DTMF NETWORKS SDN BHD

vSwitchPro – User Manual

A Soft Switch Product by <u>DTMF Networks SDN BHD</u>

DTMF Networks SDN BHD B3-01B, SME Technopreneur Centre, 2270 Jalan Usahawan 2, 63000 Cyberjaya, Selangor DE, Malaysia Tel: +60 3 8320 2855 Fax: +60 3 8320 3108

Email: support@dtmfnetworks.com
info@dtmfnetworks.com

Table of Content

Chapter 1 EXECUTIVE SUMMARY

1.1. INTRODUCTION

vSWITCHPro is High Performance Professional Voice over IP Soft Switch that employs state of the art Next Generation Network technology and includes most comprehensive suite of intelligent call routing features.

1.2. PURPOSE AND AUDIENCE

The purpose of this document is to present a detailed description of the vSwitchPro. It will explain the features of the application, the interfaces of the application, what the application will do and the constraints under which it must operate.

This document is intended for the users of vSwitchPro.

1.3. FEATURES AND MODULES

Following are the features and modules currently implemented in vSwitchPro:

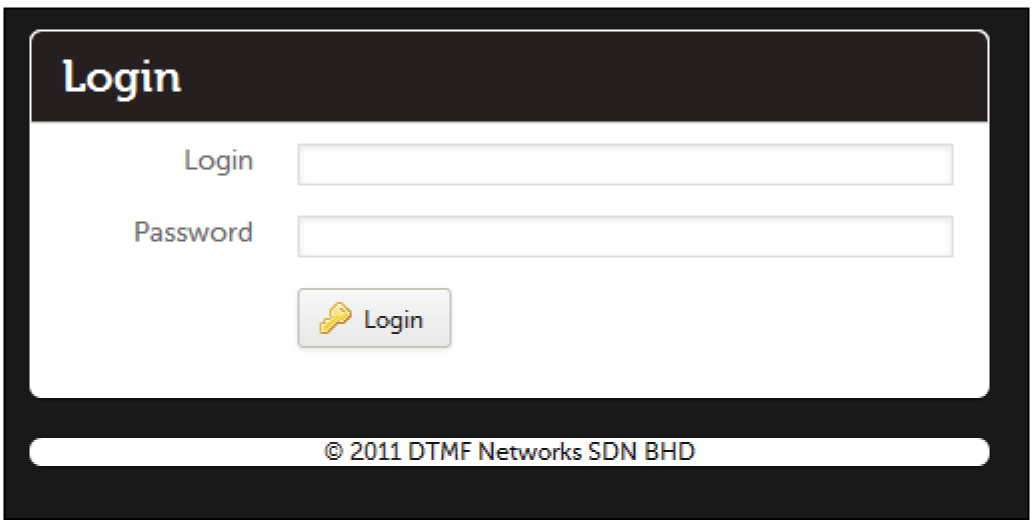
1. Users Section
2. Pool Section
3. Calling Plan section
4. Endpoint Section
5. Switch Management
6. Reports
7. Alerts

Chapter 2 vSwitchPro FEATURES AND MODULES

2.1. AUTHENTICATION

In order to start the application and access its different modules, the client user has to open the Internet browser (preferred Firefox version 3.x or above) and type the Application address in the Address bar of the browser i.e. http://1.1.1.1:8080/wss-billing-webapp/wss/auth/login

The user then needs to enter the Account id, username and password as provided to him/her via email on the login page and click the "Login" button.



Passwords are case sensitive and the user should make sure that the caps lock is not turned on. After logging into the application the user can access different modules and features of the system.

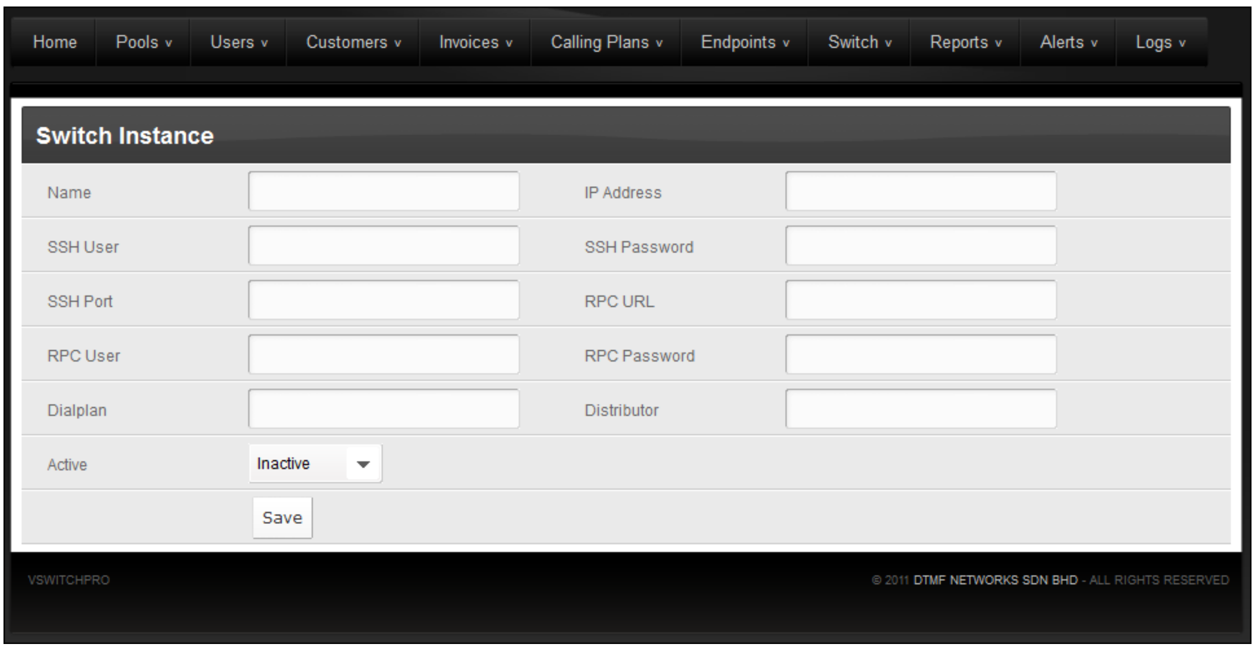
2.2. SWITCH

This section allows user to manage switch side configurations. It is comprised of 3 sub-sections,

1. Switch Instances Management
2. Search switch instances
3. Active calls

2.2.1. Switch Instances Management

Whenever a new switch is added, its switch instance is created, in order to manage the new switch through this application.



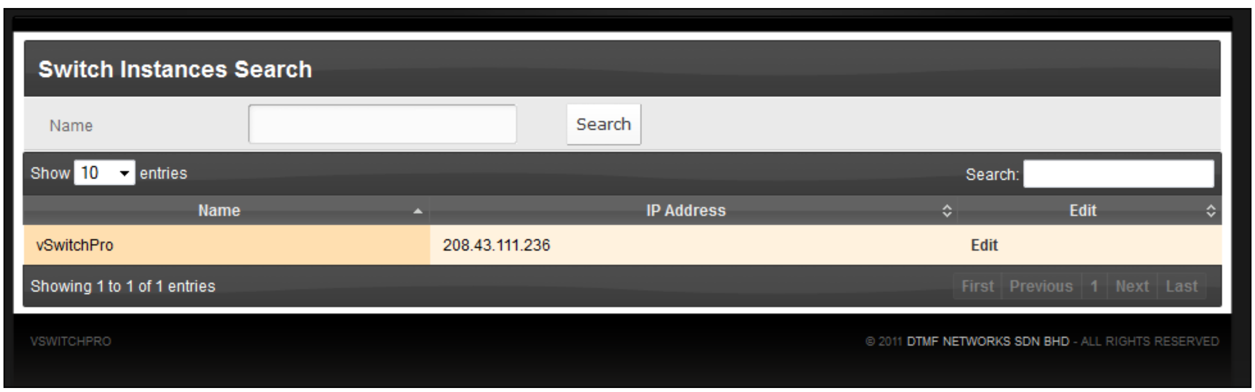
a) Mouse over **Switch** Menu -> Click **Switch Instance Management**.
b) Switch Instance page is displayed.
c) Following information is to be given by the user in order to create a switch instance:

i. **Name**: Name of the switch instance
ii. **IP Address**: IP of the switch
iii. **SSH User**: Remote access user name for the switch.
iv. **SSH Password**: Remote access password for the switch.
v. **SSH Port**: Remote service port

vi. **RPC URL**: User is required to give Remote procedure call link in this field. RPC is required for switch management functions like; reloading gateways; reloading distributor; fetch number of active calls on the switch.
vii. **RPC User**: User for RPC service
viii. **RPC Password**: Password for RPC service
ix. **Dialplan**: User is required to give location of switch dialplan
x. **Distributor**: User is required to give the path of distributor configuration.
xi. **Active**: Status of the switch. If the status is inactive, any changes made to switch will not be applicable.

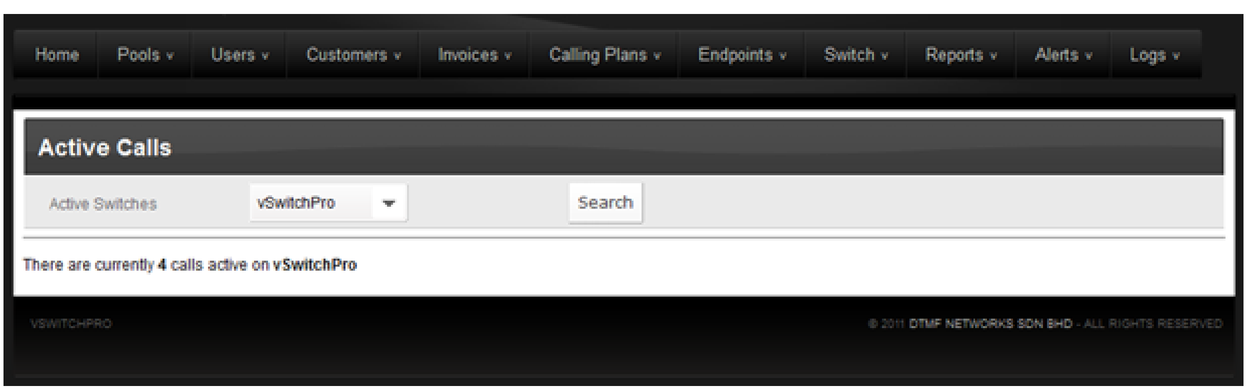
2.2.2. Search (Switch Instances)

This screen allows user to search available switch instances on the basis on their names and edit them if required. Upon pressing edit user is redirected to the screen same as switch instance management.



2.2.3. Active Calls

This section allows user to view the number of current active calls running on each switch individually.



2.3. USERS SECTION

Users section is used to define the users that are going to use the application. This section comprises of two sub-sections:

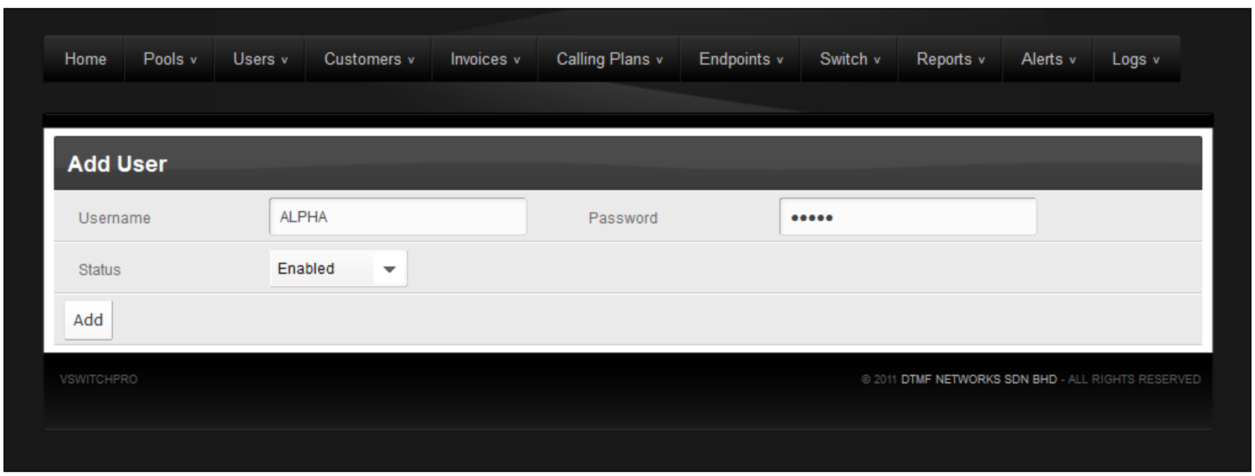
1. User Management
2. Search

2.3.1. User Management:

This sub-section allows adding new users. The following fields are required in order to add a new user:

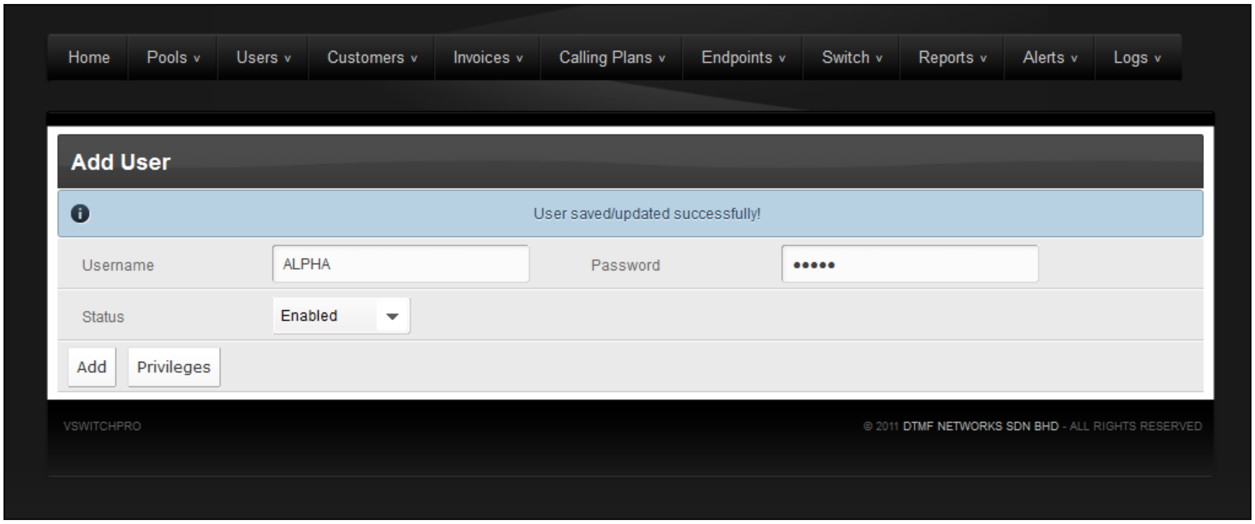
a) Username
b) Password
c) Status

To create a new user account, you must be logged into an account name that has administrative privileges



a) Mouse over **User** Menu -> Click **User Management**.
b) Add user page displays.
c) Click in the Username box, and type an account name for the new user.
d) Enter the new user's password in the Password field.
e) Select the status of the user account
f) Press Add

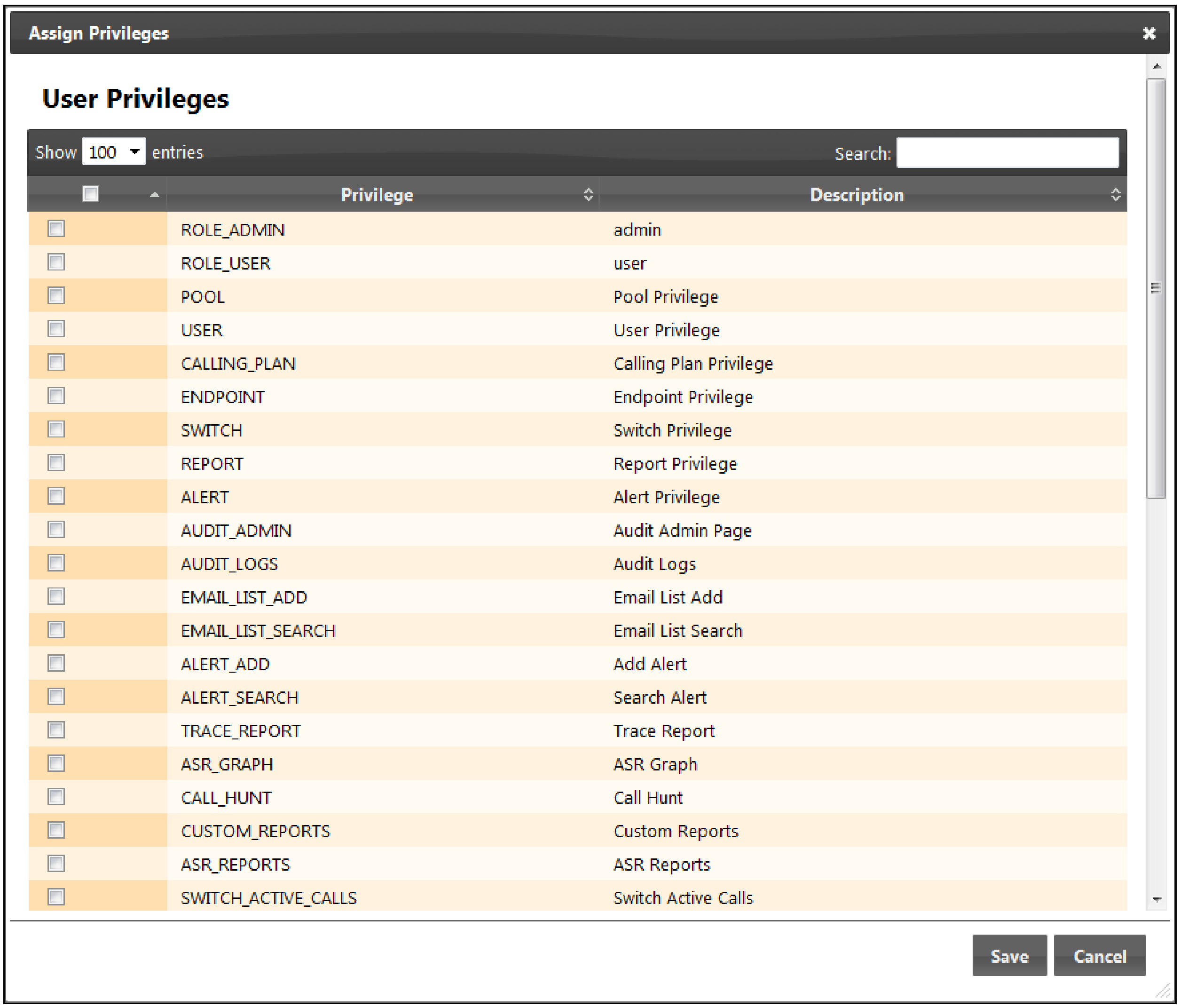
Upon clicking ADD a confirmation message will appear on the top of the screen and a new tab **PRIVILEGES** will be shown.



The privileges can be assigned to the new user from the **PRIVILEGES** tab which is activated once the user is created.

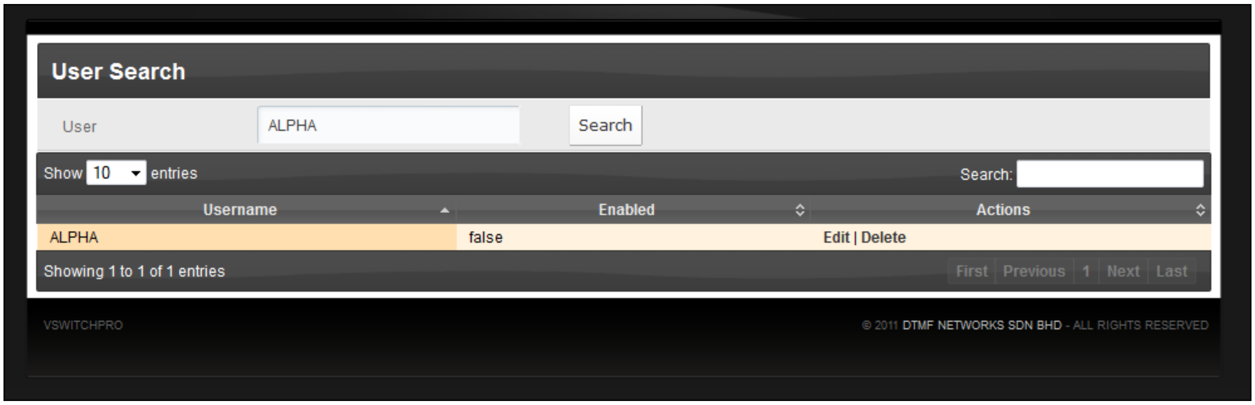
User interface for assigning privileges is easy to use and administrator is able to assign all privileges for a user in one click as well as multiple privileges with a user friendly privileges screen.

It is mandatory for the admin to assign ROLE_ADMIN and ROLE_USER privileges to each user interacting with the system. Rest of the privileges can be assigned as per user responsibilities.



2.3.2. Search (User)

This section provides an option to search and edit a particular user. Upon typing the username, Search brings the table of the possible matched users. User with admin role can select any user account to delete or edit its complete information and privileges.



2.4. POOLS TAB

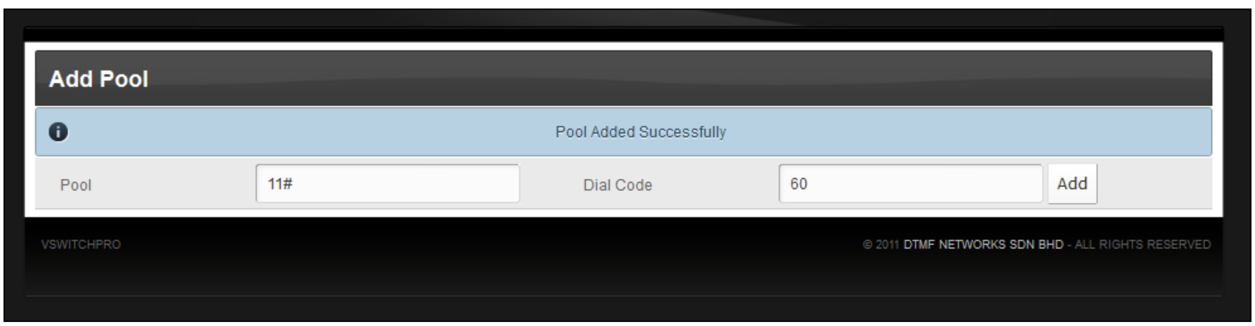
A pool is a logical grouping of codes. This section allows user to create new pool and edit them. The pools created here are later bound to a calling plan. The pool section is comprised of two subsections.

1. Dial code Management
2. Search

2.4.1. Dial code Management

This screen provides the option to create a new pool or add new codes into any existing pool. It is comprised of 2 mandatory fields,

a) Pool
b) Dial code

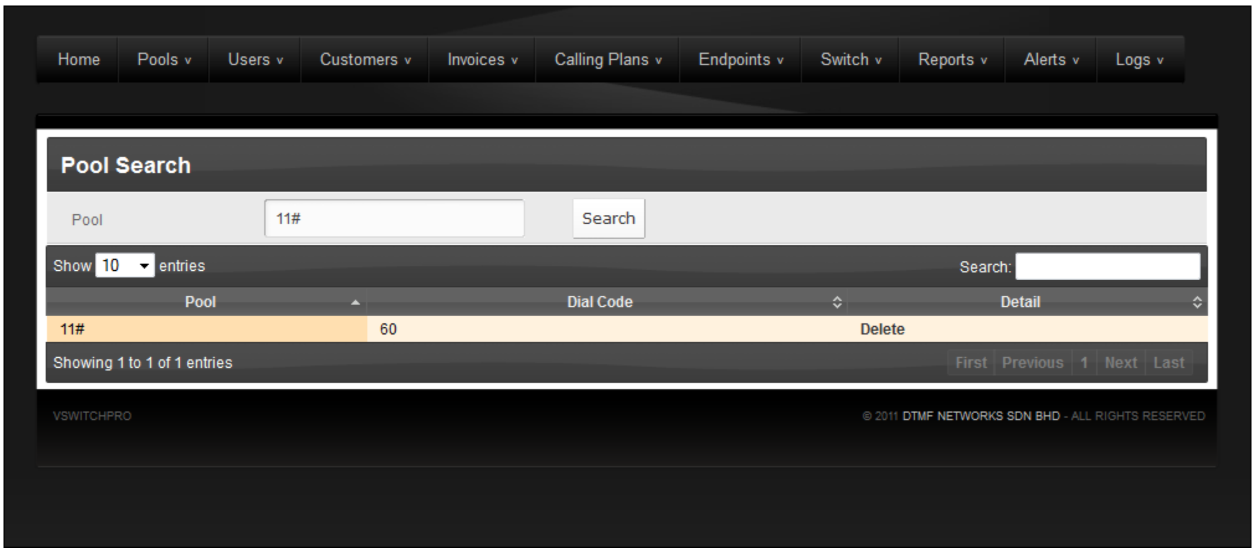


Upon Submitting the required information, a new pool is created if the pool name entered does not already exist in the database. However, if the pool exists then the entered code is added in that existing pool. It is mandatory for the user to append “#” sign with the pool name, otherwise an error message will be displayed on the screen and the pool will not be created or updated.

2.4.2. Search (Pool)

This screen allows users to search for existing pool. When the pool name is entered in the search bar a drop-down list of the related pools appears. Upon searching the selected pool the list of codes added in that pool is displayed.

User has an option to delete unwanted codes through this screen.



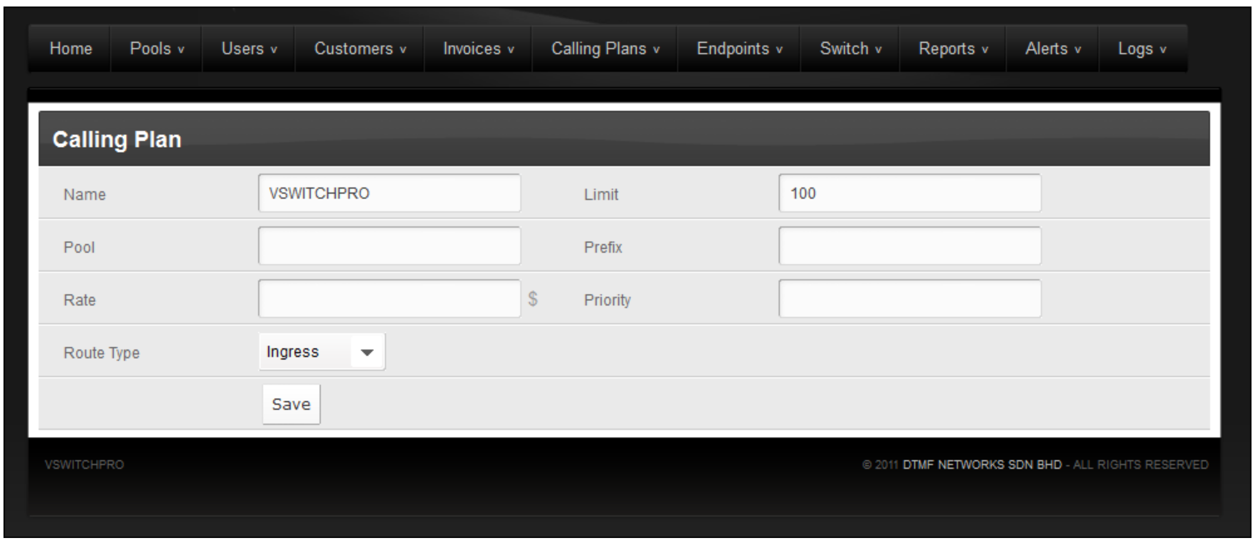
2.5. CALLING PLAN SECTION

A calling plan is a group of routes that is added to endpoints and determines the destinations allowed to a customer or the destinations which the supplier will carry. This section is used to define and manage calling plans, routes and rates. It is comprised of four sections

1. Calling plan Management
2. Search
3. Bulk Upload
4. Routes Management

2.5.1. Calling Plan Management

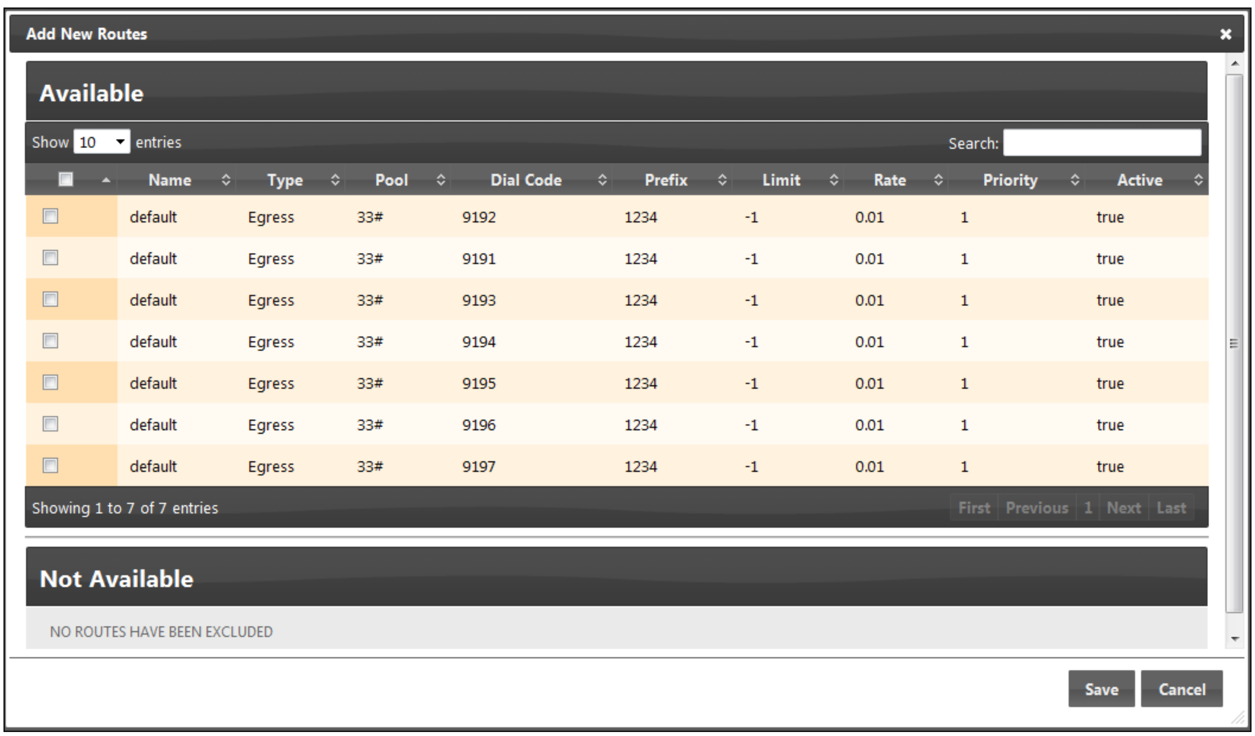
This section provides the option of adding new calling plans.



a) Mouse over **Calling Plan** Menu -> Click **Calling Plan Management**.
b) Calling plan page is displayed. On this page, only Calling plan name and limit fields are editable initially. The rest of the fields are disabled.
c) Click on Name field and type calling plan name.
d) Enter limit in the limit field. This limit will be applicable on all the ACTIVE ROUTES that are added in that calling plan. If the limit field is left empty the system would treat it as unlimited. Limits can be applied to BOTH customers end as well as vendors end.
    a. NOTE: Limit determines the number of simultaneous calls that a customer can send to vSwitchPro or the switch user can send to its Supplier/Carrier.
e) Once the calling plan is saved the remaining fields (Pool, Rate, Prefix, Priority and Type) are now editable.

i. **POOL:** Each pool may contain a different set of routes. Hence, each pool may point to a different LCR (Least Cost Routing) stack.
ii. **RATE:** Rates determine how to price a call for carriers, regions, and service type, based on connection charges and billing increments.
iii. **PREFIX:** The dialing prefix sent by the customer or sent to the supplier. This prefix is prepended to the dialed number.
iv. **PRIORITY:** This number determines the position of a particular number in LCR stack. With 1 being the highest priority.

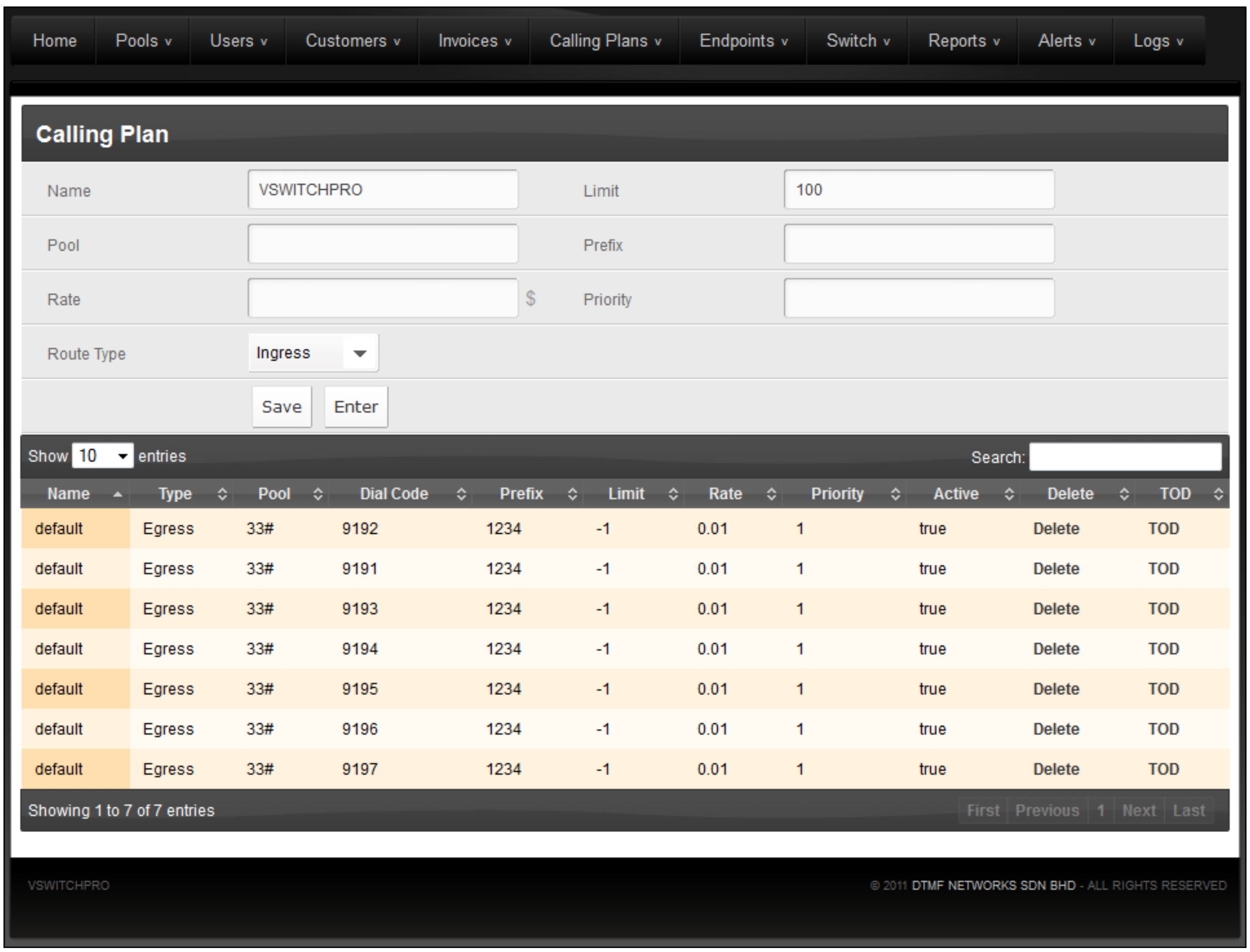
Upon pressing Enter, a pop-up window appears containing all the codes added in that pool. The user has to select the codes that are to be added in the calling plan. User also has an option to edit information of any route through the pop-up window.



	Name	Type	Pool	Dial Code	Prefix	Limit	Rate	Priority	Active
☐	default	Egress	33#	9192	1234	-1	0.01	1	true
☐	default	Egress	33#	9191	1234	-1	0.01	1	true
☐	default	Egress	33#	9193	1234	-1	0.01	1	true
☐	default	Egress	33#	9194	1234	-1	0.01	1	true
☐	default	Egress	33#	9195	1234	-1	0.01	1	true
☐	default	Egress	33#	9196	1234	-1	0.01	1	true
☐	default	Egress	33#	9197	1234	-1	0.01	1	true

<ins>NOTE</ins>: Prefix, Limit, Rate, Priority and Active fields are editable on this screen.

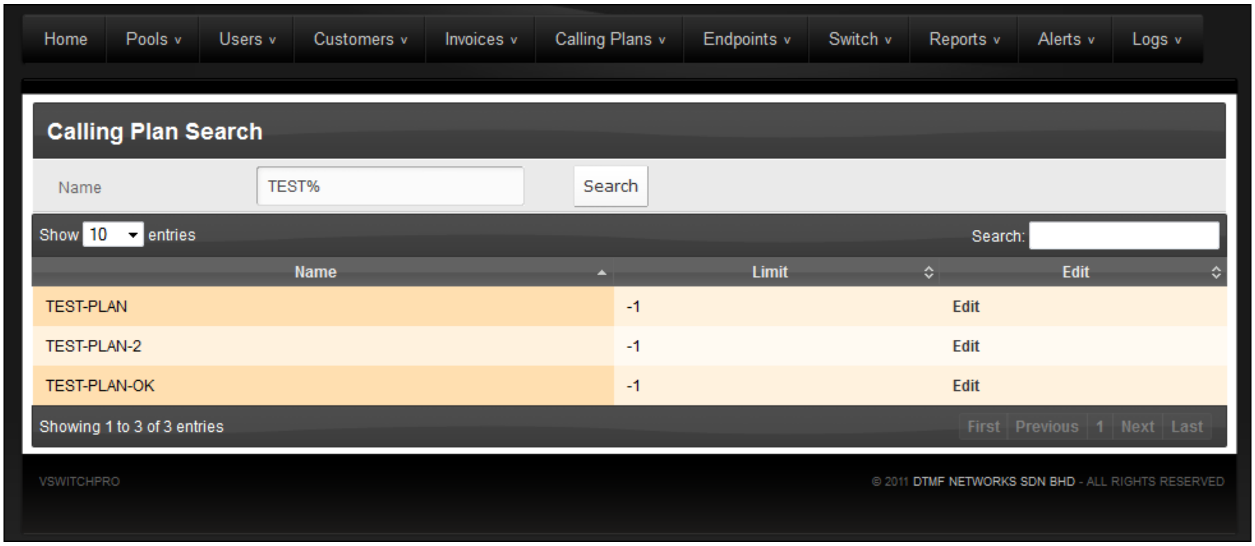
Upon pressing 'Save', all the selected routes are added to the calling plan as shown below:



Through this screen user now has an option to perform Time of Day routing on the added codes. Permanent deletion of routes can also be performed through this screen.

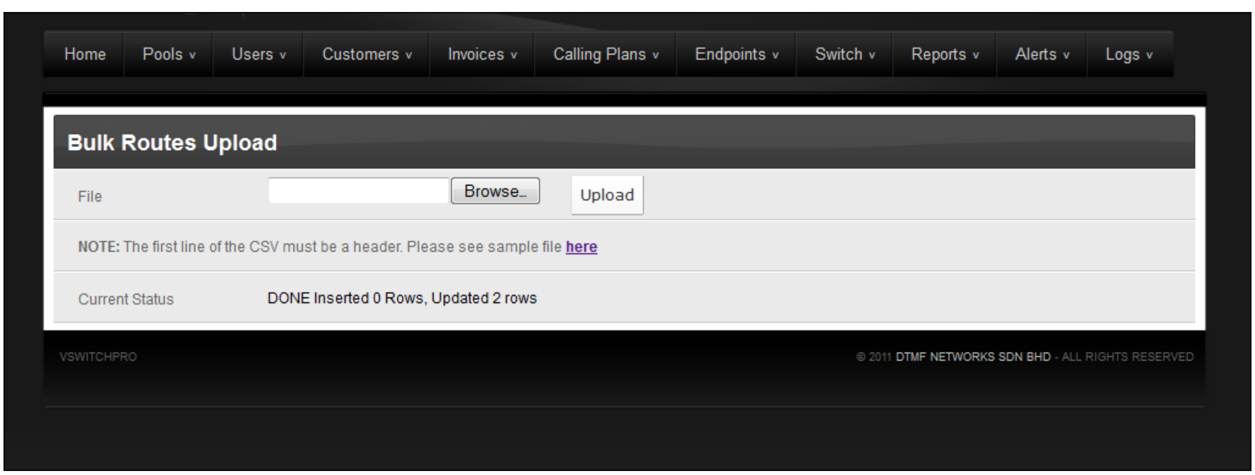
2.5.2. Search (Calling Plan)

This screen allows user to search and edit the existing calling plans. When a calling plan name is entered in the search bar, a list of related search is shown along with the call limit that has been applied to each calling plan. User has an option to make changes to the calling plan information through this screen.

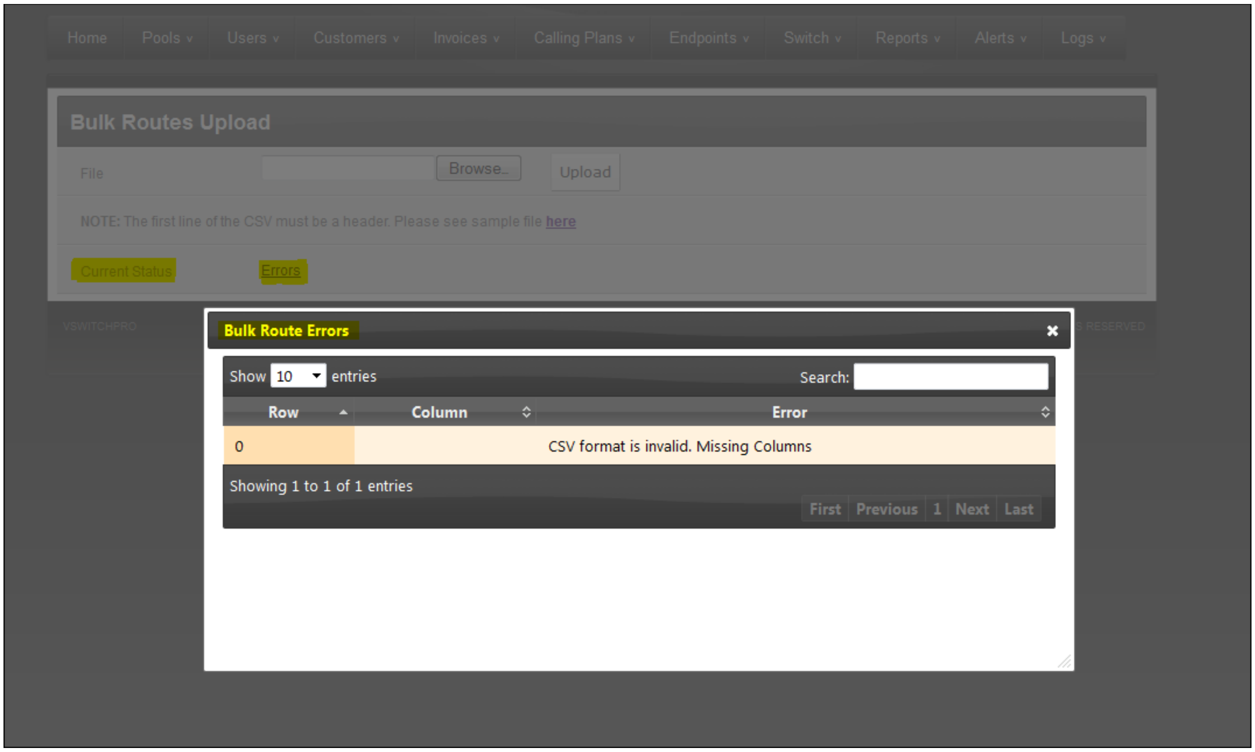


2.5.3. Bulk Routes Upload

Through this screen user can upload the required codes through a CSV file. A sample for CSV format has been given on this screen too.

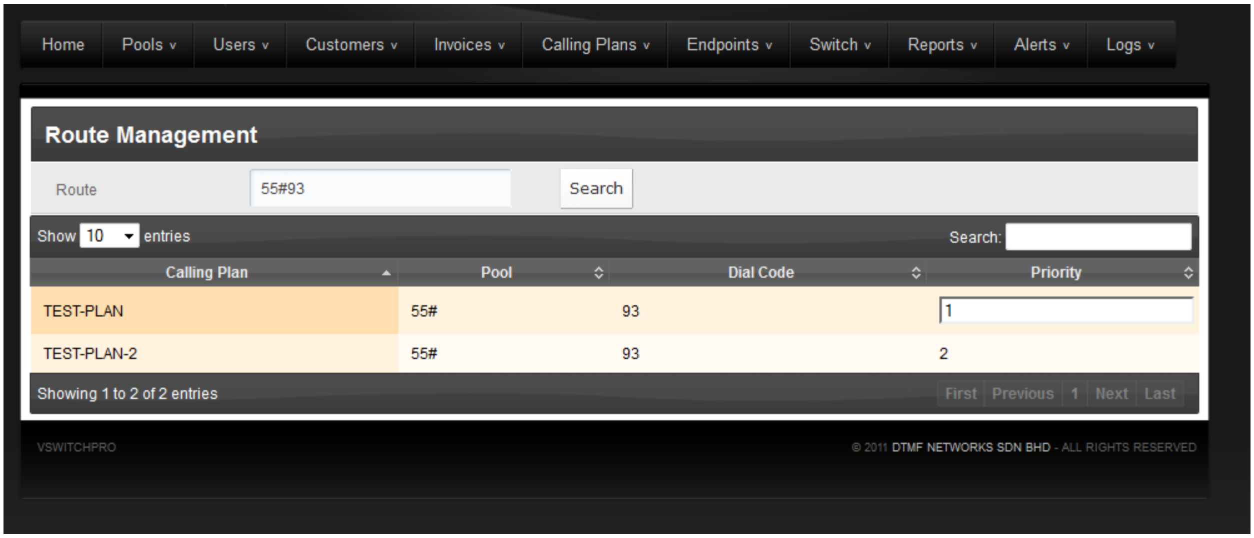


This bulk upload process is asynchronous. User can perform other tasks while this process is taking place in the background. Once the process is completed, a summary is displayed, stating the changes that have been made. However, If the bulk upload job is not successful, (as shown below) an error message is displayed which tells the user the reasons for the failure of job.



2.5.4. Route Management

This screen provides the option to change the priority of any route in a calling plan. Upon entering the combination of pool and dialplan, a list of related calling plans is displayed. The priorities can then be changed according to the routing table.



2.6. ENDPOINT TAB

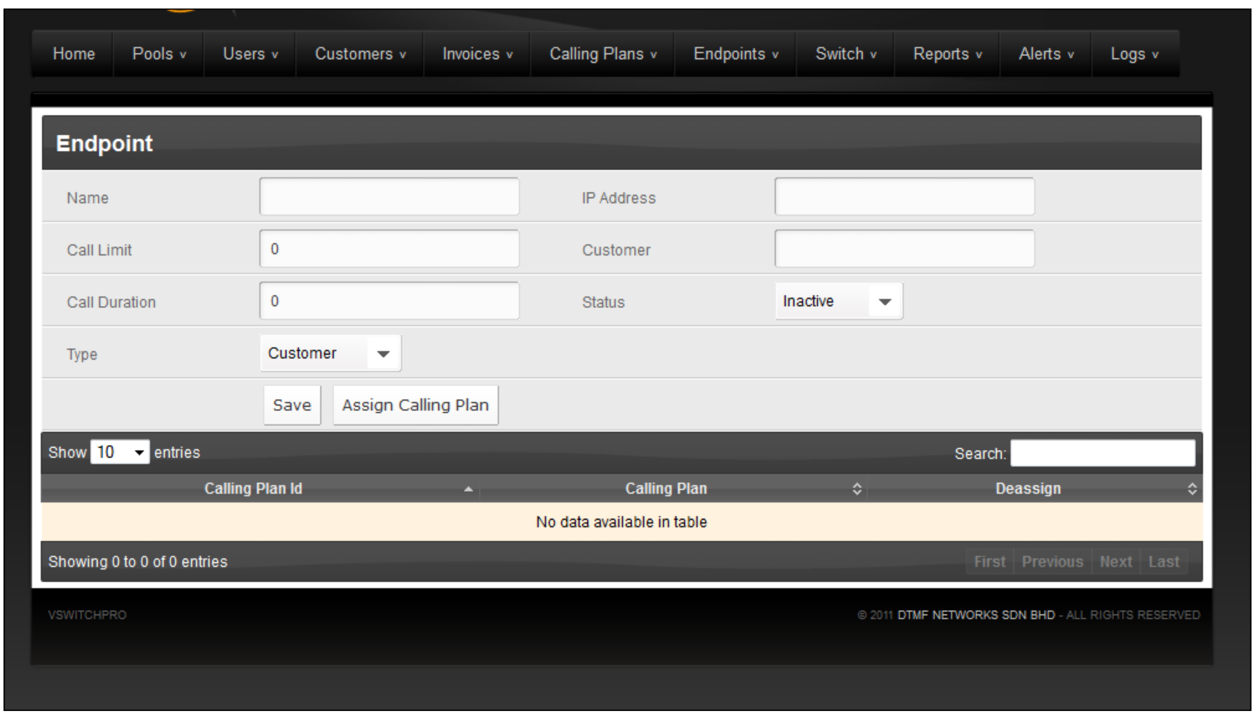
The IP addresses provided by the customers or vendors are added in the system as ENDPOINTS. This section is comprised of two sub sections

1. Create Endpoint
2. Search Endpoint

2.6.1. Create Endpoint

This screen allows users to create/add new endpoints in the system. In order to create an endpoint user needs to add the following information on this screen,

a) Endpoint Name
b) IP address
c) Call limit
d) Customer ID
e) Call Duration
f) Status
g) Type
h) Calling Plan



While adding Endpoint through this screen, the user should make sure that:

- While adding multiple IPs of a single customer/vendor, the Customer ID in each endpoint should remain the same.
- The particular IP, that is being added, does not already exist in the system. If the IP is already added in the system with the same or different endpoint name an error message would appear.

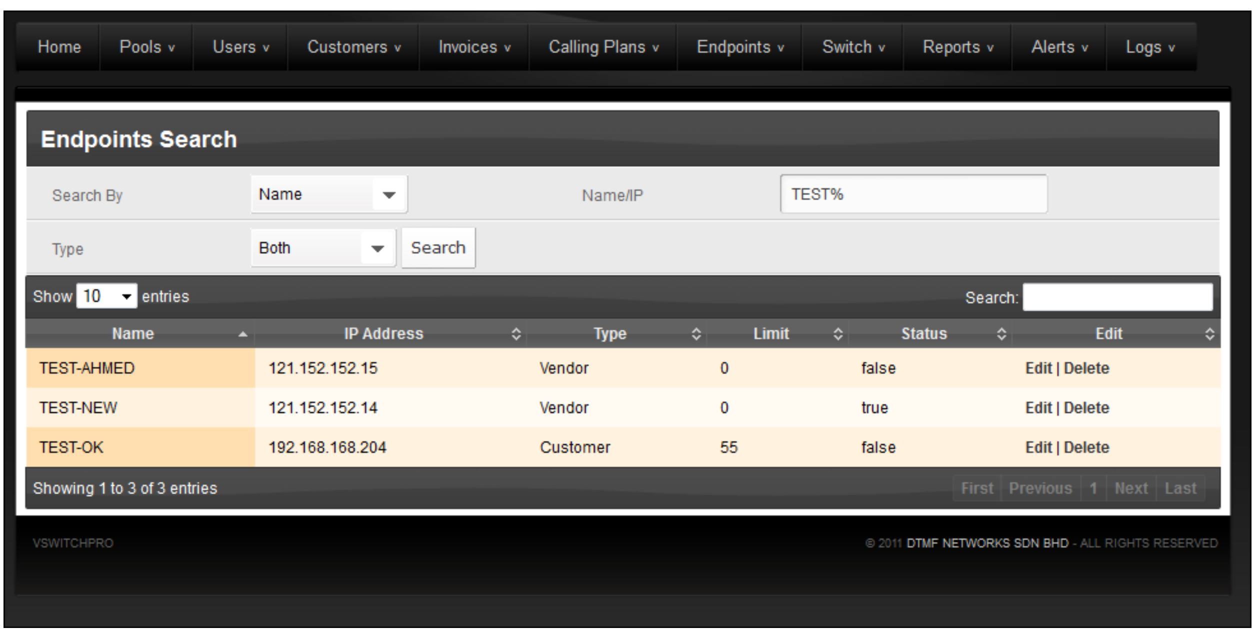
Also, if required, user could assign more than one calling plans to a single endpoint.

2.6.2. Search (Endpoint)

This screen allows user to search for a particular endpoint using either endpoint name or IP address. User could also use wild card search. The search results displayed contain the following details

a) IP
b) Call Limit
c) Endpoint Type
d) Status

User can update any of these fields using edit screen. Endpoint deletion option is also given on this screen.



User is allowed to edit all the fields except Customer Type. Once the Customer type has been defined while creating the account it CANNOT BE CHANGED.

2.7. REPORTS SECTION

This section is used to monitor the performance of the routes and the changes made in those routes. It is comprised of different types of reports, that includes,

1. ASR Report
2. Call Hunt
3. Active Calls Graph
4. Trace Report

2.7.1. ASR Report

Through this reports we can check the performance/quality of the route based on parameters like ASR, ACD and PDD. The definitions of these terms are as follow.

ASR: Answer Seizure ratio (ASR) is the number of successfully answered calls divided by the total number of calls attempted

ACD: Average Call duration is the total duration of calls divided by total number of connected calls. ALOC (Average length of call) is another term used for ACD.

PDD: The time between punching in the last digit of a telephone number and receiving a ring, busy signal or an announcement etc.
ASR/ACD/PDD shows the route performance for example ASR/ACD should not be low and PDD should not be too high.

ASR reports are divided into following types:

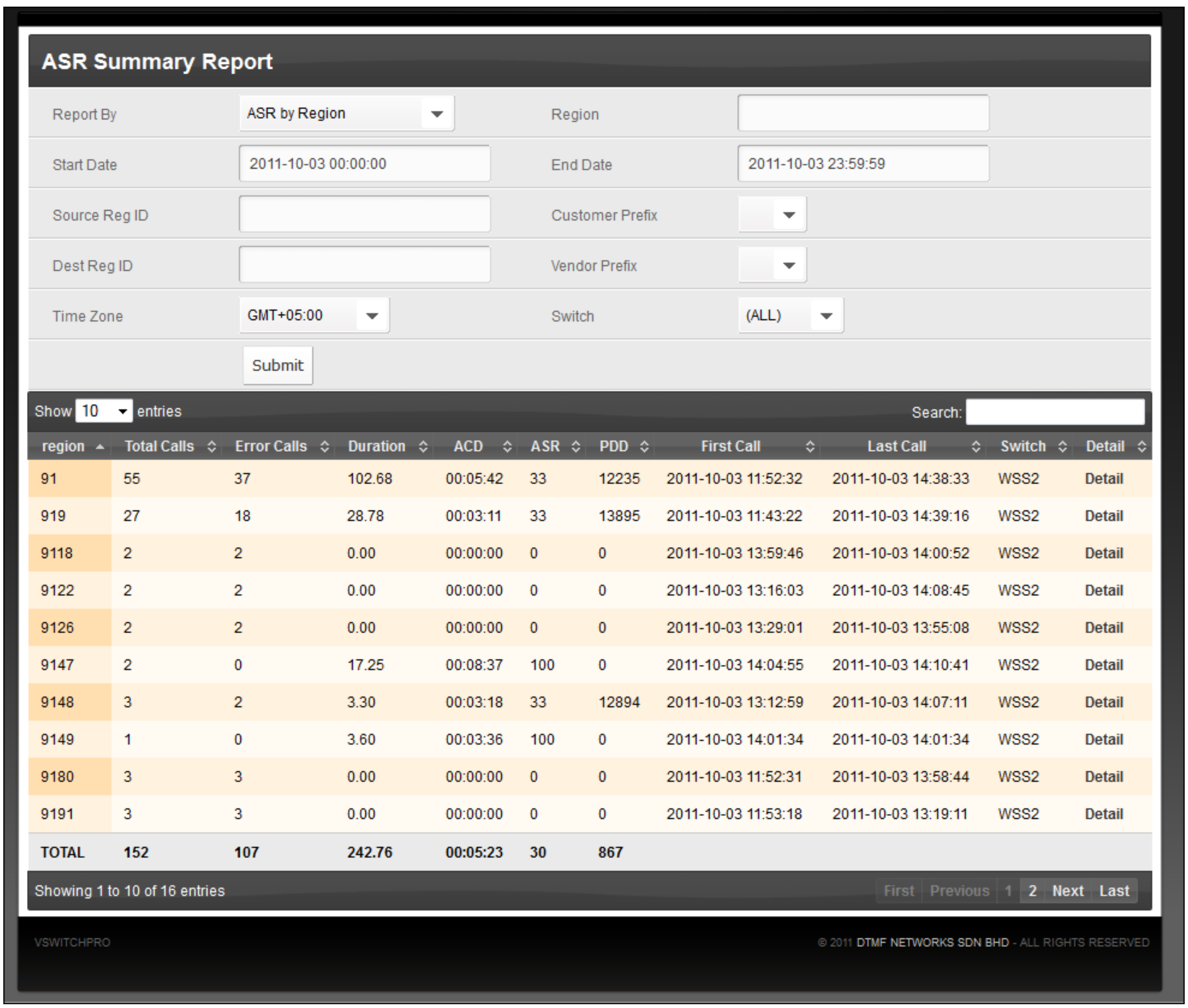
a) ASR by Vendor ID
b) ASR by Customer ID
c) ASR by Vendor IP
d) ASR by Customer IP
e) ASR by Region
f) ASR by Day
g) ASR by Hour
h) ASR by Minute

User can view these reports based on the following criteria:

a) Start date
b) End date
c) Region
d) Source Reg ID
e) Destination Reg ID
f) Customer Prefix
g) Vendor Prefix
h) Time zone
i) Switch

The reports display the following information:

a) Source/Dest Reg ID
b) Total Calls
c) Error Calls
d) Minutes
e) ASR
f) ACD
g) Average PDD (In msec)
h) Switch
i) Time of first call
j) Time of last call



ASR Summary Report

Report By	ASR by Region	Region	
Start Date	2011-10-03 00:00:00	End Date	2011-10-03 23:59:59
Source Reg ID		Customer Prefix	
Dest Reg ID		Vendor Prefix	
Time Zone	GMT+05:00	Switch	(ALL)
	Submit		

Show 10 entries — Search:

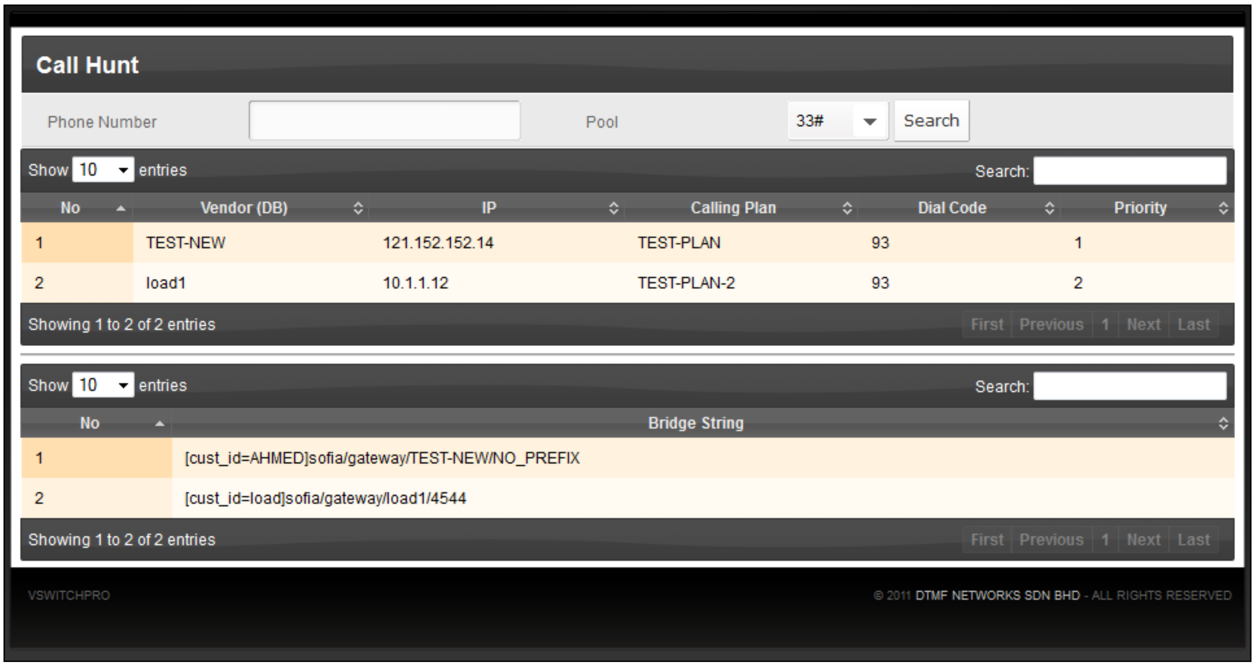
region	Total Calls	Error Calls	Duration	ACD	ASR	PDD	First Call	Last Call	Switch	Detail
91	55	37	102.68	00:05:42	33	12235	2011-10-03 11:52:32	2011-10-03 14:38:33	WSS2	Detail
919	27	18	28.78	00:03:11	33	13895	2011-10-03 11:43:22	2011-10-03 14:39:16	WSS2	Detail
9118	2	2	0.00	00:00:00	0	0	2011-10-03 13:59:46	2011-10-03 14:00:52	WSS2	Detail
9122	2	2	0.00	00:00:00	0	0	2011-10-03 13:16:03	2011-10-03 14:08:45	WSS2	Detail
9126	2	2	0.00	00:00:00	0	0	2011-10-03 13:29:01	2011-10-03 13:55:08	WSS2	Detail
9147	2	0	17.25	00:08:37	100	0	2011-10-03 14:04:55	2011-10-03 14:10:41	WSS2	Detail
9148	3	2	3.30	00:03:18	33	12894	2011-10-03 13:12:59	2011-10-03 14:07:11	WSS2	Detail
9149	1	0	3.60	00:03:36	100	0	2011-10-03 14:01:34	2011-10-03 14:01:34	WSS2	Detail
9180	3	3	0.00	00:00:00	0	0	2011-10-03 11:52:31	2011-10-03 13:58:44	WSS2	Detail
9191	3	3	0.00	00:00:00	0	0	2011-10-03 11:53:18	2011-10-03 13:19:11	WSS2	Detail
TOTAL	**152**	**107**	**242.76**	**00:05:23**	**30**	**867**				

Showing 1 to 10 of 16 entries — First Previous 1 2 Next Last

VSWITCHPRO

2.7.2. Call Hunt

Call hunt provides a user an option to check the possible termination paths of a particular call. User is required to enter the phone number/dial code and pool name in order to check the available suppliers, along with their IPs and priority, for a particular dial code. The screen also displays the bridge-string that will be created for the said dial codes.



2.7.3. Active Calls Graph:

Active call graphs show the number of calls running on the switch at a particular interval. Two types of graphs; (1) Bar Chart and (2) Line Chart are given to monitor active calls on any switch instance.

Figure (1)

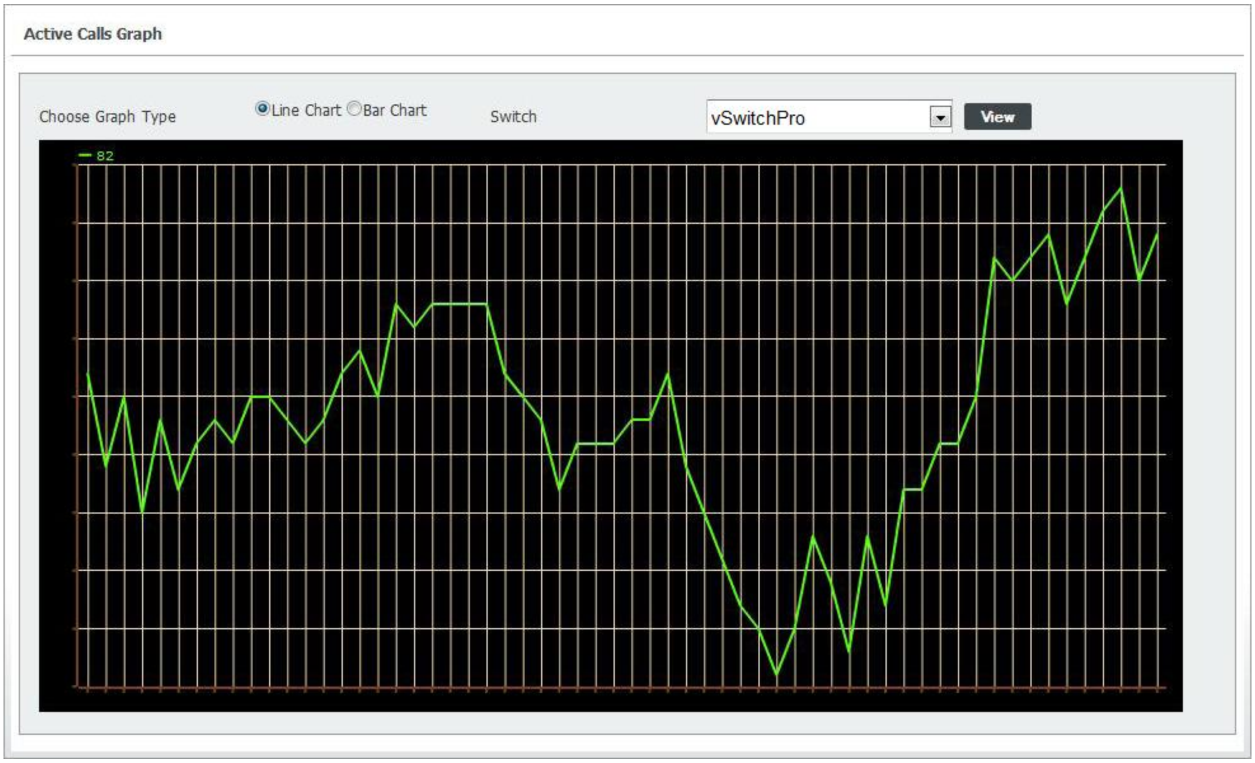
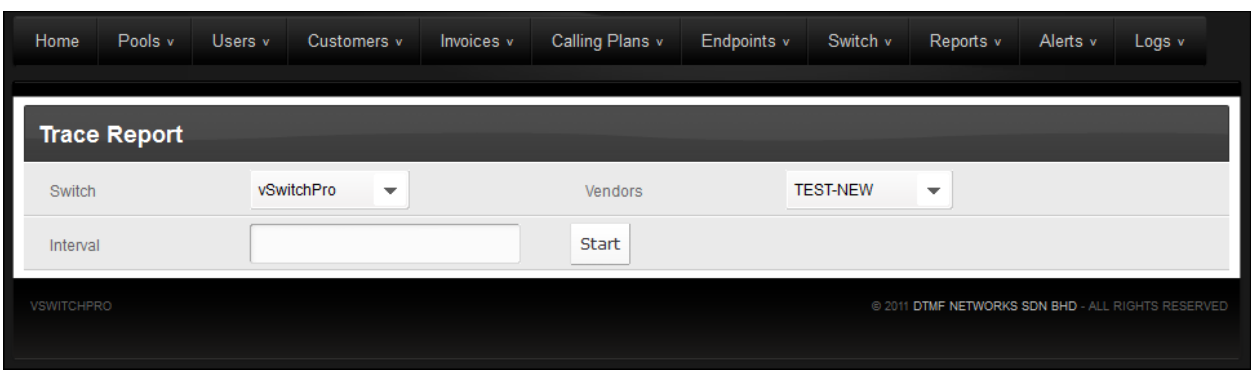


Figure (2)

Figure (1) illustrates the Bar Chart and figure (2) illustrates the Line Chart. One both the charts, the vertical axis denotes number of calls, while, the horizontal axis denotes time in seconds.

2.7.4. Trace Report:

Trace report allows user to take call traces through user interface. The user only needs to select switch and vendor/supplier/carrier name and enter the time interval to get the required call trace.



2.8. CUSTOMERS

This module allows users to create, maintain and track all the information of the Customers/Vendors using the service.

This module is divided into following sections:

1. Customer Management
2. Search
3. Balance logs Admin

2.8.1. Customer Management:

This module allows users to create new accounts by adding the following information:

GENERAL INFORMATION

Name: The name of the company needs to be entered here.

Balance: This field is displayed for Pre-paid accounts only. Initial balance needs to be entered in this field for customers having type as pre-paid. This field should have a value greater than 0 for the customer calls to get through. The balance is deducted after every 60 seconds interval for an active account, based on usage.

Limit: This field is displayed for Post-paid accounts only. Limit field is applicable to postpaid accounts in such a way that they will be blocked after reaching a certain amount in dollars.

Account Type: Account type is selected as either prepaid or postpaid.

CONTACT INFORMATION
The contact information of the company is given here;

Account Manager: General information of the account manager.
Name: Account Manager Name.
Email: Account manager email address
Contact #: Contact number of the account manager.

NOC Manager: General information of NOC Manager
Name: NOC manager name
Email: NOC manager email address
Contact #: Contact number of NOC manager

General Information: General information about the company
Company: Company Name
Email: Company’s email address

Rates Email: Email address where rate notifications are to be sent
Billing Email: Email address where invoices are to be sent
Address: Information about the company's location

Figure (3) shows how an Add Customer page looks like.

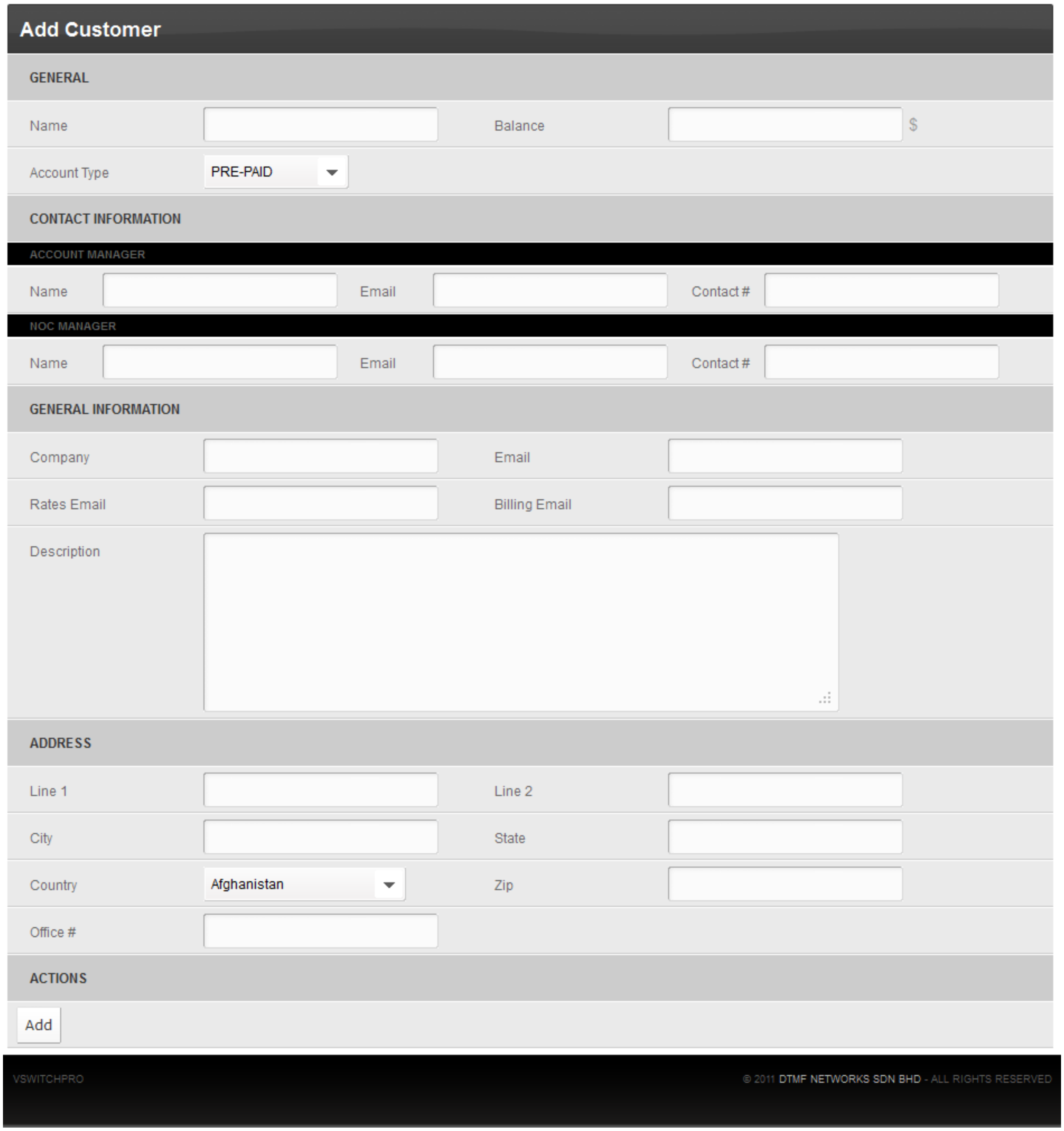
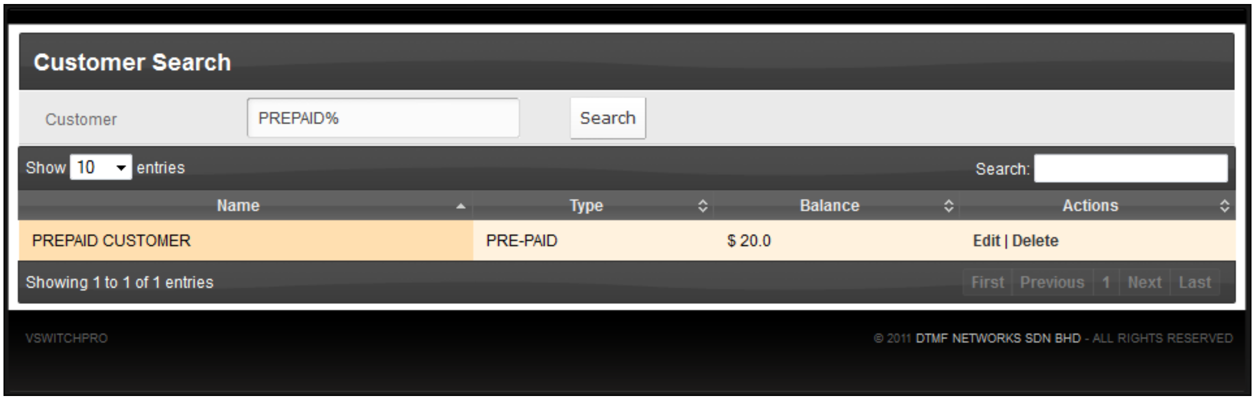


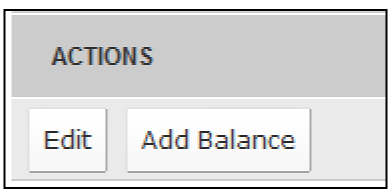
Figure (3)

2.8.2. Search (Customer):

This screen is used to search the customers that exist in the database and edit their information or delete the account, if required.

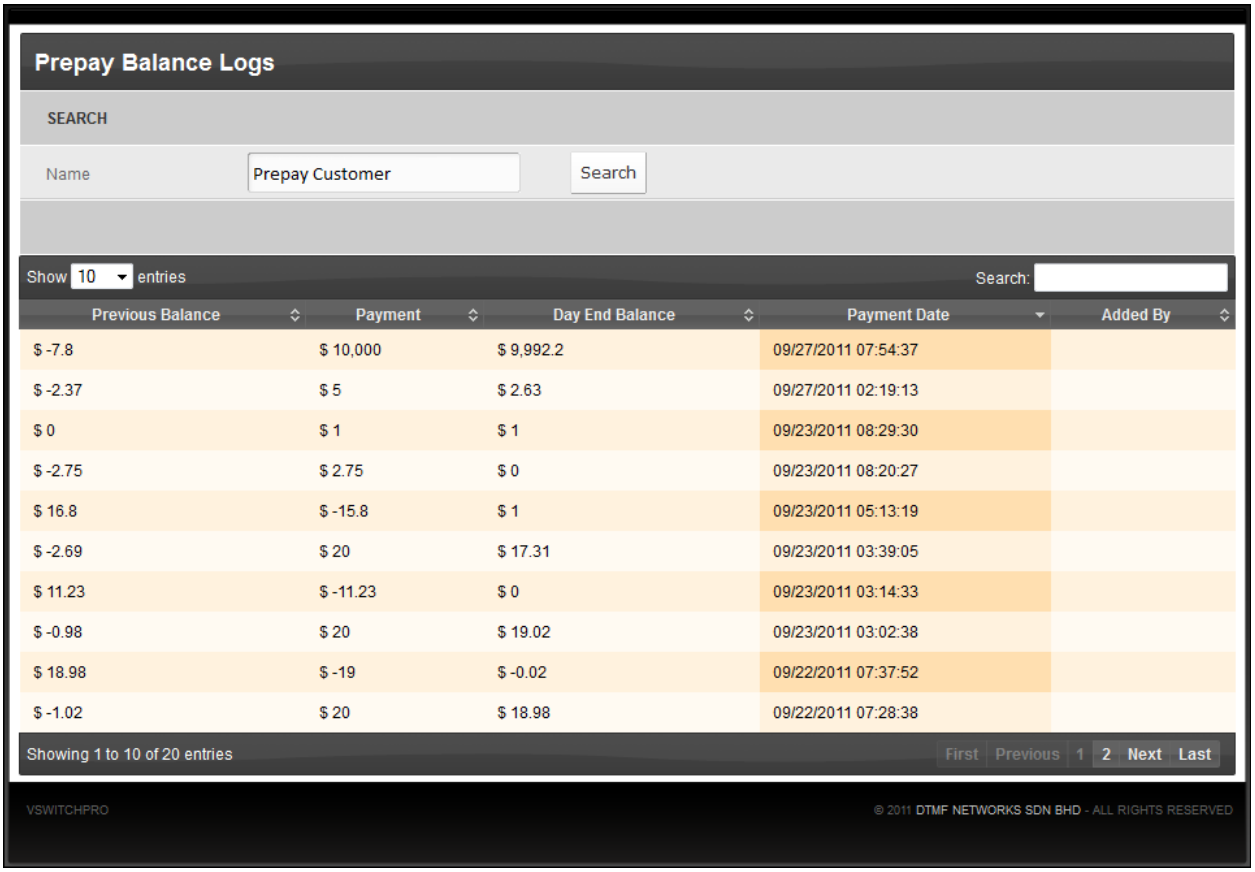


Also, balance for prepay customer is added through edit screen.



2.8.3. Prepay Balance Logs

This feature allows users to view the balance logs of different prepay customers. Upon entering the name of the customer; previous balance, payments entered on any day and day end balance of each day is displayed. Along with the name of user who has entered the payment.



Previous Balance	Payment	Day End Balance	Payment Date	Added By
$ -7.8	$ 10,000	$ 9,992.2	09/27/2011 07:54:37	
$ -2.37	$ 5	$ 2.63	09/27/2011 02:19:13	
$ 0	$ 1	$ 1	09/23/2011 08:29:30	
$ -2.75	$ 2.75	$ 0	09/23/2011 08:20:27	
$ 16.8	$ -15.8	$ 1	09/23/2011 05:13:19	
$ -2.69	$ 20	$ 17.31	09/23/2011 03:39:05	
$ 11.23	$ -11.23	$ 0	09/23/2011 03:14:33	
$ -0.98	$ 20	$ 19.02	09/23/2011 03:02:38	
$ 18.98	$ -19	$ -0.02	09/22/2011 07:37:52	
$ -1.02	$ 20	$ 18.98	09/22/2011 07:28:38	

2.9. INVOICES

This section provides the option for generating the invoices for different Customers. This section is further divided into two sub-sections:

1. Create Invoice
2. History

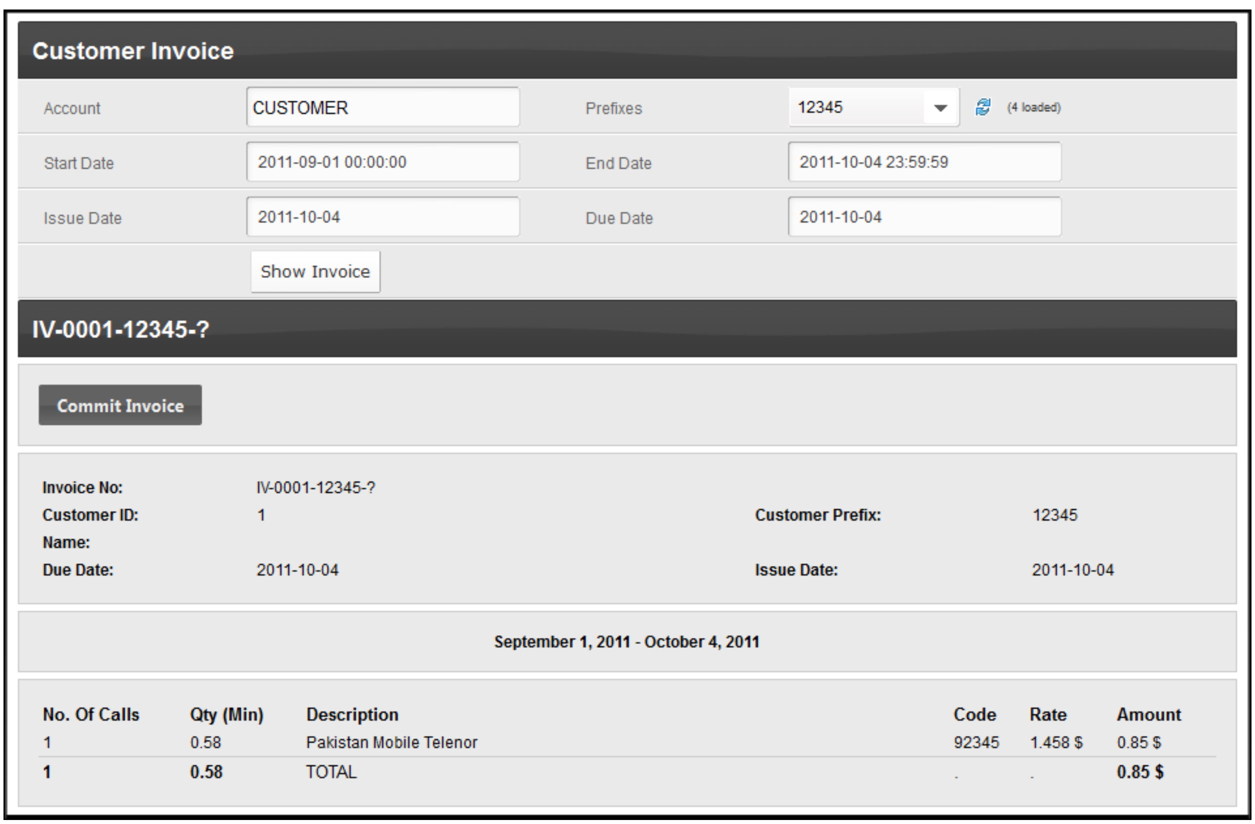
2.9.1. Create Invoice

This screen allows users to create customer invoice on the basis of prefix. Multiple invoices could be generated for customer if he has more than one prefix. Following fields are required to generate invoice;

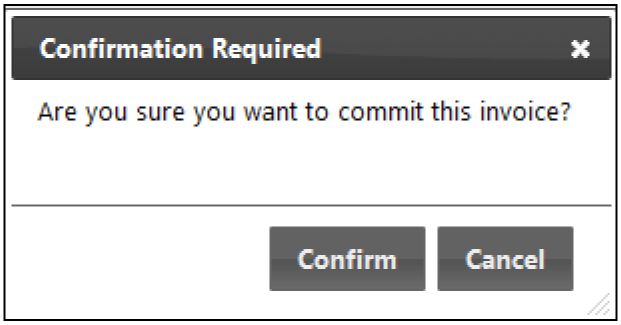
a) Account Name
b) Prefix
c) Start Date
d) End Date
e) Issue Date
f) Due Date

Upon pressing “show invoice” tab, customer invoice is created.

As can be seen in the screen-shot.



Once the invoice is generated user can now commit the invoice after verifying it. Upon pressing "Commit Invoice" tab a confirmation pop-up window appears.



After pressing "confirm", user is redirected to Invoice history page, where the user has following options

- History Invoice: "History invoice" opens the committed invoice in HTML format.
- Renew Invoice: "Renew invoice" fetches the PDF format of the updated invoice.
- Notify: "Notify" is a check for the users, for identifying the invoices that are already sent to the customers.

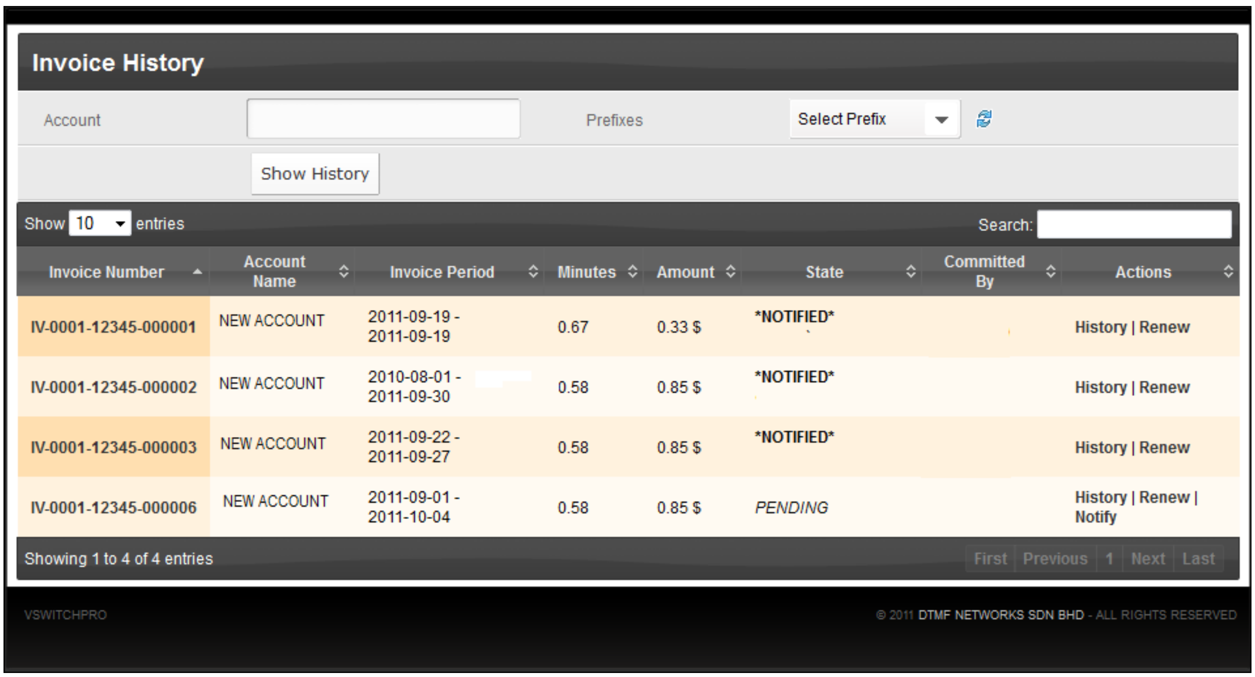
<u>NOTE</u>: User can update the invoice settings as per requirements by running "invoice.sh" script which can be downloaded from the website along with the package. For these updates to take effect user needs to restart the application, using following commands:

1. /opt/webserver/bin/catalina.sh stop OR pkill -9 java (To stop application)
2. /opt/webserver/bin/catalina.sh start (To start application)
3. ps aux | grep catalina (To check the status of application)

2.9.2. History

User can also access the history screen (explained above) directly for any customer.

a) Mouse over **Invoice** Menu -> Click **History**.
b) History page is displayed.
c) Enter an account name and select prefix.
d) Upon pressing enter, all the history invoices for the selected account are displayed.



2.10. ALERTS

Alert is a utility intended to trigger an email, to the concerned department/person, In case the stats of any vendor go below the benchmark level. For example, an alarm could be configured to trigger an email when the average call duration falls under, say, 180 seconds, indicating some problem in the operation. This module is into following sections:

1. Alert Management
2. Search Alerts
3. Email-list Management
4. Search email-list

2.10.1. Alert Management

This screen allows user to create alerts. User needs to give the following information in order to create alerts.

- **Name:** Name or identifier for the alert.

- **Criteria:** Three types of alerts can be created;
  - *ACD (Average call duration)*
  - *ASR (Average success ratio)*
  - *PDD (Post Dial Delay)*

- **Threshold:** Upon reaching the threshold value, alert email is generated. Threshold is defined in seconds for ACD alerts, Milliseconds for PDD alerts and in percent for ASR alerts.

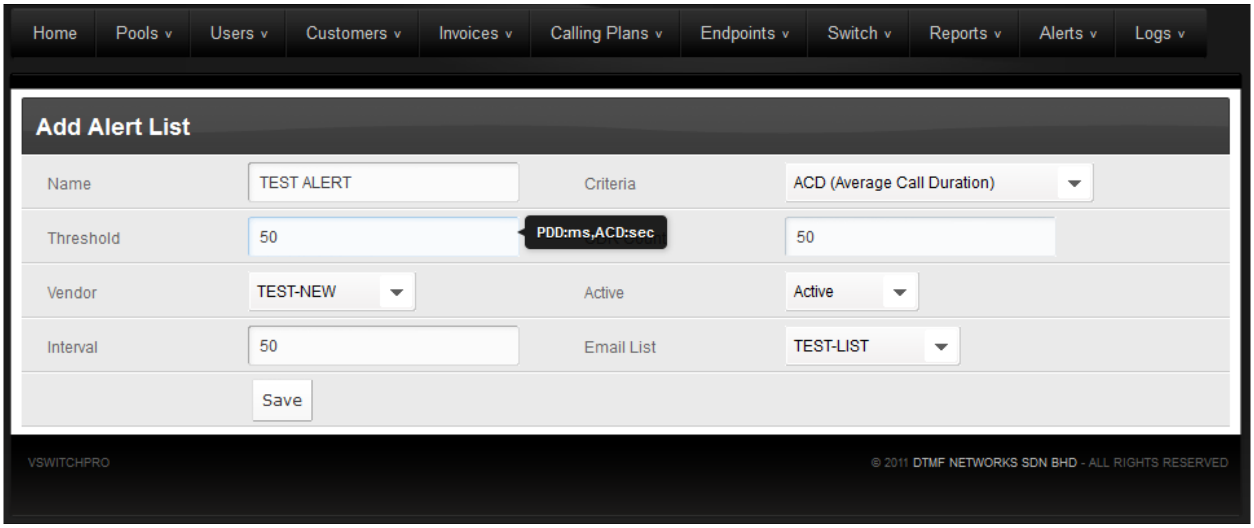
- **CDR Count:** The minimum number of CDRS on which the alert should be generated.

- **Vendor:** Alert is defined for each vendor individually.

- **Status:** The status of the alert. If the status is INACTIVE, alert email will not be triggered.

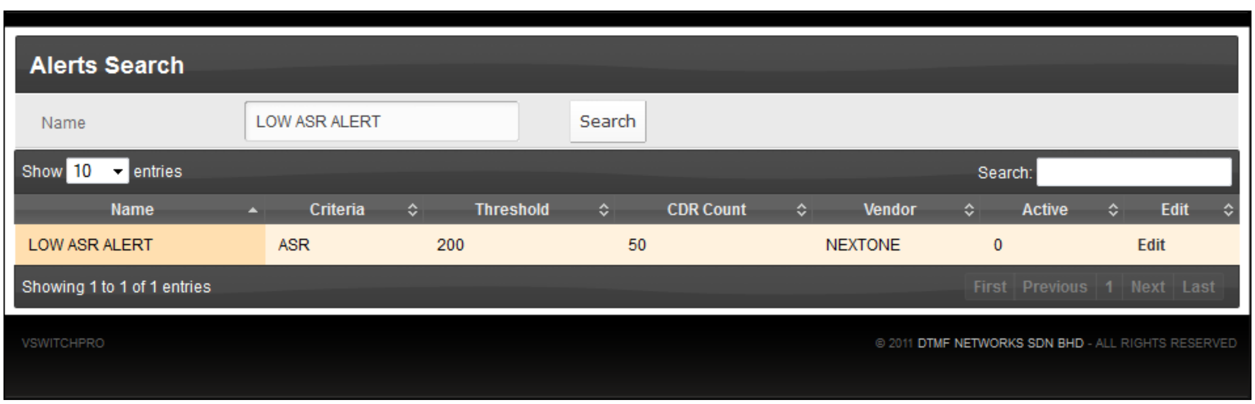
- **Interval:** Time interval between two successive alert emails.

- **Email List:** Email list points to the group of user, alert email wills be sent to.



2.10.2. Search (Alerts)

Alerts search screen displays the summary of all the matching/existing alerts in the database. Alert search takes place on the basis of alert name. User has an option to search and edit an existing alert through this screen.

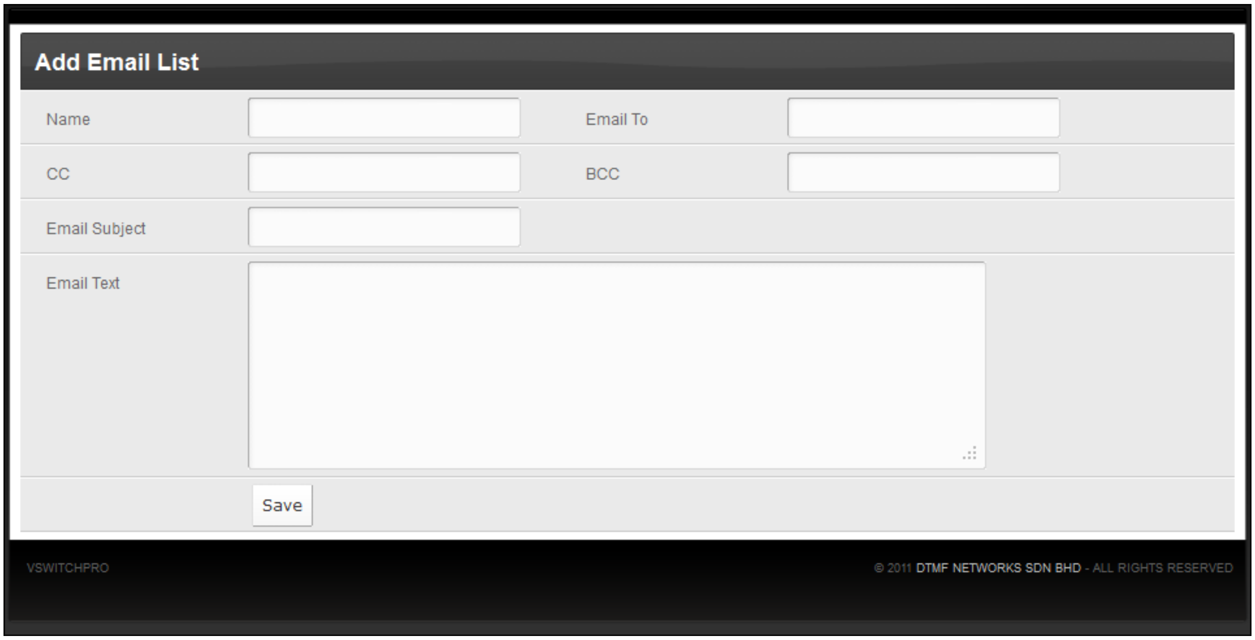


2.10.3. Email-List Management

This screen allows users to create a template for the alerts to be generated as well as specify the receivers of alert emails. Following information is required in order to create an email list.

Name: Name or identifier for the email-list.
Email To; CC; BCC: Email addresses of the receivers of the alert emails.
Email Subject: Subject of the email is to be defined in this field.

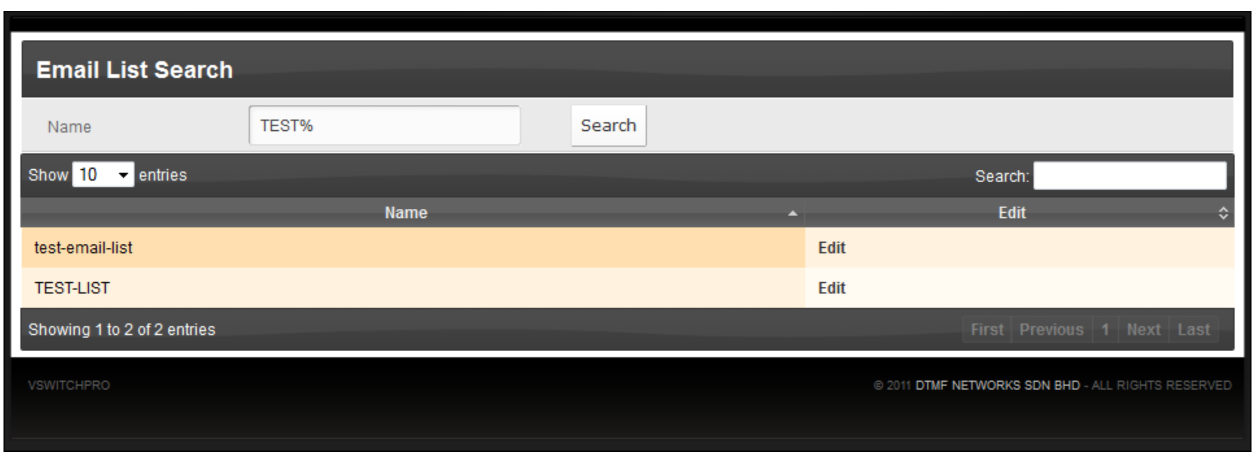
Email Text: Description that user wants to see in alert email.



2.10.4. Search Email-List

Through this screen user has the facility to look for the email-lists that already exist in the database.

Email-list is searched on the basis of name. User is also allowed to edit the alert list through this screen, if required.



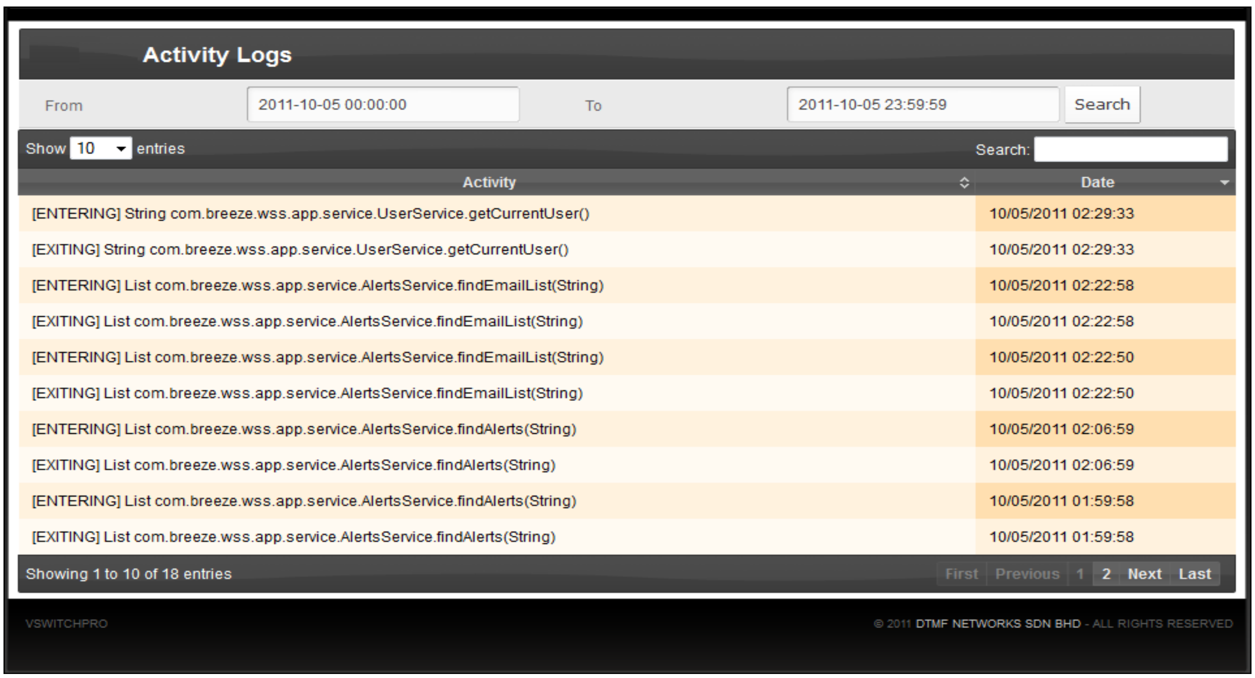
2.11. LOGS

Logs track operations performed on the application. User can view the logs of all other users given that he has admin privileges to do so. This module is divided into two sections:

1. My Activity
2. Administration

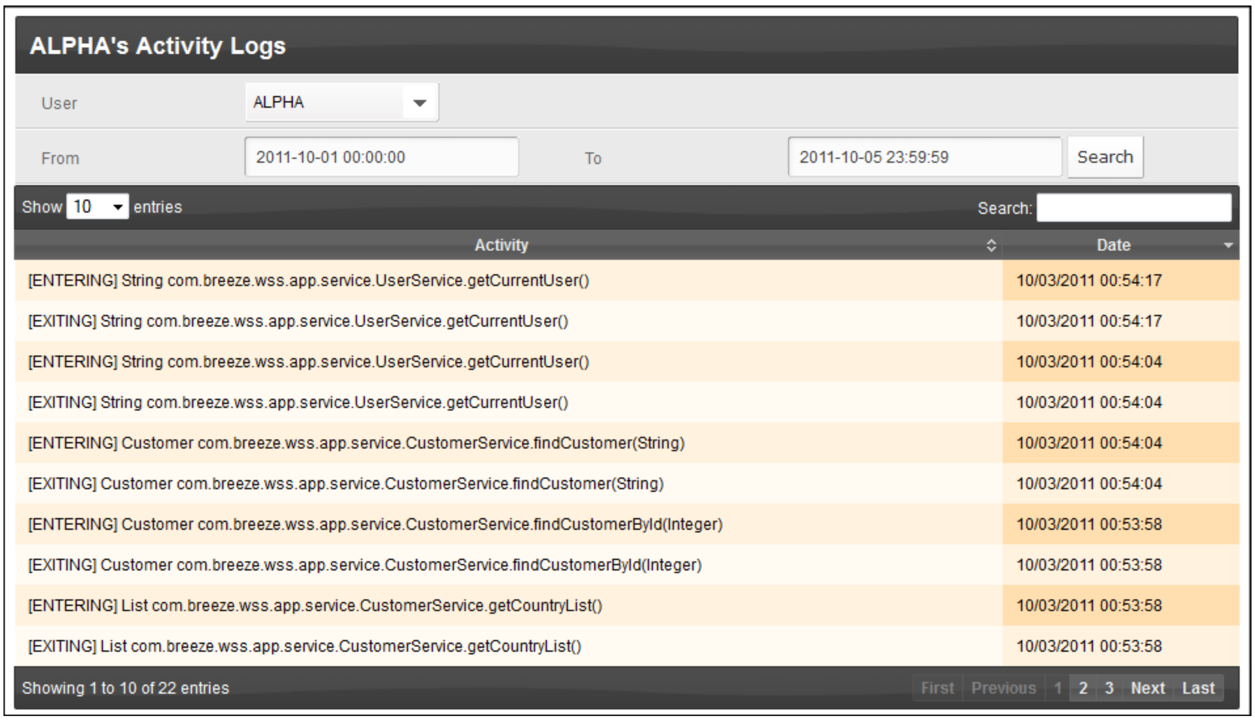
2.11.1. My Activity

This screen allows user to view his activities on the application at a specific time interval. Upon selecting the required time and date the summary of the all the tasks performed by the user is displayed along with the time stamp.



2.11.2. Administration

Any user who has administrative privileges has an access to view the activities performed by other user of the application. Upon selecting the user name and time interval, admin user is redirected to the summary of the activities performed by that particular user.



Activity	Date
[ENTERING] String com.breeze.wss.app.service.UserService.getCurrentUser()	10/03/2011 00:54:17
[EXITING] String com.breeze.wss.app.service.UserService.getCurrentUser()	10/03/2011 00:54:17
[ENTERING] String com.breeze.wss.app.service.UserService.getCurrentUser()	10/03/2011 00:54:04
[EXITING] String com.breeze.wss.app.service.UserService.getCurrentUser()	10/03/2011 00:54:04
[ENTERING] Customer com.breeze.wss.app.service.CustomerService.findCustomer(String)	10/03/2011 00:54:04
[EXITING] Customer com.breeze.wss.app.service.CustomerService.findCustomer(String)	10/03/2011 00:54:04
[ENTERING] Customer com.breeze.wss.app.service.CustomerService.findCustomerById(Integer)	10/03/2011 00:53:58
[EXITING] Customer com.breeze.wss.app.service.CustomerService.findCustomerById(Integer)	10/03/2011 00:53:58
[ENTERING] List com.breeze.wss.app.service.CustomerService.getCountryList()	10/03/2011 00:53:58
[EXITING] List com.breeze.wss.app.service.CustomerService.getCountryList()	10/03/2011 00:53:58