

## References

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- [18] [www.php.net/](http://www.php.net/)
- [19] [www.visual-paradigm.com/Activity](http://www.visual-paradigm.com/Activity)

# Appendix A

## User Manual

The following are the screen snap shots taken from Network Monitoring System. This will explain how user can logon and use the Network Monitoring System.

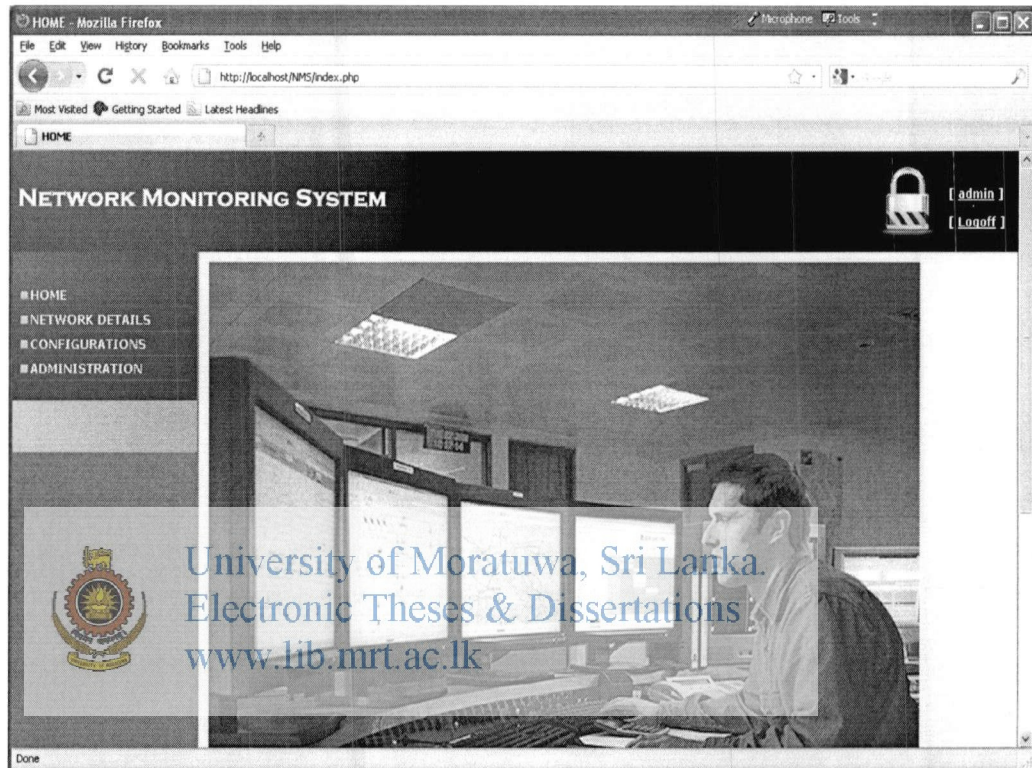


Figure A-1 : NMS Main page

Then user will get the figure A-2

LOGIN	
USERNAME	:
PASSWORD	:
<input type="button" value="RESET"/> <input type="button" value="SUBMIT"/>	

Figure A-2 : User Login page

### Figure. A-3 : NMS Main Menu

Then click on Data Link Monitoring user can monitor the Data links status from following page in figure A-3.

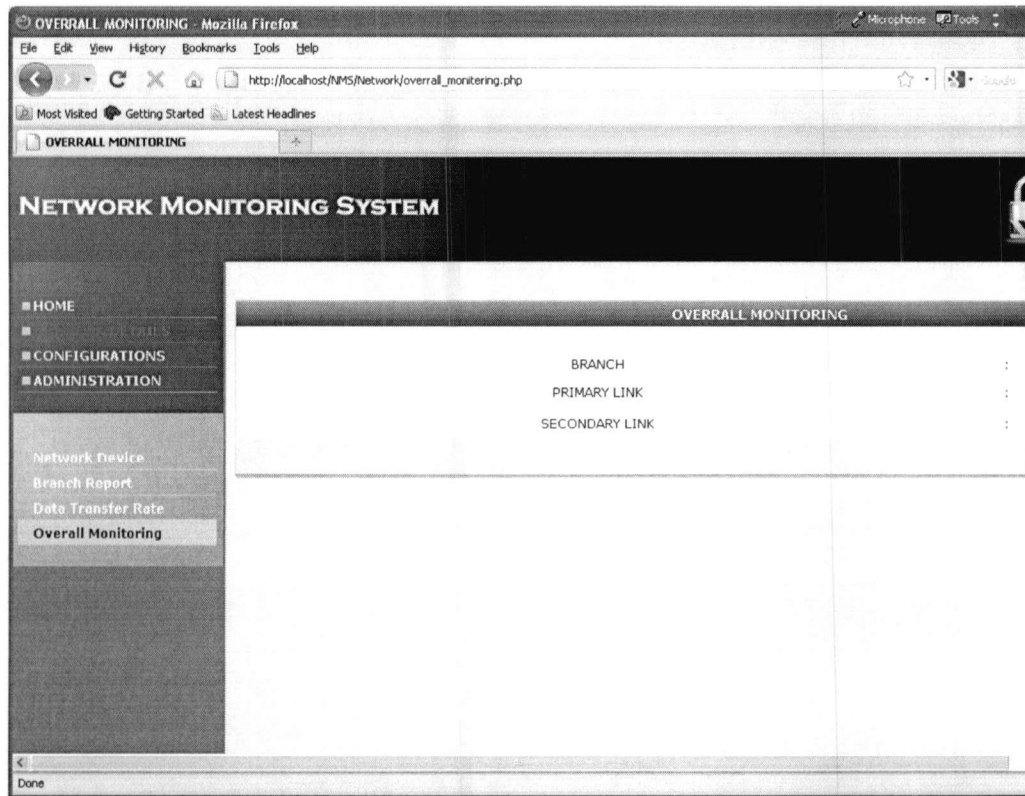


Figure. A-3- NMS Main Menu

Figure. A-4 Data Links status(branch wise) page

Selecting required branch or red indicate branch then page in figure A-4 will display with service providers.

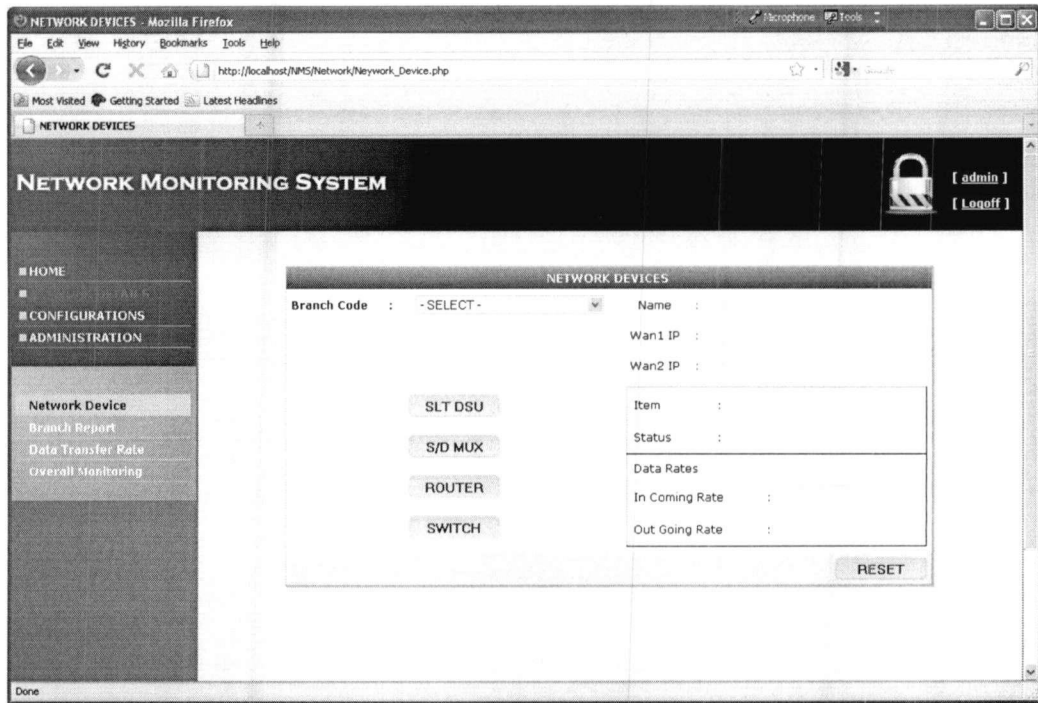


Figure. A-4 - Data Links status

**Figure. A-5 : Data Links status for selected branch**

The click on Network device button of NMS Main Menu.

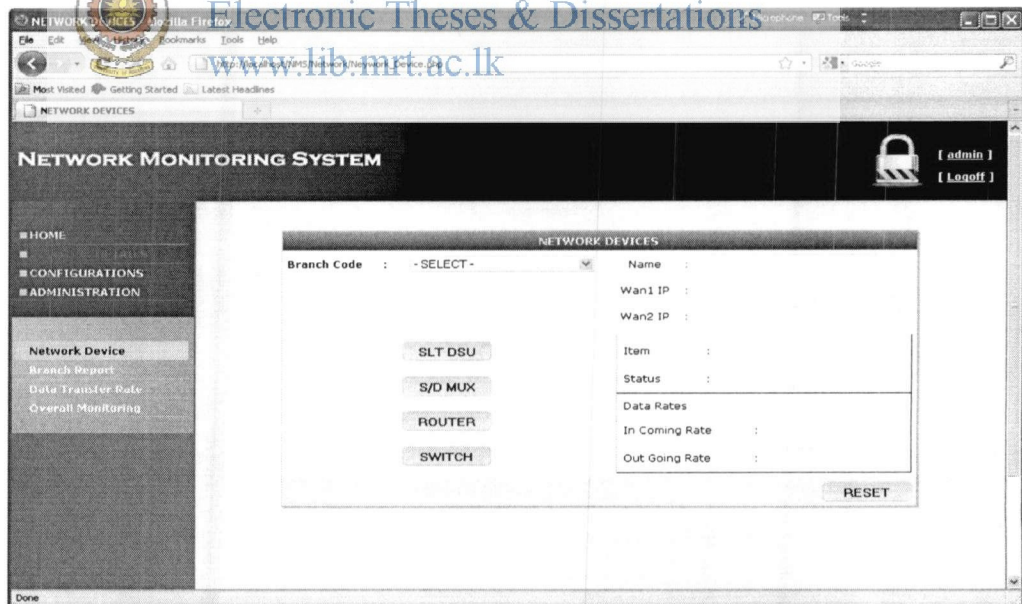


Figure. A-5 - Device Status

**Figure. A-6 : Add branch to the System**

Selecting the Add branch option then page in Fig A-6 will be displayed.

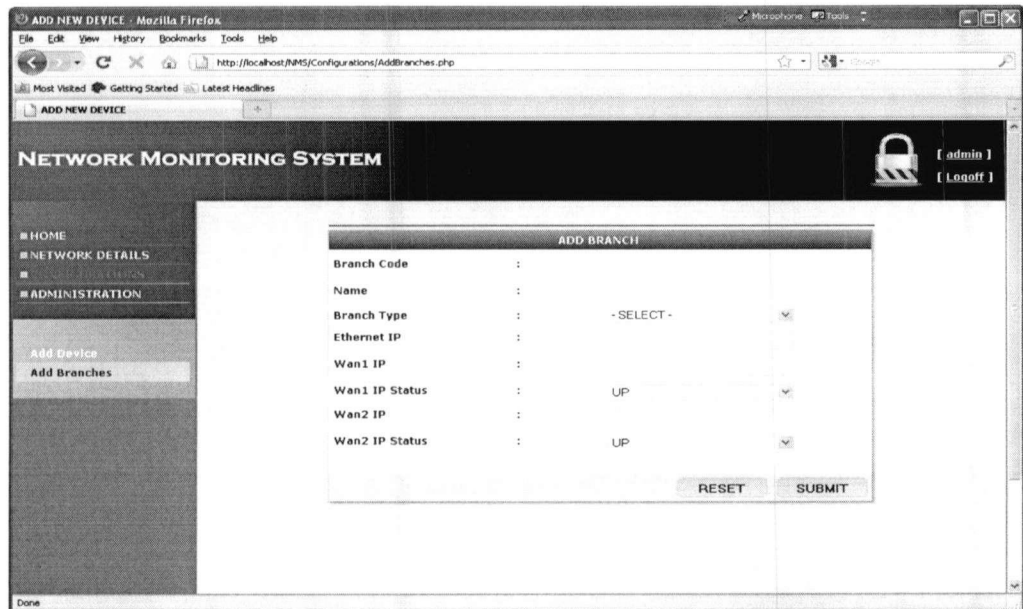


Figure. A-6 : Add branch to the System

**Figure. A-7 : Error checking**

The click on Add Network Device button from NMS Main Menu Then the following page will appear as in figure A-7.

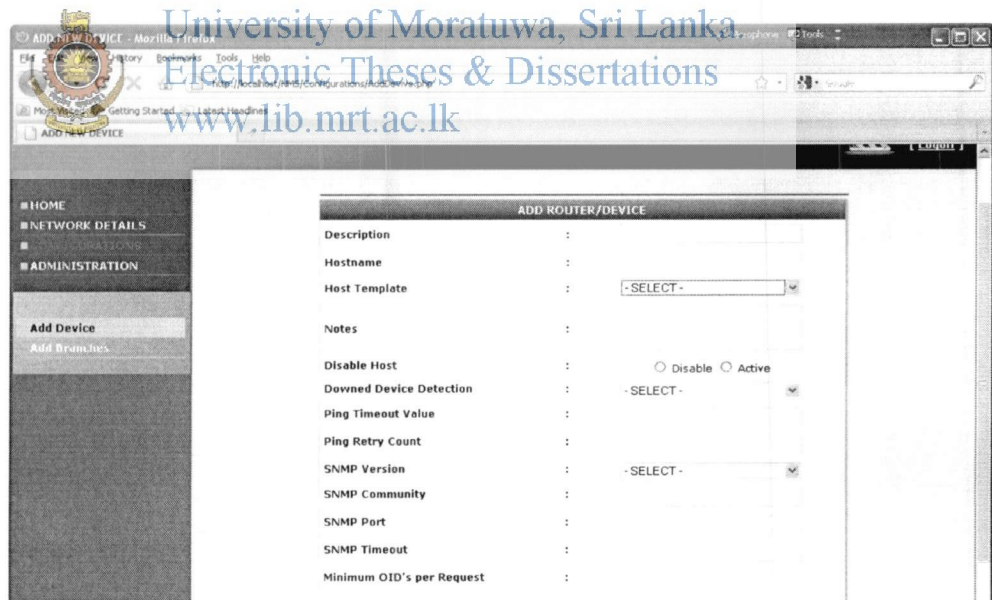
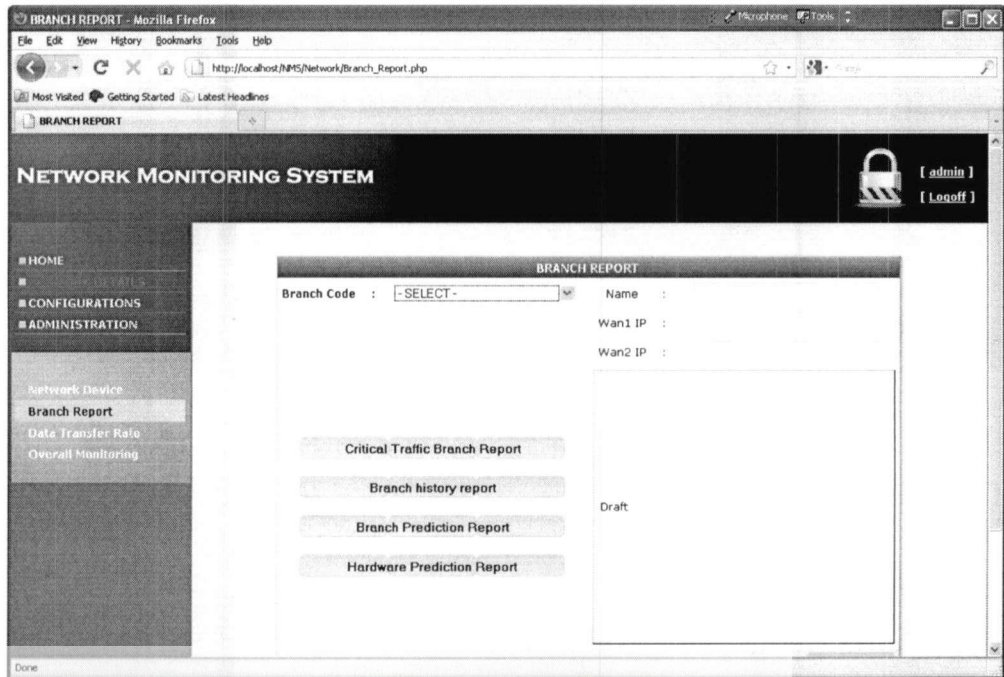


Figure. A-7 : Error checking

### Figure. A-8- Network Device Status

When entered the required branch code, user can Monitor the Network Device Status from following page A-8



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### Figure. A-9 : Traffic Monitoring

If the user selects Data Transfer Rate then page in figure A-9 will display with data transfer rates.

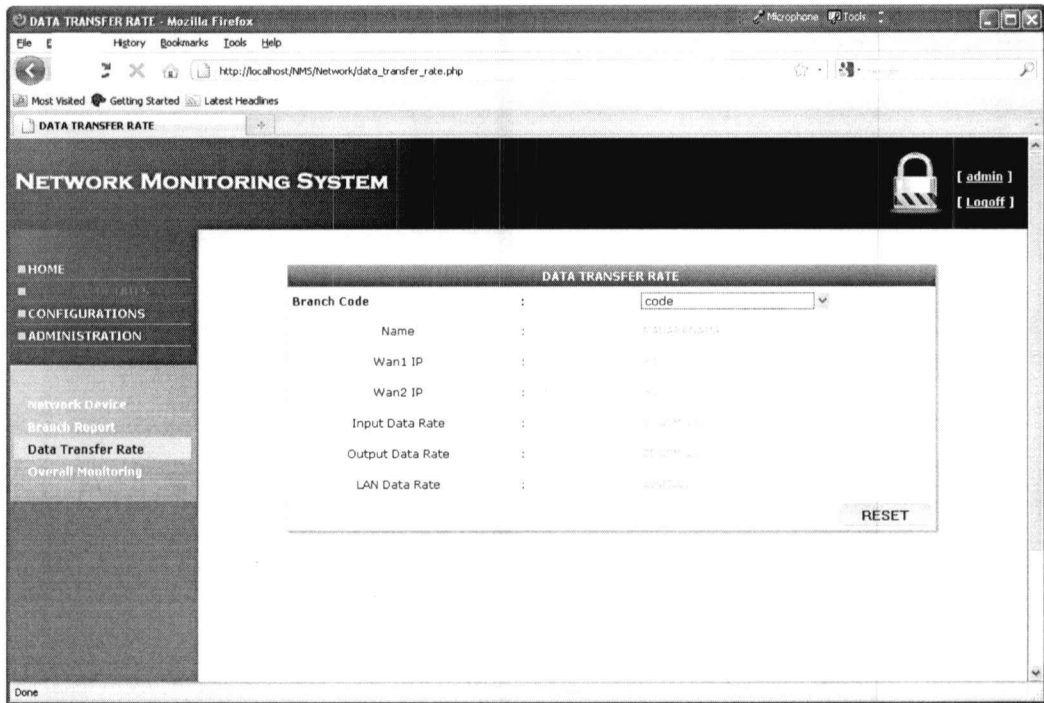


Figure. A-9 - Traffic Monitoring

Figure. A-10 : General User Management Menu  
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 Then select the User ID creation then page on figure A-10 will display on the screen.  
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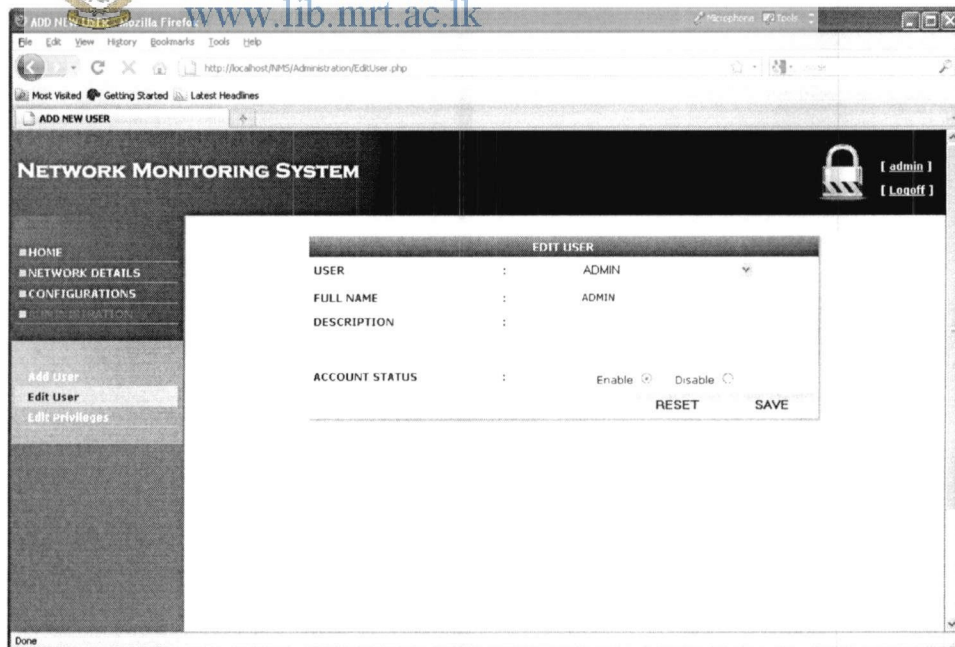


Figure. A-10 – User Management

**Figure. A-11 : User ID creation**

If user selects Edit user privileges in figure A-11 will display on the screen.

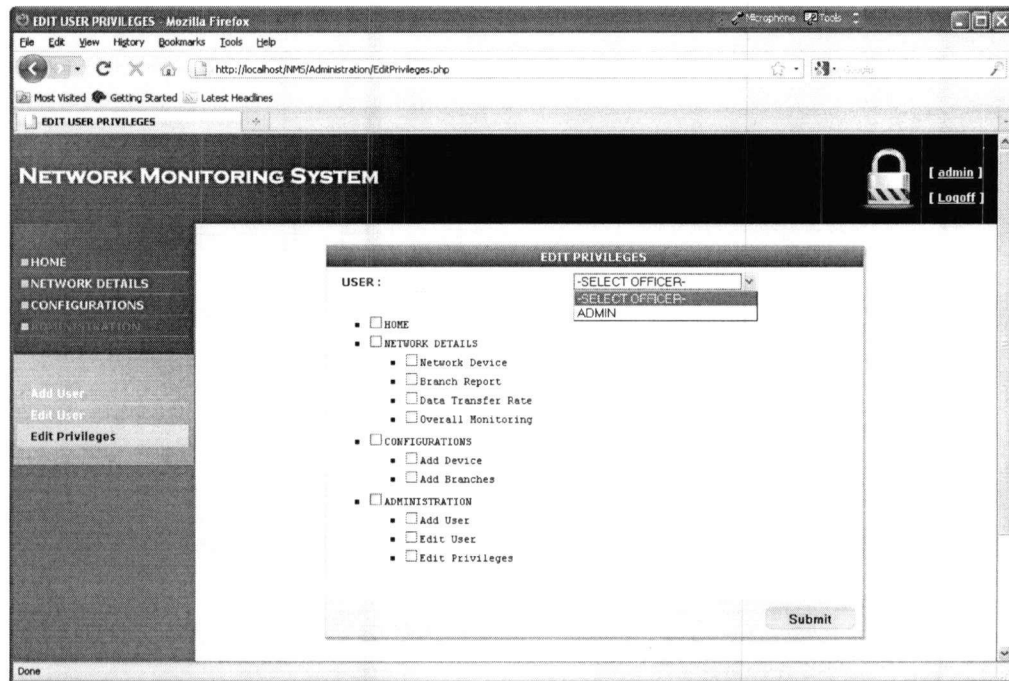


Figure. A-11- Edit user privileges

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# Appendix B

## Graphical output of Traffic

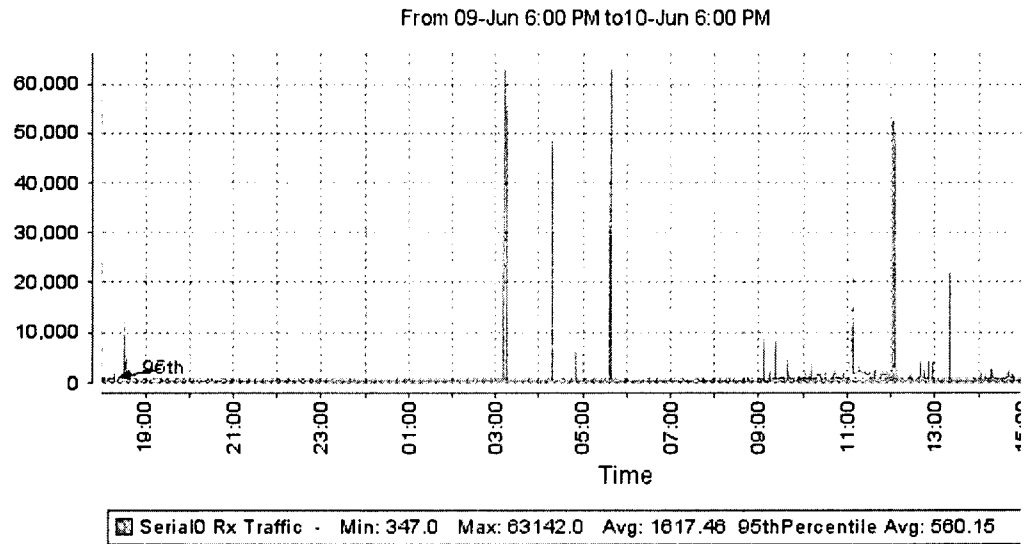


Figure. B-1 – Traffic – Union Place branch

## SLT WAN Rx Traffic – Union Place branch



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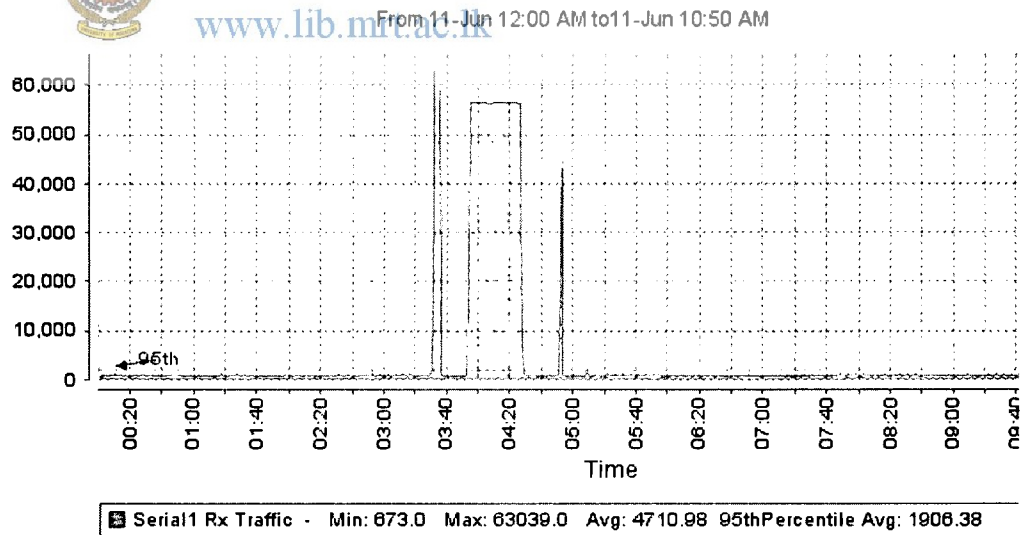


Figure. B-2 - WAN 1 Rx Traffic

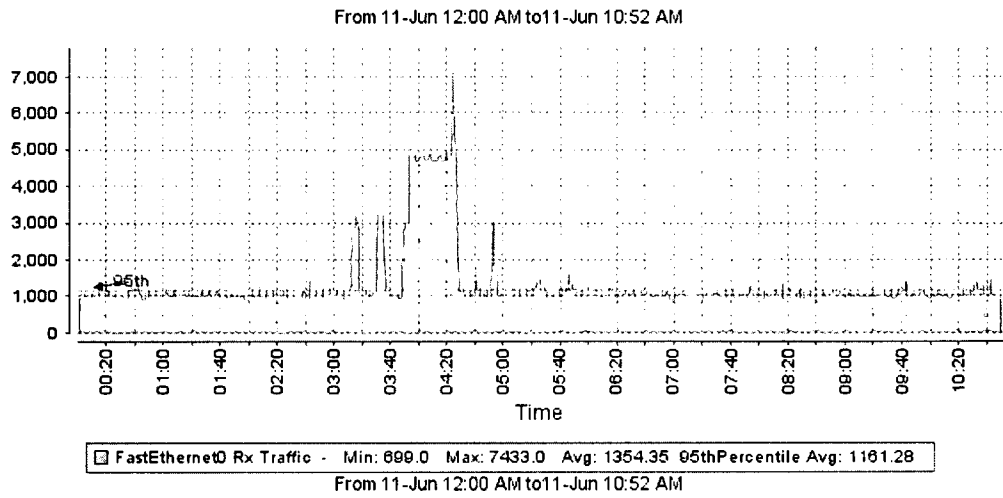


Figure. B-3 – Fast Ethernet Rx Traffic

**Fast Ethernet Rx Traffic – Union Place branch**

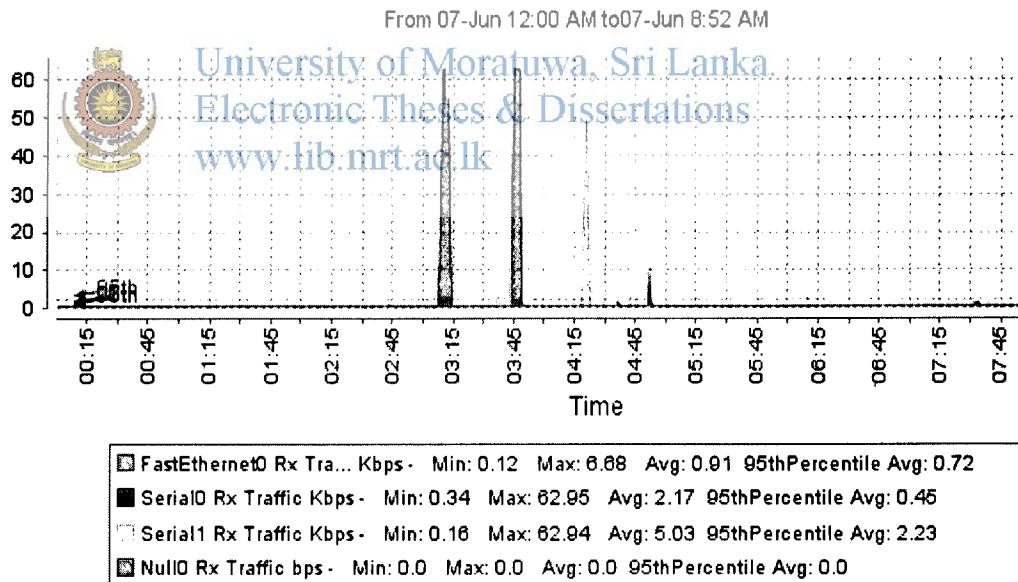


Figure. B-4 - Interface Traffic

### Interface Rx Traffic – Union Place branch

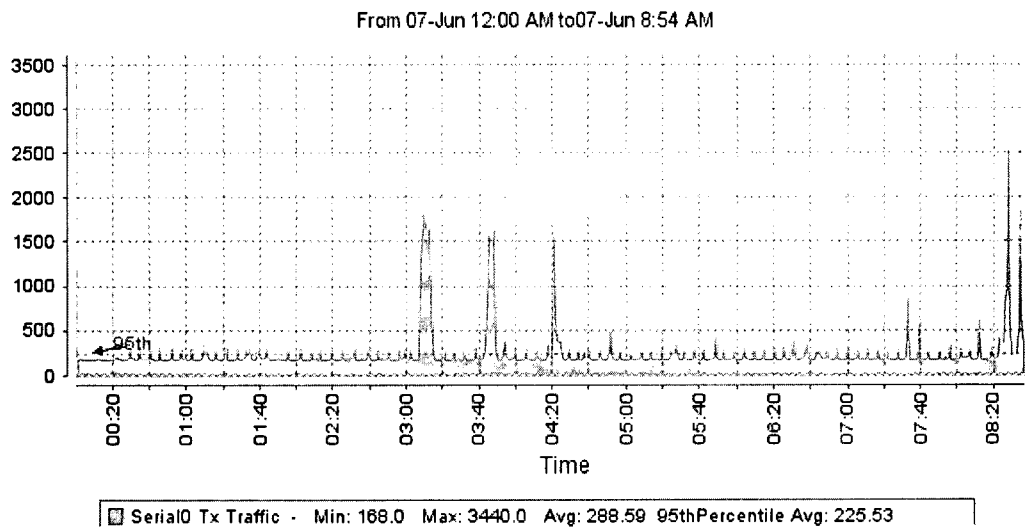


Figure. B-5- SLT WAN 2 Traffic

### SLT WAN Tx Traffic – Union Place branch

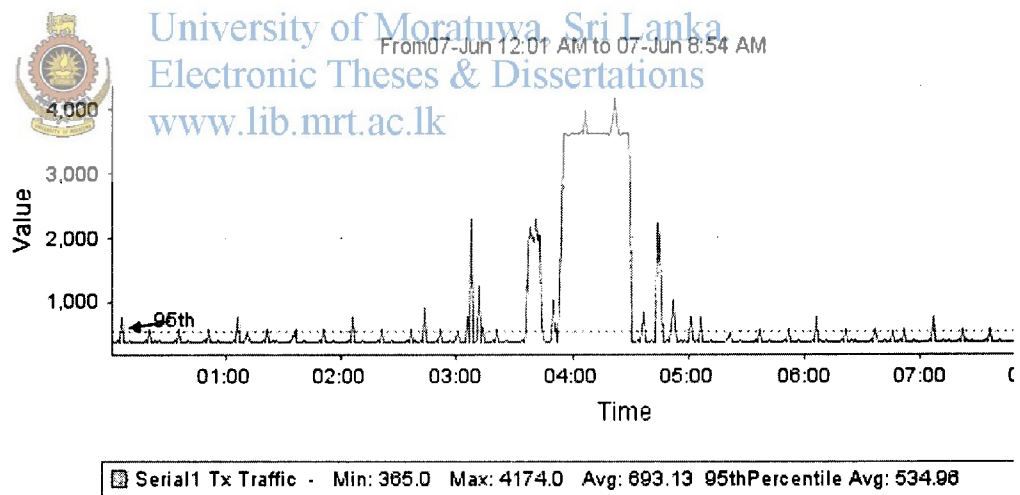


Figure. B-6-WAN Tx Traffic

## NMS Main Screen

```

<?php
    require_once ('Class/DataBase.class.php');
    require_once ('Class/Authentication.class.php');

    session_start();
    $dbcon = new DataBase();
    $auth = new Authentication(false);

    $module_id = -1;
?>

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
    <meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
    <title>Network Monitoring System (NMS) /title>
    <link rel="stylesheet" href="StyleSheets/Main.css" type="text/css" />
    <link rel="stylesheet" href="StyleSheets/AlertBox.css" type="text/css" />

    <script src="JavaScript/Environment.js" type="text/javascript"
language="JavaScript"></script>
    <script src="JavaScript/Controls.js" type="text/javascript"
language="JavaScript"></script>
    <script src="JavaScript/Main.js" type="text/javascript"
language="JavaScript"></script>
</head>

<body>
<?php require_once('Data/TemplateTop.php'); ?>

<?php require_once('Data/TemplateBottom.php'); ?>
</body>
</html>

```

# Login Page

## Pseudo Code & Relate Coding

- User logon to the system

If User name incorrect

“Display Error message”

else

“Go to menu”

```
<?php
require_once ('Class/DataBase.class.php');
require_once ('Class/Authentication.class.php');

session_start();
$dbcon = new DataBase();
$auth = new Authentication(false);
$module_id = -1;

$redirect =
(isset($_REQUEST['redirect']))?$_REQUEST['redirect']:'index.php';

$errorList = array() ;

if(isset($_POST['op'])){
    $Username = trim($_POST['username']);
    $Password = trim($_POST['password']);
    try{
```

```

        $sql = "select USERID, USERNAME, STATUS from
AP_USER where USERNAME = '$Username' and PASSWORD =
MD5('$Password')";
        $result = $dbcon->executeQuery($sql);
        if (mysql_num_rows($result) > 0){
            $row = mysql_fetch_assoc($result);
            if ($row['STATUS'] == 1){
                $user = new User();
                $user->setUserId($row['USERID']);
                $user->setUserName($row['USERNAME']);

                $_SESSION['USER'] = $user;
                header("Location: " . $redirect);
                die("<strong>Authentication error, Header
command failed to execute</strong>");
            }
            else {
                $errorList[] = 'Account has been disabled,
Please contact the Administrator';
            }
        }
        else {
            $errorList[] = 'Username/Password incorrect, Please
try again';
        }
    }
    catch (Exception $e) {
        $errorList[] = htmlspecialchars($e->getMessage(),
ENT_QUOTES);
    }
    else {
        $Username = "";
    }
}
?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>

```



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```
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<title>Login</title>
```

```
<link rel="stylesheet" href="StyleSheets/Main.css" type="text/css" />
<link rel="stylesheet" href="StyleSheets/AlertBox.css" type="text/css" />
<link rel="stylesheet" href="StyleSheets/TableStyle.css" type="text/css" />
<link rel="stylesheet" href="StyleSheets/DropShadow.css" type="text/css" />
```

```
<script src="JavaScript/Environment.js" type="text/javascript"
language="JavaScript"></script>
<script src="JavaScript/Controls.js" type="text/javascript"
language="JavaScript"></script>
<script src="JavaScript/Main.js" type="text/javascript"
language="JavaScript"></script>
<script src="JavaScript/PasswordMeter.js" type="text/javascript"
language="JavaScript"></script>
<script src="JavaScript/Ajax.js" type="text/javascript"
language="JavaScript"></script>
<script src="js/Login.js" type="text/javascript" language="JavaScript"><</script>
```

```
</head>
```

```
<body>
```

```
<?php require_once('Data/TemplateTop.php'); ?>
```

```
<div align="center">
```

```
<br />
```

```
<br />
```

```
<br />
```

```
<br />
```

```
<br />
```

```
<br />
```

```
<br />
```

```
<br />
```



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```

<br />
<br />
<br />
<br />
<br />
<?php
    if (sizeof($errorList) > 0)
    {
        $error_message = '<font color="#FF0000">';
        foreach ($errorList as $error) $error_message .= '<li>' . $error .
'</li>';
        $error_message .= '</font>';

        echo '<script type="text/javascript" language="JavaScript">';
        echo "Cnt.AlertBox('WARNING MESSAGE', '$error', null,
'Warning')";
        echo '</script>';
    }
?>
<br />

<div id="shadow-container" style="width:500px;">
<div class="shadow1">
<div class="shadow2">
<div class="shadow3">
<div class="shadow4">
<div class="container">
    <form name="frm" action="<?php echo $_SERVER['PHP_SELF'] ?>"
method="post">
        <input type="hidden" name="redirect" value="<?php echo $redirect ?>"
/>
        <input type="hidden" name="op" value="ds" />
        <table align="center" width="100%" class="table_style1" border="0"
cellspacing="0">
            <thead>
                <tr>
                    <td colspan="5">User Login</td>
                </tr>
            </thead>
            <tbody>
                <tr>
                    <td align="center" valign="top" rowspan="2">&nbsp;</td>

```



```
name="username" value="<?php echo $Username ?>" />
    </td>
</tr>
<tr>
    <td align="left"><strong>Password</strong></td>
    <td align="center"><strong>:</strong></td>
    <td align="center" > <input type="password" class="textbox"
name="password" maxlength="16" />
    </td>
</tr>
</tbody>
<tfoot>
<tr>
    <td colspan="5" align="right"> <input type="button"
onclick="submitForm(this)" class="button" value="Login" />
    <input type="button" onclick="resetForm(this)" class="button"
value="Reset" /></td>
</tr>
</tfoot>
</table>
</form>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
<?php require_once('Data/TemplateBottom.php'); ?>
</body>
</html>
```



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```

<?php
    require_once ('../Class/DataBase.class.php');
    require_once ('../Class/Authentication.class.php');

    session_start();
    $dbcon = new DataBase();
    $auth = new Authentication(true);

    $auth->checkAccess(11, $dbcon);

    $module_id = 9;

    $errorList = array();
    $hasErrors = false;

?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<title>Branch Report</title>

<link rel="stylesheet" href="../StyleSheets/Main.css" type="text/css" />
<link rel="stylesheet" href="../StyleSheets/AlertBox.css" type="text/css" />
<link rel="stylesheet" href="../StyleSheets/TableStyle.css" type="text/css" />
<link rel="stylesheet" href="../StyleSheets/DropShadow.css" type="text/css" />

<script src="../JavaScript/Environment.js" type="text/javascript"
language="JavaScript"></script>
<script src="../JavaScript/Controls.js" type="text/javascript"
language="JavaScript"></script>
<script src="../JavaScript/Main.js" type="text/javascript"
language="JavaScript"></script>
<script src="../JavaScript/Ajax.js" type="text/javascript"
language="JavaScript"></script>
<script src="js/Branch_Report.js" type="text/javascript"
language="JavaScript"></script>
</head>

<body>

```

```

<?php require_once('../Data/TemplateTop.php'); ?>
<div align="center">
    <br />
    <br />

    <div id="shadow-container" style="width:845px;">
    <div class="shadow1">
    <div class="shadow2">
    <div class="shadow3">
    <div class="shadow4">
    <div class="container">
        <form name="frm" action="<?php echo $_SERVER['PHP_SELF'] ?>"
method="post">
            <table width="800" border="1" align="center" cellpadding="0"
cellspacing="0" class="table_style1">
                <thead>
                    <tr>
                        <td colspan="6">Branch Report</td>
                    </tr>
                </thead>
                <tbody>
                    <tr>
                        <td align="left"><strong>Branch Code</strong></td>
                        <td align="center"><strong>:</strong></td>
                        <td align="center">
                            <select class="dropdown"
name="type" id="type" onchange="loadBranch(this);" >
                                <option value="0">-
                                SELECT -</option>
                                <?php
                                    $sql =
                                "SELECT BRANCH_CODE FROM BRANCHES WHERE STATUS = 1";
                                    $result =
                                $dbcon->executeQuery($sql);
                                    while($row =
                                mysql_fetch_array($result)){
                                        echo("<option value=" . $row['BRANCH_CODE'] . ">" .
                                $row['BRANCH_CODE'] . "</option>");
                                    }
                                ?>
                            </select>
                        </td>
                    </tr>
                </tbody>
            </table>

```

```

                <td align="center">Name</td>
                <td align="center">:</td>
            </tr>
            <tr>
                <td align="center">
                    <input type="text" class="textbox" id="brnch_name"
                    disabled="disabled" />
                </td>
            </tr>
            <tr>
                <td colspan="3" rowspan="2" align="center" style="padding-
                top:20px;">
                    <input type="button" class="button" name="cbtr" id="cbtr"
                    value="Critical Branch Traffic Report"
                    onclick="loadValues(document.getElementById('brnch_name').value,this);"
                    style="width:250px; font-weight:bolder; background-image:none; border:1px solid
                    #900;" />
                </td>
                <td align="center">Wan1 IP</td>
                <td align="center">:</td>
            </tr>
            <tr>
                <td align="center">
                    <input type="text" class="textbox" id="Wan1_IP"
                    disabled="disabled" />
                </td>
            </tr>
            <tr>
                <td align="center">Wan2 IP</td>
                <td align="center">:</td>
            </tr>
            <tr>
                <td align="center">
                    <input type="text" class="textbox" id="Wan2_IP"
                    disabled="disabled" />
                </td>
            </tr>
            <tr>
                <td colspan="6"><table width="800"
                border="0" cellspacing="0" cellpadding="0">
                    <tr>
                        <td style="padding-top:10px;"><table
                        width="800" border="0" cellspacing="0" cellpadding="0">
                            <tr>
                                <td width="200" align="center"><input
                                type="button" class="button" name="btn1" id="btn1" value="Branch Traffic
                                Report"
                                onclick="loadValues(document.getElementById('brnch_name').value,this);"
                                style="width:190px; font-weight:normal; background-image:none; border:1px solid

```

```

#900;" disabled="disabled"/></td>
                                <td width="200" align="center"><input
type="button" class="button" name="btn2" id="btn2" value="Branch History
Report"
onclick="loadValues(document.getElementById('brnch_name').value,this);"
style="width:190px; font-weight:normal; background-image:none; border:1px solid
#900;" disabled="disabled" /></td>
                                <td width="200" align="center"><input
type="button" class="button" name="btn3" id="btn3" value="Branch Prediction
Report"
onclick="loadValues(document.getElementById('brnch_name').value,this);"
style="width:190px; font-weight:normal; background-image:none; border:1px solid
#900;" disabled="disabled" /></td>
                                <td width="200" align="center"><input
type="button" class="button" name="btn4" id="btn4" value="Hardware Prediction
Report"
onclick="loadValues(document.getElementById('brnch_name').value,this);"
style="width:190px; font-weight:normal; background-image:none; border:1px solid
#900;" disabled="disabled" /></td>
                                </tr>
                                </table></td>
                                </tr>
                                <tr>
                                <td style="padding:10px;"><div
id="value_lable"></div></td>
                                </tr>
                                <tr>
                                <td style="padding:5px;"
align="right"><input type="reset" class="button" value="Reset"
onclick="resetForm();" style="width:100px;" /></td>
                                </tr>
                                </table></td>
                                </tr>
                                </tbody>
                                <tfoot>
                                </tfoot>
                                </table>
                                </form>
                                </div>
                                </div>
                                </div>
                                </div>
                                </div>
                                </div>
                                </div>
                                <?php require_once('../Data/TemplateBottom.php'); ?>
                                </body>
                                </html>

```



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## Detect Data Transfer Rate

```
<?php
    require_once ('../Class/DataBase.class.php');
    require_once ('../Class/Authentication.class.php');

    session_start();
    $dbcon = new DataBase();
    $auth = new Authentication(true);

    $auth->checkAccess(12, $dbcon);

    $module_id = 9;

    $errorList = array();
    $hasErrors = false;

?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<title>Data Transfer Rate</title>
<link rel="stylesheet" href="../StyleSheets/Main.css" type="text/css" />
<link rel="stylesheet" href="../StyleSheets/AlertBox.css" type="text/css" />
<link rel="stylesheet" href="../StyleSheets/TableStyle.css" type="text/css" />
<link rel="stylesheet" href="../StyleSheets/DropShadow.css" type="text/css" />

    <script src="../JavaScript/Environment.js" type="text/javascript"
language="JavaScript"></script>
    <script src="../JavaScript/Controls.js" type="text/javascript"
language="JavaScript"></script>
    <script src="../JavaScript/Main.js" type="text/javascript"
language="JavaScript"></script>
    <script src="../JavaScript/Ajax.js" type="text/javascript"
language="JavaScript"></script>
    <script src="js/data_transfer_rate.js" type="text/javascript"
language="JavaScript"></script>
</head>

<body>
<?php require_once('../Data/TemplateTop.php'); ?>
<div align="center">
```

```

<br />
    <br />

    <div id="shadow-container" style="width:700px;">
        <div class="shadow1">
            <div class="shadow2">
                <div class="shadow3">
                    <div class="shadow4">
                        <div class="container">
                            <form name="frm" action="<?php echo $_SERVER['PHP_SELF'] ?>"
method="post">
                                <table align="center" width="100%" class="table_style1" border="1"
cellspacing="0">
                                    <thead>
                                        <tr>
                                            <td colspan="6">Data Transfer Rate</td>
                                        </tr>
                                    </thead>
                                    <tbody>
                                        <tr>
                                            <td align="center"><strong>Branch Code</strong></td>
                                            <td align="center"><strong>:</strong></td>
                                            <td align="center"> <select class="dropdown" name="type"
onchange="loadBranch(this);">
                                                <option value="0"> SELECT </option>
                                                <?php
                                                    $sql =
"SELECT BRANCH_CODE FROM BRANCHES WHERE STATUS = 1";
                                                    $result =
$dbcon->executeQuery($sql);
                                                    while($row =
mysql_fetch_array($result)){
                                                        echo("<option value=" . $row['BRANCH_CODE'] . ">" .
$row['BRANCH_CODE'] . "</option>");
                                                    }
                                                ?>
                                                </select> </td>
                                            </tr>
                                        <tr>
                                            <td align="center">Name</td>
                                            <td align="center">:</td>
                                            <td align="center"> <input type="text" class="textbox"
id="brnch name"

```

```

disabled="disabled" />
    </td>
</tr>
<tr>
    <td align="center">Wan1 IP</td>
    <td align="center">:</td>
    <td align="center"> <input type="text" class="textbox"
id="Wan1_IP" disabled="disabled" />
    </td>
</tr>
<tr>
    <td align="center">Wan2 IP</td>
    <td align="center">:</td>
    <td align="center"> <input type="text" class="textbox"
id="Wan2_IP" disabled="disabled" />
    </td>
</tr>
<tr>
    <td align="center">Input Data Rate</td>
    <td align="center">:</td>
    <td align="center"> <input type="text" class="textbox"
id="in_data_rate" disabled="disabled" />
    </td>
</tr>
<tr>
    <td align="center">Output Data Rate</td>
    <td align="center">:</td>
    <td align="center"> <input type="text" class="textbox"
id="out_data_rate" disabled="disabled" />
    </td>
</tr>
<tr>
    <td align="center">LAN Data Rate</td>
    <td align="center">:</td>
    <td align="center"> <input type="text" class="textbox"
id="lan_data_rate" disabled="disabled" />
    </td>
</tr>
</tbody>
<tfoot>
<tr>
    <td colspan="6" align="right"> <input type="reset" class="button"

```



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```
value="Reset" />
    </td>
</tr>
</tfoot>
</table>
</form>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
<?php require_once('../Data/TemplateBottom.php'); ?>
</body>
</html>
```



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## Overall Monitoring

```
<?php
    require_once ('../Class/DataBase.class.php');
    require_once ('../Class/Authentication.class.php');

    session_start();
    $dbcon = new DataBase();
    $auth = new Authentication(true);

    $auth->checkAccess(13, $dbcon);

    $module_id = 9;

    $errorList = array();
    $hasErrors = false;

?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<title>Overall Monitoring</title>
<link rel="stylesheet" href="../StyleSheets/Main.css" type="text/css" />
<link rel="stylesheet" href="../StyleSheets/AlertBox.css" type="text/css" />
<link rel="stylesheet" href="../StyleSheets/TableStyle.css" type="text/css" />
<link rel="stylesheet" href="../StyleSheets/DropShadow.css" type="text/css" />

    <script src="../JavaScript/Environment.js" type="text/javascript"
language="JavaScript"></script>
    <script src="../JavaScript/Controls.js" type="text/javascript"
language="JavaScript"></script>
    <script src="../JavaScript/Main.js" type="text/javascript"
language="JavaScript"></script>
    <script src="../JavaScript/Ajax.js" type="text/javascript"
language="JavaScript"></script>
    <script src="js/data_transfer_rate.js" type="text/javascript"
language="JavaScript"></script>
    <script type="text/javascript" language="javascript">
```

```

//
    }
    else{
        echo("<td width=200><div class=down
onmousemove='show_alert(\"\".$row['NAME'].\"\\,\"1\\')>Down</div></td>");
    }

    if($row['WAN2_IP_STATUS'] == 1){
        echo("<td width=200><div class=up>Up</div></td>");
    }
    else{
        echo("<td width=200><div class=down
onmousemove='show_alert(\"\".$row['NAME'].\"\\,\"1\\')>Down</div></td>");
    }
    echo ("</tr>");
}
?>
</table>
</form>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
<?php require_once('./Data/TemplateBottom.php'); ?>
</body>
</html>
<script type="text/javascript" language="javascript">
    setTimeout(function(){location.href="overall_monitoring.php"},10000);
</script>

```



## Network Devices

- Alert System

If database input Zero

“Generate warring message”

Else

“No message

```
<?php
require_once ('../Class/DataBase.class.php');
require_once ('../Class/Authentication.class.php');

session_start();
$dbcon = new DataBase();
$auth = new Authentication(true);

$auth->checkAccess(10, $dbcon);

$module_id = 9;

$errorList = array();
$hasErrors = false;
?>
```



```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<title>Network Devices</title>

<link rel="stylesheet" href="../StyleSheets/Main.css" type="text/css" />
<link rel="stylesheet" href="../StyleSheets/AlertBox.css" type="text/css" />
<link rel="stylesheet" href="../StyleSheets/TableStyle.css" type="text/css" />
<link rel="stylesheet" href="../StyleSheets/DropShadow.css" type="text/css" />

<script src="../JavaScript/Environment.js" type="text/javascript"
language="JavaScript"></script>
<script src="../JavaScript/Controls.js" type="text/javascript"
language="JavaScript"></script>
<script src="../JavaScript/Main.js" type="text/javascript"
language="JavaScript"></script>
<script src="../JavaScript/Ajax.js" type="text/javascript"
language="JavaScript"></script>
<script src="js/Network_Device.js" type="text/javascript"
```

```

<div align="center">
    <br />
    <br />

<div id="shadow-container" style="width:700px;">
    <div class="shadow1">
        <div class="shadow2">
            <div class="shadow3">
                <div class="shadow4">
                    <div class="container">
                        <form name="frm" action="<?php echo $_SERVER['PHP_SELF'] ?>"
method="post">
                            <table align="center" width="100%" class="table_style1" border="1"
cellspacing="0">
                                <thead>
                                    <tr>
                                        <td colspan="6">Network Devices</td>
                                    </tr>
                                </thead>
                                <tbody>
                                    <tr>
                                        <td align="left"><strong>Branch Code</strong></td>
                                        <td align="center"><strong>:</strong></td>
                                        <td align="center"><select class="dropdown" name="type"
onchange="loadBranch(this);" >
                                            <option value="0">- Select -</option>
                                        <?php

BRANCH_CODE from BRANCHES where STATUS = 1";
$mysql = "select
$result =
$dbcon->executeQuery($sql);
while($row =
mysql_fetch_array($result)){
    echo("<option value=" . $row['BRANCH_CODE'] . ">" .
$row['BRANCH_CODE'] . "</option>");
}
?>

                                        </select> </td>
                                        <td align="center">Name</td>
                                        <td align="center">:</td>
                                        <td align="center"> <input type="text" class="textbox"

```

```

readonly="readonly" />
    </td>
  </tr>
  <tr>
    <td align="left">&nbsp;</td>
    <td align="center">&nbsp;</td>
    <td align="center">&nbsp;</td>
    <td align="center">Wan1 IP</td>
    <td align="center">:</td>
    <td align="center"> <input type="text" class="textbox"
id="Wan1_IP" readonly="readonly" />
    </td>
  </tr>
  <tr>
    <td align="left">&nbsp;</td>
    <td align="center">&nbsp;</td>
    <td align="center">&nbsp;</td>
    <td align="center">Wan2 IP</td>
    <td align="center">:</td>
    <td align="center"> <input type="text" class="textbox"
id="Wan2_IP" readonly="readonly" />
    </td>
  </tr>
  <tr>
    <td align="center" colspan="3" rowspan="2"> <table border="0">
    <tr>
      <td align="center"> <input type="button" class="button"
name="btnStl_dsu" value="SLT DSU" onclick="loadValues(this);" />
    </td>
  </tr>
  <tr>
    <td align="center"> <input type="button" class="button"
name="btnS_d_mux" value="S/D MUX" onclick="loadValues(this);" />
    </td>
  </tr>
  <tr>
    <td align="center"> <input type="button" class="button"
name="btnRouter" value="ROUTER" onclick="loadValues(this);" />
    </td>
  </tr>
  <tr>
    <td align="center"> <input type="button" class="button"

```



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```

name="btnSwitch" value="SWITCH" onclick="loadValues(this);" />
</td>
</tr>
</table></td>
<td align="center" colspan="3" rowspan="4"> <table border="1"
width="100%">
<tr>
<td align="left" id="value_label">Item</td>
<td align="left">:</td>
<td align="left"> <input type="text" class="textbox"
id="txtValue" readonly="readonly" style="width:100px;" />
</td>
</tr>
<tr>
<td align="left" id="value_label">Status</td>
<td align="left">:</td>
<td align="left"> <input type="text" class="textbox"
id="txtStatus" readonly="readonly" style="width:100px;" />
</td>
</tr>
</table>
<table border="1" width="100%">
<tr>
<td align="left">Data Rates</td>
</tr>
<tr>
<td align="left" id="value_label">In Coming Rate</td>
<td align="left">:</td>
<td align="left"> <input type="text" class="textbox"
id="txtIn_rate" readonly="readonly" style="width:100px;" />
</td>
</tr>
<tr>
<td align="left">Out Going Rate</td>
<td align="left">:</td>
<td align="left"> <input type="text" class="textbox"
id="txtOut_rate" readonly="readonly" style="width:100px;" />
</td>
</tr>
</table></td>
</tr>
</tbody>

```



```
<tfoot>
<tr>
<td colspan="6" align="right"> <input type="reset" class="button"
value="RESET" onclick="resetForm();" />
</td>
</tr>
</tfoot>
</table>
</form>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
<?php require_once('../Data/TemplateBottom.php'); ?>
</body>
</html>
```



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## NMS- Uptime Monitor ( To send SMS )

```
!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<title>NMS Uptime Monitor</title>
<script language="JavaScript" type="text/javascript">
////////////////////////////////////
// CONFIGURATION STARTS HERE

// Configure refresh interval (in seconds)
var refreshinterval=30

// Shall the countdown be displayed inside your status bar? Say "yes" or "no"
below:
var displaycountdown="yes"

// CONFIGURATION ENDS HERE
////////////////////////////////////

// Do not edit the code below
var starttime
var nowtime
var reloadseconds=0
var secondssinceloaded=0

function starttime() {
    starttime=new Date()
    starttime=starttime.getTime()
    countdown()
}

function countdown() {
    nowtime= new Date()
    nowtime=nowtime.getTime()
    secondssinceloaded=(nowtime-starttime)/1000
    reloadseconds=Math.round(refreshinterval-secondssinceloaded)
    if (refreshinterval>=secondssinceloaded) {
        var timer=setTimeout("countdown()",1000)
        if (displaycountdown=="yes") {
            window.status="Page refreshing in "+reloadseconds+ "
seconds"
        }
    }
}
```

```

clearTimeout(timer)
    window.location.reload(true)
}
}
window.onload=starttime
</script>

<style type="text/css">
<!--
.style1 {
    color: #003399;
    font-weight: bold;
    font-size: 24px;
}
.style3 {color: #003399; }
.style4 {color: #666600}
.style7 {color: #990000}
.style8 {
    color: #006600;
    font-weight: bold;
}
.style11 {
    color: #003399;
    font-weight: bold;
    font-style: italic;
    font-size: 12px;
}
.style13 {color: #990033; font-weight: bold; }
-->
</style>
</head>

<body>
<?PHP
    require('conn.php');
?>
<h2>&nbsp;</h2>
<p>&nbsp;</p>
<table width="872" height="260" border="0" align="center"
bordercolor="#FFFFFF" bgcolor="#FFFFFF">
<tr>
<td height="53" colspan="3"><h2 class="style1">NMS Uptime
Monitor</h2></td>

```



```

<tr>
  <td height="43" colspan="3"><h3 class="style3">Current Configurations
</h3></td>
</tr>
<tr>
  <td width="196" height="38"><span class="style4">Last Refresh
Time</span></td>
  <td colspan="2"><span class="style4"><strong><?php echo date('d-m-y
H:i:s')." <BR>"; ?></strong></span></td>
</tr>
<tr>
  <td height="30"><span class="style4">Alerts Destinaton </span></td>
  <td colspan="2"><span class="style4"><strong><?php echo $pno;
?></strong></span></td>
</tr>
<tr>
  <td height="31" class="style4">Top Level Alert Destination </td>
  <td colspan="2"><span class="style4"><strong><?php echo $TLApno; ?>
</strong></span><span class="style11">Alert will be sent to a pre-defined top
level Manager after a 4 hours of delay </span></td>
  <td width="6">&nbsp;</td>
</tr>
<tr>
  <td colspan="3">&nbsp;</td>
</tr>
<tr>
  <td height="31" colspan="3" class="style7"><span
class="style13">Branches in unreachable state</span></td>
</tr>
<?php
echo "<p></p> ";
//echo date('l jS \of F Y h:i:s A');
$sql="SELECT * FROM branches WHERE WAN1_IP_STATUS='0' OR
WAN2_IP_STATUS='0' ORDER BY WAN1_IP_STATUS";
$result=mysql_query($sql);

while($row=mysql_fetch_array($result)){
  if($row['ALERT_STATUS'] == 0) {
    $node = "";
    $type = "";
    if ($row['WAN2_IP_STATUS'] == 0){
      $node = "WAN2";
    } else {

```



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```

    }

    $insertSql = "INSERT INTO alert (BRANCH_ID, NODE,
TYPE) VALUES ( '". $row['BRANCH_ID'] ."', '". $node ."', 'ALERT')";
    $result0=mysql_query($insertSql);

    $updateSql="UPDATE branches SET ALERT_STATUS =
1, ALERT_TIME = now() WHERE BRANCH_ID = '". $row['BRANCH_ID'] ."'";
    $result00=mysql_query($updateSql);

    $msg=$row['NAME']." branch is down ...";
    $txt="smssender.exe /p:$pno /m:\"$msg\" /l";
    $fp = fopen('sms.bat', 'w');
    fwrite($fp, $txt);
    fclose($fp);

    } else if($row['RECOVERY_STATUS'] == 0) {
        if( time() - strtotime($row['ALERT_TIME']) > 14400){
            $stopMsg= "Connectivity of the ". $row['NAME'] ."
branch is down for more that 4 hours, Please have your attaention";
            $txt="smssender.exe /p:$TLApno /m:\"$stopMsg\"
/l";

            $fp = fopen('sms.bat', 'w');
            fwrite($fp, $txt);
            fclose($fp);
        }
    }

}

} University of Moratuwa, Sri Lanka.
?>Electronic Theses & Dissertations
<tr>www.lib.mrt.ac.lk
<td height="28" class="style4"><?php echo $row['NAME'];
?></td>
<td height="28" class="style4"><?php
if($row['WAN1_IP_STATUS'] == 0){ echo "WAN1"; } else
{ echo "WAN2";}?></td>
<td height="28" class="style4"><?php echo $row['ALERT_TIME']; ?></td>
</tr>
<?php
//echo $msg."<br>";
}
?>
<tr>
<td colspan="3">&nbsp;&nbsp;&nbsp;</td>
</tr>
<tr>

```



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```

        <td height="31" colspan="3" class="style7"><span
class="style8">Branches recovered recently</span></td>
    </tr>

```

```

    <?php
    $recSql="SELECT * FROM branches WHERE
RECOVERY_STATUS = '1'";
    $recResult=mysql_query($recSql);
    //echo $recSql;
    while($row=mysql_fetch_array($recResult)){
        if($row['WAN2_IP_STATUS'] == 1 &&
$row['WAN1_IP_STATUS'] == 1) {
            $updateRecSql="UPDATE branches SET
ALERT_STATUS = 0, ALERT_TIME = null, RECOVERY_STATUS = 0,
RECOVERY_TIME = null WHERE BRANCH_ID = ".$row['BRANCH_ID']."";
            $result00=mysql_query($updateRecSql);
        } else {
            $updateRecSql="UPDATE branches SET
RECOVERY_STATUS = 0, RECOVERY_TIME = " WHERE BRANCH_ID =
".$row['BRANCH_ID']."";
            $result00=mysql_query($updateRecSql);
        }
    }
    ?>

```



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```

    <td height="28" class="style4"><?php echo
$row['NAME']; ?></td>
    <td height="28" class="style4"><?php
    if($row['WAN1_IP_STATUS'] == 0){ echo
"WAN1"; } else { echo "WAN2";}?></td>
    <td height="28" class="style4"><?php echo
$row['RECOVERY_TIME']; ?></td>
    </tr>
    <?php
    }
    ?>

```

```

</table>
<p>&nbsp;</p>
</body>
</html>

```

## Appendix D

### Test Cases

The test cases used and the results are given below.

#### Test cases for user login authentication.

Test case No.	Description	Expected output	System created output	Status
1	User login with valid user id & password	Display the NMS Main Menu	Display the NMS Main Menu	Success
2	Enter valid user id with invalid password	“Invalid password” message prompt for the user login again	“Invalid password” message prompt for the user login again	Success
3	Enter Invalid user id with valid password	“Invalid user id” message prompt for the user login again	“Invalid user id” message prompt for the user login again	Success
4	Enter Invalid user id with Invalid password	“Invalid user id” message prompt for the user login again	“Invalid user id” message prompt for the user login again	Success
5	Press the login button without any values.	“Invalid user id” message prompt for the user login again	“Invalid user id” message prompt for the user login again	Success

Table D.1 - Test cases for user login authentication

**Test cases for Tracing the Route.**

Test case No.	Description	Expected output	System created output	Status
1	Enter Invalid IP	“Invalid IP” message prompt for the Tracing the Route again	“Invalid IP” message prompt for the Tracing the Route again	Success
2	Enter Blank	“Invalid IP” message prompt for the Tracing the Route again	“Invalid IP” message prompt for the Tracing the Route again	Success
3	Enter non existing IP	Tracing the hop by hop and cannot trace the IP	Tracing the hop by hop and cannot trace the IP	Success
4	Enter valid existing IP	Tracing the hop by hop and trace the particular IP	Tracing the hop by hop and trace the particular IP	Success

**Table D-2 - Test cases for Tracing the Route.**

**Test cases for Error checking.**

Test case No.	Description	Expected output	System created output	Status
1	Enter Invalid Branch code	“Invalid Branch” message prompt for the Error checking again	“Invalid Branch” message prompt for the Error checking again	Success
2	Enter Blank	“Invalid Branch” message prompt for the Error checking again	“Invalid Branch” message prompt for the Error checking again	Success
3	Enter valid existing Branch code	Display the errors for given Branch	Display the errors for given Branch	Success

**Table – D-3- Test Cases for Error Checking**

**Test cases for Network Device Status.**

Test case No.	Description	Expected output	System created output	Status
1	Enter Invalid Branch code	“Invalid Branch” message prompt for the Network device status again	“Invalid Branch” message prompt for the Network device status again	Success
2	Enter Blank	“Invalid Branch” message prompt for the Network device status again	“Invalid Branch” message prompt for the Network device status again	Success
3	Enter valid existing Branch code	Display the Network Device Status for given Branch	Display the Network Device Status for given Branch	Success

**Table D-4 - Test cases for Network Device Status**

**Test cases for Configuration Management.**

Test case No.	Description	Expected output	System created output	Status
1	Enter Invalid Branch code	“Invalid Branch” message prompt for the configuration management again	“Invalid Branch” message prompt for the configuration management again	Success
2	Enter Blank	“Invalid Branch” message prompt for the configuration management again	“Invalid Branch” message prompt for the configuration management again	Success
3	Enter valid existing Branch code	Display the existing Maximum values for given Branch	Display the existing Maximum values for given Branch	Success

**Table D-5 - Test cases for Configuration Management**



**Test cases for Data Transfer Rate.**

Test case No.	Description	Expected output	System created output	Status
1	Enter Invalid Branch code	“Invalid Branch” message prompt for the Data Transfer Rate again	“Invalid Branch” message prompt for the Data Transfer Rate again	Success
2	Enter Blank	“Invalid Branch” message prompt for the Data Transfer Rate again	“Invalid Branch” message prompt for the Data Transfer Rate again	Success
3	Enter valid existing Branch code	Display the last five minutes input, output and LAN Data Rates for given Branch	Display the last five minutes input, output and LAN Data Rates for given Branch	Success

**Table D-6 - Test cases for Data Transfer Rate**

Save test procedures were carried out for the user and other form submitting interfaces and all the test cases were successful. Normal user interfaces tested by Data centre staff and required output given by the system. Administrative interfaces tested by myself. The test data and user acceptance test results as follows



**Test Cases**

The interface used to logon to the system

Test Case	Input Data	Expected Result	Output Result
Login with incorrect user id	Xyz	User not exists message display	User not exists message display
Login with incorrect password	Abcde	Incorrect user name or password	Incorrect user name or password
Login with correct user id and password	xyz xyz123	Load NMS Main menu	Load NMS Main menu

**Table D-7 - Test Results of the Login Form**

### Tracing the Route used for Troubleshooting

Test Case	Input Data	Expected Result	Output Result
Enter Invalid IP	12.35.2 or 12..3.5.6 or 12.267.6.5	“Invalid IP” message display	“Invalid IP” message display
Enter Blank		“Invalid IP” message display	“Invalid IP” message display
Enter non existing IP	15.47.7.1	Tracing the hop by hop and cannot trace the IP	Tracing the hop by hop and cannot trace the IP
Enter valid existing IP	15.2.4.1	Tracing the hop by hop and trace the particular IP	Tracing the hop by hop and trace the particular IP

**Table D-8 - Test Results of the Trace route Form**

### Error checking form

Test Case	Input Data	Expected Result	Output Result
Enter Invalid Branch code	A250	“Invalid Branch code” message display	“Invalid Branch code” message display
Enter Blank		“Invalid Branch code” message display	“Invalid Branch code” message display
Enter non existing Branch code	6785	“Invalid Branch code” message display	“Invalid Branch code” message display
Enter valid Branch code	225	Display the Errors for given branch	Display the Errors for given branch

**Table D-9 - Error checking form**

**Test Results of the Error Checking Form**  
Network Device Status form

Test Case	Input Data	Expected Result	Output Result
Enter Invalid Branch code	A250	"Invalid Branch code" message display	"Invalid Branch code" message display
Enter Blank		"Invalid Branch code" message display	"Invalid Branch code" message display
Enter non existing Branch code	6785	"Invalid Branch code" message display	"Invalid Branch code" message display
Enter valid Branch code	225	Display the Network Device Status given branch	Display the Network Device Status given branch

**Table D-10 Network Device Status form**



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