	30000	30000	30000
Jul 2013	45000	45000	45000
Oct 2013	60000	60000	60000

HDPE PROJECT - HDPE (HDPE SANDS) HISTORICAL

ID	NAME	Start	2014	2013	Issues	Risks
1	Project Governance					
1.1	Cost Performance					
1.2	Schedule Performance					
1.3	Whole-Project Costing					
1.3.1	Utilities & Infrastructure					
1.3.2	Structure & Services					
1.3.3	Site Preparation and Roadings					
1.3.4	Concrete & Rebar					
1.3.5	Roofing equipment					
1.3.6	Heat exchangers					
1.3.7	Surge protection					
1.3.8	Installation					
1.4	Issues & Risks					
2	Deliverables					
3	Documentation					
4	Maintenance & Regulatory					

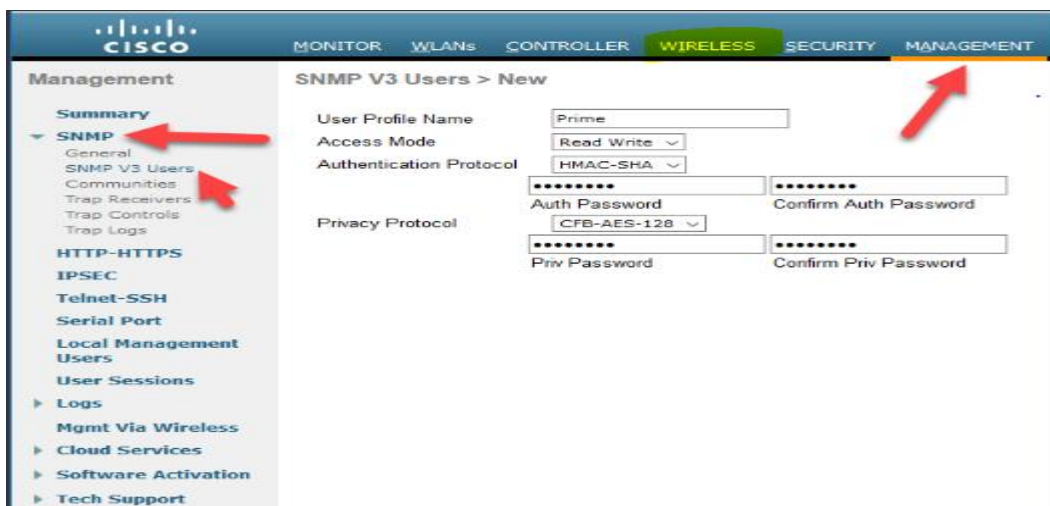
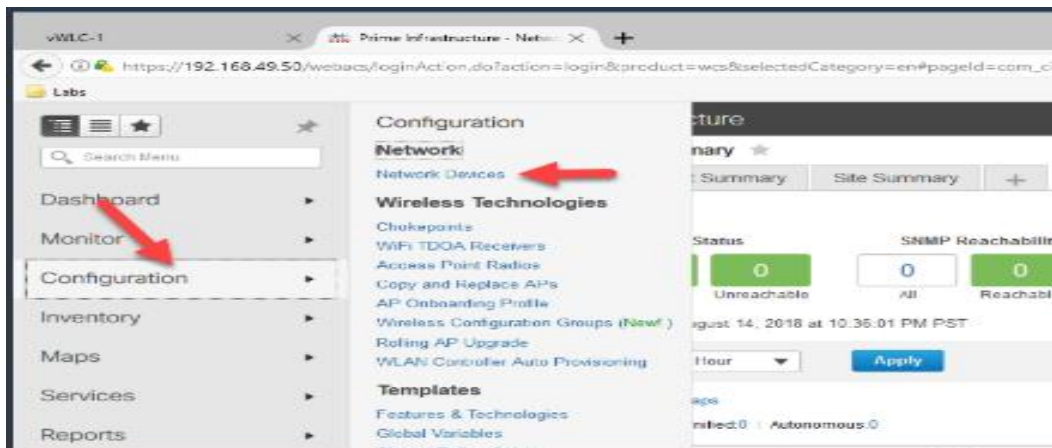
FOR THE CAPITAL PROJECTS - SUMMARY OF HDPE (HDPE SANDS) AND ...

Discipline	Productivity
Process Engineering	0.59
Plant Eng / Ops	0.65
Civil Engineering	0.69
Roofing Equipment	0.67
Basic Equipment	0.7
Electrical Engineering	0.69

FOR THE CAPITAL PROJECTS - HDPE (HDPE SANDS) DISCIPLINE P...

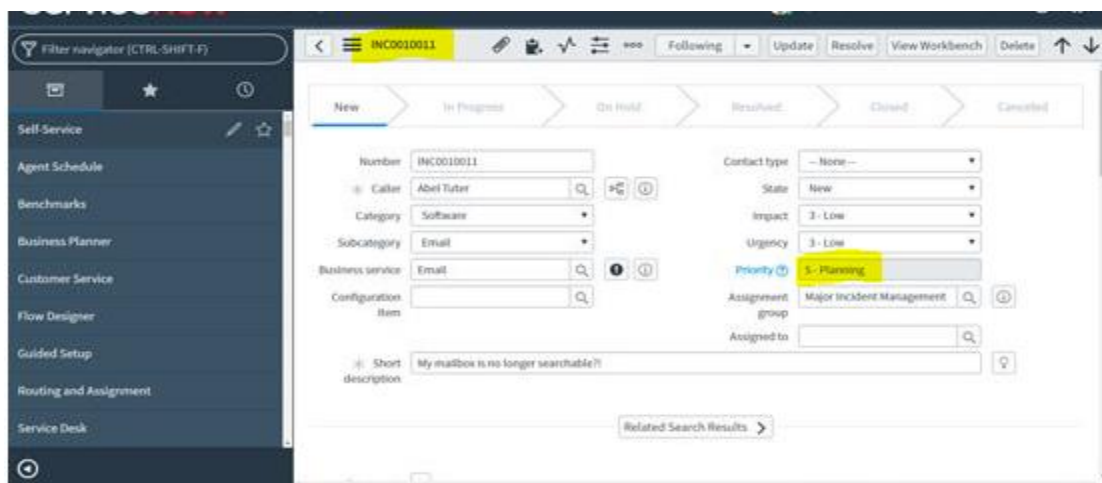
Discipline	Productivity
Productivity (SPR to last cut off)	0.64
Cumulative	1
Cumulative (to Change)	0.9

3. WLC attachment

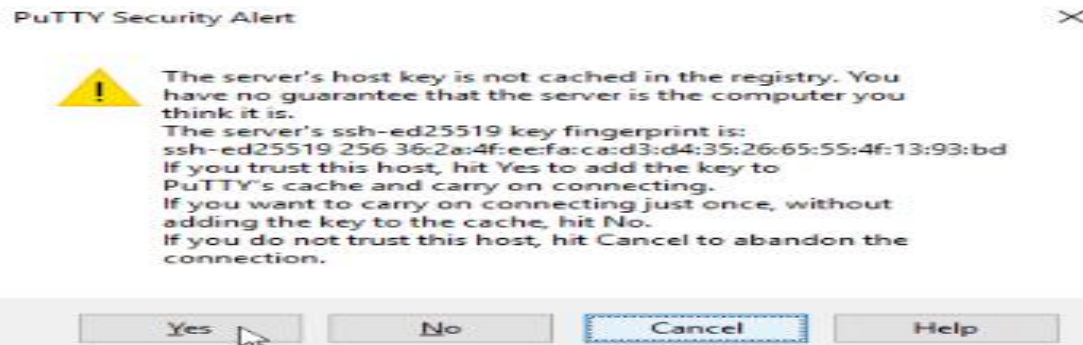
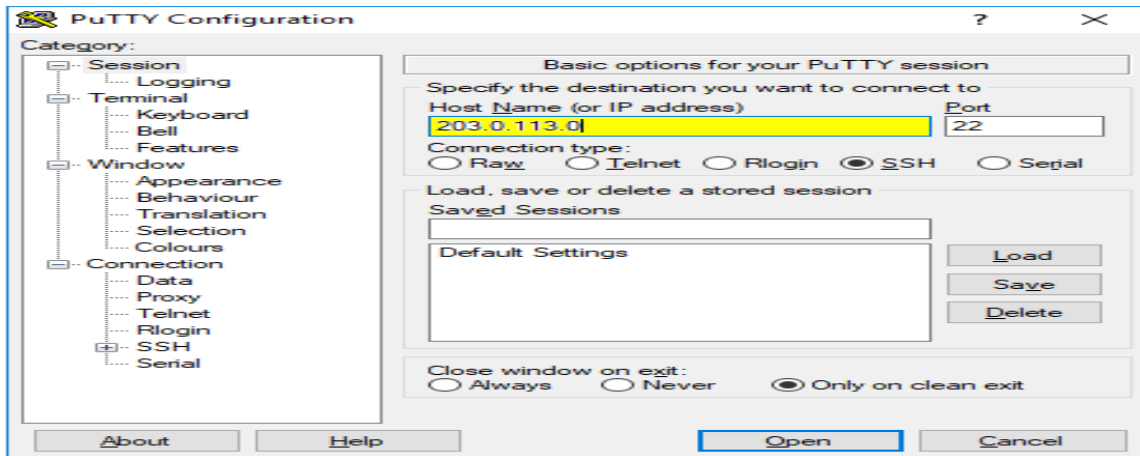


Meraki Access Point	<input type="checkbox"/>	5 D4 4880 E	<input checked="" type="checkbox"/>	MR32-HW	gateway	9
Meraki Access Point	<input type="checkbox"/>	L4 48E0 A	<input checked="" type="checkbox"/>	MR32-HW	gateway	4
Meraki Dashboard	<input type="checkbox"/>	C4 4A30 A	<input checked="" type="checkbox"/>	MR32-HW	gateway	22
Meraki Dashboard	<input type="checkbox"/>	F8 4A80 A	<input checked="" type="checkbox"/>	MR32-HW	gateway	23
Meraki Security Appliance	<input type="checkbox"/>	B6 4B70 A	<input checked="" type="checkbox"/>	MR32-HW	gateway	5
Meraki Security Appliance	<input type="checkbox"/>	Supply Room AP	<input checked="" type="checkbox"/>	MR32-HW	gateway	9
Meraki Switch	<input type="checkbox"/>	C10 4C60 A	<input checked="" type="checkbox"/>	MR32-HW	gateway	15
Meraki Switch	<input type="checkbox"/>	D9 4D60 A	<input checked="" type="checkbox"/>	MR32-HW	gateway	27

4.DCC sending attachment



5. Checking Logs attachment



```
S200-SW1#ping 10.1.30.254
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.1.30.254, timeout is 2 seconds:
..!!!
Success rate is 60 percent (3/5), round-trip min/avg/max = 21/40/65 ms
S200-SW1#trace 10.1.30.254
Type escape sequence to abort.
Tracing the route to 10.1.30.254
VRF info: (vrf in name/id, vrf out name/id)
 0 10.200.10.1 69 msec 6 msec 8 msec
 1 10.1.10.1 22 msec 20 msec 13 msec
 2 10.1.30.254 48 msec * 33 msec
S200-SW1#
```

```
S100-CE1#show ip route vrf 10
Routing Table: 10
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, m - OMP
       n - NAT, Ni - NAT inside, No - NAT outside, Nd - NAT DIA
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       H - NHRP, G - NHRP registered, g - NHRP registration summary
       o - ODR, P - periodic downloaded static route, l - LISP
       a - application route
       + - replicated route, % - next hop override, p - overrides from Pfr

Gateway of last resort is not set

 10.0.0.0/8 is variably subnetted, 12 subnets, 2 masks
m   10.1.10.0/24 [251/0] via 10.1.10.2, 00:13:21
m   10.1.20.0/24 [251/0] via 10.1.10.2, 00:13:21
m   10.1.30.0/24 [251/0] via 10.1.10.2, 00:13:21
C   10.100.10.0/24 is directly connected, GigabitEthernet3.10
L   10.100.10.1/32 is directly connected, GigabitEthernet3.10
C   10.100.20.0/24 is directly connected, GigabitEthernet3.20
L   10.100.20.1/32 is directly connected, GigabitEthernet3.20
C   10.100.30.0/24 is directly connected, GigabitEthernet3.30
L   10.100.30.1/32 is directly connected, GigabitEthernet3.30
m   10.200.10.0/24 [251/0] via 10.200.10.2, 00:13:05
m   10.200.20.0/24 [251/0] via 10.200.10.2, 00:13:05
m   10.200.30.0/24 [251/0] via 10.200.10.2, 00:13:05
S100-CE1#
```

CHAPTER 7

SOFTWARE TESTING

Software testing is elaborated form of checking all types of options that are included within the system and it has to be done before the system is being provided to the users. Testing will be based on targeting the differences in such a way that all the client requirements are properly arranged and fulfilled. All sides of requirements will be associated and it is needed that the concepts should be clear so that each conceptualization can be properly represent his to the clients in the real time working. The software testing will be important to get the acknowledgement of work processes in a variation.

All types of software testing mechanism you will be implied by selecting the right process required and this will be done with the help of proper discretion and variations of working. Proper co-ordination is required such that understanding can be achieved for the processing that has to be acknowledged. Software testing will be also done to have proper primary labelling of the activities which will be even documented for more understanding.

Types of Testing

- **White Box Testing**
- **Black Box Testing**

1. White Box Testing:

It is also called as Glass Box testing. It is the process of checking the internal structures or working of an application as it was expected to perform.

2. Black Box Testing

It is also called as Behavioral Testing. It examines the functionality of the system without interfering the internal structures of the system. This can be applied on different levels of testing to check the correctness of the software it just checks whether the requirements are satisfied without entering the internal structure of the software.

11. TESTING STAGES

The testing stages are:

- 1. Unit Testing**
- 2. User acceptance testing**

12. UNIT TESTING

Unit testing is the test which is carried on to test whether the individual programs are working correctly.

13. USER ACCEPTANCE TESTING

User acceptance testing is the final segment of the software testing process, during UAT, real software users test the software to make sure it could deal with required responsibilities in real-

global eventualities. UAT is one of the final and most crucial software product procedures that must arise earlier than newly advanced software is rolled out to the market. UAT is likewise called beta testing, application testing or end-user testing.

14. TEST PLAN

The test plan describes the testing scope, approach, resources and schedule of intended activity. Among many of test items it identifies the features to be tested, and assigning which will do what task, how independent the tester is, the environment in which the test is going to be done, what are the design techniques that are to be used and entry and exit criteria to be used, and the risks involving contingency planning. In general, it defines the test planning process.

15. Test Data

Testing Data is the one which can used for testing the qualities? Test data is used to perform testing.

16. Test Report

Test Report is wanted to estimate the consequences in a formal way. It's miles a record that records information were given from an assessment strive in a composed manner, depicts the natural or running conditions, and demonstrates the examination of check comes approximately with take a look at targets.

1.7. Test 1: Sign Up / Sign in Test Cases

Test ID	Test Case	Purpose	Output	Result
1	Login into the tool	Login successful	Connect with the devices.	Pass
2	While login into the tool , check for the VPN connection	To check whether the login happens successfully or not	Error Occurred	Pass
3	If the user enters wrong password and wrong user name the Login into the mail doesn't occurs	To login and enter into to tool	Error Occurred: Incorrect Password and Incorrect Username	Pass
4	Data is sent to respective authorized mail for example(Microsoft outlook)	To fetch the data	Error: Expect Company mail id , data won't be sent to other mail , irrespective of (Data Security)	Pass
5	After Logging into the tool, if Page doesn't Load or Re-loads	Device details cannot be find.	Error in Internet Need to be rectified	Pass

Test Case Components	Input	Expected Output	Output	Result
1. Devices connection	i)Page not loaded	Devices should connect and shown on dashboard	Cannot collect the required output	Pass
	ii)Page loaded, once device is connected , The Business User Requirements are Listed	Device is connected.	Start the process.	Pass
2.Checks the issue.	The site code should be entered in right format.	End summary sheet is Created.	The output is generated	Pass
	If Site code miss matches.	Summary sheet will be created with wrng data.	The output which is generated is incorrect	Pass
3.	If File Name Is	The given	The output	Pass

Sitecode is entered into the powerBi	incorrect	Site Doesn't matches	isn't generated	
	Site code Matches	The given site code works successfully	The output is generated	Pass
4. site field entry	i) File field left empty	Does not shows any info.	Cannot get any details of site.	Pass
	ii)site code or location entered.	Shows all the details of the particular site.	Get the details any proceed for next step.	Pass
5. Engage the service providers	Opens the portal for entering the circuit id.	The circuit id correctly verified	Opens the ticket with service provider.	Pass
	If the portal denies the circuit id.	In this condition access fails.	Doesn't opens the ticket with isp.	Pass

6. customer managed.	The site is customer managed then send the mail and ask them to raise the ticket with service provider.	If customer is not available,communicate during business hours.	Generates aSuccessful result	Pass
	The site is customer managed then ask them to do the LL checking.	The connection not proper at physical layer,ask for rebooting.	Doesn't do any Operations.	Pass

TestCase Components	Input	Expected Output	Output	Result
1.Checks the device connection and power.	Invalid device name.	The process stops.	Process failed error throws.	Pass
	Device does not have power.	The process fails.	Process fails and error is thrown to the user	Pass

	If the device has the power and not able to login.	Login process fails and need to check cabling.	Throws the error to the user.	Pass
	If the device has the power and not able to login.	Needs to check with the providers if there is any maintainance or fibre cut issues.	Process Fails and error communication is sent in the form of mails.	Pass
2. Able to login	All okay with the device	Process successfully completed.	Gives successive results.	Pass

CHAPTER 8

CONCLUSION

This project explains about the necessities and the advantages of the networking and the monitoring of the networks. It shows the uses and the advantages of the network monitoring in the corporate organizations and correctly administer it and the maintenance. If the network is not getting monitored the network may be black hold and any error or fault can occur and may be unnoticed for the long period of time unless it is creating the big issue on the network.

This project shows the majority of popular monitoring systems that are used to monitor watch the network with the issues that helps preventing them from the complete testing coverages which is detecting the each and every fault and errors in the network. This project shows the technology used in solving the issues that often occurs can be solved using available technologies those was not available when the systems like these were originally developed.

The new techniques for developing the more better network monitoring systems are devised and investigated. A new replacement tool was build from using new technologies. There are several number of the techniques combined together into a new networking tool to enhance useability and uses of the tool from th corporate perspective from the network monitoring and system administrators.

CHAPTER 9

FUTURE ENHANCEMENT

The most wanted and the major feature a networking tool can have is the event and error notification. If anything occurring unusual on the network apart from the network monitoring standards the system should be prepared for sending and communicating the notification to the user in such a way that the error or the event occurred is being investigated further. Most important is that the system should be that intelligent that it should notify the customer only when it is solvable by the user. There is no meaning sending the communication to the user for the issues which cannot be solved by the user that will be the total no use and the waste of the resources. The systems should be able to consolidate the same type of triggering events and should send only one notification so that user should not be bombarded with the notification messages. This feature will help in improving and enhancing the performances which helps improvising system that are being used. The notification systems may be used to modularize the uses of the particular type of the events and instances and can be on or off according to the priority and use of the system , for instant notification we can develop the instant module which sends emails and messages to the user. The network monitoring can develop the historical data and can have generated the reports on the supported data. For perfectly storing the data the SQL is the best way to do it with RDBMS for storing and keeping any data and the information.

APPENDIX A

BIBLIOGRAPHY

REFERENCE BOOKS:

- Computer networking :Top Down Approach
- Object Oriented Modeling and Design with UML, edition 2, by James Rumbaugh and Michael Blaha.

REFERENCE WEBSITES:

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- <https://www.cisco.com>