Bab IV

IMPLEMENTASI

4.1 Spesifikasi Sistem

4.1.1 Spesifikasi Hardware

Berikut spesifikasi hardware yang digunakan dalam implementasi tugas akhir ini :

o   Sebuah laptop dengan spesifikasi :

o   Processor   : Intel Core2 Duo CPU T5870 @2.00GHZ

o   Memori   : 2.00 GB RAM

o   Hardisk   : 250 GB

o   Sebuah Router dengan spesifikasi:

o   Processor   : MPC8544 800MHz

o   Memor   : 512 MB RAM

o   Main Storage/NAND : 512 MB RAM

4.1.2 Spesifikasi Software

Berikut spesifikasi hardware yang digunakan dalam implementasi tugas akhir ini

o   System operasi   : Windows 7

o   System operasi   : Ubuntu 15 LTS

o   Web server   : Apache

o   Database Server   : Mysql

o   Web Browser   : Chrome

o   Software editor   : PH

4.2 Implementasi

4.2.1 Halaman Resource

Gambar 4.1 Halaman Resource

```php
<?php

require('routeros_api.class.php');

$API = new routeros_api();

$API->debug = false;

if ($API->connect('xxx', 'xxx', 'xxx')) {    // Change this
as necessery

$ARRAY = $API->comm("/system/resource/print");

$first = $ARRAY['0'];

$memperc = ($first['free-memory']/$first['total-memory']);

$hddperc = ($first['free-hdd-space']/$first['total-hdd-
```

```php
        space']);

        $mem = ($memperc*100);

        $hdd = ($hddperc*100);

        //echo "Mikrotik Resources";

        //echo "<br />";

        $result = count($ARRAY);

        print_r ($ARRAY);

        echo "<table class='w3-table-all w3-hoverable'>";

        echo "<tr><td>Platform, board name and Ros version
        is:</td><td>" . $first['platform'] . " - " .
        $first['board-name'] . " - "  . $first['version'] . " - "
        . $first['architecture-name'] . "</td></tr><br />";

        echo "<tr><td>Cpu and available cores:</td><td>" .
        $first['cpu'] . " at " . $first['cpu-frequency'] . " Mhz
        with " . $first['cpu-count'] . " core(s) "  .
        "</td></tr><br />";

        echo "<tr><td>Uptime is:</td><td>" . $first['uptime'] . "
        (hh/mm/ss)" . "</td></tr><br />";

echo "<tr><td>Cpu Load is:</td><td>" . $first['cpu-load'] . " %"
. "</td></tr><br />";

echo "<tr><td>Total,free memory and memory % is:</td><td>" .
$first['total-memory'] . "Kb - " . $first['free-memory'] . "Kb -
" . number_format($mem,3) . "% </td></tr><br />";

echo "<tr><td>Total,free disk and disk % is:</td><td>" .
$first['total-hdd-space'] . "Kb - " . $first['free-hdd-space'] .
"Kb - " . number_format($hdd,3) . "% </td></tr><br />";

//echo "<tr><td>Sectors (write,since reboot,bad
blocks):</td><td>" . $first['write-sect-total'] . " - " .
$first['write-sect-since-reboot'] . " - " . $first['bad-blocks']
. "% </td></tr><br />";

echo "</table>";

<script src="assets/highcharts/api/js/jquery-
1.11.3.min.js"></script>

<script src="assets/highcharts/code/highcharts.js"></script>

<script src="https://code.highcharts.com/highcharts-
more.js"></script>

<script
```

```
src="https://code.highcharts.com/modules/exporting.js"></script>

<script>

var cpuload178, memory178;

$(document).ready(function() {    Highcharts.setOptions({
// This is for all plots, change Date axis to local timezone

            global : {

                useUTC : false

            }

        });


                cpuload178 = new Highcharts.chart('cpuload', {


            chart: {

                type: 'gauge',

                plotBackgroundColor: null,

                plotBackgroundImage: null,

                plotBorderWidth: 0,

                plotShadow: false

            },

            title: {

                text: 'CPU 178'

            },

            pane: {

                startAngle: -150,

                endAngle: 150,

                background: [{

                    backgroundColor: {

                        linearGradient: { x1: 0, y1: 0, x2: 0,
    y2: 1 },
```

```
                stops: [

                    [0, '#FFF'],

                    [1, '#333']

                ]

            },

            borderWidth: 0,

            outerRadius: '109%'

        }, {

            backgroundColor: {

                linearGradient: { x1: 0, y1: 0, x2: 0,
y2: 1 },

                stops: [

                    [0, '#333'],

                    [1, '#FFF']

                ]

            },

            borderWidth: 1,

            outerRadius: '107%'

        }, {

            // default background

        }, {

            backgroundColor: '#DDD',

            borderWidth: 0,

            outerRadius: '105%',

            innerRadius: '103%'

        }]

    },

    // the value axis

    yAxis: {
```

```
min: 0,

max: 100,

minorTickInterval: 'auto',

minorTickWidth: 1,

minorTickLength: 10,

minorTickPosition: 'inside',

minorTickColor: '#666',

tickPixelInterval: 30,

tickWidth: 2,

tickPosition: 'inside',

tickLength: 10,

tickColor: '#666',

labels: {

    step: 2,

    rotation: 'auto'

},

title: {

    text: 'CPU (%)'

},

plotBands: [{

    from: 0,

    to: 60,

    color: '#55BF3B' // green

}, {

    from: 60,

    to: 80,

    color: '#DDDF0D' // yellow

}, {
```

```
                from: 80,

                to: 100,

                color: '#DF5353' // red

            }]

        },

        series: [{

            name: 'Speed',

            data: [0],

            tooltip: {

                valueSuffix: ' %'

            }

        }]

    })

    memory178 = new Highcharts.chart('memory', {

        chart: {

            type: 'gauge',

            plotBackgroundColor: null,

            plotBackgroundImage: null,

            plotBorderWidth: 0,

            plotShadow: false

        },

        title: {

            text: 'MEMORY 178'

        },

        pane: {

            startAngle: -150,

            endAngle: 150,

            background: [{
```

```
            backgroundColor: {
                linearGradient: { x1: 0, y1: 0, x2: 0,
y2: 1 },
                stops: [
                    [0, '#FFF'],
                    [1, '#333']
                ]
            },
            borderWidth: 0,
            outerRadius: '109%'
        }, {
            backgroundColor: {
                linearGradient: { x1: 0, y1: 0, x2: 0,
y2: 1 },
                stops: [
                    [0, '#333'],
                    [1, '#FFF']
                ]
            },
            borderWidth: 1,
            outerRadius: '107%'
        }, {
        }, {
            backgroundColor: '#DDD',
            borderWidth: 0,
            outerRadius: '105%',
            innerRadius: '103%'
        }]
    },
```

```
yAxis: {

    min: 0,

    max: 100,

    minorTickInterval: 'auto',

    minorTickWidth: 1,

    minorTickLength: 10,

    minorTickPosition: 'inside',

    minorTickColor: '#666',

    tickPixelInterval: 30,

    tickWidth: 2,

    tickPosition: 'inside',

    tickLength: 10,

    tickColor: '#666',

    labels: {

        step: 2,

        rotation: 'auto'

    },

    title: {

        text: 'Memory (%)'

    },

    plotBands: [{

        from: 0,

        to: 60,

        color: '#55BF3B'

    }, {

        from: 60,

        to: 80,

        color: '#DDDF0D'
```

```
                    }, {

                        from: 80,

                        to: 100,

                        color: '#DF5353'

                    }]

                },


                series: [{

                    name: 'Memory Usage',

                    data: [0],

                    tooltip: {

                        valueSuffix: ' %

            requestData();

        });

        function requestData() {

            $.ajax({

                url: 'speedo_server.php',

                success: function(data) {

                    var point_cpu =
        cpuload178.series[0].points[0];

        plotBands: [{

                        from: 0,

                        to: 60,

                        color: '#55BF3B'

                    }, {
```

```
 from: 60,

                to: 80,

                color: '#DDDF0D'

            }, {

                from: 80,

                to: 100,

                color: '#DF5353'

            }]

        },


        series: [{

            name: 'Memory Usage',

            data: [0],

            tooltip: {

                valueSuffix: ' %

    requestData();

});

function requestData() {

    $.ajax({

        url: 'speedo_server.php',

        success: function(data) {

            var point_cpu =
cpuload178.series[0].points[0];


        point_cpu.update(parseInt(data[0]));

            var point_memory =
memory178.series[0].points[0];

        point_memory.update(parseInt(data[1]));

                setTimeout(requestData, 1000);
```

```
            },
        cache: false
    });
        }
    </script>
```

Sesegmen program 4.1 halaman resource

4.2.2   Halaman Interface Management

Halaman Interface Management halaman yang berfungsi untuk melihat interface.

Gambar 4.2 Halaman Interface Management

```php
<?php

    require('routeros_api.class.php'); //mikrotik api

    $API = new routeros_api();

    if (!$API->connect('xxx', 'xxx', 'xxx')) die('Gagal konek ke
mikrotik') ;

    if(isset($_GET['id']))

    {

        $id = $_GET['id'];

        if(isset($_GET['enable'])) $API-
>write('/interface/enable',false);

        else if(isset($_GET['disable'])) $API-
>write('/interface/disable',false);

        else header('Location: interface.php');

        $API->write("=numbers=".$id);

        header('Location: interface.php');

    }

    $API->write('/interface/print',false);

    $API->write('=brief=');

    $all_data = $API->read();

    //print_r($all_data);
?>
```

Segmen program 4.2 halaman interface Management

4.2.3. Halaman Hotspot User

Halaman Hotspot User unutk melakukan eksekusi add, delete dan edit profil dari user tersebut :

Gambar 4.3 Halaman Hotspot User

```php
<?php

error_reporting(E_ALL);

include"connect.php";

    // simoan database

    $tgls = isset($_GET['tgls']) ? $_GET['tgls'] :
date('d-m-Y');

    $q = mysqli_query($conn,"select * from hsuser where
tanggal = '$tgls'");

    while($x = mysqli_fetch_array($q)){

        echo "user_lan.push($x[lan]);";
```

```
            echo "user_lab.push($x[lab]);";

            echo "user_wifi.push($x[wifi]);";

            echo "user_total.push($x[user]);";

        }

        //echo "iki tgl = ".$tgl;

    ?>

    </script>

    <html>

        <head>

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

            <title>Grafik </title>

            <script type="text/javascript"
src="https://ajax.googleapis.com/ajax/libs/jquery/1.8.2/jq
uery.min.js"></script>

            <style type="text/css">

    ${demo.css}

            </style>

            <script type="text/javascript">

    $(function () {

        $('#container').highcharts({

            title: {

                text: 'Grafik pengguna Internet',

                x: -20 //center

            },

            subtitle: {

                text: 'STIKI (Sekolah Tinggi Informatika dan
    Komputer Indonesia)',

        <head>

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

```
            <title>Grafik </title>

            <script type="text/javascript"
src="https://ajax.googleapis.com/ajax/libs/jquery/1.8.2/jq
uery.min.js"></script>

            <style type="text/css">

${demo.css}

            </style>

            <script type="text/javascript">

$(function () {

    $('#container').highcharts({

        title: {

            text: 'Grafik pengguna Internet',

            x: -20 //center

        },

        subtitle: {

            text: 'STIKI (Sekolah Tinggi Informatika dan
Komputer Indonesia)',


            x: -20

        },

        xAxis: {

            categories:
['00:00','01:00','02:00','03:00','04:00','05:00','06:00','
07:00', '08:00', '09:00', '10:00', '11:00', '12:00',

                '13:00', '14:00', '15:00', '16:00',
'17:00', '18:00', '19:00', '20:00', '21:00', '22:00',
'23:00']

    },

        yAxis: {

            title: {

                text: 'User '

            },
```

```
    plotLines: [{
            value: 0,
            width: 1,
            color: '#808080'
        }]
},
tooltip: {
    valueSuffix: ' User'
},
legend: {
    layout: 'vertical',
    align: 'right',
    verticalAlign: 'middle',
    borderWidth: 0
},
series: [{
    name: 'LAN',
    data: user_lan
}, {
    name: 'WiFi',
    data: user_wifi
}, {
    name: 'LAB',
    data: user_lab
}, {
    name: 'Total',
    data: user_total
},
```

```
                            ]

        });

    });

    function pilihSelect(){

            $('#tanggal').val('<?php echo $tgl;?>');

            $('#tanggal').change(function(){

                    //console.log('as')

            window.location="chart2.php?tgls="+$('#tanggal').val

                    </script>

            </head>

            <body onload = 'pilihSelect();'>
    <script
    src="https://code.highcharts.com/highcharts.js"></script>

    <script
    src="https://code.highcharts.com/modules/exporting.js"></s
    cript>

    <div id="container" style="min-width: 510px; height:
    400px; margin: 0 auto"></div>

    <label for='tanggal'>Pilih Tanggal</label><select id =
    'tanggal'>

            <?php $query = "select tanggal from hsuser group by
    tanggal";

            $mq = mysqli_query($conn,$query);

            while ($row = mysqli_fetch_array($mq)){

                    echo "<option value='".$row['tanggal']."'
    />".$row['tanggal']."</option>";

            }

            ?>

    </select>


    <script
    src="https://code.highcharts.com/highcharts.js"></script>

    <script
```

```
src="https://code.highcharts.com/modules/exporting.js"></s
cript>

<div id="container" style="min-width: 510px; height:
400px; margin: 0 auto"></div>

<label for='tanggal'>Pilih Tanggal</label><select id =
'tanggal'>

    <?php $query = "select tanggal from hsuser group by
tanggal";

    $mq = mysqli_query($conn,$query);

    while ($row = mysqli_fetch_array($mq)){

        echo "<option value='".$row['tanggal']."'
/>".$row['tanggal']."</option>";

    }

    ?>

</select>

    </body>

</html>
```

Segment Program 4.3 Halama User Hotspot

4.2.4 Halaman Bandwidth

Halaman Bandwith berisi tentang Bandwith yang terpakai dan ditampilkan dalam bentuk grafik

Gambar 4.4 Halaman bandwidth Lab
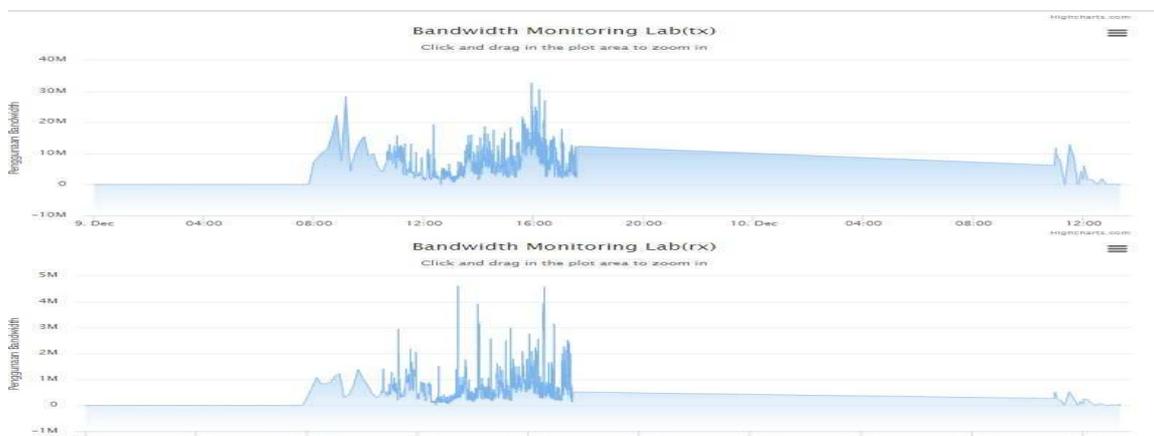
Gambar 4.5 Halaman bandwidth WiFi
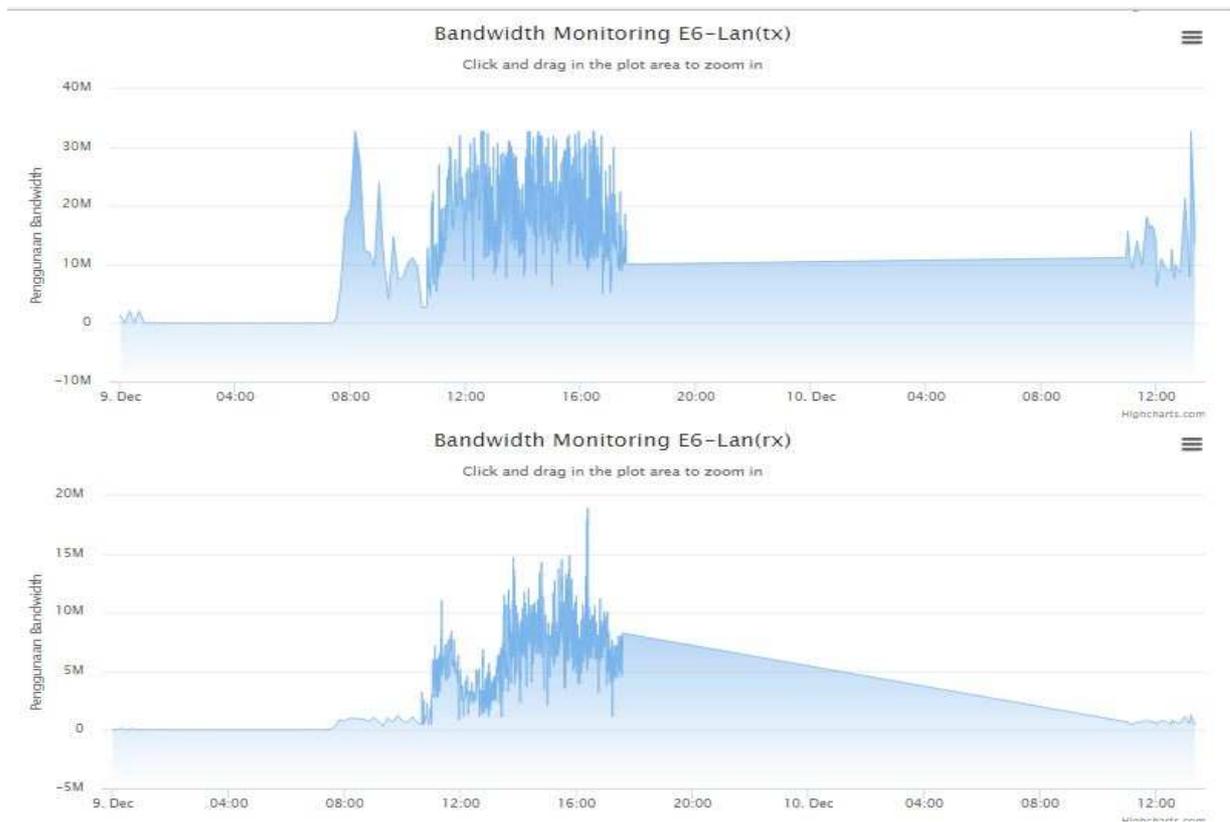
Gambar 4.7 Halaman bandwidth Indihome

```php
<?php
require('../ta/connect.php');

$sql="SELECT
        UNIX_TIMESTAMP(tanggal)*1024 AS `time`,
        tx*1024 AS `tx`,
        rx*1024 AS `rx`
    FROM
        bandwidth
    WHERE
        tanggal >= DATE(NOW()) - INTERVAL 1 DAY
    AND interface = 'IndiHome'";
$result = mysqli_query($conn,$sql);
$data_indi_tx=array();
$data_indi_rx=array();
while($line = mysqli_fetch_array($result, MYSQL_ASSOC)){
    $data_indi_tx[] = "[".$line['time'].",".$line['tx']."]";
    $data_indi_rx[] = "[".$line['time'].",".$line['rx']."]";
}

$sql="SELECT
        UNIX_TIMESTAMP(tanggal)*1024 AS `time`,
        tx*1024 AS `tx`,
        rx*1024 AS `rx`
    FROM
        bandwidth
    WHERE
```

```
        tanggal >= DATE(NOW()) - INTERVAL 1 DAY
    AND interface = 'E13-RadioIndosat'";
$result = mysqli_query($conn,$sql);
$data_indo_tx=array();
$data_indo_rx=array();
while($line = mysqli_fetch_array($result, MYSQL_ASSOC)){
    $data_indo_tx[] = "[".$line['time'].",".$line['tx']."]";
    $data_indo_rx[] = "[".$line['time'].",".$line['rx']."]";
}
$sql="SELECT
        UNIX_TIMESTAMP(tanggal)*1024 AS `time`,
        tx*1024 AS `tx`,
        rx*1024 AS `rx`
    FROM
        bandwidth
    WHERE
        tanggal >= DATE(NOW()) - INTERVAL 1 DAY
    AND interface = 'BR_VLAN'";
$result = mysqli_query($conn,$sql);
$data_vlan_tx=array();
$data_vlan_rx=array();
while($line = mysqli_fetch_array($result, MYSQL_ASSOC)){
    $data_vlan_tx[] = "[".$line['time'].",".$line['tx']."]";
    $data_vlan_rx[] = "[".$line['time'].",".$line['rx']."]";
}
$sql="SELECT
        UNIX_TIMESTAMP(tanggal)*1024 AS `time`,
        tx*1024 AS `tx`,
        rx*1024 AS `rx`
    FROM
        bandwidth
    WHERE
        tanggal >= DATE(NOW()) - INTERVAL 1 DAY
    AND interface = 'E6-LAN'";
$result = mysqli_query($conn,$sql);
$data_6lan_tx=array();
$data_6lan_rx=array();
while($line = mysqli_fetch_array($result, MYSQL_ASSOC)){
    $data_6lan_tx[] = "[".$line['time'].",".$line['tx']."]";
    $data_6lan_rx[] = "[".$line['time'].",".$line['rx']."]";
}
$sql="SELECT
        UNIX_TIMESTAMP(tanggal)*1024 AS `time`,
        tx*1024 AS `tx`,
        rx*1024 AS `rx`
    FROM
        bandwidth
    WHERE
        tanggal >= DATE(NOW()) - INTERVAL 1 DAY
    AND interface = 'E8-LabNET'";
$result = mysqli_query($conn,$sql);
$data_lab_tx=array();
$data_lab_rx=array();
while($line = mysqli_fetch_array($result, MYSQL_ASSOC)){
```

```php
        $data_lab_tx[] = "[".$line['time'].",".$line['tx']."]";
        $data_lab_rx[] = "[".$line['time'].",".$line['rx']."]";
    }
?>
<?php
// Set the JSON header
      header("Content-type: text/json");
      require('../ta/routeros_api.class.php'); //mikrotik api

    $API = new routeros_api();

      if($API->connect('xxx', 'xxx', 'xxx')){
            $ARRAY = $API->comm("/system/resource/print");
            $first = $ARRAY['0'];
      }
$ret=array(
      0=>$first['cpu-load'],
      1=>round((($first['total-memory']-$first['free-
memory'])/$first['total-memory'])*100,0)
);
echo json_encode($ret);
?>

<?php
      require('../ta/connect.php');

<?php
// Set the JSON header
      header("Content-type: text/json");
      require('../ta/routeros_api.class.php'); //mikrotik api

    $API = new routeros_api();

      if($API->connect('xxx', 'xxx', 'xxx')){
            $ARRAY = $API->comm("/system/resource/print");
            $first = $ARRAY['0'];
      }
$ret=array(
      0=>$first['cpu-load'],
      1=>round((($first['total-memory']-$first['free-
memory'])/$first['total-memory'])*100,0)
);
echo json_encode($ret);
?>

<?php
      require('../ta/connect.php');

    $sql="SELECT
            UNIX_TIMESTAMP(tanggal)*1024 AS `time`,
            tx*1024 AS `tx`,
            rx*1024 AS `rx`
```

```
        FROM
            bandwidth
        WHERE
            tanggal >= DATE(NOW()) - INTERVAL 1 DAY
        AND interface = 'IndiHome'";
$result = mysqli_query($conn,$sql);
$data_indi_tx=array();
$data_indi_rx=array();
while($line = mysqli_fetch_array($result, MYSQL_ASSOC)){
    $data_indi_tx[] = "[".$line['time'].",".$line['tx']."]";
    $data_indi_rx[] = "[".$line['time'].",".$line['rx']."]";
}

$sql="SELECT
            UNIX_TIMESTAMP(tanggal)*1024 AS `time`,
            tx*1024 AS `tx`,
            rx*1024 AS `rx`
        FROM
            bandwidth
        WHERE
            tanggal >= DATE(NOW()) - INTERVAL 1 DAY
        AND interface = 'E13-RadioIndosat'";
$result = mysqli_query($conn,$sql);
$data_indo_tx=array();
$data_indo_rx=array();
while($line = mysqli_fetch_array($result, MYSQL_ASSOC)){
    $data_indo_tx[] = "[".$line['time'].",".$line['tx']."]";
    $data_indo_rx[] = "[".$line['time'].",".$line['rx']."]";
}
$sql="SELECT
            UNIX_TIMESTAMP(tanggal)*1024 AS `time`,
            tx*1024 AS `tx`,
            rx*1024 AS `rx`
        FROM
            bandwidth
        WHERE
            tanggal >= DATE(NOW()) - INTERVAL 1 DAY
        AND interface = 'BR_VLAN'";
$result = mysqli_query($conn,$sql);
$data_vlan_tx=array();
$data_vlan_rx=array();
while($line = mysqli_fetch_array($result, MYSQL_ASSOC)){
    $data_vlan_tx[] = "[".$line['time'].",".$line['tx']."]";
    $data_vlan_rx[] = "[".$line['time'].",".$line['rx']."]";
}
$sql="SELECT
            UNIX_TIMESTAMP(tanggal)*1024 AS `time`,
```

```php
                tx*1024 AS `tx`,
                rx*1024 AS `rx`
            FROM
                bandwidth
            WHERE
                tanggal >= DATE(NOW()) - INTERVAL 1 DAY
            AND interface = 'E6-LAN'";
    $result = mysqli_query($conn,$sql);
    $data_6lan_tx=array();
    $data_6lan_rx=array();
    while($line = mysqli_fetch_array($result, MYSQL_ASSOC)){
        $data_6lan_tx[] = "[".$line['time'].",".$line['tx']."]";
        $data_6lan_rx[] = "[".$line['time'].",".$line['rx']."]";
    }
    $sql="SELECT
                UNIX_TIMESTAMP(tanggal)*1024 AS `time`,
                tx*1024 AS `tx`,
                rx*1024 AS `rx`
            FROM
                bandwidth
            WHERE
                tanggal >= DATE(NOW()) - INTERVAL 1 DAY
            AND interface = 'E8-LabNET'";
    $result = mysqli_query($conn,$sql);
    $data_lab_tx=array();
    $data_lab_rx=array();
    while($line = mysqli_fetch_array($result, MYSQL_ASSOC)){
        $data_lab_tx[] = "[".$line['time'].",".$line['tx']."]";
        $data_lab_rx[] = "[".$line['time'].",".$line['rx']."]";
    }
?>

<?php
// Set the JSON header
    header("Content-type: text/json");
    require('../ta/routeros_api.class.php'); //mikrotik api

    $API = new routeros_api();

    if($API->connect('xxx', 'xxx', 'xxx')){
        $ARRAY = $API->comm("/system/resource/print");
        $first = $ARRAY['0'];
    }



<?php
// Set the JSON header
```

```php
      header("Content-type: text/json");
      require('../ta/routeros_api.class.php'); //mikrotik api

    $API = new routeros_api();

      if($API->connect('xxx', 'xxx', 'xxx')){
            $ARRAY = $API->comm("/system/resource/print");
            $first = $ARRAY['0'];
      }

$ret=array(
      0=>$first['cpu-load'],
      1=>round((($first['total-memory']-$first['free-
memory'])/$first['total-memory'])*100,0)
);
echo json_encode($ret);
?>

$ret=array(
      0=>$first['cpu-load'],
      1=>round((($first['total-memory']-$first['free-
memory'])/$first['total-memory'])*100,0)
);
echo json_encode($ret);
?>

$ret=array(
      0=>$first['cpu-load'],
      1=>round((($first['total-memory']-$first['free-
memory'])/$first['total-memory'])*100,0)
);
echo json_encode($ret);
?>

<?php
// Set the JSON header
      header("Content-type: text/json");
      require('../ta/routeros_api.class.php'); //mikrotik api
      require('../ta/connect.php'); //koneksi ke db

    $API = new routeros_api();

      if ($API->connect('xxx', 'xxx', 'xxx')) {
            $API->write("/interface/monitor-traffic",false);
            $API->write("=interface=IndiHome,E13-RadioIndosat,E6-
LAN,E8-LabNET,BR_VLAN",false);
            $API->write("=once=");
```

```php
            $ARRAY = $API->read();
            foreach ($ARRAY as $value) {
                    if ($value['name'] == "IndiHome"){
                            $ISP2 = $value['name'];
                            $RX_ISP2 = intval($value['rx-bits-per-
second']/1000);
                            $TX_ISP2 = intval($value['tx-bits-per-
second']/1000);
                    }
                    if ($value['name'] == "E13-RadioIndosat"){
                            $ISP1 = $value['name'];
                            $RX_ISP1 = intval($value['rx-bits-per-
second']/1000);
                            $TX_ISP1 = intval($value['tx-bits-per-
second']/1000);
                    }
                    if ($value['name'] == "E6-LAN"){
                             $LAN = $value['name'];
                             $RX_LAN = intval($value['rx-bits-per-
second']/1000);
                             $TX_LAN = intval($value['tx-bits-per-
second']/1000);
                     }
                    if ($value['name'] == "E8-LabNET"){
                            $LAB = $value['name'];
                             $RX_LAB = intval($value['rx-bits-per-
second']/1000);
                             $TX_LAB = intval($value['tx-bits-per-
second']/1000);
                    }
                     if ($value['name'] == "BR_VLAN"){
                            $WIFI = $value['name'];
                            $RX_WIFI = intval($value['rx-bits-per-
second']/1000);
                            $TX_WIFI = intval($value['tx-bits-per-
second']/1000);
                    }
            }
            $ARRAY = $API->comm("/system/resource/print");
            $first = $ARRAY['0'];
      }
      // simpan database

      $sql = "INSERT INTO bandwidth (ip, tanggal, interface, tx, rx)
VALUES
      ('xxx', now(), '$ISP1', '$TX_ISP1', '$RX_ISP1'),
      ('xxx', now(), '$ISP2', '$TX_ISP2', '$RX_ISP2'),
```

```
     ('xxx', now(), '$LAN', '$TX_LAN', '$RX_LAN'),
     ('xxx', now(), '$LAB', '$TX_LAB', '$RX_LAB'),
     ('xxx', now(), '$WIFI', '$TX_WIFI', '$RX_WIFI')";
     $result=$conn->query($sql);

     if ($API->connect('114.4.32.177', 'xxx', 'xxx')){
             $ARRAY = $API->comm("/system/resource/print");
             $mem = $ARRAY['0'];
     }

  //Mulai Anomali Monitor

  //Ambil rata-rata penggunaan pada hari dan jam yang sama dalam
rentang 30 hari terakhir, dan selain hari ini
  $sql="SELECT
          rata30.interface,
          ROUND(ABS(rata30.r_tx-last5.l_tx)/rata30.r_tx*100,2) AS
tx,
          ROUND(ABS(rata30.r_rx-last5.l_rx)/rata30.r_rx*100,2) AS rx
      FROM (
      SELECT
          interface,
          AVG(tx) AS r_tx,
          AVG(rx) AS r_rx
      FROM
          bandwidth
      WHERE
          tanggal >= DATE(NOW()) - INTERVAL 30 DAY
      AND DAYNAME(tanggal)=DAYNAME(NOW())
      AND HOUR(tanggal)=HOUR(NOW())
      AND DATE_FORMAT(tanggal,'%d-%m-%Y')<>DATE_FORMAT(NOW(),'%d-%m-
%Y')
      GROUP BY
          interface ) rata30 LEFT JOIN (
      SELECT
          interface,
          AVG(tx) AS l_tx,
          AVG(rx) AS l_rx
      FROM
          bandwidth
      WHERE
          tanggal >= date_sub(now(), interval 5 minute)
      GROUP BY
          interface
      ) last5 ON rata30.interface=last5.interface";
  $result = mysqli_query($conn,$sql);
  $anom=array();
```

```php
    while($line = mysqli_fetch_array($result, MYSQL_ASSOC)){
        $anom[$line['interface']] = $line;
    }
    $treshold=50;
    foreach($anom as $i=>$interface) {
        if($interface['tx']>$treshold||$interface['rx']>$treshold){
            $anom[$i]['status']='abnormal';
        }else $anom[$i]['status']='normal';
    }
    $sql="SELECT
            interface,
            `status`
        FROM
            status_anomali";
    $result = mysqli_query($conn,$sql);
    $stat_anom=array();
    while($line = mysqli_fetch_array($result, MYSQL_ASSOC)){
        $stat_anom[$line['interface']] = $line;
    }
    $stat_anom_baru='';
    $sms_msg='';
    foreach($anom as $i=>$interface){
        if(!empty($stat_anom[$i])){
            if($interface['status']!=$stat_anom[$i]['status']){
                $sql="UPDATE status_anomali SET
`status`='".$interface['status']."' WHERE interface='$i'";
                $result = mysqli_query($conn,$sql);


    $sql="SELECT
            interface,
            `status`
        FROM
            status_anomali";
    $result = mysqli_query($conn,$sql);
    $stat_anom=array();
    while($line = mysqli_fetch_array($result, MYSQL_ASSOC)){
        $stat_anom[$line['interface']] = $line;
    }
    $stat_anom_baru='';
    $sms_msg='';
    foreach($anom as $i=>$interface){
        if(!empty($stat_anom[$i])){
            if($interface['status']!=$stat_anom[$i]['status']){
                $sql="UPDATE status_anomali SET
`status`='".$interface['status']."' WHERE interface='$i'";
                $result = mysqli_query($conn,$sql);
```

```php
                if(strlen($sms_msg)>0) $sms_msg.=', ';
                $sms_msg.=($i.' menjadi '.$interface['status']);
            }
        }else{
            if(strlen($stat_anom_baru)>0) $stat_anom_baru.=',';

$stat_anom_baru.="('".$interface['interface']."','".$interface['status
']."')";
        }
    }
    if(strlen($stat_anom_baru)>0){
        $sql="INSERT INTO status_anomali (`interface`,`status`) VALUES
".$stat_anom_baru;
        $result = mysqli_query($conn,$sql);
    }
    if(strlen($sms_msg)>0){
        $private_key = '8fgj4578dsd';
            $url = 'http://114.4.32.188/sms/index.php/';
        $phonenumber='081330610559';
        $msg='Perubahan pada interface : '.$sms_msg;


            $public_key =
md5("pub[$private_key|".date('HmYDi')."]bup");
            $url =
$url.$public_key."?telp=$phonenumber&pesan=".urlencode($msg);
            $curlSession = curl_init();
            curl_setopt($curlSession, CURLOPT_URL, $url);
            curl_setopt($curlSession, CURLOPT_BINARYTRANSFER, true);
            curl_setopt($curlSession, CURLOPT_RETURNTRANSFER, true);
            $response = curl_exec($curlSession);
            curl_close($curlSession);

    }
    //Selesai Anomali Monitor
$x=time() * 1000;
$ret=array(
    0=>array(
            'rx'=>array($x,$RX_ISP1*1024),
            'tx'=>array($x,$TX_ISP1*1024)
    ),
    1=>array(
            'rx'=>array($x,$RX_ISP2*1024),
            'tx'=>array($x,$TX_ISP2*1024)
    ),
    2=>array(
            'rx'=>array($x,$RX_LAN*1024),
```

```
                    'tx'=>array($x,$TX_LAN*1024)
        ),
        3=>array(
                'rx'=>array($x,$RX_LAB*1024),
                'tx'=>array($x,$TX_LAB*1024)
        ),
        4=>array(
                'rx'=>array($x,$RX_WIFI*1024),
                'tx'=>array($x,$TX_WIFI*1024)

                'tx'=>array($x,$TX_LAN*1024)
        ),
        3=>array(
                'rx'=>array($x,$RX_LAB*1024),
                'tx'=>array($x,$TX_LAB*1024)
        ),
        4=>array(
                'rx'=>array($x,$RX_WIFI*1024),
                'tx'=>array($x,$TX_WIFI*1024)

                'tx'=>array($x,$TX_LAN*1024)
        ),
        3=>array(
                'rx'=>array($x,$RX_LAB*1024),
                'tx'=>array($x,$TX_LAB*1024)
        ),
        4=>array(
                'rx'=>array($x,$RX_WIFI*1024),
                'tx'=>array($x,$TX_WIFI*1024)

        ),
        5=>$first['cpu-load'],
        6=>$mem['memory-load'],
        7=>$anom,
    8=>$response,
    9=>$msg
);
echo json_encode($ret);
?>
```

Segmen program 4.4 halaman Bandwith