

A Project Report On

**RULE BASED BEHAVIORAL STATISTICS
GENERATOR WITH MULTI ENVIRONMENT
SUPPORT**

Submitted in Partial fulfillment of the requirements
for the award of the degree

MASTER OF COMPUTER APPLICATIONS
of



Visvesvaraya Technological University
Belgaum, Karnataka

By

**NIKITHASOWMYA
1CR17MCA15**



CMR INSTITUTE OF TECHNOLOGY
132, IT Park Road, Kundalahalli, Bangalore-560037

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Under the guidance of

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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

**RULE BASED BEHAVIORAL STATISTICS
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*Submitted in partial fulfilment of the requirement
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Master of Computer Applications
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*Visvesvaraya Technological University, Belgaum, Karnataka
is a result of the bonafide work carried out by*

**NIKITHASOWMYA
1CR17MCA15**

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CERTIFICATE

This is to certify that the project titled "Rule based behavioral statistics generator with multi environment support" is submitted to Oxy Logica in fulfillment of the requirement for the final semester degree of MCA from CMRIT, BENGALURU. The project is a bona fide record at work carried out by Miss. NikithaSowmya (1CR17MCA15) under the supervision and guidance of Mr. Chetan MR (Technical Manager) Oxy Logica, Bangalore between the periods from 30th December 2019 to 30th May 2020.

The source code of the Project and executable file setup is not issued to the trainee as per the policy of the company.

Best regards,

A handwritten signature in black ink, appearing to read 'Chetan MR'.

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(For Oxy Logica)

DECLARATION

I, **NIKITHASOWMYA**, student of 6th MCA, **CMR Institute of Technology**, bearing the USN **1CR17MCA15**, hereby declare that the project entitled “**RULE BASED BEHAVIORAL STATISTICS GENERATOR WITH MULTI ENVIRONMENT SUPPORT**” has been carried out by me under the supervision of External Guide **Mr. Chetan MR**, Technical Manager, and Internal Guide **Ms. Uma B Assistant Professor, Dept. of Master of Computer Applications** and submitted in the partial fulfillment of the requirements for the award of the Degree of Master of Computer Applications by the **Visvesvaraya Technological University** during the academic year 2019-2020. The reports has not been submitted to any other University or Institute for the award of any degree or certificate.

Place: Bangalore

Date:

NIKITHASOWMYA

(1CR17MCA15)

ACKNOWLEDGMENT

I would like to thank all those who are involved in this endeavour 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.

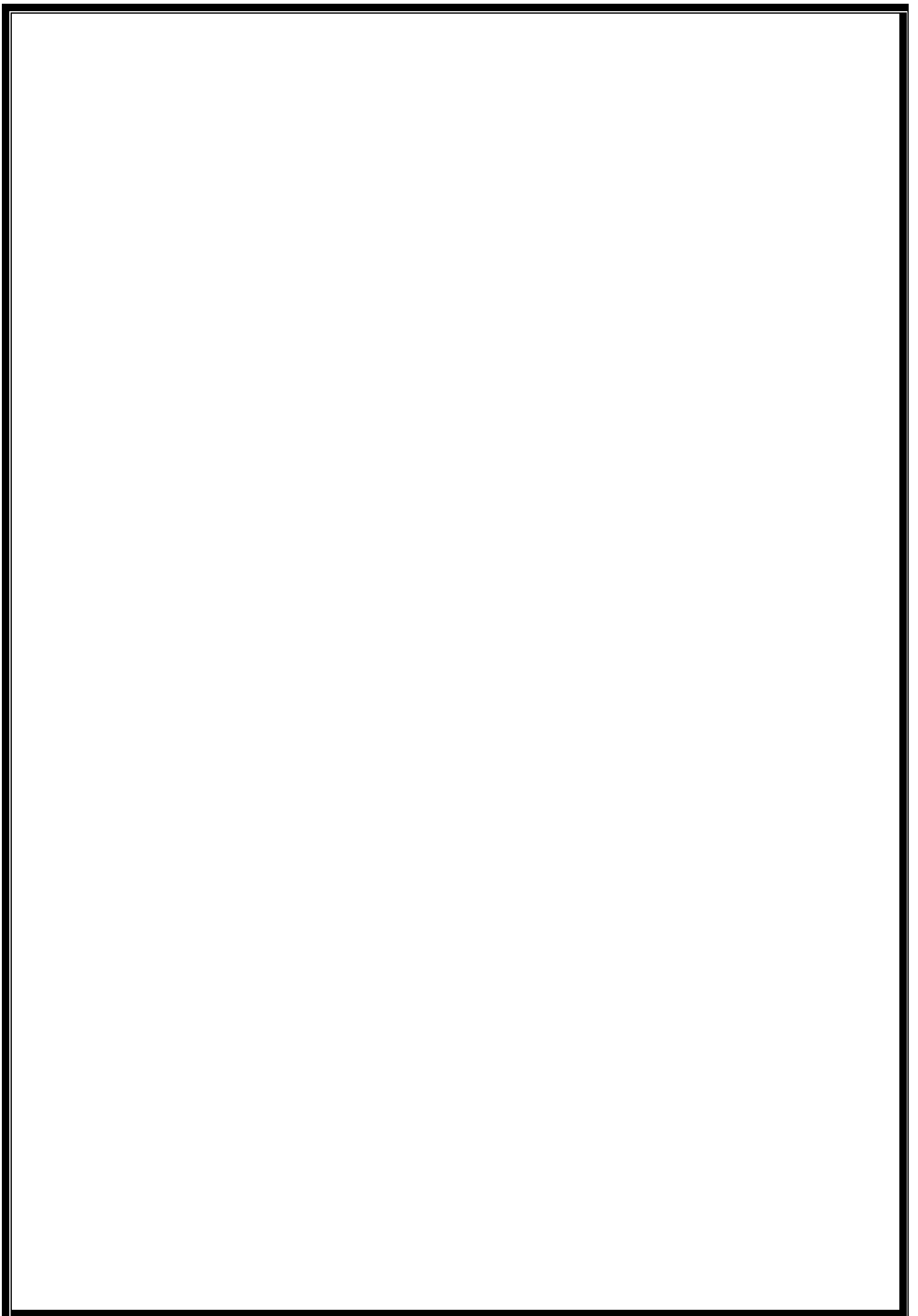
I offer my special thanks to my external project guide Mr. Chetan MR Technical Manager, OXY Logica., Bangalore, and to my Internal Project guide Uma B, Department of MCA, CMRIT, Bangalore without whose help and support throughout this project would not have been this success.

I am thankful to Dr. SANJAY JAIN, Principal, CMRIT, Bangalore for his kind support in all respect during my study. I would like to thank Mr. Chetan MR, Technical Manager, OXY Logica., Bangalore, who gave opportunity to do this project at an extreme organization 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.

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CHAPTER 1

INTRODUCTION

1.1 PROJECT DESCRIPTION

The network identities are required to be properly referenced as different provisions of workability and different provisions of network activities has to be performed. Multiple consideration of the working environment related to large organization work references are required to be associated with centralized and consolidated work provisions for which the system is being designed so that multiple environments can be added and different types of activity considerations can be acknowledged.

System is designed for multiple types of visualizations which is important in real-time to be considered as the organization wants to check all types of network related activities so that the health monitoring is needed. The monitoring Association can be customized so the users are required to inform the system according to the perceptions that which type of related identity provisions are required to be monitored or navigated and how the related references of information should be presented.

Multiple types of presentation formats are provided within the system which has to be added by the administrator and accordingly the real-time the related information will be converted and will be shown. The system also provides multiple types of activities that can be acknowledged at the same reference console system so for that we have to do detailed settings for different preferences and even that acknowledgement of multi window working is provided. When multiple Windows can be added it will be helpful as different types of operations in different Windows can be organized making it more official especially in terms of the navigation where different types of activities required to monitor at clients same time.

The consolidation of related references are also provided so that multiple types of activities can be added and can be acknowledged at the same time should activities based on monitoring, activities based on security provisions, activities based on different types of behavior understanding and different consolidated working can be associated simultaneously.

Multiple types of acknowledgements are associated for the Automations which are also required and as the Automations are required it will be helpful for the users to reflects their work in detail so we can

say that even the system can be utilized for detailing the work according to the perceptions and criteria so that in real-time the system can perform the referential activities.

Multiple types of guidelines will be given, so that any types of integration or any type of workability which is associated can be properly generalized with detailed references of work. Multiple types of consolidated behavioral analysis based on different security requirements can be performed to the system which will help the companies to acknowledge the type of security view they require so that proper network security reference can be established. System is also incorporated with multiple types of information customization options which are included in such a way that all types of information which is provided can be modified when it is viewed or when it is monitored.

Multiple types of statistics conversions are also included within the system so we can say that any type of information which is required to be monitored with some graphical view can also be obtained. The system is associated with different types of working customization which can be done from the administrative view so any type of custom provisions required to be added on to the working frame it will be acknowledged.

Multiple types of consideration that are required to be established for acknowledging multiple types of working can be properly defined so every client will be having their own references of defining the requirements which will be quite important and flexible. Simulated working in real time will be provided with the help of the system so that the Representation and illustrations can be properly recognized and even different types of network related activities can be performed with all required regulations.



Figure 1: System working aspect is referenced above for the unified management

In the above **Figure 1** it shows how the system will work and what are the operations will be taken place in the system.

End User Monitoring

The End Users will be monitored in this using the network facilities provided by the admins. Where it says how the end users have to work and in which proper network the end users should use to work and what are they applications the end users want in their system will also be given to the end users and will monitored.

Network Monitoring

The Network Monitoring the system will provide the network facilities to the end users. The network will be monitored by the Admin, who check and monitors which network the users want.

Application Layer Analytics

Application layer provides applications to the users which they want to work with understanding the behavior. All the analytics and operations will be taken place in this layer.

Application Mapping

Applications are mapped in here. Which application should be used in which system and the networking will take place here.

Transaction Tracing

Transaction tracing it will provide the details of the transactions which are done by the end users. They trace the from which source the transaction is done to where in this.

Deep Component Analytics

Components which should be used in which applications are listed in this. Analysis and operations will be held here.

The report conversions are also provided with different types of information required to be shared or transferred can be done where the selective formats users will get this, even conditional automation sharing will be given with help of which the triggers can be set for the transfer. The associations of the required workability on multiple environments are also supported so the system will provide the integration formats through which multiple references of the network can be added. As the resources are added with the help of selected provisions multiple types of conditional operations can be performed where even the workability can be divided so multiple groups will be added to perform different activities.

1.2 COMPANY PROFILE

The inventive thoughts and with the assistance of cutting edge digitalized arrangements the organization gives the customers all social part of working where the expected undertaking arrangements can be furnished with a legitimate auxiliary comprehension. Different kinds of discernment are attempted by the association with the goal that hundred percent consumer loyalty and specially craft arrangements can be given.

Numerous stage support and the area direction on a worldwide scale is overseen by the association to help oversee diverse business necessities for instance the task direction, business foundation in commitment, the related business stage structures, personality enough scaling, inquire about contemplations, vital execution and arranging and so forth.

The coordinated innovative work group will be related day in and day out as far as finding new methods and thoughts with the goal that we can help the customers for more advanced business systems administration and foundation.

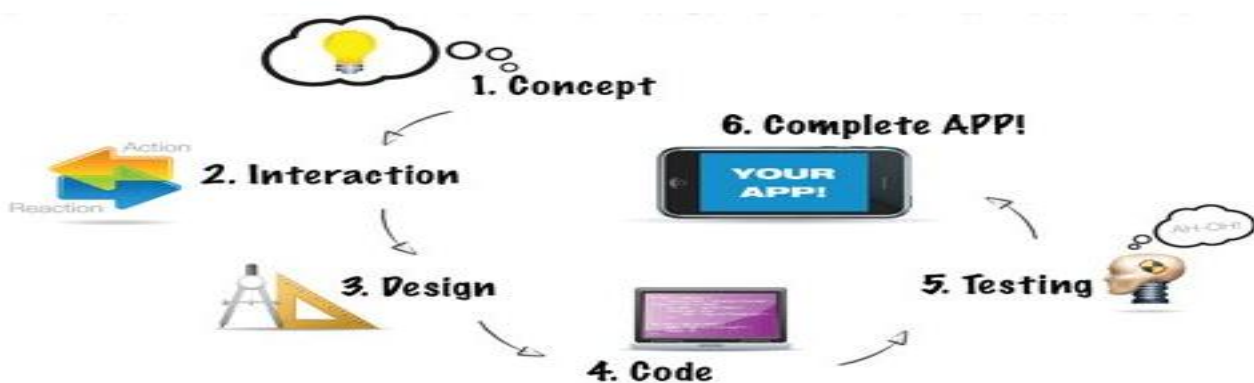


Figure 2: Companies work cycle

In the above **Figure 2** it shows the work cycle of the Oxy logicacompany. At 1st the company will come over the idea or the concept which they want to develop a product. They interact with the members in the company and form a group and discuss. They then design how the product should look like and then start working on it. Then the technical team will code. The QA team will do the testing. Finally after testing the developed product will be successfully completed.

Some of the main perfection the company is into is listed as following

- Website outline and advancement.
- Custom advancement of Windows and UNIX.
- Multi-level, customer/server arrangements.
- E-stores.
- Blog outlines.
- Online stores.
- SMS/GPRS applications.
- E-business systems.
- SEO, SEM and SMM.
- Database plan and advancement.
- Consulting and critical thinking.
- Domain and Web facilitating.

CHAPTER 2

LITERATURE SURVEY

2.1 EXISTING SYSTEM AND PROPOSED SYSTEM

2.1.1 EXISTING SYSTEM

To have a consolidated working in terms of multiple environment references we have acknowledged that in the existing system there is no scenario so each reference of security maintainability operations and monitoring is required to be organized into which family and as the references are managed individually it requires lots of configuration and setup understanding. Multiple types of references when added has been acknowledged with multiple types of security breach which is not good for the organization.

In the existing scenario the important problems that has been incorporated is listed as following –

- Security references are the major problem that is faced by the organization in the existing work because it has seen that multiple instances are required to be configured with different types of conditional working and accessibility so obviously more peoples and scattered working is involved.
- In the existing system the real-time variations based on different types of network layer monitoring is not supported so any type of information required to be generalized has to be done on an individual considerations where different setup of the tools are required.
- The custom view provisions are also not supported so the related comparisons and understanding of the identity behavior is quite difficult to be recognized.
- Automation and the rules that are required based on which different types of working have to be incorporated is also not support it to be selectively included from one single system show all different types of regulations and Automations are required to be managed with different references and resource inclusions.

- Various types of Security Analysis which is needed to be organized is also not supported from a single system so for implementing different references of security different types of tools are related and used making it very much expensive.
- Multi activities for different types of network identities is not supported from a single system so for different types of Identity based operations different workforce users are required to be added and even they will be used in different resources making it complex.
- Customization based on working also aren't supported in existing systems so many types of monitoring references are required to be generated from one single place it is not possible likewise different types of activities also does not support the custom provision working.
- Multiple types of collaborations that are required to perform different activities and the professional aspects of information transfer for the related representations in understanding is also not supported from a single system so various types of sharing aspects are required to be included and even collaboration is not supported.

2.1.2 PROPOSED SYSTEM

Proposed system provides details of network simulation activities to be properly organized and monitor from one single system with the help of different types of customized setup. All types of customizations status will be provided so that integrated views can be designed and can be established. The proposed system has been defined to provide different consolidated working provisions and can be utilized for random working for multi perceptions of security operations and monitoring activities.

Some of perceptions of proposed systems are listed-

- This proposed system eliminates the scattered working and involvement of different types of security reference problems which was faced by the organizations due to the multiple instance and configuration that are required as all types of provisional workability can be now organized from a single system.
- Multiple types of information monitoring will be supported based on multiple types of network layers so according to the related requirements the settings can be performed and accordingly the system will provide the monitoring information.

- All types of comparisons and custom view of the information that is provided is support hit so that in-depth analysis of different types of network information can be acknowledged.
- Multiple types of automation and regulation rules can be acknowledged so the system provides a detailed rule set based on which different types of activities will be proceed this will help to acknowledge the type of working required from system.
- System supports all types of workability based on Security Analysis and monitoring where multiple types of behavioral settings and pattern designs are considered so this will be very much helpful to acknowledge details security references.
- System also supports parallel working of multiple provisions of network operations show multiple types of activities can be generalized on a single system that can be acknowledged in parallel.
- Various types of working customization is also supported in the existing system because when different type of an account users have various systems they can have different types of work requirement to be associated so detailed customization support is provided.
- Multiple types of sharing aspects are also supported in the proposed system so that all types of collaborations and defined communications can be supported properly.

2.2 FEASIBILITY STUDY

All type of opportunities and all types of reference are required to be properly planned so we will be discussing all requirements and we will check that have to reference and maintain the requirements in the real time for which additional documentation will be prepared called the feasibility study documentation. Understanding about different types of provisional working based on operations the technology and the related economics has to be established.

- Technical feasibility.
- Operational feasibility.
- Economic feasibility.



Figure 3: Multiple stages of the feasibility study

In the above **Figure 3** it shows the multiple stages of feasibility study, which are discussed in detail below:

Technical feasibility

The technical considerations are undertaken based on the inclusion of multiple types of network that will be associated and even the references that are required to be generalized has to be checked because we want that proper compatibility has to be provided.

All types of operational considerations based on the design and implementation will be also organized in such a way that proper work definitions should be related and each team member will be guided by the team manager.

The Technologies will be provided on a network so that based collaboration can be generated or we can say that all types of workability resources will be provided to the users within the company environment.

Detail study of the Technologies that will be utilized and the related licensing will be done.

Operational feasibility

Operational feasibility is related with different types of operational consideration that has to be organized so we can say that the users should provide with detailed working understanding for the referential of utilities for which the system can be used.

All types of escalation that may arise in the real time will be out line based on network line will be used in the system.

Detailed documentation and detailed in house training will be provided to the users as they can associate the work properly or we can say that when the uses will be knowing how to utilize the system that all automation customizations will be helpful.

Economic feasibility

Economic references are related with different types of generalized working where we have to check the detailed cost analysis so that we can understand that how much money is required to be invested.

All types of economic considerations will be discussed within the financial department and all types of predictions will be done for which detailed reports will be presented.

Economic plays important role for the development and implementation of it should be organized properly.

2.3 TOOLS AND TECHNOLOGIES USED

Java

We will utilize different editors for Java that is accessible for instance Net Beans and Eclipse. Some noteworthy utilization of Java is that it is having meaning healthy faultlessness that suggests it is reliable as it can manage different sorts of uncommon case dealing with, memory portions, and waste social event.

Java has been configuration by sun microsystems to give the necessary adaptability and furthermore it gives stage autonomous byte codes. Java is a made sure about language which will utilize different open keys for the refreshed security arrangement.

Eclipse

Eclipse software is easy code. In here, we make use database, so data are stored in here. We can implement our code easily in this software. The work flow can be easily understood in here. Where the data stored in the database is most secured and reliable.

MySQL

My SQL is promoted in supported by My SQL which is a Swedish association, and different assortments are given by MySQL to point of reference.

It is the most predominant database group and huge subsets of the functionalities can be properly sifted through.

It is an open source grant based working.

It will be versatile.

MySQL works on many working structures and it support different lingos for example Java PHP, etc.

2.4 HARDWARE AND SOFTWARE REQUIREMENTS

Hardware requirements are

Processor used : 4th generation, Intel core i3

Clock speed of system : 1.7 Ghigahertz

Hard Disk Space used :500 giga bytes

Random Access Memory : 4 Giga Byte

Software requirements are

- Integrated development environment : Eclipse
- Server : Solid State Drive cloud server, Apache Tomcat 8, Amazon Simple Storage Service
- Databases : MySQL8.0.13
- Technology : Implemented using Hybrid cloud
- Language are : Java(Java Server Page, J2Enterprise Edition, Jscript)

CHAPTER 3

SOFTWARE REQUIREMENTS SPECIFICATION

3.1 FUNCTIONAL REQUIREMENTS

Functionalities are required to be discussed because we have to understand that how when a function is triggered the system process is the information so this will help us to design the variations properly and even in the future we can relate the work.

3.1.1 Pattern monitoring

Use Case Name	Pattern monitoring
Trigger	setups
Precondition	Authentication required
Process	Pattern monitoring is associated with the security concerns so the system provides mechanism Where are related packet can be designed and in reference to the designed packet different types of pattern monitoring can be organized various types of designing and perception analysis will be provided which the uses will be presented with detailed notification and information references to identify the problem.
Post-condition	Details added and pattern reference design seen

3.1.2 Information monitoring

Use Case Name	Information monitoring
Trigger	Selective
Precondition	Authentication
Process	Information monitoring in terms of the activities associated with the network will be also generated by the system where the users will be asked for the related reports that has to be outlined and in terms of the structuring of the reports whereas even the selective graphical formations are needed to be selectively e acknowledged so that the system can provide the related real-time information.
Post-condition	Details added

3.1.3 Multi task provisions

Use Case Name	Multi task provisions
Trigger	Setups
Precondition	Authentication enquired
Process	Multi task provisions are also acknowledge within the system where multiple Windows can be designed and related perspectives can be organized in parallel so we can say that system provides mechanism where multiple dashboards are generated for different activities at the same time.
Post-condition	Added reference provided

3.1.4 Matrix conversion

Use Case Name	Matrix conversion
Trigger	Selective
Precondition	Integration of network and settings required
Process	Matrix conversion is also associated with the system where different types of matrix generated can be converted into different formats and when these Matrix are convert it is very much helpful as the monitoring understanding can be achieved and even if required different types of sharing can be acknowledged.
Post-condition	Display seen

3.2 NON FUNCTIONAL REQUIREMENTS

Non Functional Consultant quite important but has to be discussed because when we are discussing the problems that are faced by the users in real time provides better understanding so that we can acknowledge proper measures for the real time system.

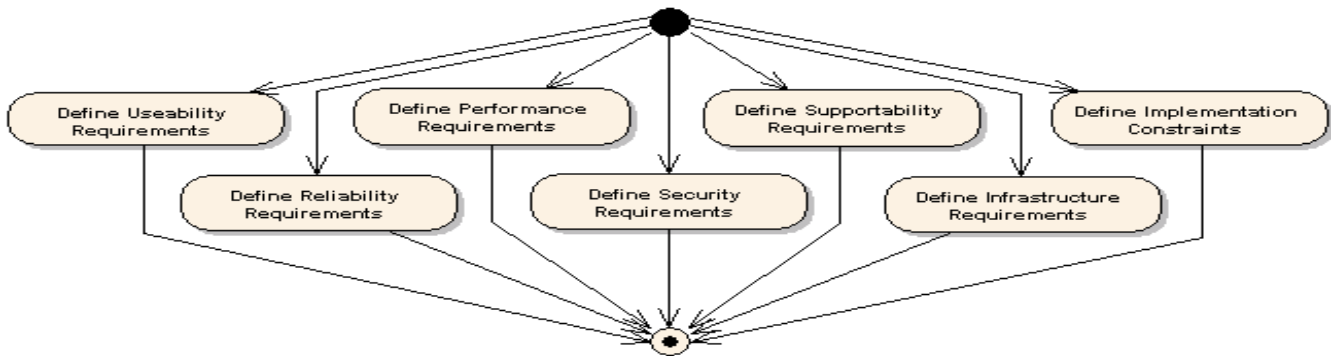


Figure 4: Different non functional variations are seen above

In **Figure 4**, some of the important non functional properties are discussed below.

- **Transparency**

We require the transparency of the work so the system is included with multiple types of custom option and each custom option that is included is associated with different types of perception setting. All types of related workability which will be added to the system make the system behave in the related manner

- **Documentations**

We require detailed documentations to be generalized in different format so that users can have the understanding about the work consideration and any type of reference that is required in real time can be properly organized or we can say that system working can be properly referenced with the help of detailed documentation

- **Security**

As multiple types of work references are required to be acknowledge it is needed that system should provide the security measures and the security measures will be provided in multiple references of accessibility and even different references of the data security

- **Robust**

The system is robust and any type of real time problems or errors that will arise will be properly managed by the system so any type of integrated working that will be selected by the users and if any wrong selections are acknowledged the system will notify the users

- **Scalability**

Multiple types of networks can be added and each network can be related with different types of identities so the system provides the scalability as much load is required to be handled when bigger organizations will be utilizing the system. Multiple types of association and work informations can be organized with the help of systems.

CHAPTER 4

SYSTEM DESIGN

4.1 SYSTEM PERSPECTIVE

Users:

Administrator

The administrator is main user of system who will have reference of work structuring or we can say that user will be having all types of setup accessibility rights so that working can be properly generalized.

Sub administrators

These administrators will be having the references of acknowledgement as they will be having different rights and they will be performing different types of network related monitoring and other operation.

Dependency and assumptions:

Major dependency of the system is that all types of network that are required to be organized on to the system has to be first incorporate it and accordingly the setup has to be accomplished after which individual account holders can utilize the system for different types of references of activities.

Assumption of the system is that authentication should be properly provided as the system will deal with different types of network related information access and even when the detail knowledge is associated with the working the optimization of the system can be organized.

Scope and objective:

The major scope of the system is that it can be utilized for different types of network activities and provision on a global scale with multiple types of environment compatibility provided making it useful

The objective of the system is to provide environment based consolidations so that the complications of different activity references can be minimized because the system provides all descriptive monitoring associated information at the same time the system also provide all types of differential activity

inclusions.

Problem statement:

Multiple references of the problem statement is being acknowledged as the system provides multiple complicated functionality integration.

The system has to be generalized in terms of complex setup of the environment and even the compatibility for different references of working has to be provided.

The system also requires a setup based monitoring outline so that according to the constitution the information can be provided where even the graphical conversion is needed in real time which has to be properly associated.

4.2 CONTEXT DIAGRAM/ DFD

It provides multiple sequences of synchronization of processes where all types of scope and boundaries of the system.

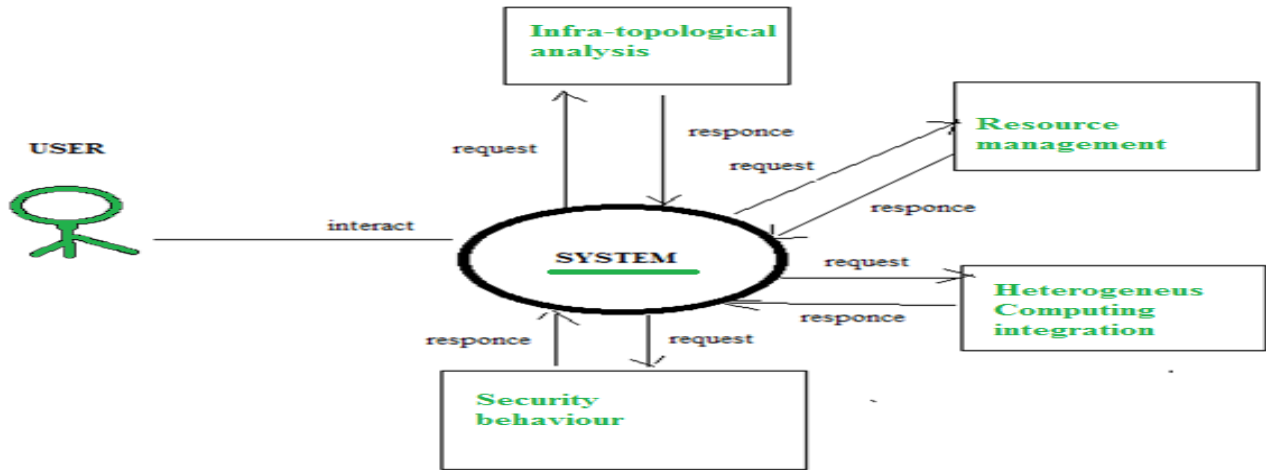


Figure 5: Context Diagram of project

The above **Figure 5** gives the details of the project. Where it says the user interaction with organization, the system then checks whether clients are proper valid client and then if client has proper authentication then the system gives the user to access within it and provides the resources, services and applications which the user wants when the user requests.

Data Flow Diagram Notations

This diagram represent the flow of our project and it will be done by referencing different types of components based on function database input, output and flows.

	Yourdon and Coad	Gane and Sarson
External Entity		
Process		
Data Store		
Data Flow		

4.2.1 DFD OF ADMIN

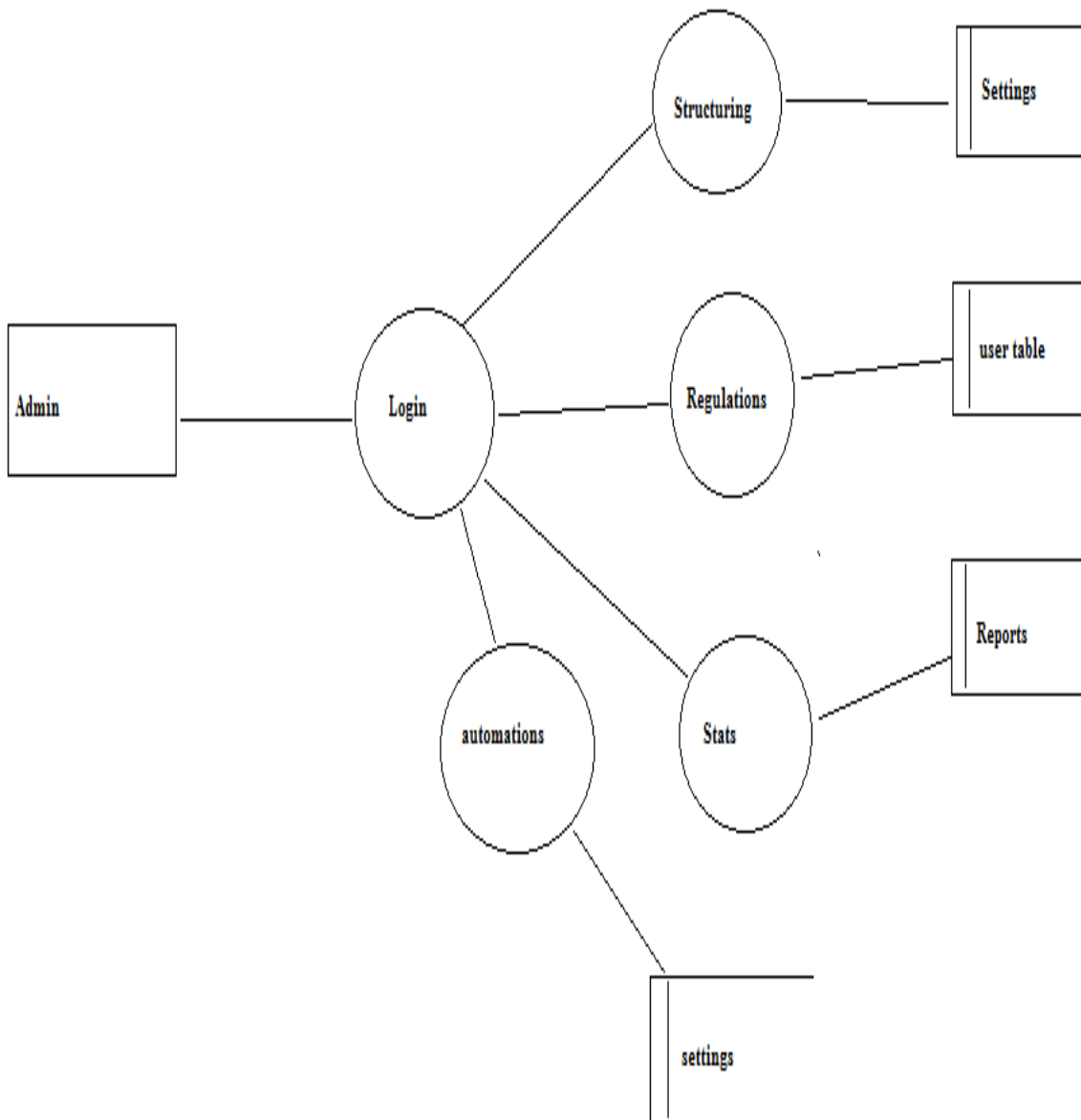


Figure 6: Admin side DFD

In **Figure 6** shows the admin dfd and describes admins functionality like login of admin, settings, details of user, automations etc.

The admin will have the authorization to make any changes in this domain. They will also keep the regulations for the users with the help of this domain.

4.2.2 DFD OF USER

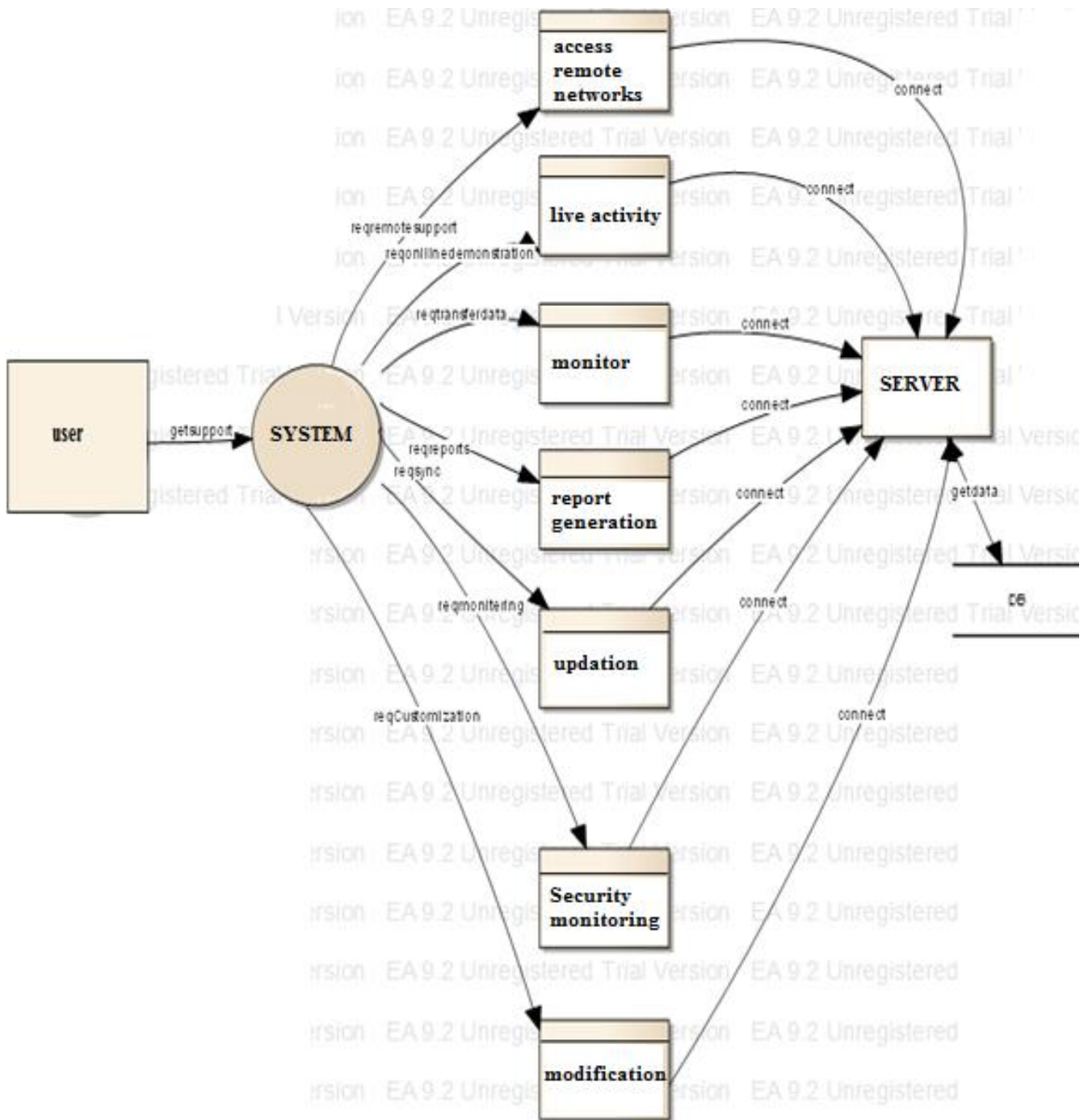


Figure 7: User side DFD

In above **Figure 7** show the flow, clients interacting with the system and accessing the system. The user requests the system to allow access to systems. As multiple clients accessing, the system has to checks if users are an validated user. After check the customer is verified user, system allows the user to access the system and provides the applications and the services which the user wants.

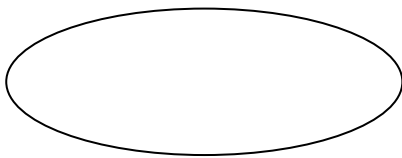
CHAPTER 5

DETAILED DESIGN

5.1 USE CASE DIAGRAM

Here it shows all types of interactions and relationships linking customers and different types of use cases where the user is involved for the referential usage.

Use Case Diagram Notations



Use case



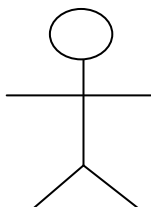
Association



System name



Generalization



Actor

5.1.1 Use Case Diagram Of Project

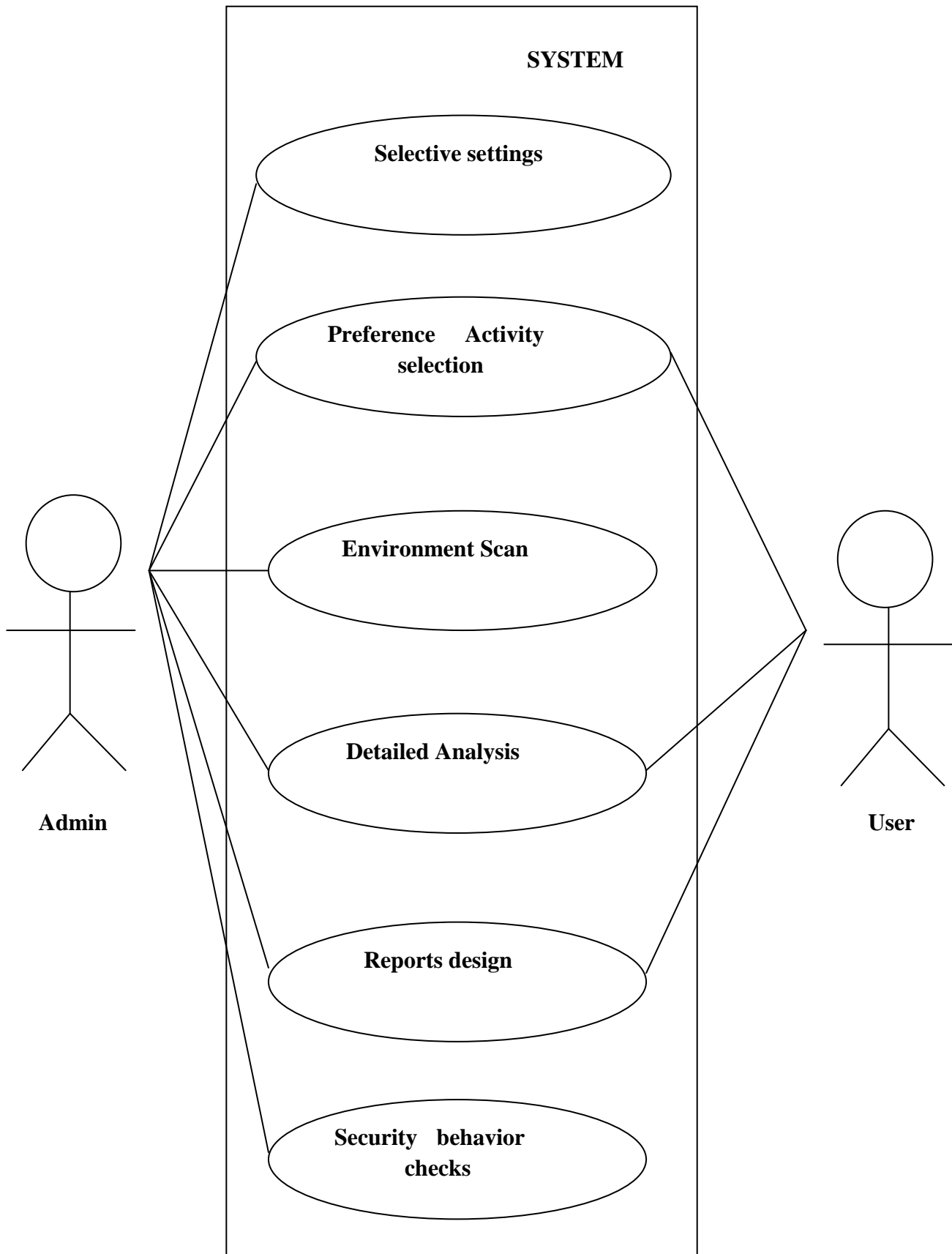


Figure 8: Use-case our project

UML Description

This above **Figure 8** it shows the functionalities of the admin mainly. The admin and the users are actors.

Admin's functionality within the system are as follows :

- The admin will have the authority to do the settings and other operations
- Admin will also have the access to do Detailed Analysis. How many users are accessing the systems applications and services are shown in here.
- Preference Activity selections are made by the admin. Where the admin will select the activity of the user which client should get the access 1st and do the work get done will be selected here.
- Reports design are also done by the admin side. This is also one of the main functionality of the admin where the admin will provide the users with different designing patterns which can be used in the reports.
- The admin main functionality is to provide the security. It does the security check before giving the access to any of the user. After giving the access to the users, the users will be authorized to use to services, networks and application provided by the admin.

5.2 SEQUENCE DIAGRAMS

Here the related external actors along with related methods invoked by these actors. The sequence diagram are even known as event diagram. The interaction between objects, also shows the proper order of the system functionality and also the messages passing between them.

5.2.1 SEQUENCE DIAGRAM FOR ADMIN

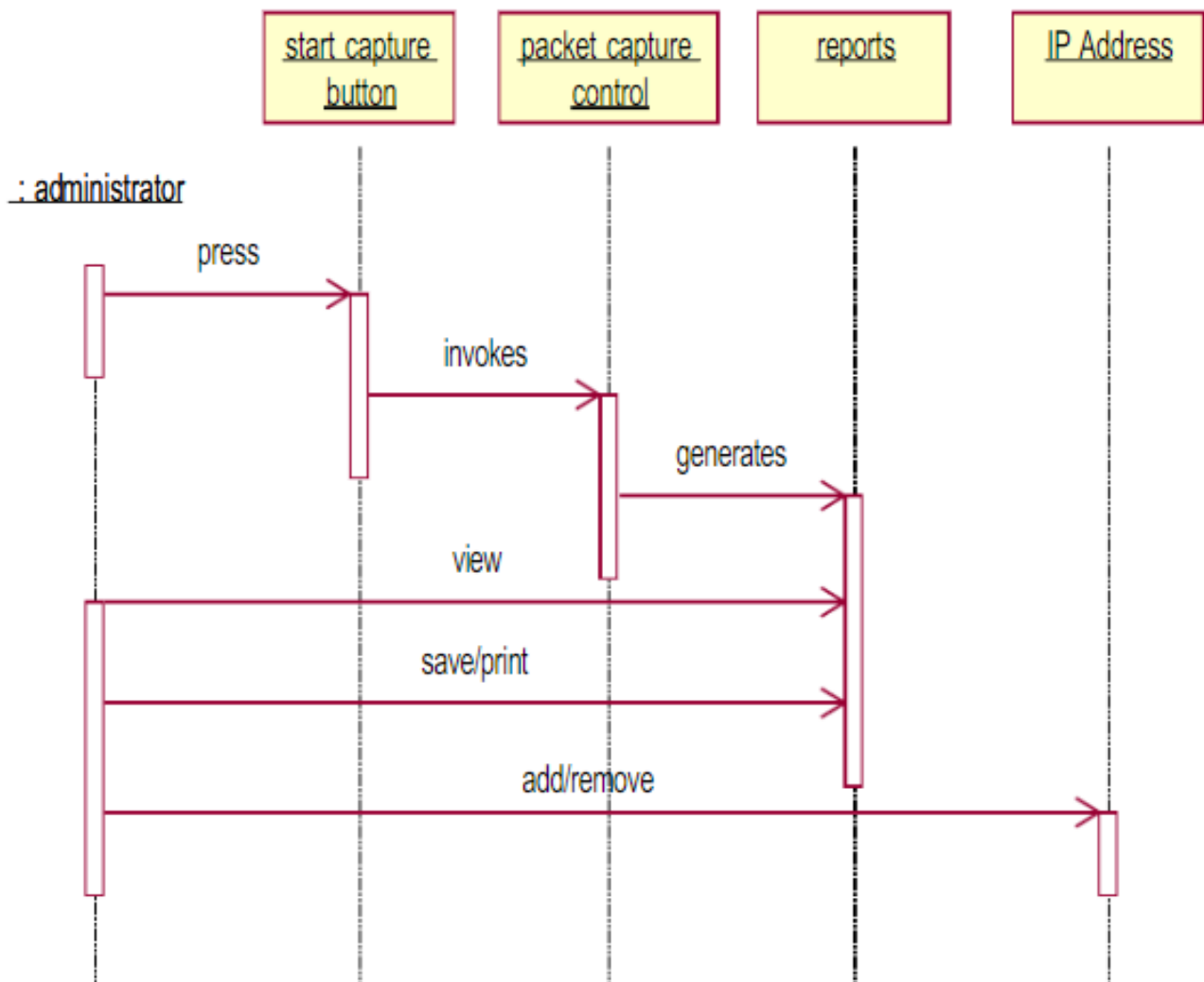


Figure 9: Sequence diagram of the admin

In **Figure 9** shows the sequence flow of administrator in system. As the head logs into the system, the system the starts to capture the admin work flow. The admin will have an authenticated IP addresses through which they have much secured connected networks.

5.2.2 SEQUENCE DIAGRAM FOR USER

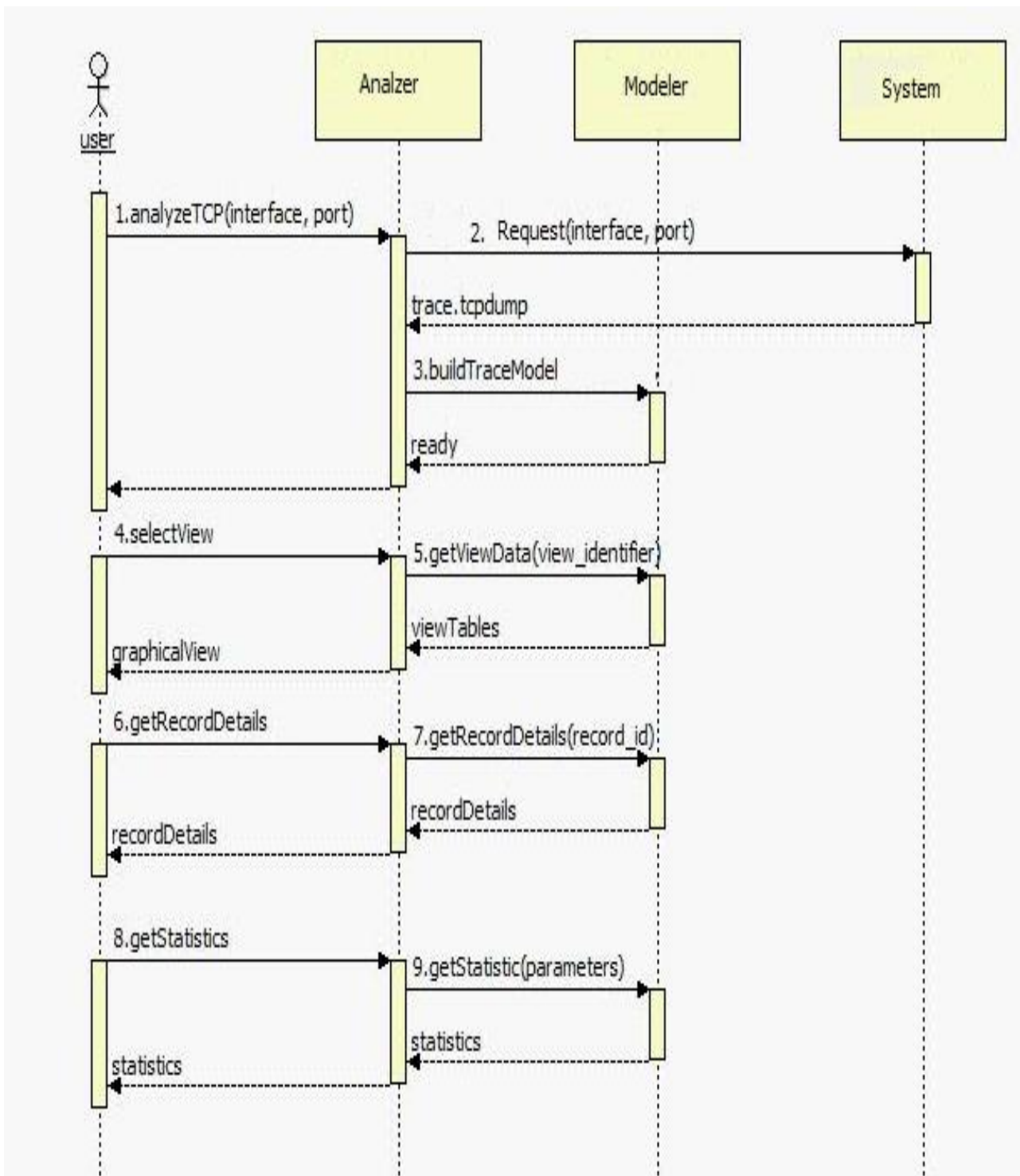


Figure 10: Sequence diagram of the user to get statistics

In **Figure 10** it shows the sequence flow of the users in the system. After admins login into organization, the user will be authorized to access the system. The above diagram shows in detail about the sequence flow of the user in the system.

5.2.3 SEQUENCE DIAGRAM FOR NETWORK CONNECTIONS OF USERS

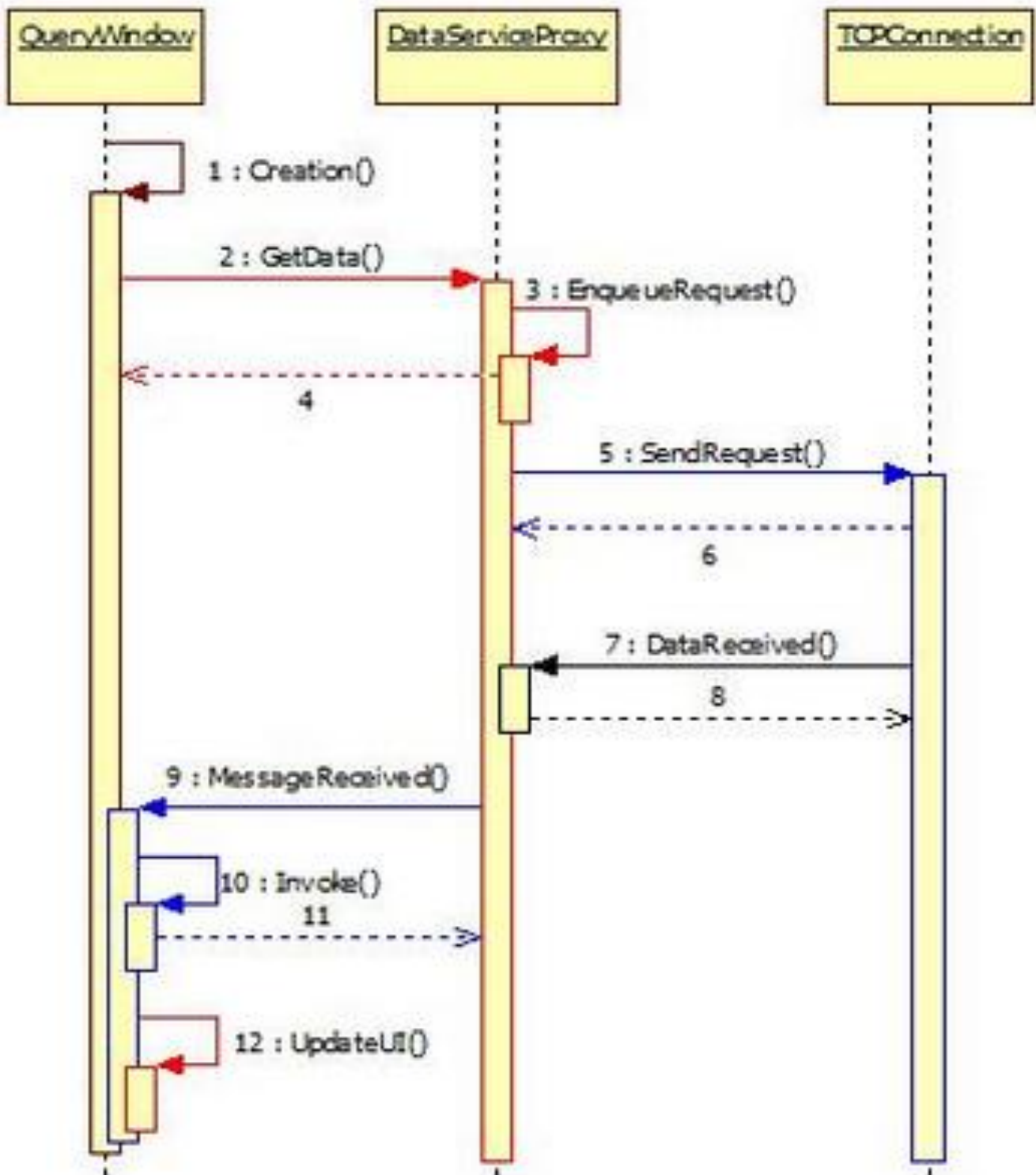


Figure 11: Sequence diagram network connections of users

In the **Figure 11** it shows the sequence flow of the user network connection. The admin accepts the connection by checking whether is the user authenticated, after checking the user authentication the admin will provide the services to the client.

5.2.4 SEQUENCE DIAGRAM FOR CONNECTION BETWEEN SERVER AND CLIENT

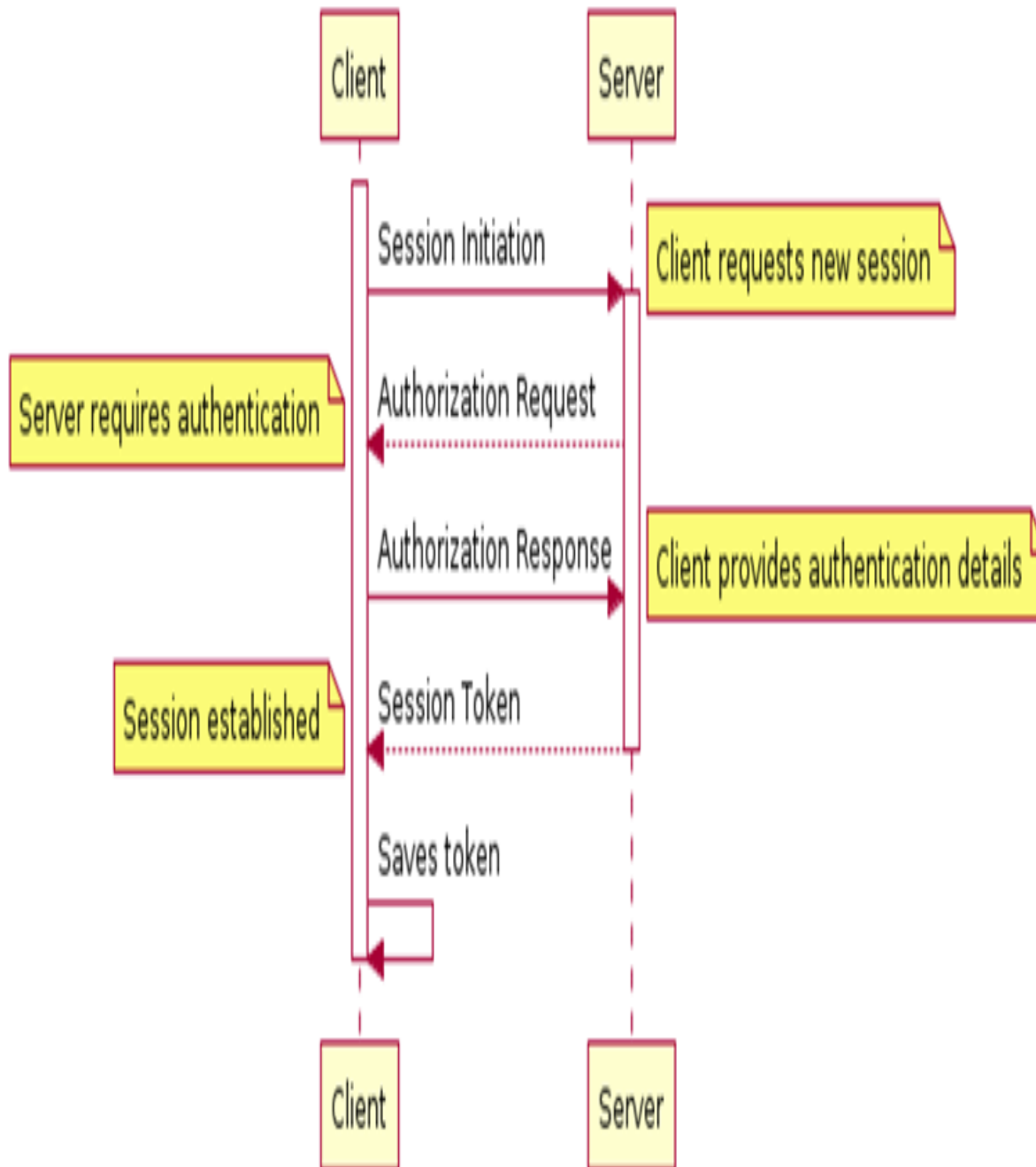


Figure 12: Sequence diagram for linking of server and client

The above **Figure 12** shows connection between clients and administrators. The customer dispatch call to the server, server after accepting the request of the client it provides the services the client wants.

5.3 ACTIVITY DIAGRAMS

Here is design to understand flow of one activity.

Multiple sequential branches are related so that all types of flow control can be defined between the elements

5.3.1 Activity diagram for Admin

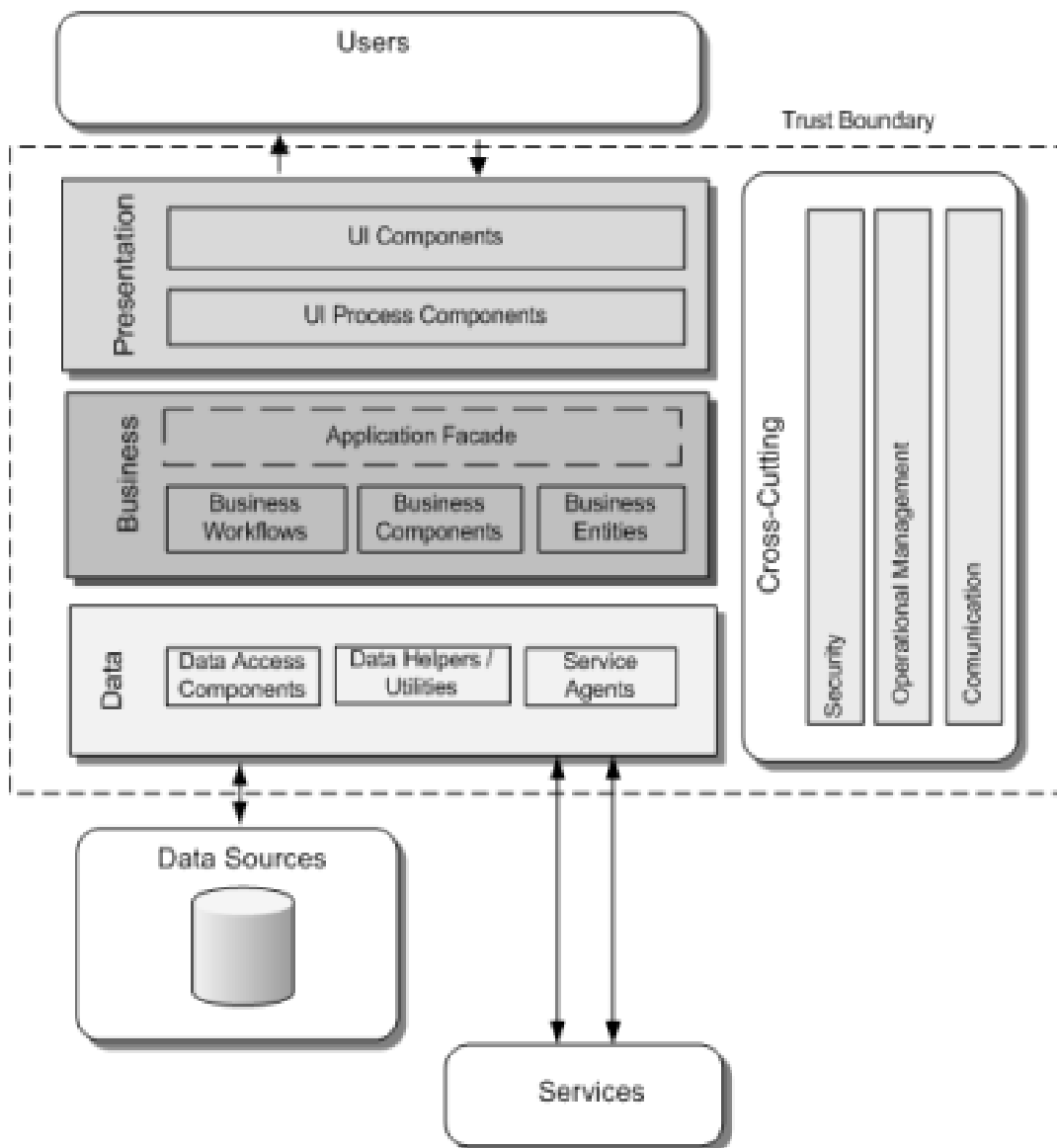


Figure 13: Activity Diagram of Admin

In **Figure 13** is the Architecture diagram which defines structure of component interrelationships and the principles so that reflection understanding how the system working can be achieved.

5.3.2 Activity diagram of User to download reports

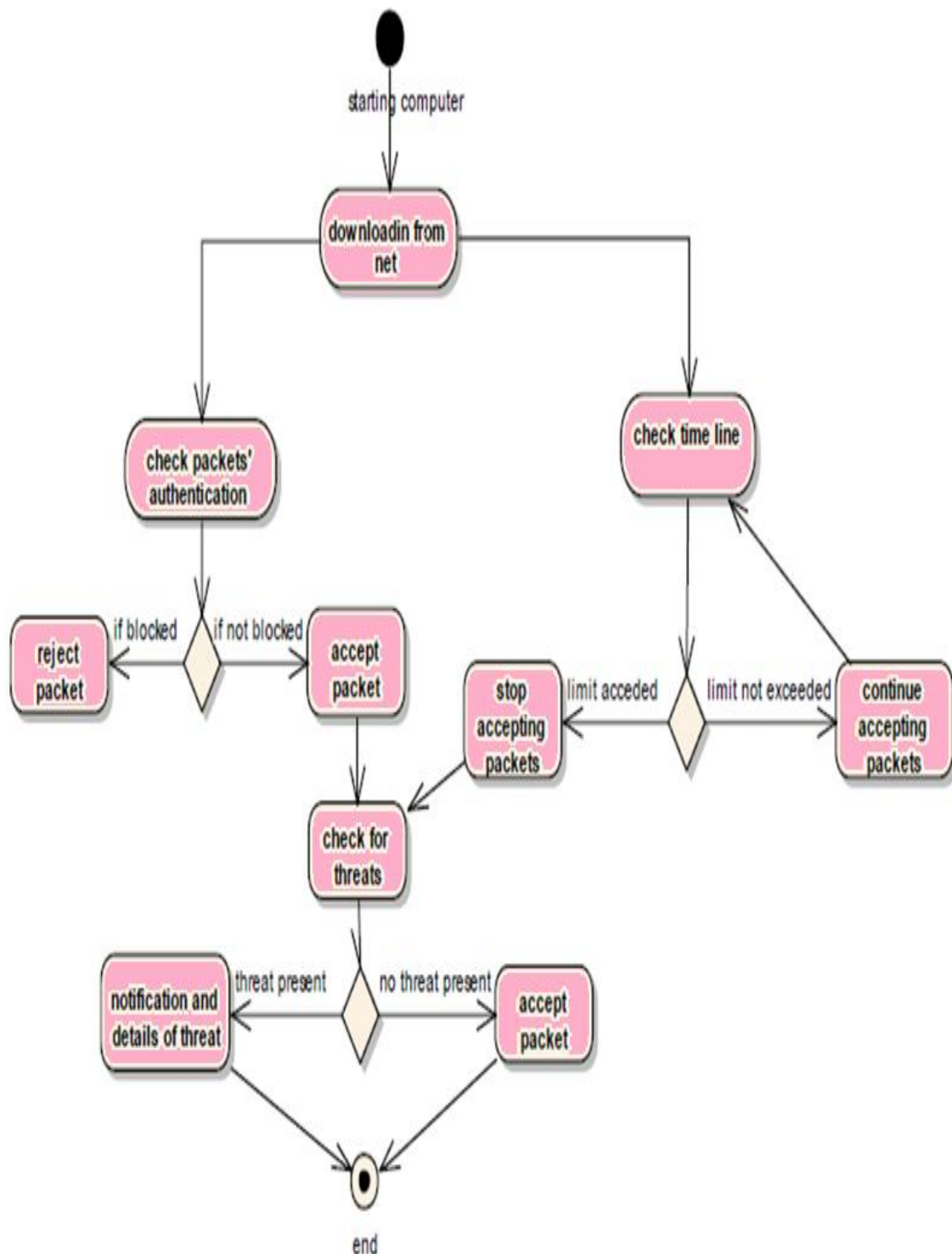


Figure 14: Activity diagram for user to download reports

The **Figure 14** says the flow of the users how they are downloading the reports from the system. The authenticated user will have the authorization to download, access and make the use of the services provided by the admin.

5.3.3 UML Activity diagram for Sniffer

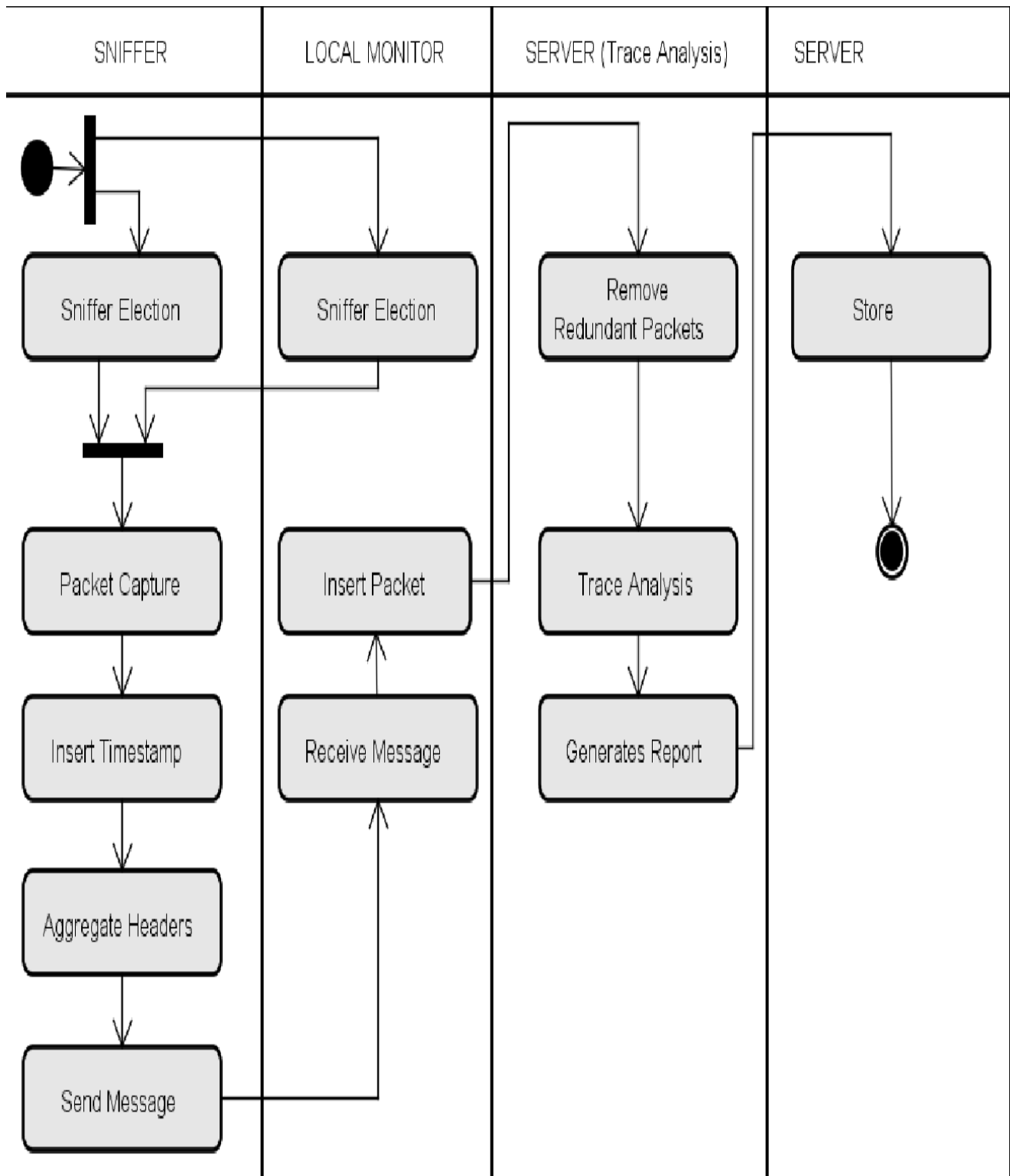


Figure 15: UML Activity Diagram of Sniffer

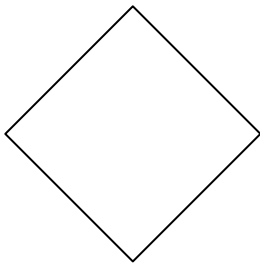
The **Figure 15** shows UML Activity diagram, from sniffer election sending the packets to the server is shown in this UML diagram.

5.4 ENTITY RELATIONSHIP DIAGRAMS

Entity Relationship Diagram short formed as E-R Diagram describes the structure of the Database.

It contains the elements, relationship sets etc.

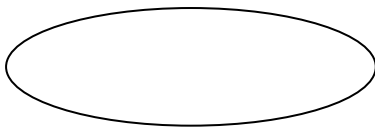
ER DIAGRAM NOTATIONS



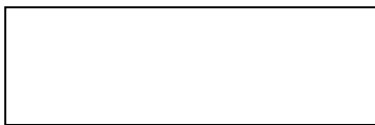
Rhombus denotes the Relation sets



Line links the Attributes and Entity sets



Ellipse denotes the Attributes



Rectangle denotes the Entity

5.4.1 ER Diagram of project

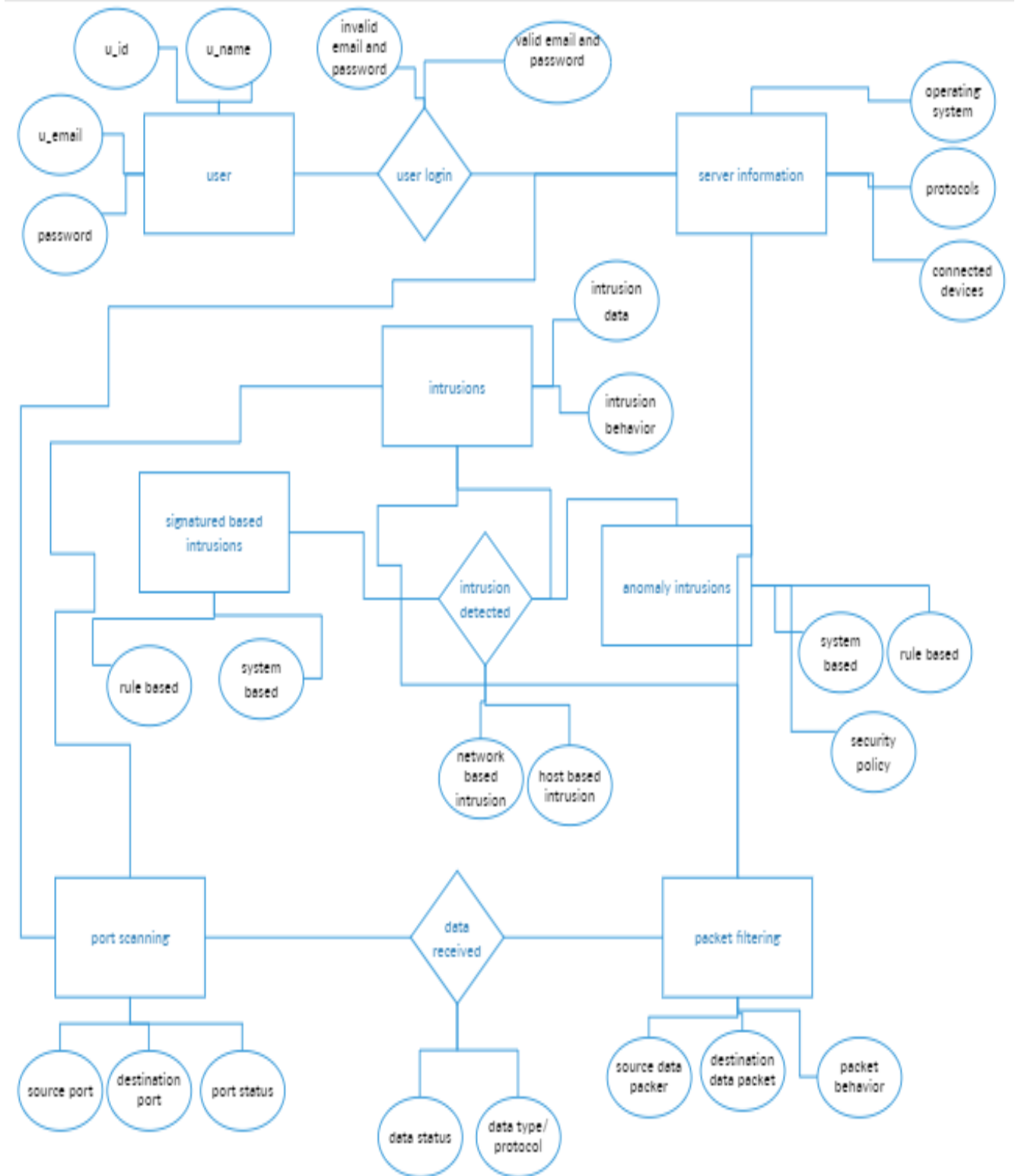


Figure 16: EntityRelationship Diagram of project

The **figure 16** shows in detail about the relationship connections of the admin, user and other main models.

5.4.2 Database EntityRelationship Diagram

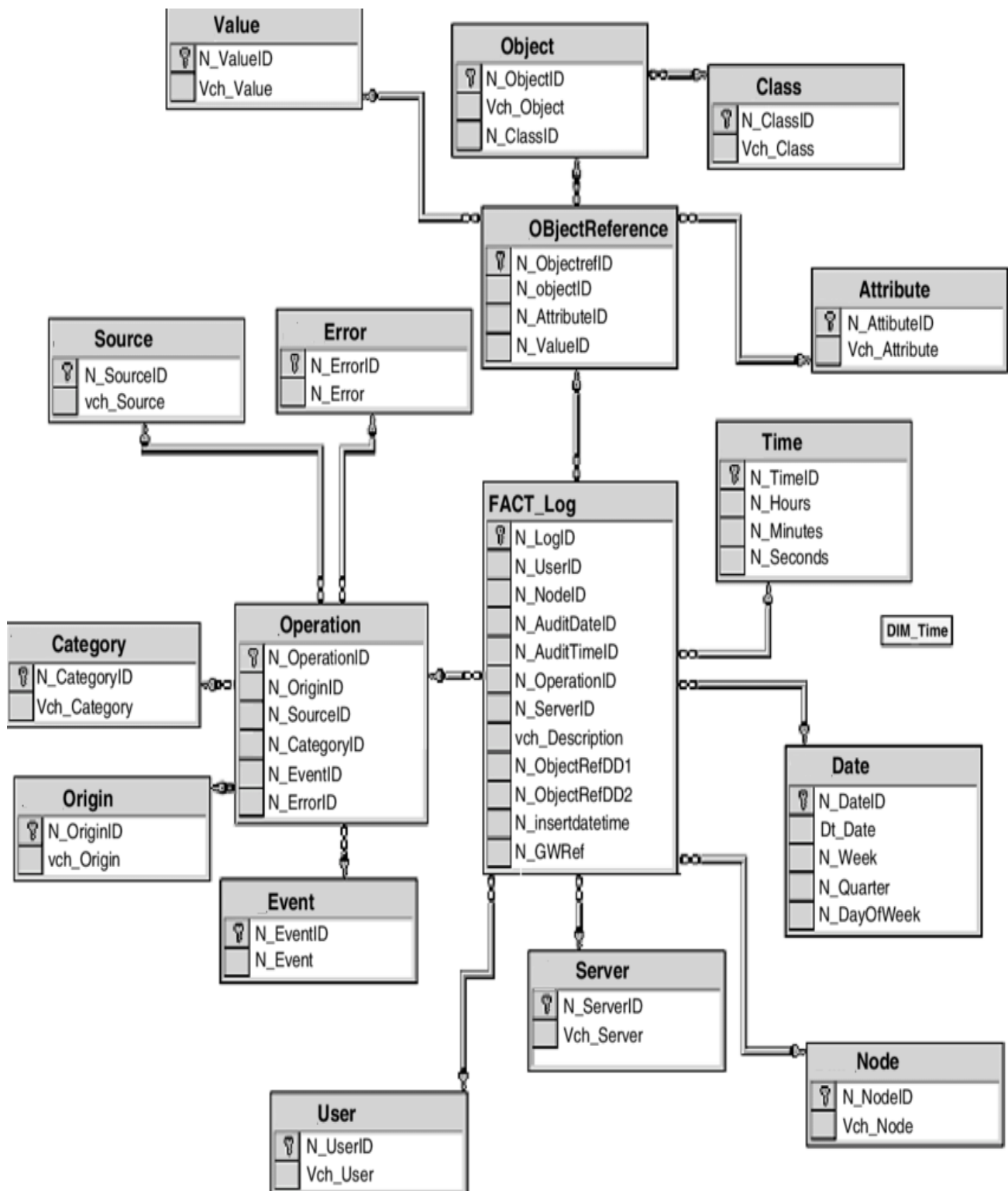


Figure 17: Database ER Diagram for our project

Above **Figure 17** shows the database ER diagram model. It shows the relationship between the models in here.

5.4.3 ER Diagram for data transfer from admin to user

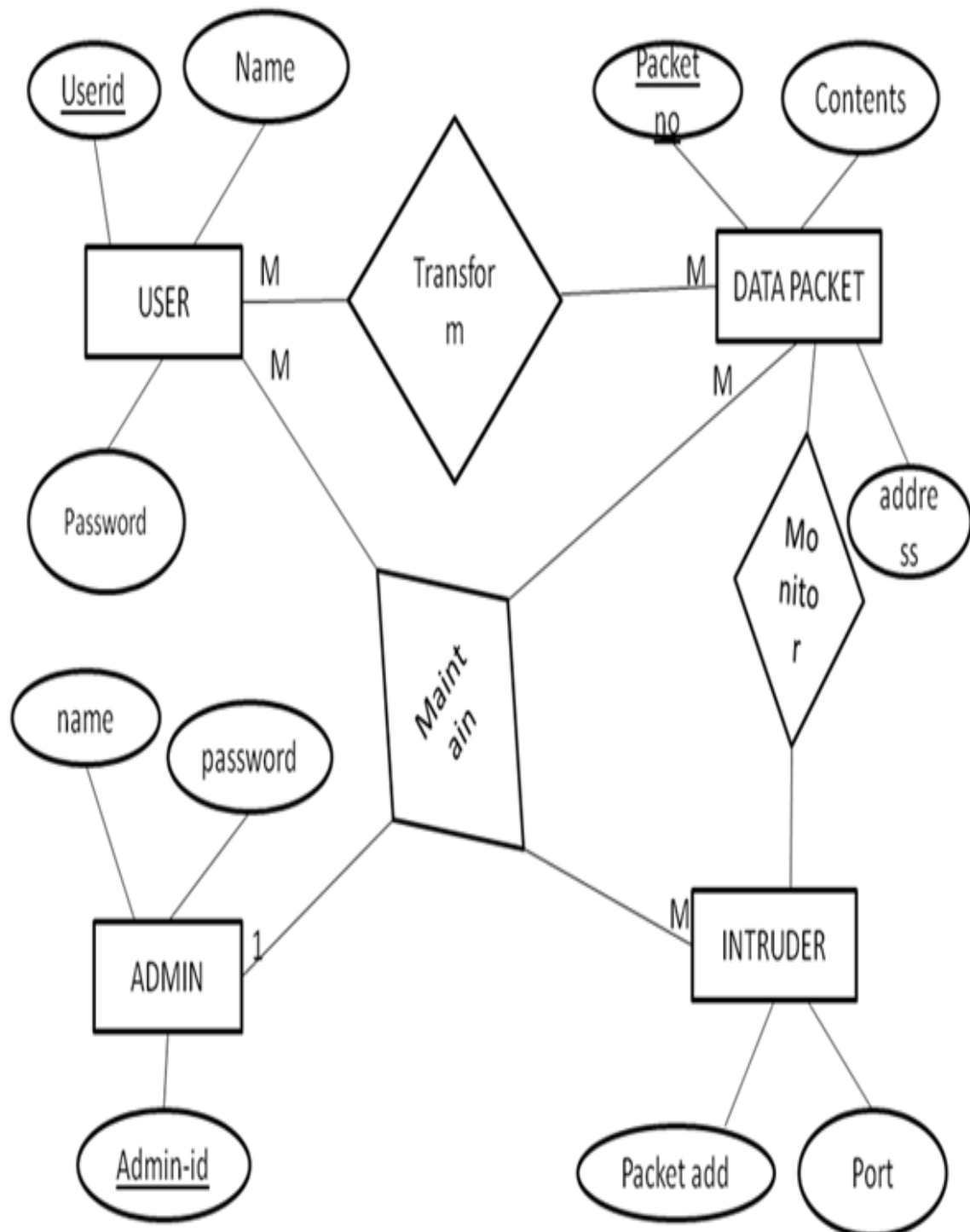


Figure 18: ER Diagram for data transfer from admin to user

In **Figure 18** shows the data transfer from admin to the user and also shows the other models which are included in data transfer.

5.5 CLASS DIAGRAMS

Class diagram is a reference where the structure is described in the format of classes attributes operations in the relationships.

5.5.1 Class Diagrams of project

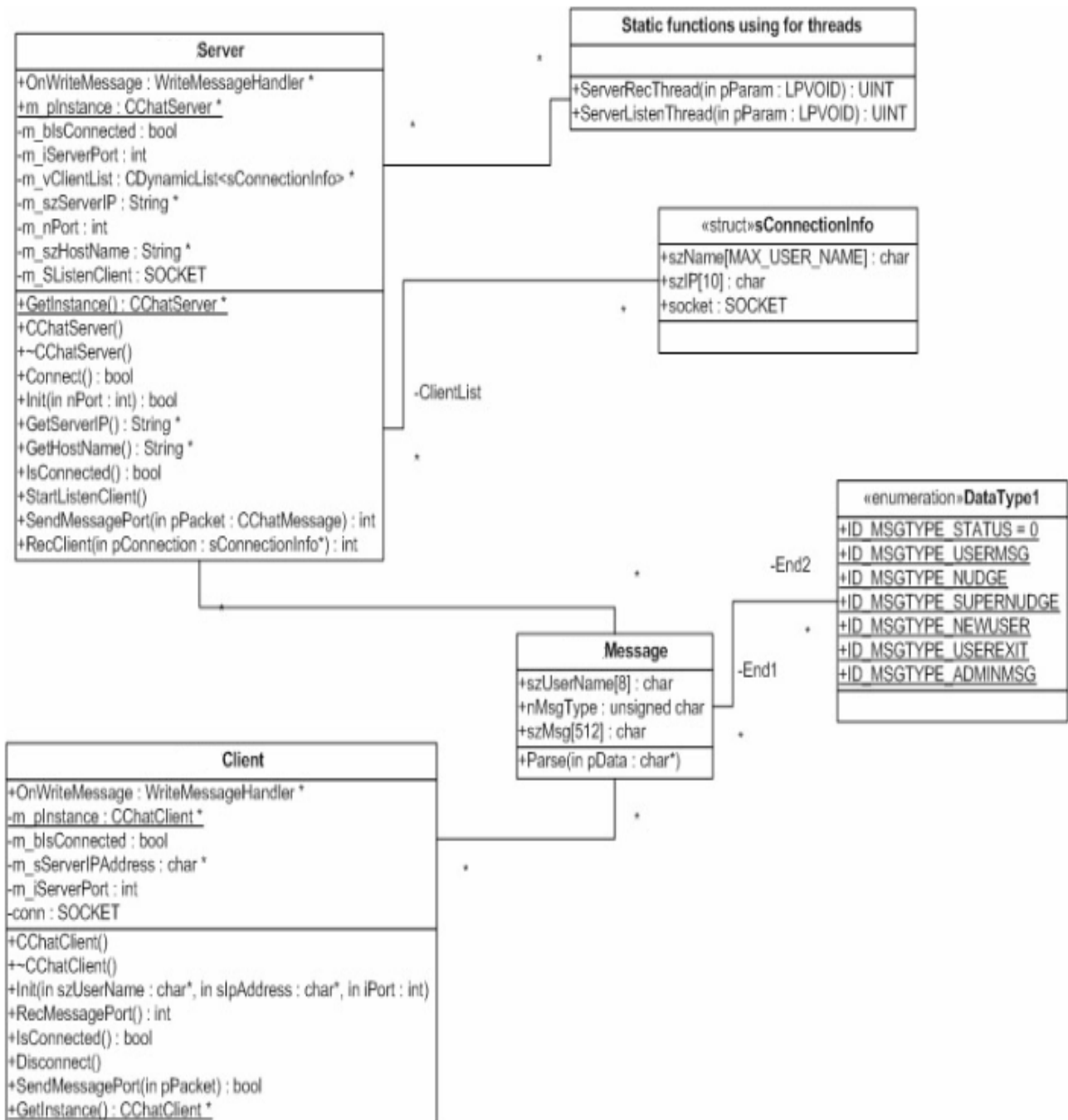


Figure 19: Class diagram of project

5.5.2 Class Diagram of Admin's scheduler classes

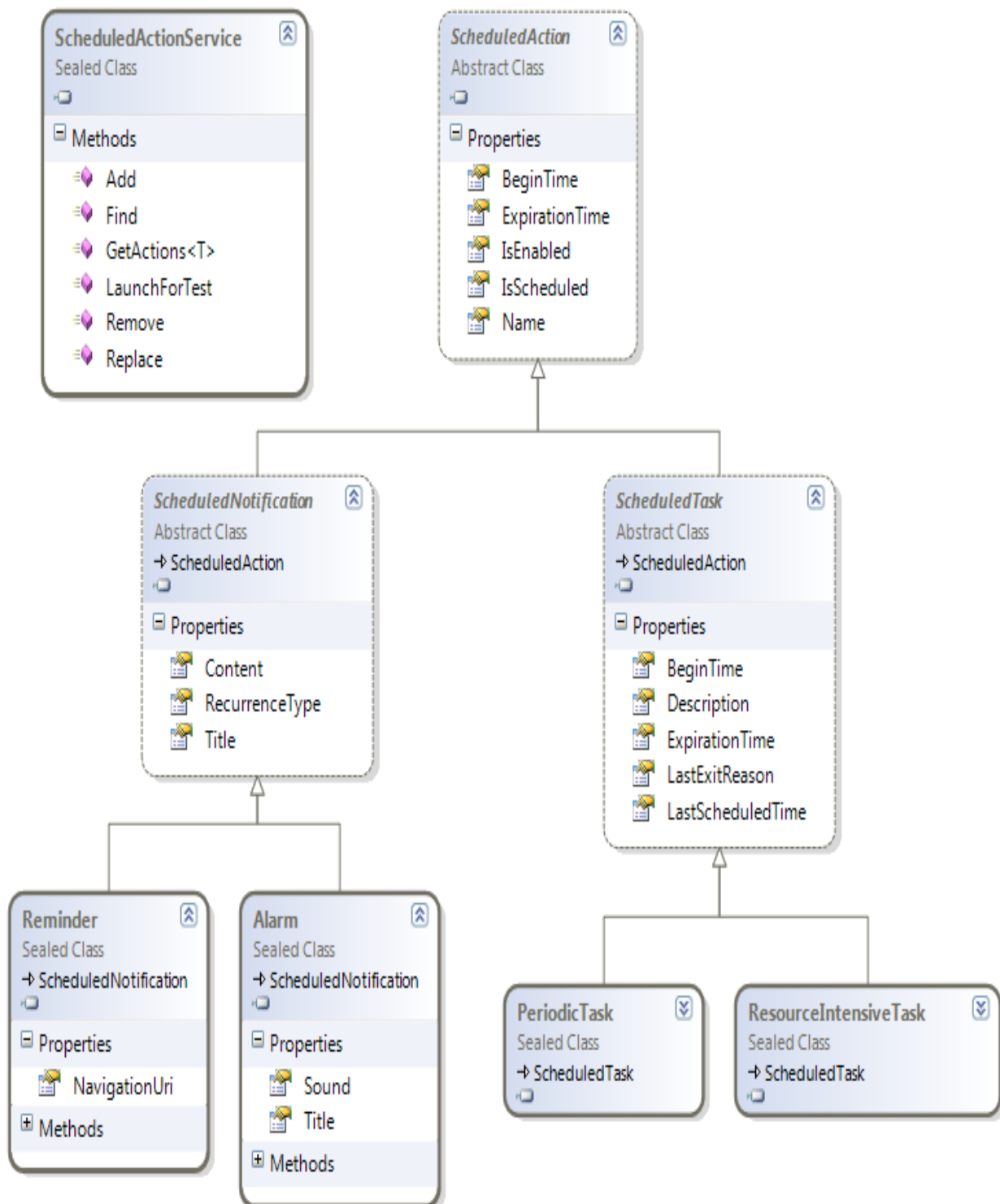


Figure 20: Class diagram of admin's scheduler class

In the above **Figure 20** it shows the classes and its attributes, where the admin will do the scheduler actions.

5.5.3 Class Diagram of Admin's data processings class

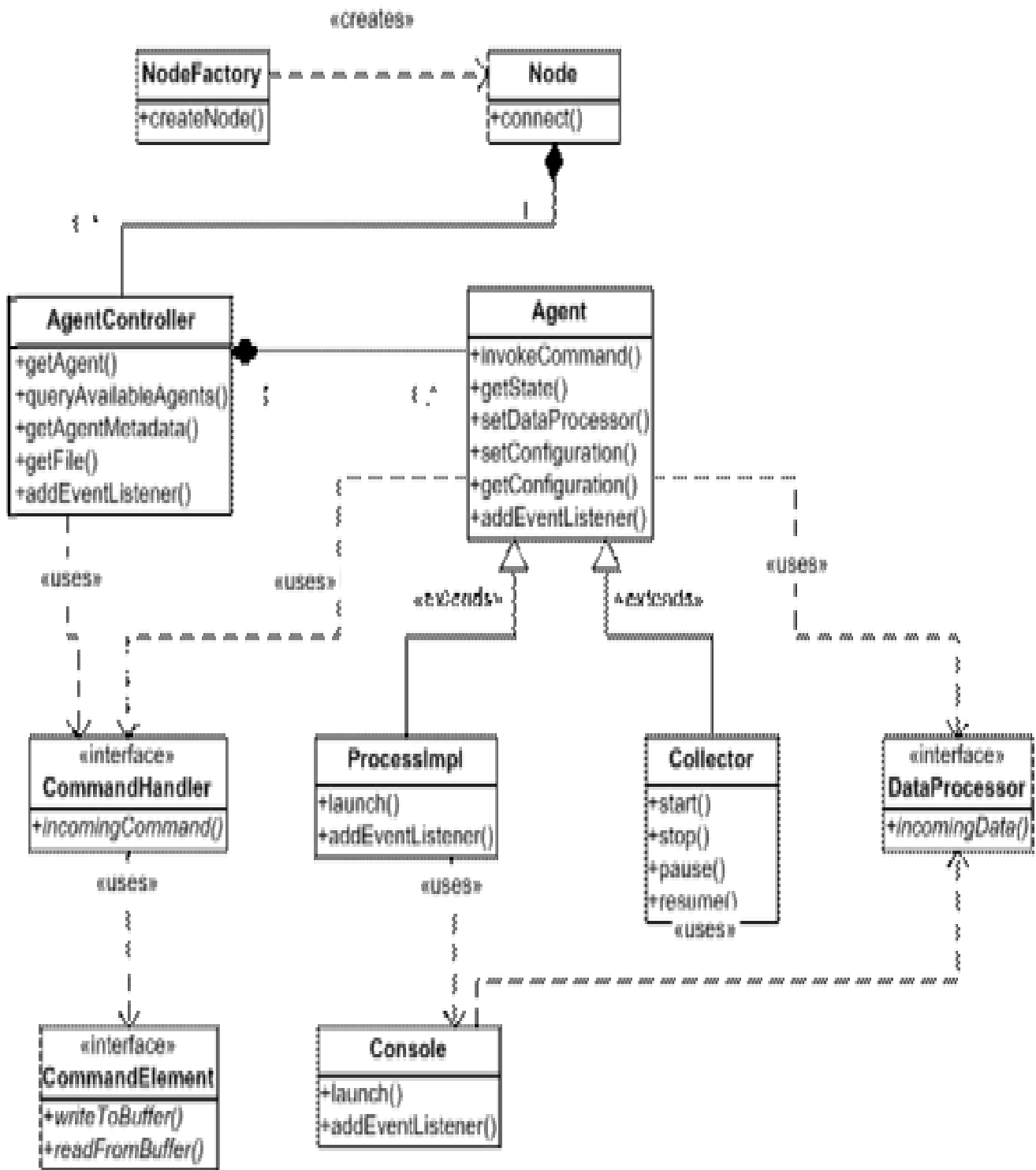


Figure 21: Diagram of admin's data processing classes

In the above **Figure 21** it shows classes in the admin's data processing using collector, data processor classes etc.

CHAPTER 6

IMPLEMENTATION

Implementation is where the developer will make plans accordingly to his visions and make proper outcome which the developer wanted to see. Planning and Arranging is a basic part of any fruitful undertaking. To complete a project the implementation plan that outrages the task is essential.

The usage the producer will take is when the whole developing phase is ready. Developing phase includes designing, coding, encoding etc where the developers will work together and make the result.

Execution is the way toward structure of the product as indicated by its plan. After executing the developer can check whether the product is according to his plan.

6.1 SCREENSHOTS

Login page

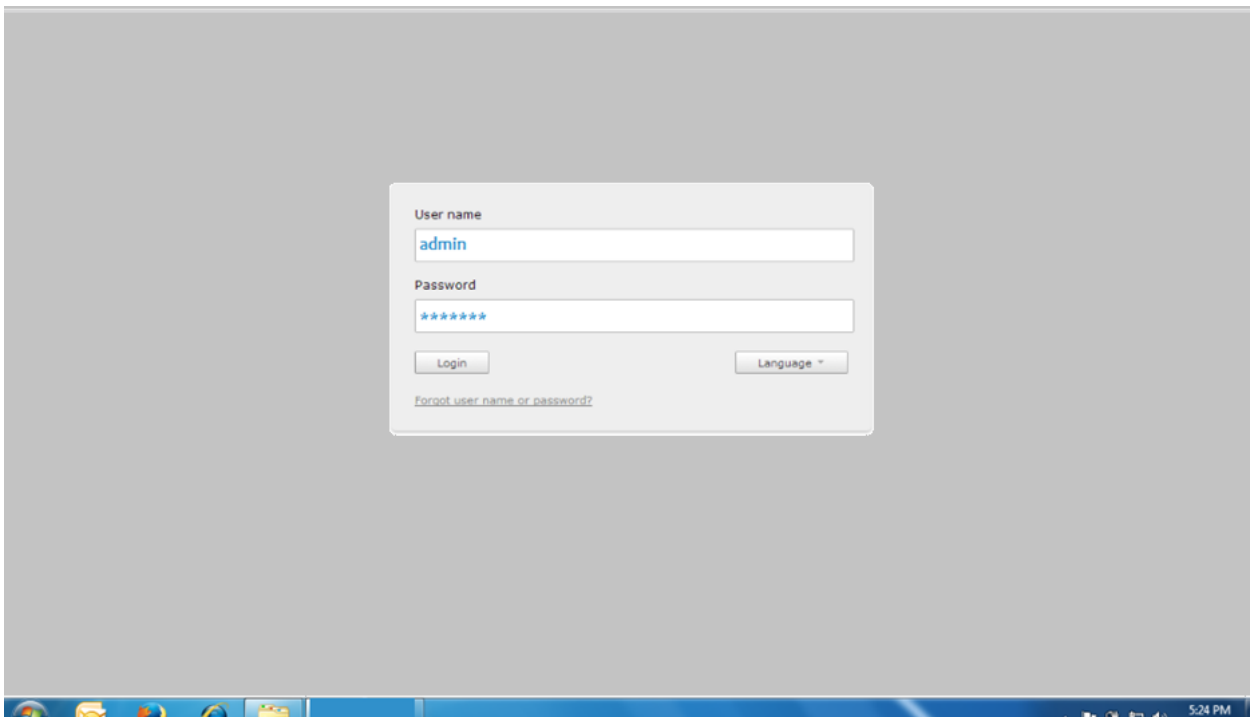


Figure 22: Login page for the admin and user

Adding the rules

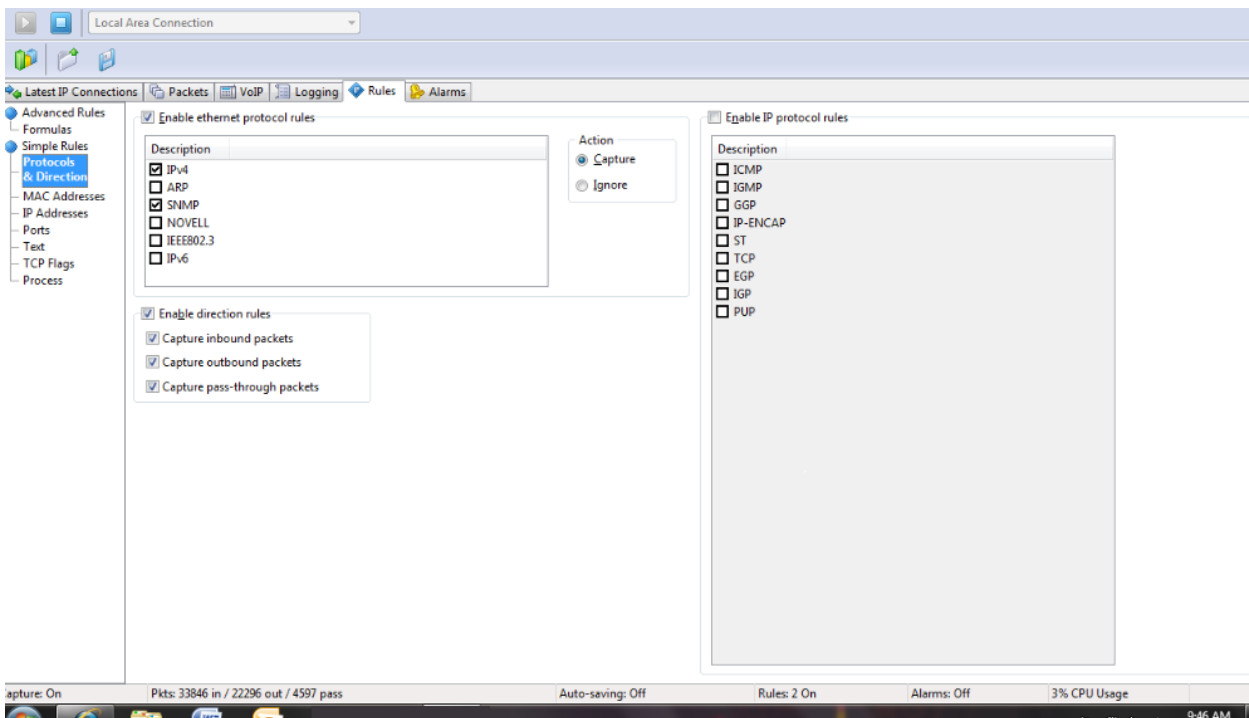


Figure 23: Admin adding the rules

Logging information

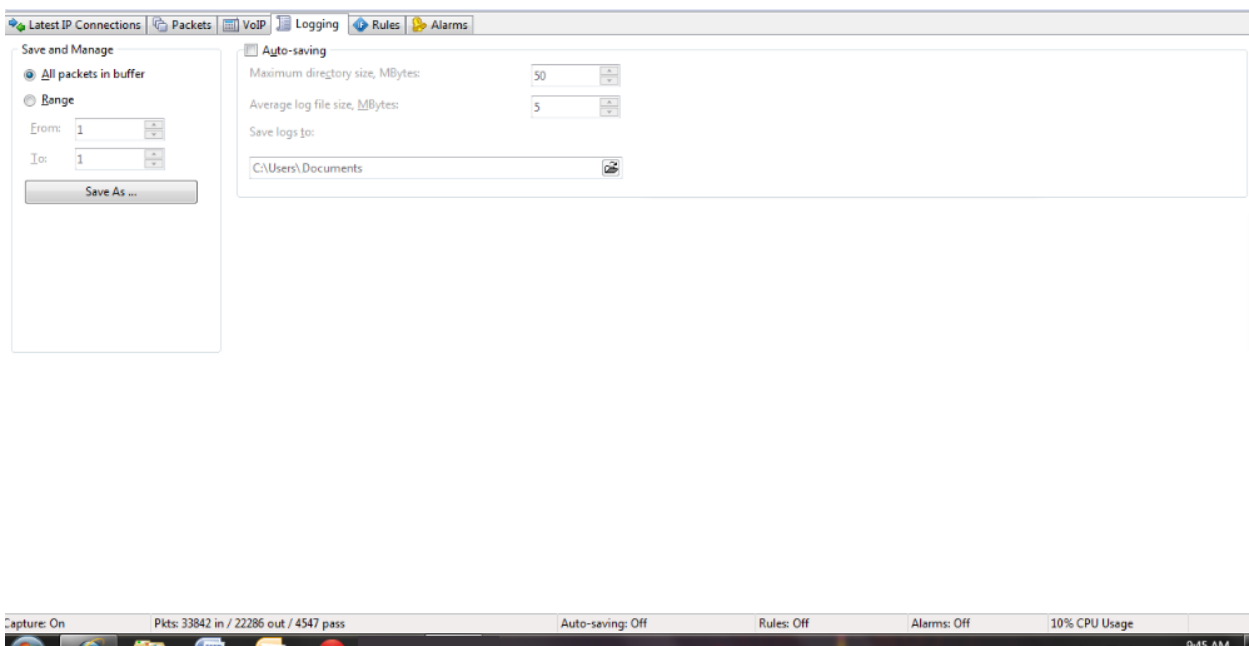


Figure 24: Admin logging information for the data sync

Automated notification settings

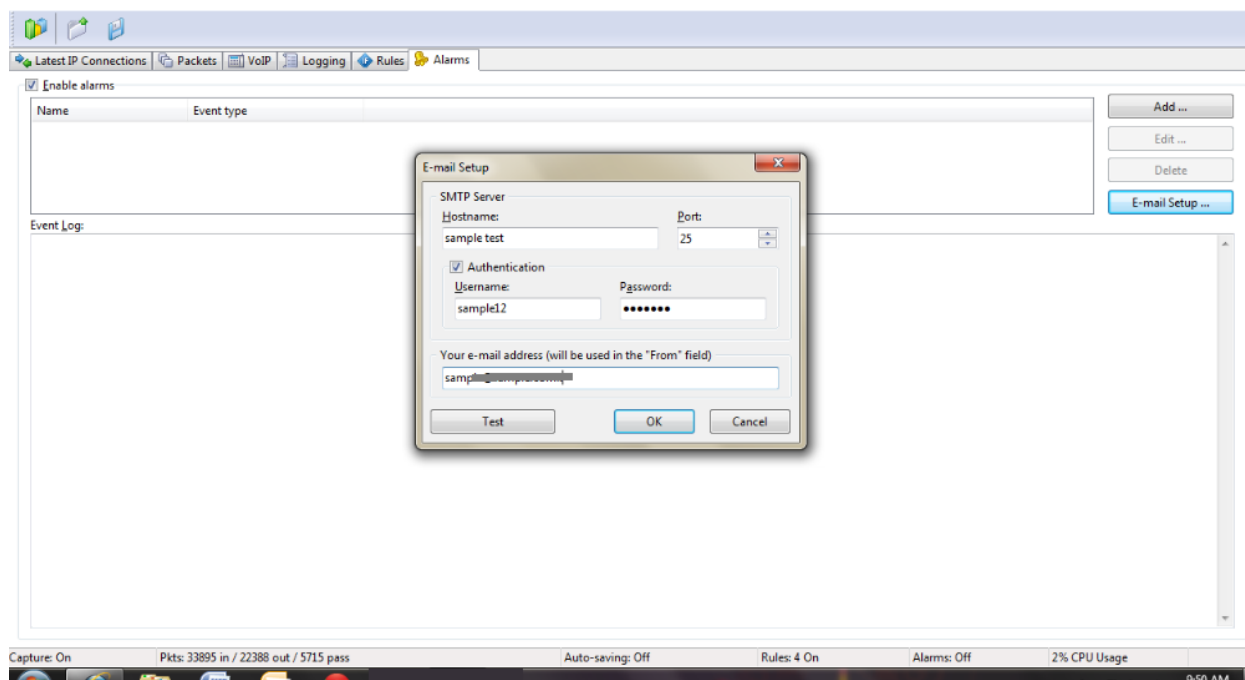


Figure 25: Admin automated notification settings

Capture of information packets

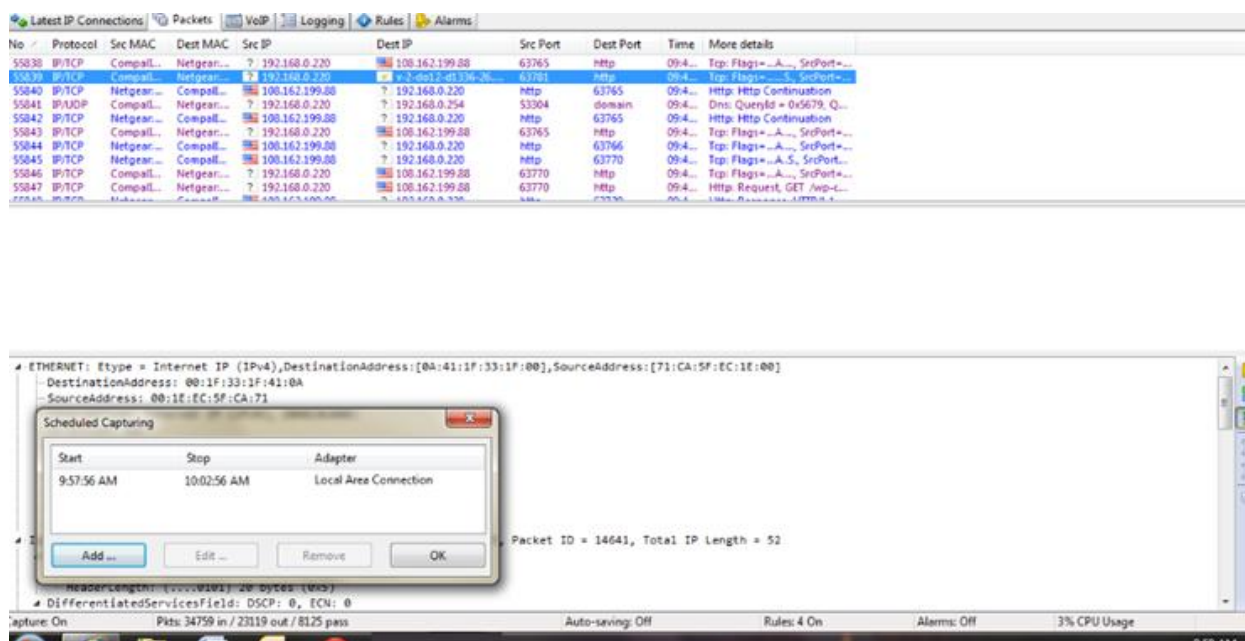


Figure 26: Admin capture of information packets, even schedule can be added

Detailed setup in terms of stats

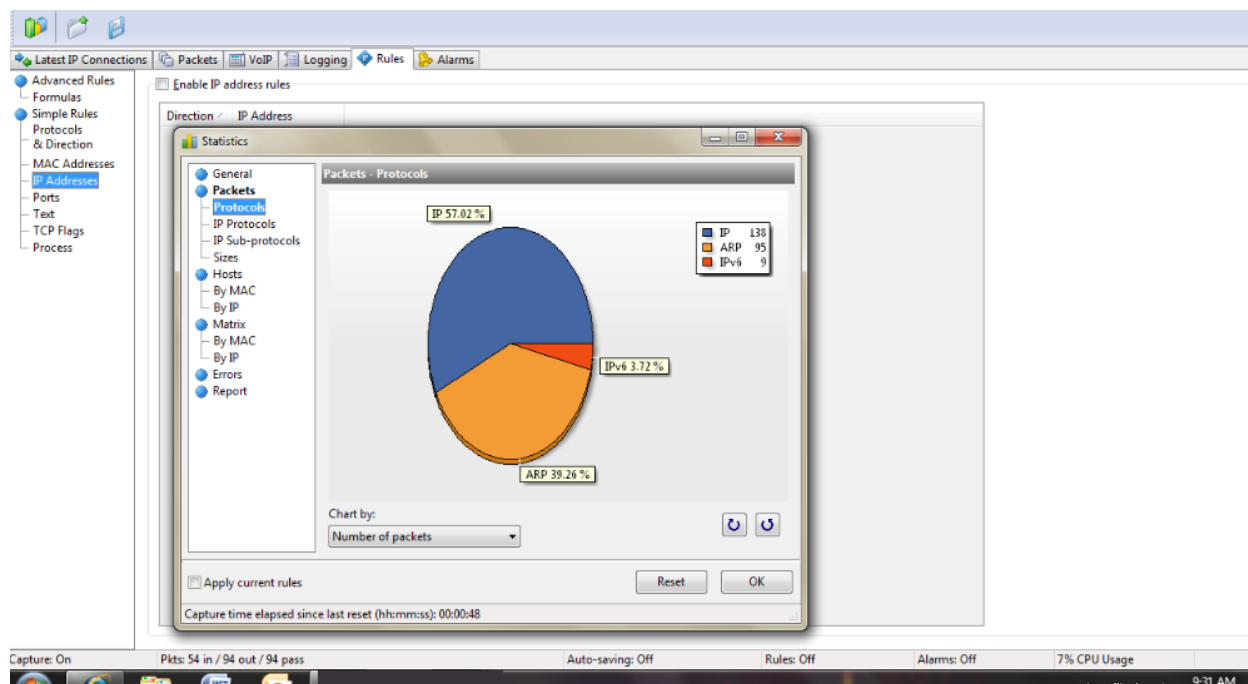


Figure 27: Admin detailed setup in terms of stats

Stat shown

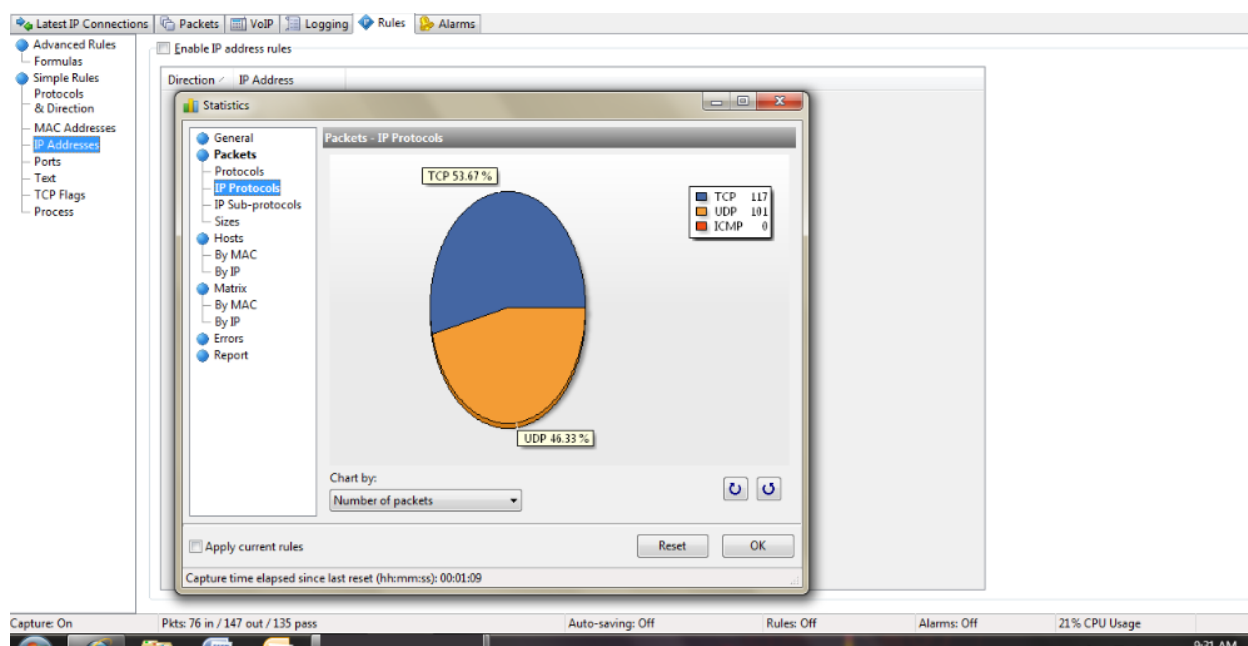


Figure 28: Admin stat shown

MAC stat shown

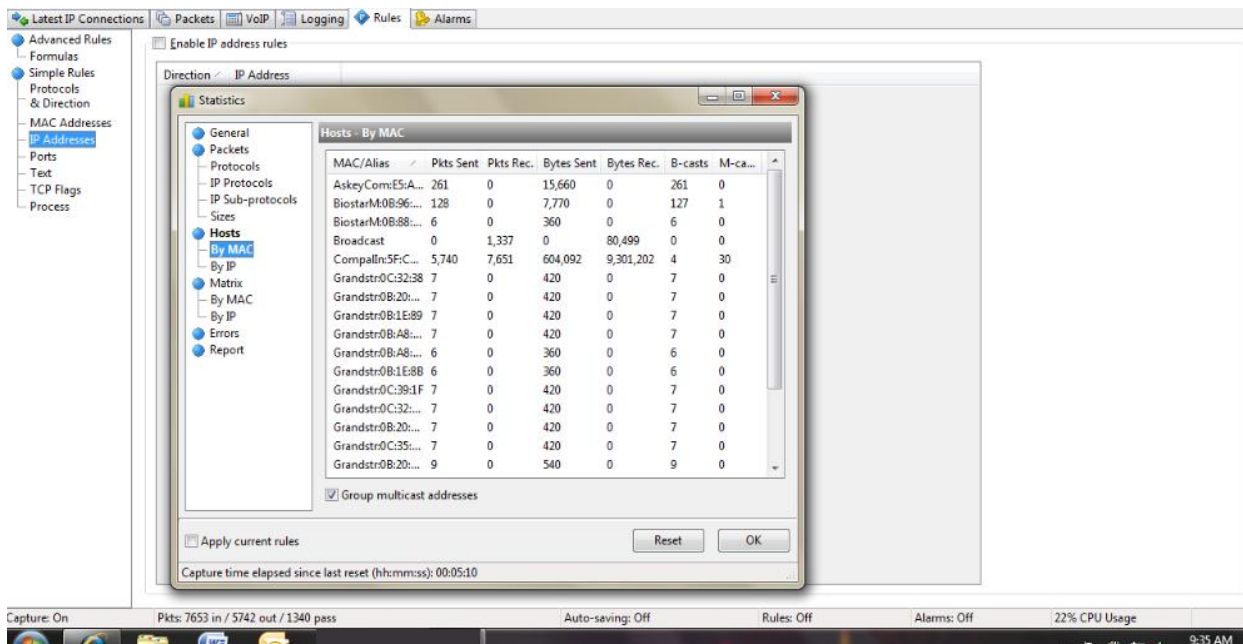


Figure 29: Admin MAC stat shown

Reports settings

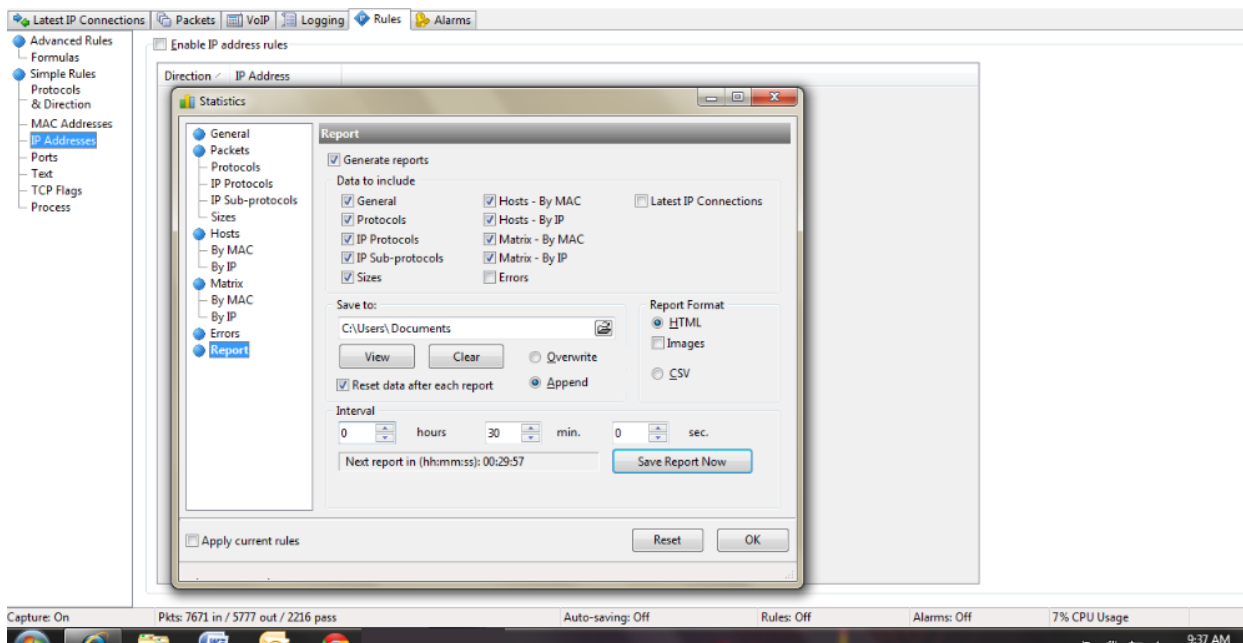


Figure 30: Admin reports settings

Custom reference

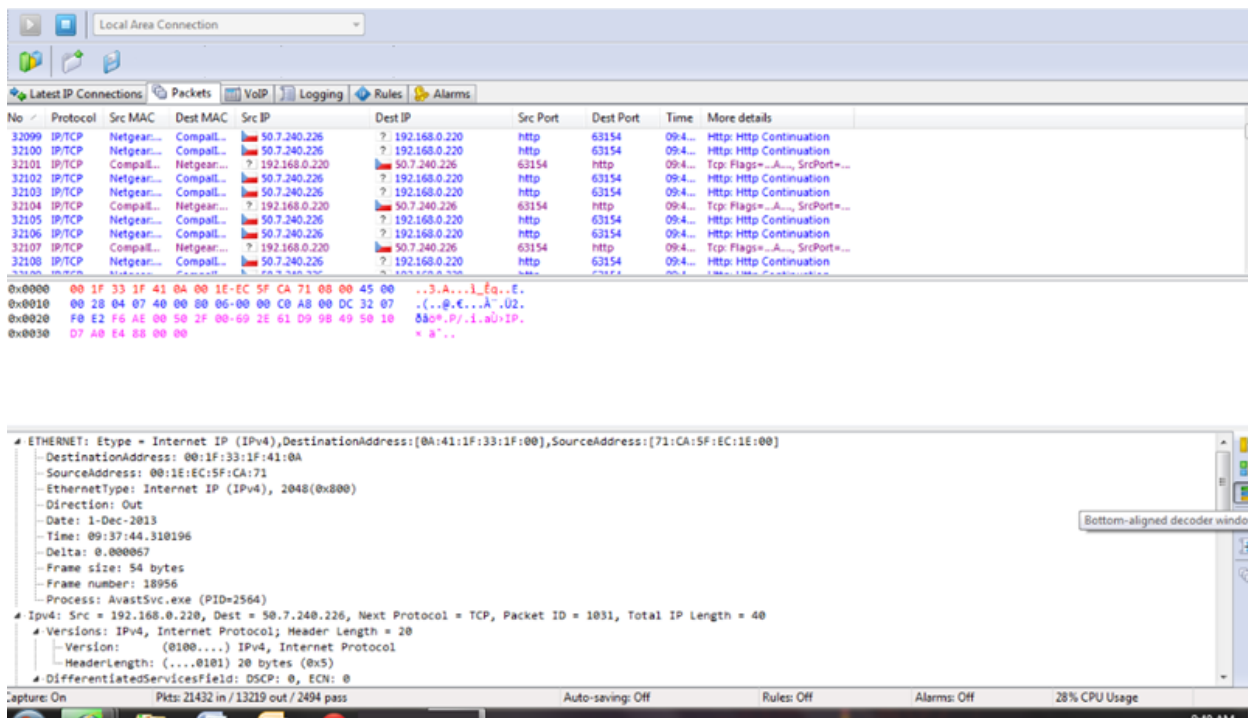


Figure 31: Admin custom reference shown

Security analysis with dummy reference design

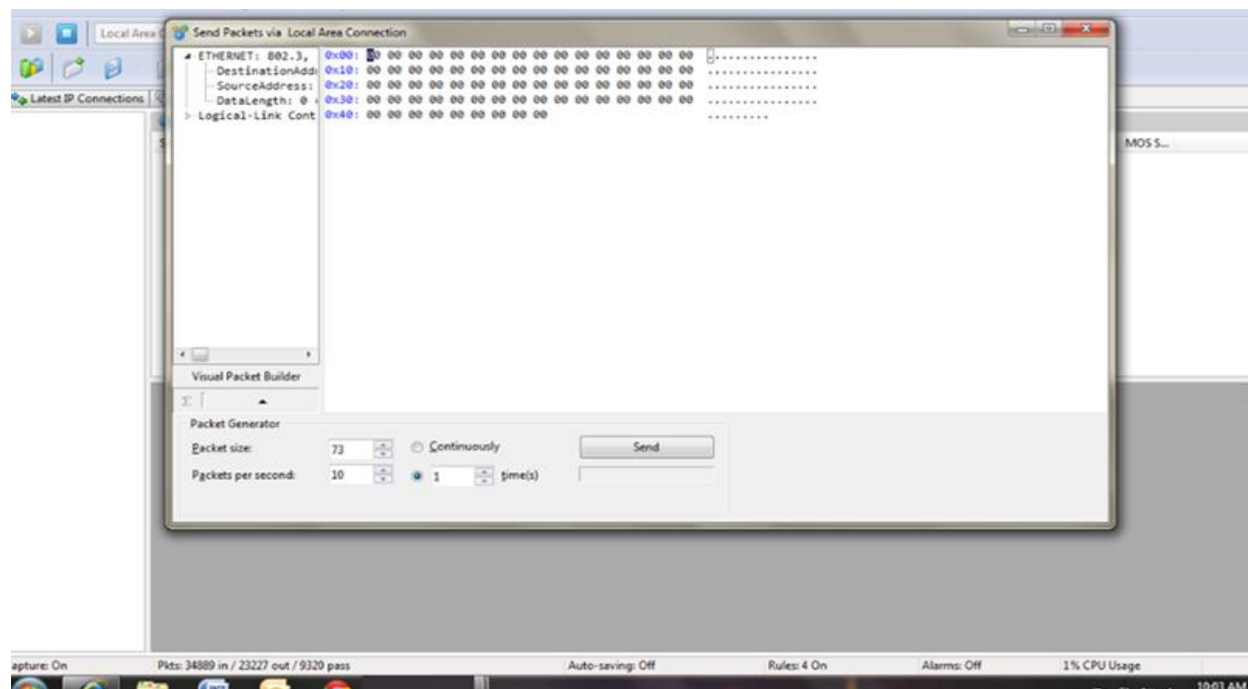


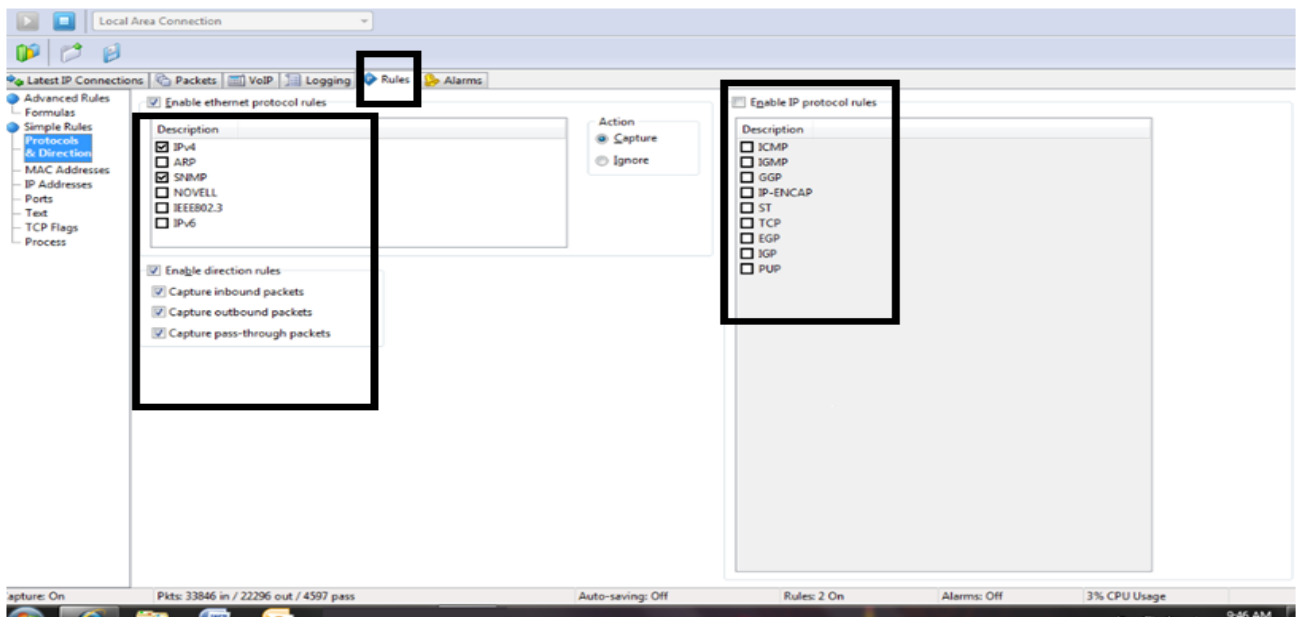
Figure 32: Admin security analysis with dummy reference design

Real time scan

Local IP	Remote IP	In	Out	Direction	Sessions	Ports	Hostname	Bytes	Process
192.168.0.1	216.38.27.62	3	3	In	0	62951,62942...	62.27.38.216.hosted.b...	342	AvastSvc.exe
192.168.0.1	54.236.136.195	1	1	In	0	63125	ec2-54-236-136-195.c...	114	AvastSvc.exe
fe80::a58...	ff02::0001:0002	0	7	Pass	0	dhcpc6-clie...		1,050	
192.168.0.1	255.255.255.255	0	1	Out	0	bootps		342	svchost.exe
192.168.0.1	192.168.0.254	12	11	In	0	bootpc,5129...		2,848	svchost.exe
fe80::1c9...	ff02::0001:0003	0	8	Out	0	lmnr		904	svchost.exe
192.168.0.1	224.0.0.252	0	8	Out	0	lmnr		744	svchost.exe
192.168.0.1	192.168.3.255	0	3	Out	0	netbios-ns		276	System
192.168.0.1	65.55.53.190	3	8	Out	1	http,netbios...		1,268	System
192.168.0.1	54.230.190.92	1	1	In	0	62930	server-54-230-190-92...	114	AvastSvc.exe
192.168.0.1	31.13.79.49	1	1	In	0	63097	edge-star-shv-06-sin1...	114	AvastSvc.exe
192.168.0.1	54.230.190.216	1	1	In	0	63066	server-54-230-190-21...	114	AvastSvc.exe
192.168.0.1	50.7.225.98	1	0	In	0	62899		60	AvastSvc.exe
192.168.0.1	50.7.240.226	5157	2796	Out	1	http,netbios...		7,540,520	AvastSvc.exe
192.168.0.1	111.221.26.253	9	13	Out	1	http,netbio...		8,259	System
192.168.0.1	8.39.37.25	1	1	In	0	63095		114	AvastSvc.exe
fe80::1c9...	ff02::000c	0	6	Out	0	ssdp		1,080	svchost.exe
192.168.0.1	239.255.255.250	0	9	Out	0	ssdp,netbio...		1,272	svchost.exe
192.168.0.1	8.39.37.21	3	3	In	0	63035,63036...		342	AvastSvc.exe
192.168.0.1	178.255.83.1	5	5	Out	1	http	ocsp.comodoca.com	1,755	svchost.exe

Figure 33: Admin real time scan shown

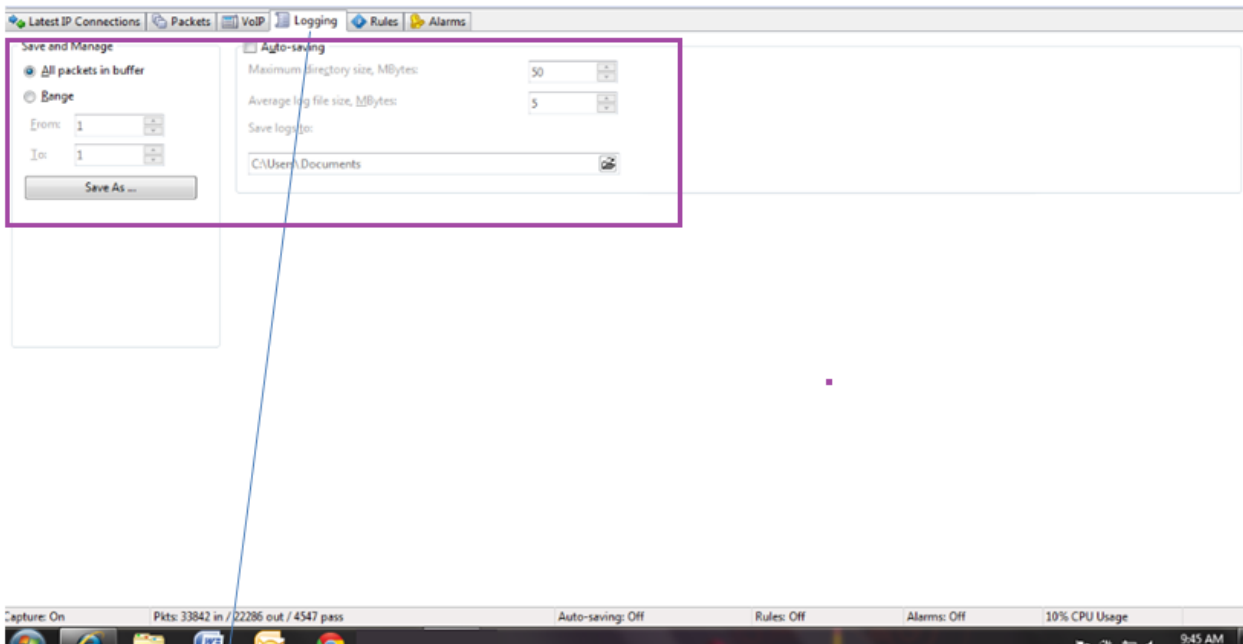
USER SIDE – Adding the rules



Adding the rules

Figure 34: User adding the rules

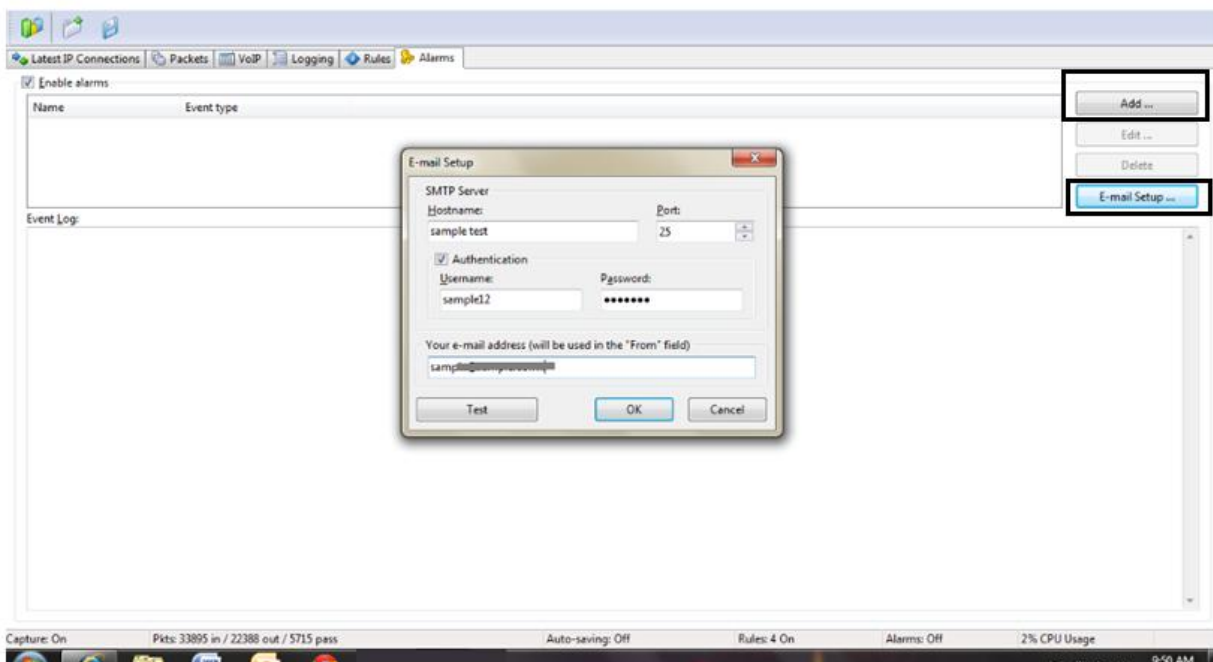
Logging information



Logging information for the data sync

Figure 35: User logging info for data sync

Notification Setting



Automated notification settings

Figure 36: User notification Setting

Information packets

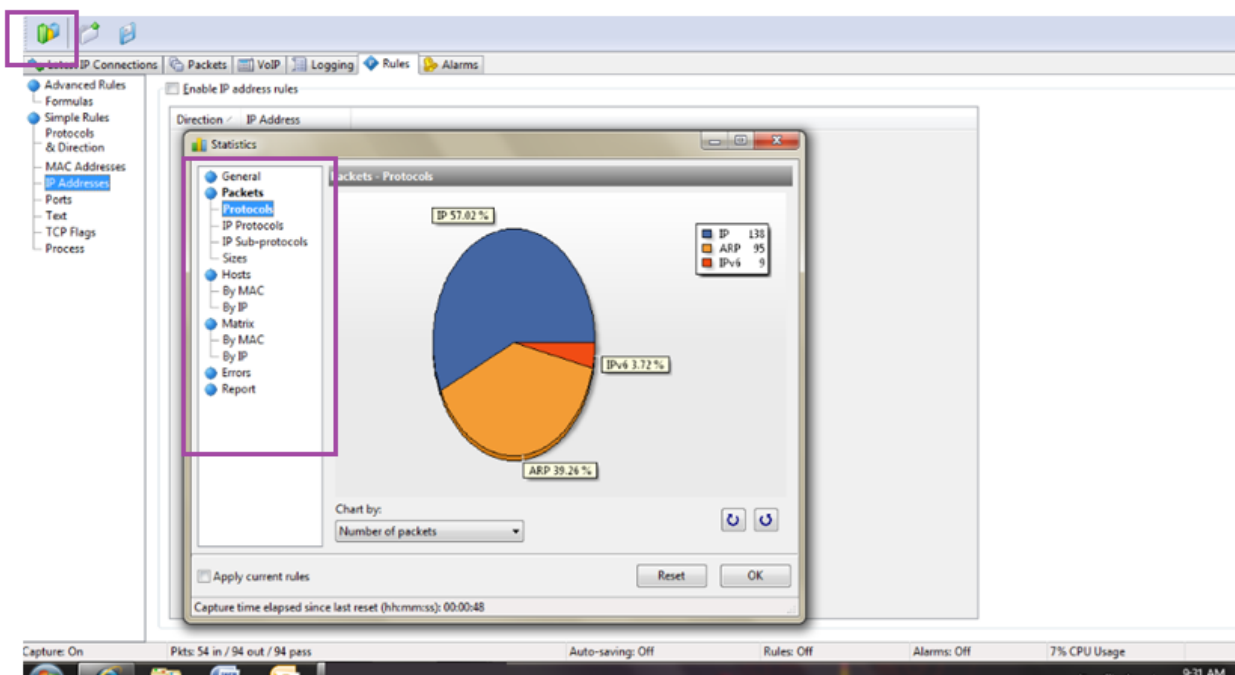
No.	Protocol	Src MAC	Dest MAC	Src IP	Dest IP	Src Port	Dest Port	Time	More details
55030	IP/TCP	Compa...	Netgear...	192.168.0.220	100.162.199.88	63765	http	09:4...	Tcp: Flags=...A...
55031	IP/TCP	Compa...	Netgear...	192.168.0.220	100.162.199.88	63765	http	09:4...	Tcp: Flags=...A...
55043	IP/TCP	Netgear...	Compa...	100.162.199.88	192.168.0.220	http	63765	09:4...	Http: Http Continuation
55041	IP/UDP	Compa...	Netgear...	192.168.0.220	192.168.0.254	53004	domain	09:4...	Dns: QtypeId = 6c6f79, Q...
55042	IP/TCP	Netgear...	Compa...	100.162.199.88	192.168.0.220	http	63765	09:4...	Http: Http Continuation
55043	IP/TCP	Compa...	Netgear...	192.168.0.220	100.162.199.88	63765	http	09:4...	Tcp: Flags=...A...
55044	IP/TCP	Netgear...	Compa...	100.162.199.88	192.168.0.220	http	63766	09:4...	Tcp: Flags=...A...
55045	IP/TCP	Netgear...	Compa...	100.162.199.88	192.168.0.220	http	63770	09:4...	Tcp: Flags=...A...
55046	IP/TCP	Compa...	Netgear...	192.168.0.220	100.162.199.88	63770	http	09:4...	Tcp: Flags=...A...
55047	IP/TCP	Compa...	Netgear...	192.168.0.220	100.162.199.88	63770	http	09:4...	Http: Request, GET /wp-c...



Capture of information packets, even schedule can be added

Figure 37: User capture of info packets

Detailed set up



Detailed setup in terms of stats

Figure 38: User detailed setup in terms of stats

Stats shown

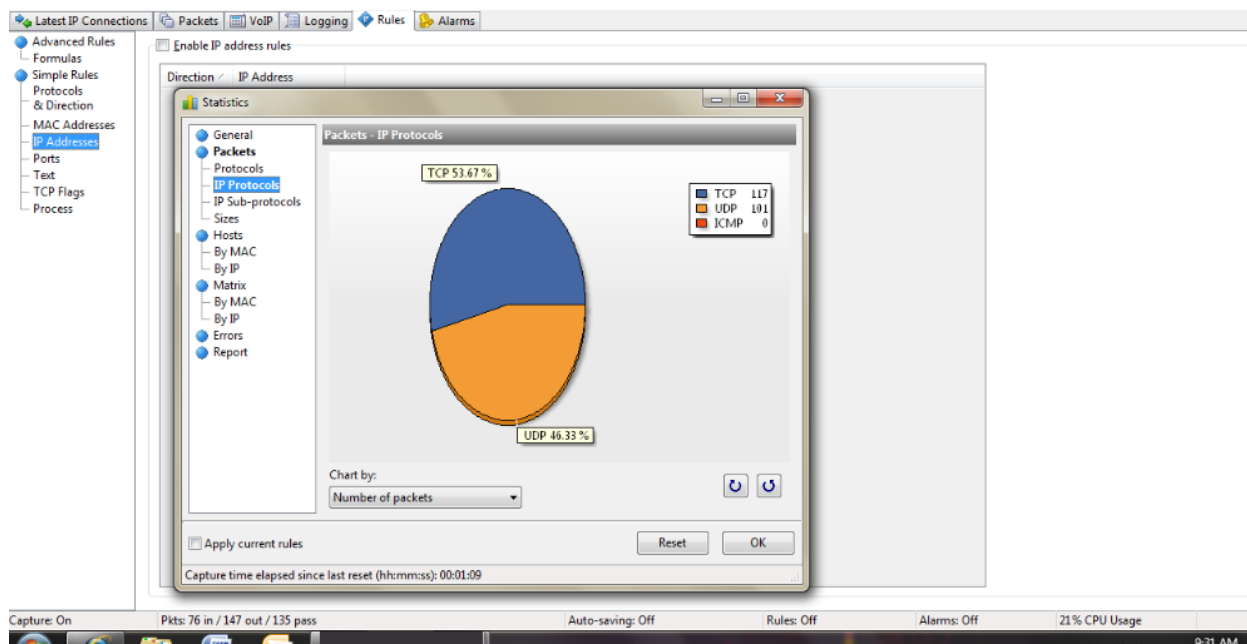


Figure 39: User stats shown

MAC stats

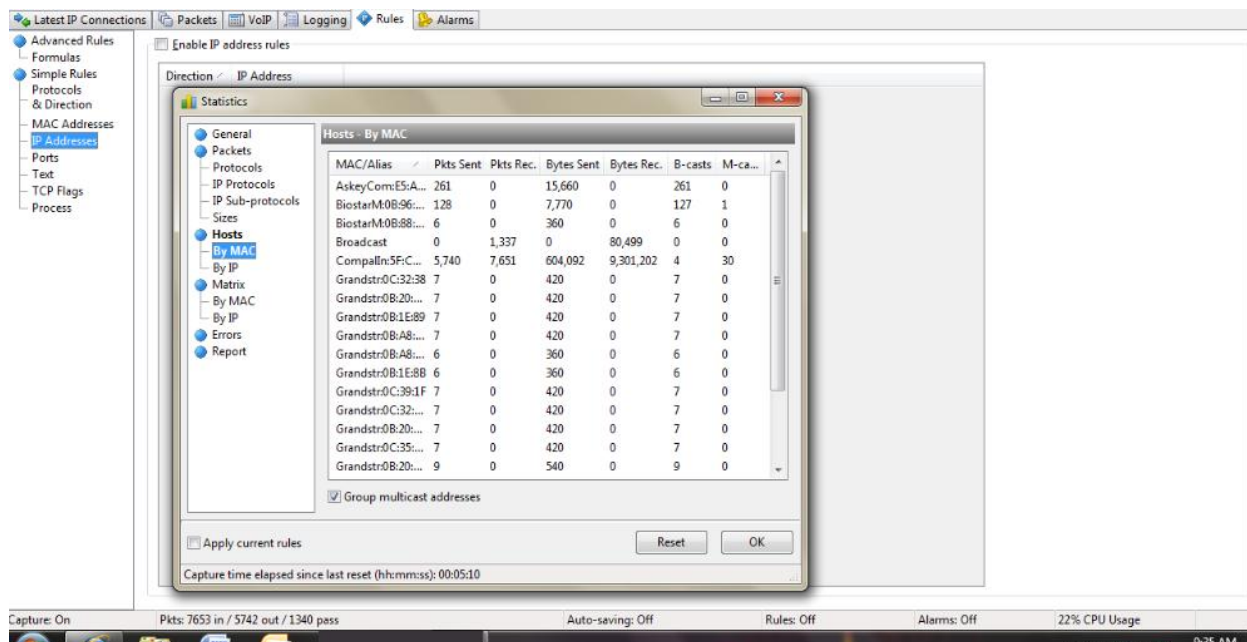
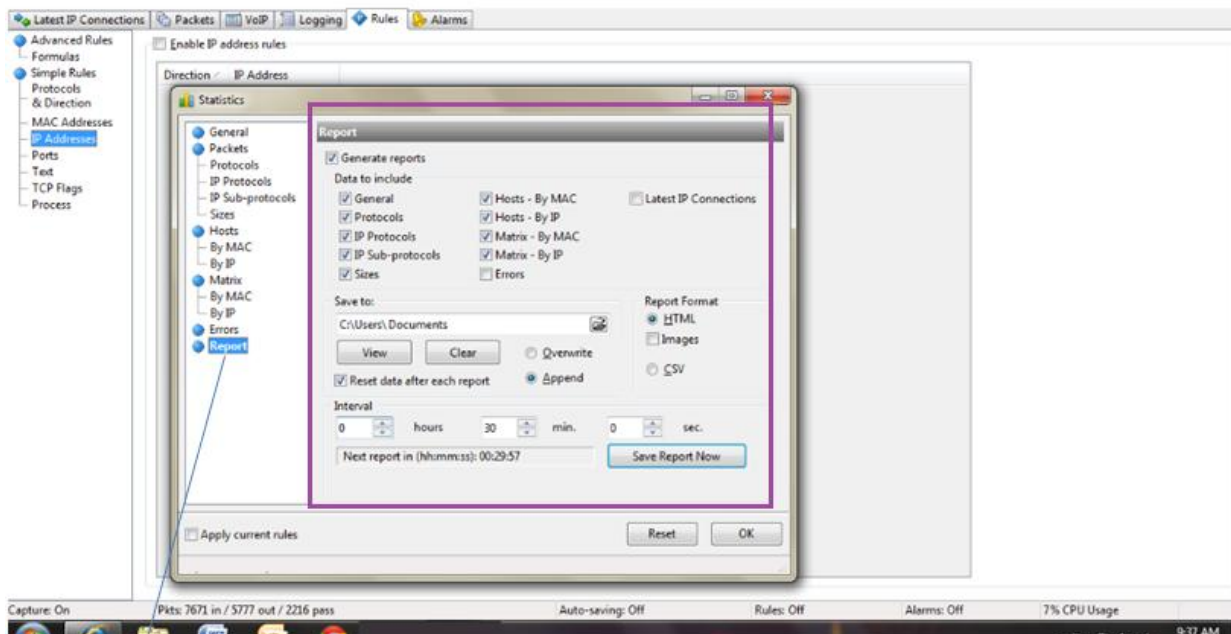


Figure 40: User MAC stats shown

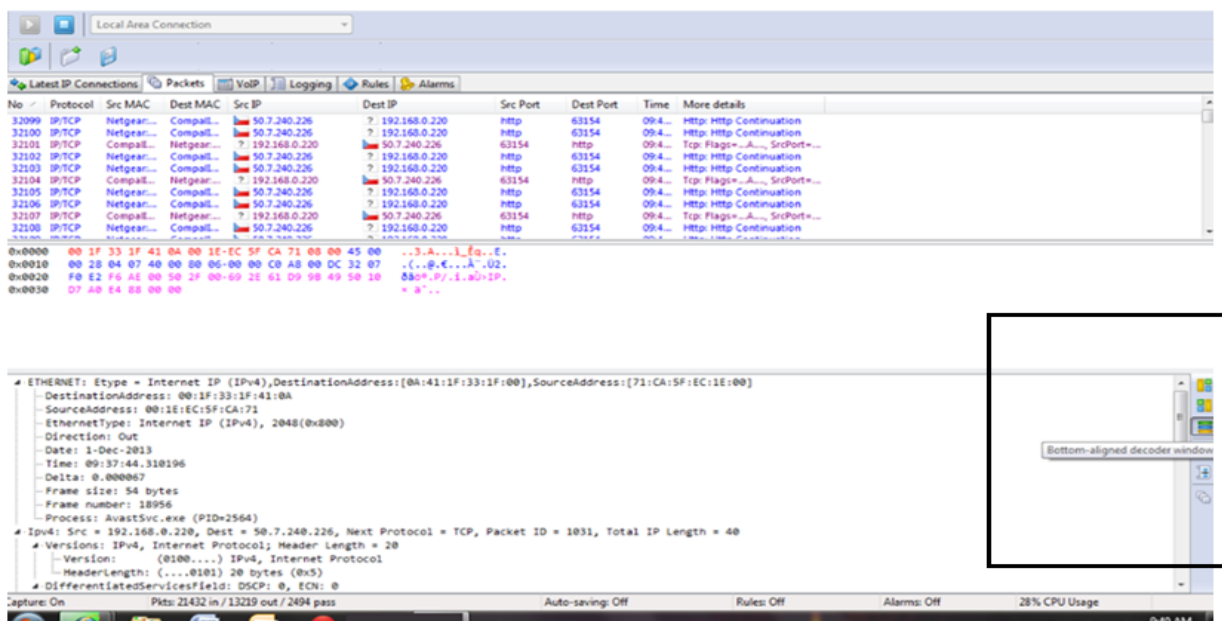
Report settings



Reports settings

Figure 41: User report settings

Custom reference



Custom reference shown

Figure 42: User Custom Reference

Real time scan

Local IP	Remote IP	In	Out	Direction	Sessions	Ports	Hostname	Bytes	Process
? 192.168.0...	216.38.27.62	3	3	In	0	62951,62942...	62.27.38.216.hosted.b...	342	AvastSvc.exe
? 192.168.0...	54.236.136.195	1	1	In	0	63125	ec2-54-236-136-195.c...	114	AvastSvc.exe
? fe80::c5...	? #02:0001:0002	0	7	Pass	0	dhcpv6-clie...		1,050	
? 192.168.0...	? 255.255.255.255	0	1	Out	0	bootps		342	svchost.exe
? 192.168.0...	? 192.168.0.254	12	11	In	0	bootpc,5129...		2,848	svchost.exe
? fe80::14...	? #02:0001:0003	0	8	Out	0	limnr		904	svchost.exe
? 192.168.0...	? 224.0.0.252	0	8	Out	0	limnr		744	svchost.exe
? 192.168.0...	? 192.168.3.255	0	3	Out	0	netbios-ns		276	System
? 192.168.0...	65.55.53.190	3	8	Out	1	http,netbios...		1,268	System
? 192.168.0...	54.230.190.92	1	1	In	0	62930	server-54-230-190-92...	114	AvastSvc.exe
? 192.168.0...	31.13.79.49	1	1	In	0	63097	edge-sta1-shv-06-sin1...	114	AvastSvc.exe
? 192.168.0...	54.230.190.216	1	1	In	0	63066	server-54-230-190-21...	114	AvastSvc.exe
? 192.168.0...	50.7.225.98	1	0	In	0	62899		60	AvastSvc.exe
? 192.168.0...	50.7.240.226	5157	2796	Out	1	http,netbios...		7,540,520	AvastSvc.exe
? 192.168.0...	111.221.26.253	9	13	Out	1	https,netbios...		8,259	System
? 192.168.0...	8.39.37.25	1	1	In	0	63095		114	AvastSvc.exe
? fe80::1c...	? #02:000c	0	6	Out	0	ssdp		1,080	svchost.exe
? 192.168.0...	? 239.255.255.250	0	9	Out	0	ssdp,netbio...		1,272	svchost.exe
? 192.168.0...	8.39.37.21	3	3	In	0	63035,63036...		342	AvastSvc.exe
? 192.168.0...	178.255.83.1	5	5	Out	1	http	ocsp.comodoca.com	1,755	svchost.exe

Capture: On Pkts: 12862 in / 8633 out / 2337 pass Auto-saving: Off Rules: Off Alarms: Off 8% CPU Usage 9:28 AM

Real time scan shown

Figure 43: User Real time scan

CODE SNIPPET**Analyzer:**

```

package jdumper.analyzer;

import jpcap.packet.*;
import java.util.*;

public class IPv6Analyzer extends JDPacketAnalyzer
{
    private static final String[] valueNames={
        "Version",
        "Class",
        "Flow Label",
        "Length",
        "Protocol",
        "Hop Limit",
        "Source IP",
        "Destination IP",
        "Source Host Name",
        "Destination Host Name"};
    Hashtable values=new Hashtable();

    public IPv6Analyzer(){
        layer=NETWORK_LAYER;}

    public boolean isAnalyzable(Packet p){
        if(p instanceof IPPacket && ((IPPacket)p).version==6) return true;
        else return false;}

    public String getProtocolName(){
        return "IPv6";}

    public String[] getValueNames(){
        return valueNames;}

    public void analyze(Packet packet){
        values.clear();

        if(!isAnalyzable(packet))    return;

        IPPacket ip=(IPPacket)packet;
        values.put(valueNames[0],new Integer(6));

```

```
values.put(valueNames[1],new Integer(ip.priority));
values.put(valueNames[2],new Integer(ip.flow_label));
values.put(valueNames[3],new Integer(ip.length));
values.put(valueNames[4],new Integer(ip.protocol));
values.put(valueNames[5],new Integer(ip.hop_limit));
values.put(valueNames[6],ip.src_ip.getHostAddress());
values.put(valueNames[7],ip.dst_ip.getHostAddress());
values.put(valueNames[8],ip.src_ip.getHostName());
values.put(valueNames[9],ip.dst_ip.getHostName());

    public Object getValue(String valueName){
        return values.get(valueName);
    }

    Object getValueAt(int index){
        if(index<0 || index>=valueNames.length) return null;
        return values.get(valueNames[index]);
    }

    public Object[] getValues(){
        Object[] v=new Object[valueNames.length];
        for(int i=0;i<valueNames.length;i++)
            v[i]=values.get(valueNames[i]);
        return v;
    }
}
```

Figure 44: Code snippet of Analyzer page

Packet:

```

private static final String[] valueNames={"Captured Time","Captured Length"};
private Packet packet;

public boolean isAnalyzable(Packet packet){
return true;}

public String getProtocolName(){
return "Packet Information";}

public String[] getValueNames(){
return valueNames;}

public void analyze(Packet p){
packet=p;}

public Object getValue(String name){
if(name.equals(valueNames[0]))
return new java.util.Date(packet.sec*1000+packet.usec/1000).toString();
else if(name.equals(valueNames[1]))
return new Integer(packet.caplen);
else return null;
}

Object getValueAt(int index){
switch(index){
case 0: return new
java.util.Date(packet.sec*1000+packet.usec/1000).toString();
case 1: return new Integer(packet.caplen);
default: return null;
}
}

public Object[] getValues(){
Object[] v=new Object[2];
v[0]=new java.util.Date(packet.sec*1000+packet.usec/1000).toString();
v[1]=new Integer(packet.caplen);
return v;
}
}

```

Figure 45: Code snippet of Packet page

CHAPTER 7

SOFTWARE TESTING

The system is based on different types of behavioral analysis in network related activity provisions so it is quite Complex and we have to check each and every reference properly because in the real-time the clients will be dependent on to the variations that are provided by the system.

Multiple types of working acknowledgement will be established and we have to acknowledge the work in such a way that all perception should be satisfied. It provides automated working so we have to check the accuracy for that as we want that according to the related triggers that has been acknowledged the system should work.

All types off related requirements which are associated with the clients will be checked for the acceptance as we want that system can provide all types of compatibility working in real-time instance for which it has been designed. Software testing considerations are required to be associated with all reference of integrated techniques that are provided within the system because we have to check that all adequate references that are required to be established has to be referenced properly in different terms because the network environment will be different in different types of organizational perspectives. Multiple types of approaches that are integrated will be checked for different detailed tabulation references and has to be optimized with clear performance visibility.

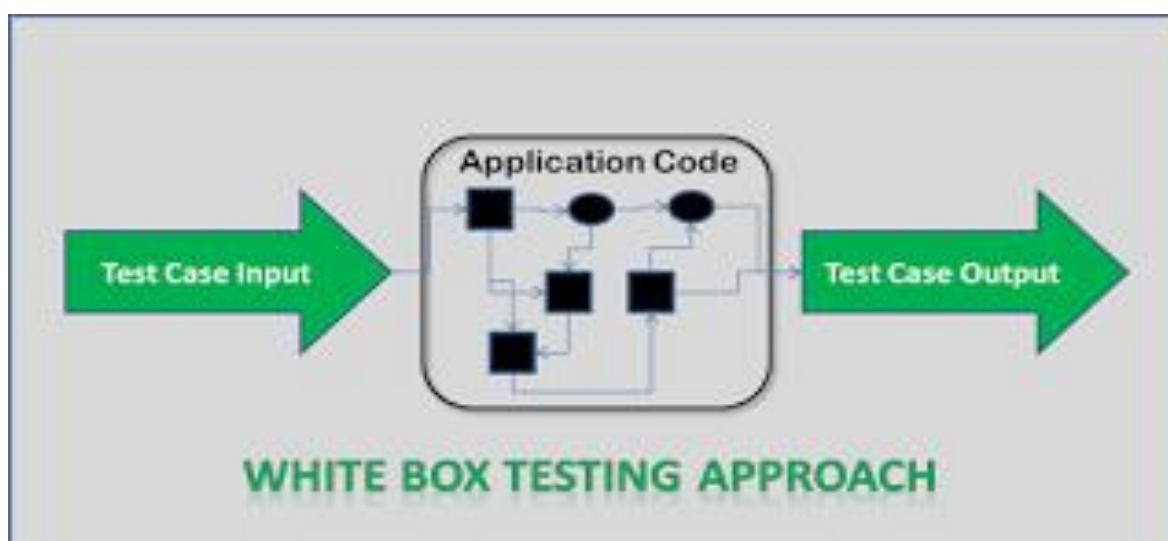


Figure 46: white box testing process

Unit Testing

- Individual units of the information gathering and individual references of working will be checked and detailed data flow and code coverage techniques will be utilized for the differential unit testing.
- Integrations will be checked so that the compatibility references can be identified.
- All types of related utilities based on different types of technologies will be also check for the referential compatibility because the Technology plays important role.
- All types of references that are required to be checked in terms of the report structuring will be check for the accuracy.
- All references of the related perceptions are being checked for the related reports that have been presented even the base of the conversions are checked.
- The customizations that are required to be implemented for any provisional working and display will be also undertaken.
- Conditional references for the triggers will be checked.
- Unit test perceptions are important because individually the hypothesis that will be provided by the system will check for the interpretations and for the correctness that the reports are displayed. The environment references will be different so we have to check that how in real time the resources are utilized and display is presented.

White Box Testing

We are also considering the white box testing as we want that proper inclusion of the experts to check the references of the code can be undertaken.

Multiple types of courts that are written will be checked in detail and all types of work accomplishments will be associated or we can say that multiple teams with detail knowledge about the work will be having different automation references and Manual references to check the related designs.

White box testing is helpful because we are taking lots of hierarchical references which has to be obtained in such a way that constitution of the variation has to be supported or we can say that any type of control or regulation that is required to be implemented should work properly so references at the time of programming will be checked.

DIFFERENT TESTING STAGES

- **Unit Testing** – Here each stage of web application is tested, tests performed on few inputs to get single output like spelling mistakes in source code and syntax errors.
- **Module Testing** – Entire module is tested, In the web application module by module is tested by checking all the source code of module that is compiled at once.
- **System Testing** - The testing strategy is stressed over finding goofs that result from sudden coordinated efforts between sub-structures and system parts. Its in manner stressed over affirming those system find helpful also non-valuable necessities.

Test case-

In here is a condition that checks correct output with expected one, which determines the software is validated, verified and bug free. It contains Test case Id, Description, Actual outcome, Expected outcome and Status which prescribes whether the actual outcome is same as expected outcome, it states pass or fail.

Test Plan

Test plan is an approach that prescribes the scope of software testing and it's activities. It is a detailed document that contains strategy, resources, objectives, schedule, estimation and test deliverables. Test plan gives out a blueprint to process software testing which is monitored and controlled every minute by the testing manager.

Test Data

Test data is a material or a content that is used in tests that can be a computer program, In plan gives out a blueprint to process software testing which is monitored and controlled every minute by the testing manager.

Test Data

Test data is a material or a content that is used in tests that can be a computer program, In some ways it is testes with the existing functionalities to get the expected outcome.

Test Report

Test report is said to be test cases which contains detailed description of tests to be performs and it contains the data of actual outcome from the software or an application which is compared with the expected outcome that results displaying a status whether the test case is pass or fail.

Project Name: Rule-based behavioral statistics generator with multi environment support

Created By: Nikithasowmya

Creation Date: 20-05-2020

Reviewed By: Uma B

Reviewed Date: 24-05-2020

TEST CASES OF PROJECT

Number	Test Description	Test Input	Expected Results	Actual	Test Status	Severity
1	Control for admins	Admin details provided	Login success is	Admin access page provided	Pass	Major
2	Adding networks	Setups	Added and save	Various setups provided and network association achieved	Pass	critical
3	Working settings	Selective	Multiple options	Provided with options	Pass	Critical
4	View changes	Add as required	Modification provided	Displayed	Pass	Critical
5	Information	Setups	Report options	Generated reports seen	Pass	Critical
6	Errors	Auto	Error displayed	Different details in the form of errors shown	Pass	Minor

7	Display	Selective	Access functions	Various tables generated	Pass	Critical
8	Operations	Authentication provided	added	Operation considerations seen	Pass	Critical
9	Data format change	Selective options	Displayed	Data formats can be structured	Pass	Critical

CHAPTER 8

CONCLUSION

Categorical working and proper information capture is being provided with the help of the system so when we have utilize a system we add multiple networks and we found that easy integrations and what factors were provided. We can also established the system is integrated with multiple types of differential working based on the monitoring references of different identities and activities of the network whereas even the monitoring provisions of different types of security references were also acknowledged. System can be also directly used for the operations based on identities of the network so any type of remote work ability is support where different types of configurations are provided by the system.

We have utilize the system for different references of information gathering and we can acknowledge that system provides a detailed understanding of setups where we can structure the type of report format we require and accordingly the system generates the report and provides us. All types of associations that are required for doing a collaborated working is also provided based on different types of user accessibility and other consideration. The system can be generalized with all rules and regulations which is supported with the help of detailed customization options included. All types of working references are properly regulated from a central consoled and even any type of modifications required at any point of time can be properly recognized so we can say some provides all types of flexibility and it was cost-effective as multiple references can be generalized. We can also conclude that when the statistical behavior has been analyzed it has been checked that all types of rule based behavioral analysis was promoted with proper promotional consideration. All types of references of multi environment support is provided within the system so we have utilized it in different variations and found that proper compatibility reference was provided.

CHAPTER 9

FUTURE ENHANCEMENT

In future we know that different type of new requirements may arise so we should understand the new requirement with proper discussion and accordingly new options are here.

Few main perceptions that are included in the future is listed as following-

- Multiple types of references that are required to be provided in terms of reports can be also added with multiple Automations and auto transfer option.
- Considerations of information reference is required to be provided so that any type of reports and any type of work associations that are acknowledge in real time can be associated with the detailed information for better understanding.
- More customization options can be added.

CHAPTER 10

APPENDIX A

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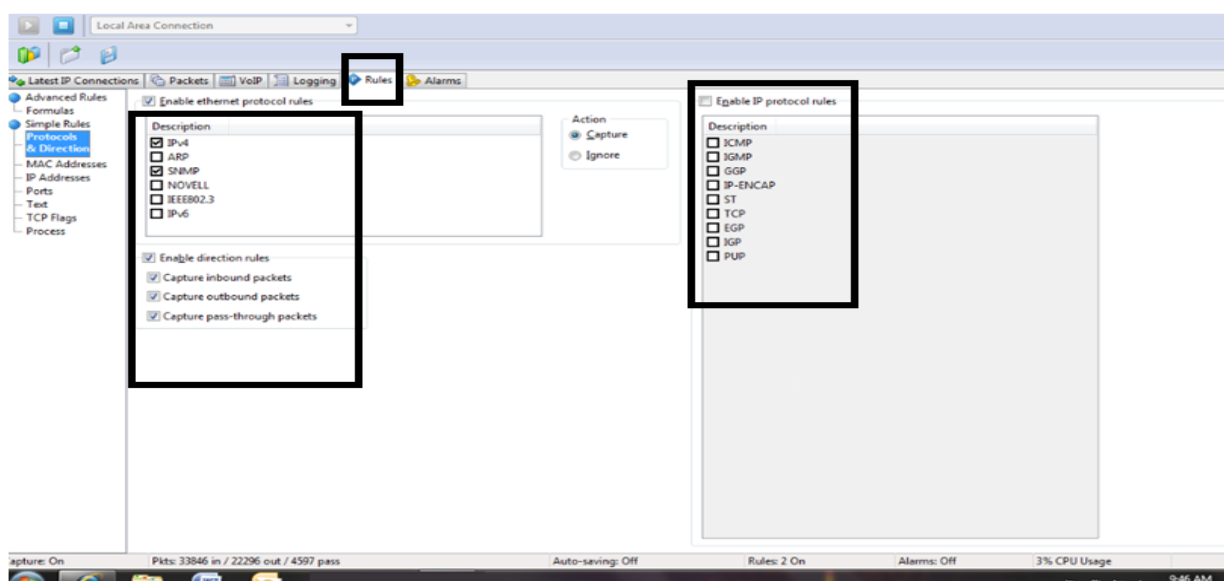
- www.wikipedia.com
- www.scribd.com
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CHAPTER 11

APPENDIX B

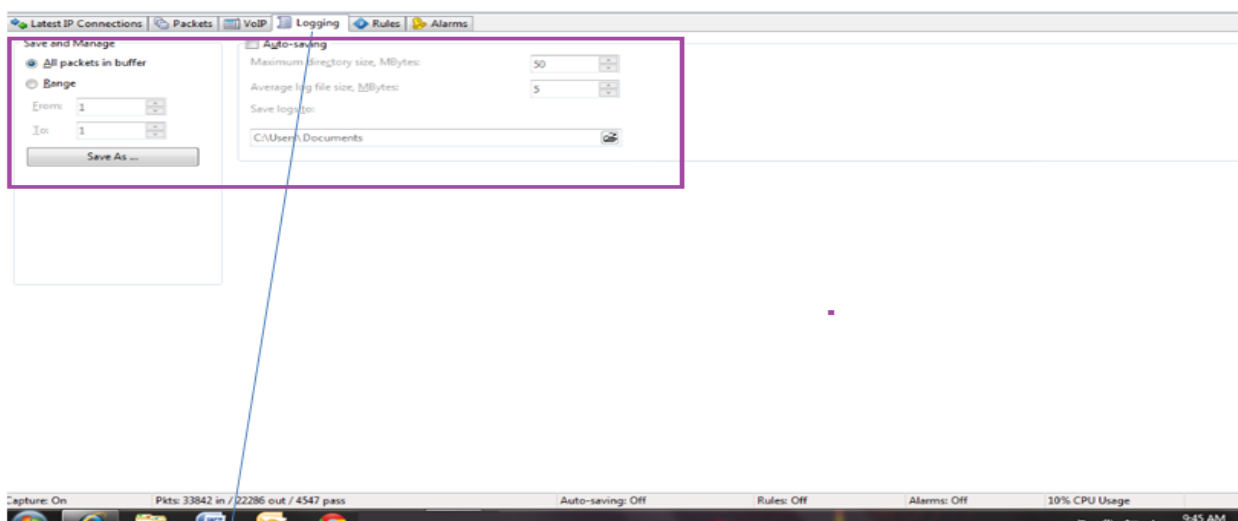
USER MANUAL

1. DISPLAYING USER DETAILS



Adding the rules

Figure 47: User's adding the rules



Logging information for the data sync

Figure 48: Logging information

2. Displaying the stats details

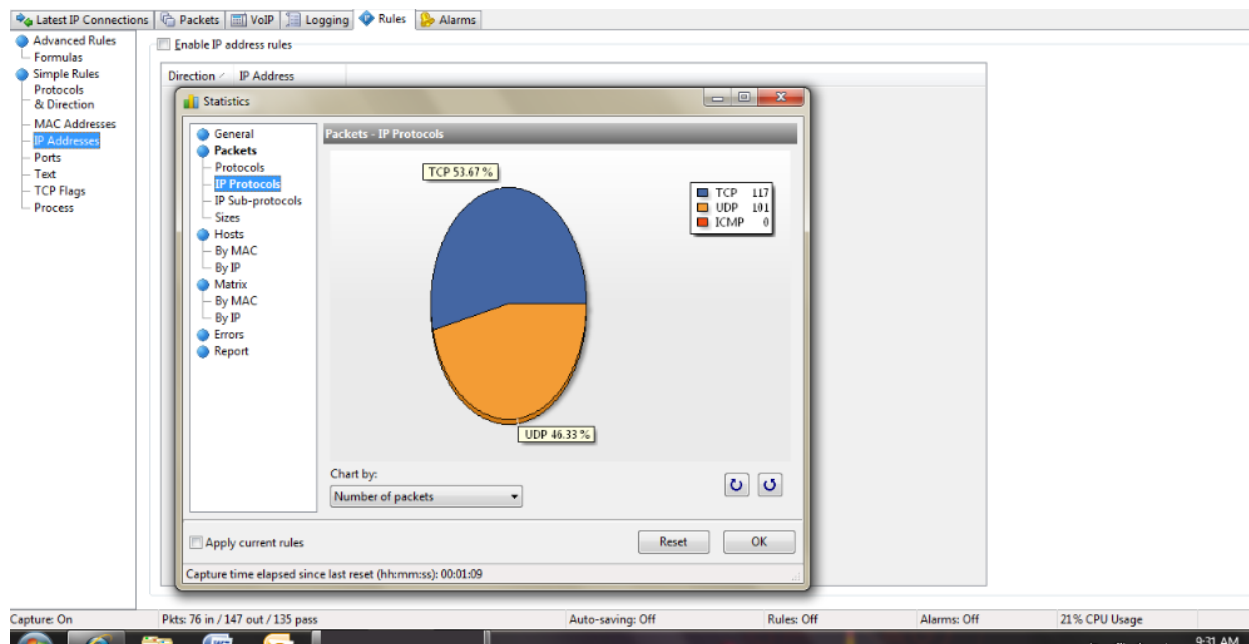


Figure 49: Stats details

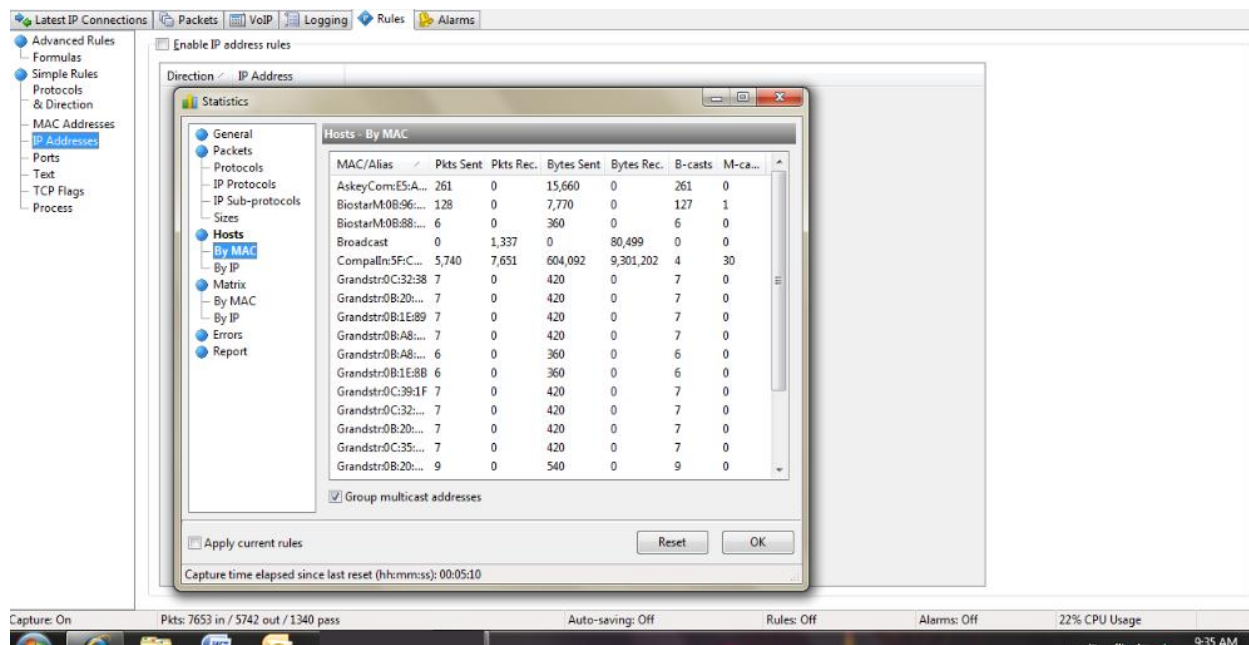


Figure 50: MAC stats details

3. Re-captcha Credentials

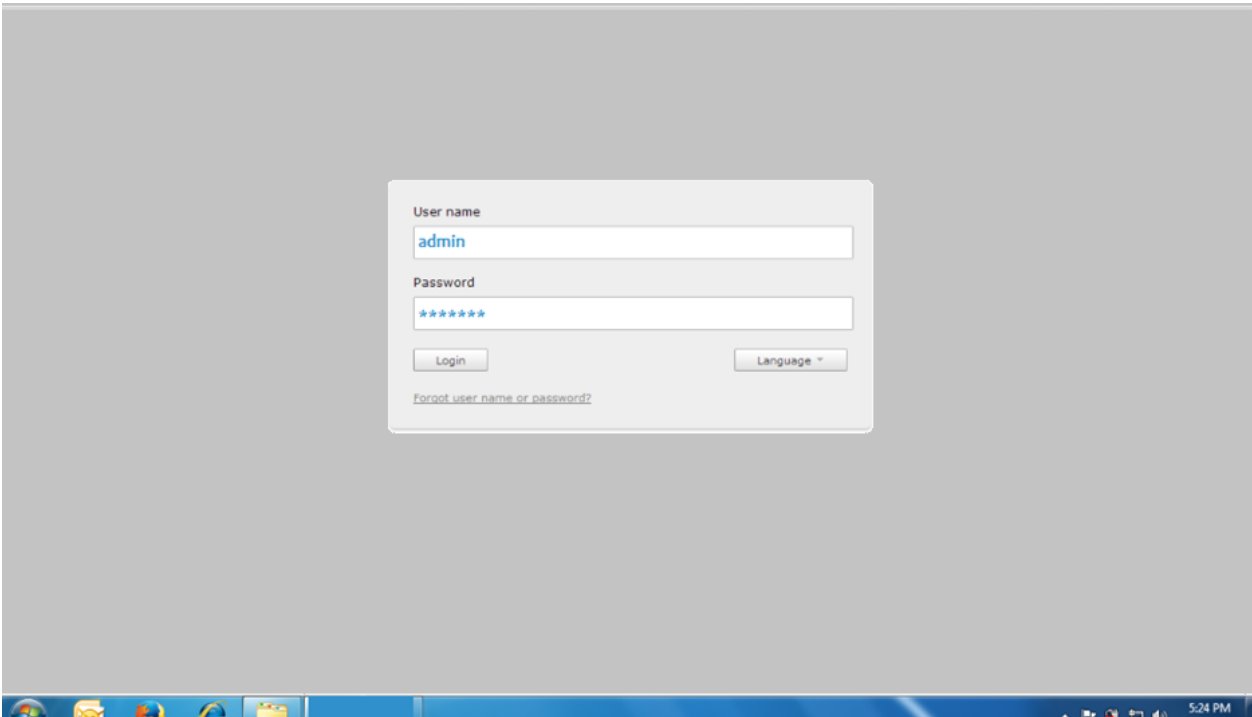


Figure 51: Login of admin's and users