

Workshop NMS

Oleh:

Idris Winarno

IPERF

Instalasi

- # apt-get install iperf

```
root@client:/home/student# apt-get install iperf
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  iperf
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 57.2 kB of archives.
After this operation, 164 kB of additional disk space will be used.
Get:1 http://kebo.pens.ac.id/debian stretch/main amd64 iperf amd64 2.0.9+dfsg1-1 [57.2 kB]
Fetched 57.2 kB in 0s (413 kB/s)
```

Ujicoba

- Server

```
root@server:/home/student# iperf -s
-----
Server listening on TCP port 5001
TCP window size: 85.3 KByte (default)
-----
[ 4] local 10.252.209.102 port 5001 connected with 10.252.209.243 port 45710
[ ID] Interval      Transfer    Bandwidth
[ 4]  0.0-10.0 sec  6.23 GBytes  5.35 Gbits/sec
```

- Client

```
root@client:/home/student# iperf -c 10.252.209.102
-----
Client connecting to 10.252.209.102, TCP port 5001
TCP window size: 85.0 KByte (default)
-----
[ 3] local 10.252.209.243 port 45710 connected with 10.252.209.102 port 5001
[ ID] Interval      Transfer    Bandwidth
[ 3]  0.0-10.0 sec  6.23 GBytes  5.35 Gbits/sec
```

IPTRAF

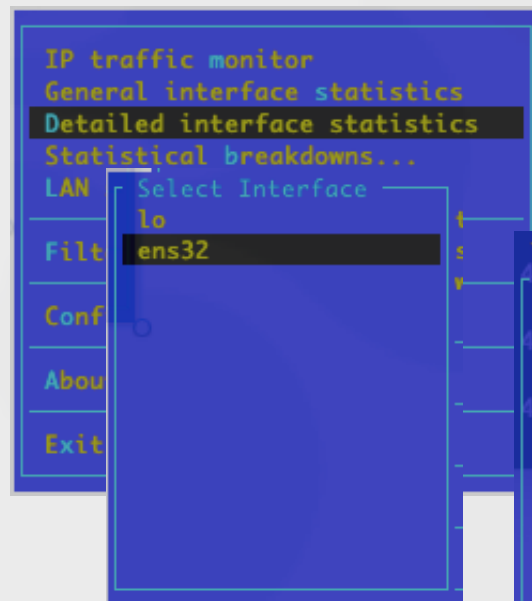
Instalasi

- # apt-get install iptraf

```
root@client:/home/student# apt-get install iptraf
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  iptraf-ng
The following NEW packages will be installed:
  iptraf iptraf-ng
0 upgraded, 2 newly installed, 0 to remove and 0 not upgraded.
Need to get 338 kB of archives.
After this operation, 770 kB of additional disk space will be used.
[Do you want to continue? [Y/n] y
```

Ujicoba

- # iptraf-ng



iptraf-ng 1.1.4

Statistics for ens32

	Total Packets	Total Bytes	Incoming Packets	Incoming Bytes	Outgoing Packets	Outgoing Bytes
Total:	76691	3072M	29428	1530604	47263	3071M
IPv4:	76691	3072M	29428	1530604	47263	3071M
IPv6:	0	0	0	0	0	0
TCP:	76691	3072M	29428	1530604	47263	3071M
UDP:	0	0	0	0	0	0
ICMP:	0	0	0	0	0	0
Other IP:	0	0	0	0	0	0
Non-IP:	0	0	0	0	0	0

Total rates: 4708.96 Mbps
14661 pps

Incoming rates: 2332.62 kbps
5605 pps

Outgoing rates: 4706.62 Mbps
9055 pps

Broadcast packets: 0
Broadcast bytes: 0

IP checksum errors: 0

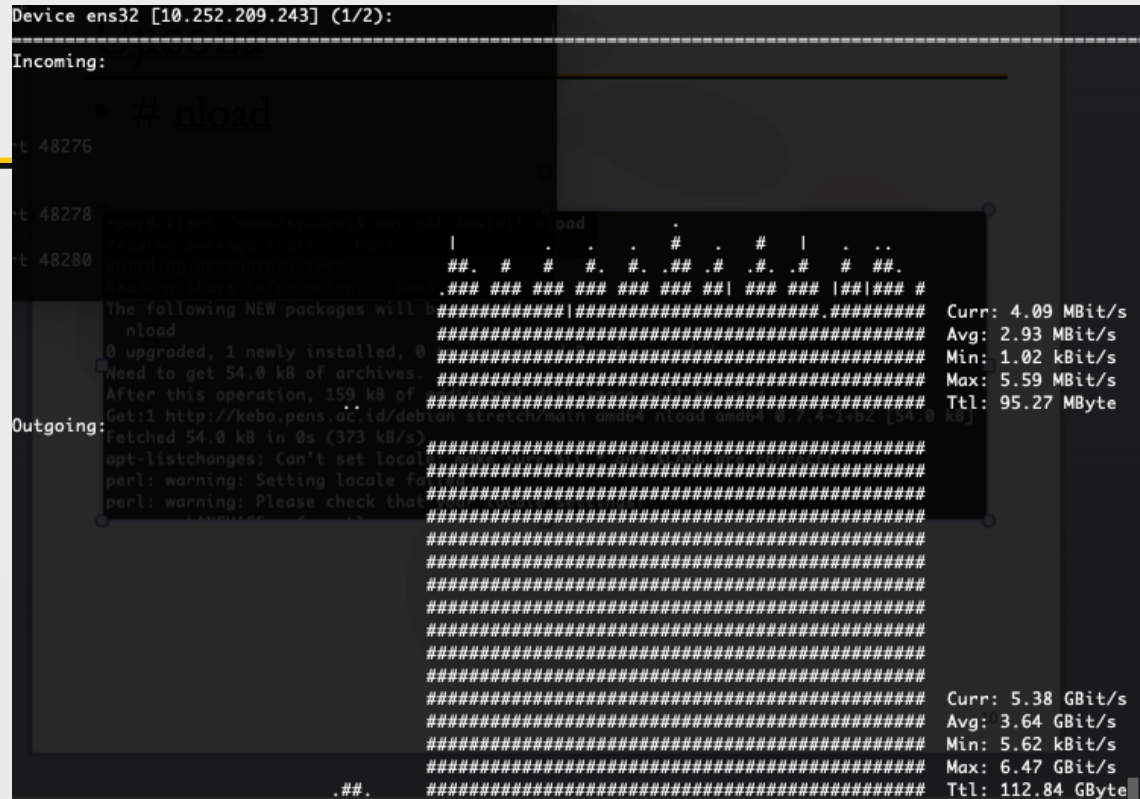
NLOAD & IFTOP

Instalasi

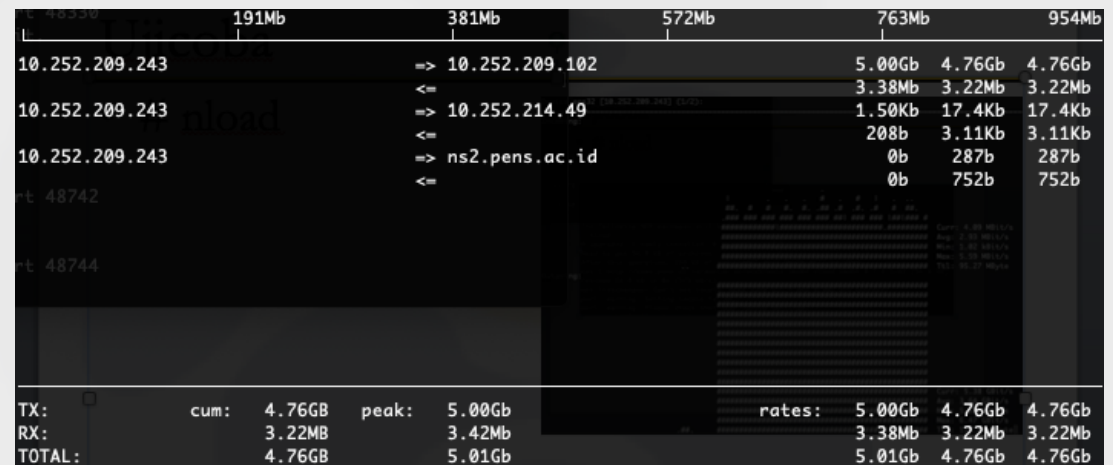
- # apt-get install nload iftop

```
root@client:/home/student# apt-get install nload iftop
Reading package lists... Done
Building dependency tree
Reading state information... Done
nload is already the newest version (0.7.4-1+b2).
The following NEW packages will be installed:
  iftop libpcap0.8
0 upgraded, 2 newly installed, 0 to remove and 0 not upgraded.
Need to get 180 kB of archives.
After this operation, 429 kB of additional disk space will be used.
Get:1 http://kebo.pens.ac.id/debian stretch/main amd64 libpcap0.8 amd64 1.8.1-3 [138 kB]
Get:2 http://kebo.pens.ac.id/debian stretch/main amd64 iftop amd64 1.0~pre4-4 [41.4 kB]
```

- # nload



- # iftop



SNMP

Instalasi

- # apt-get install snmp snmpd

```
[root@client:/home/student# apt-get install snmpd snmp
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libsensors4 libsnmp-base libsnmp30
Suggested packages:
  lm-sensors snmp-mibs-downloader snmptrapd
The following NEW packages will be installed:
  libsensors4 libsnmp-base libsnmp30 snmp snmpd
0 upgraded, 5 newly installed, 0 to remove and 0 not upgraded.
Need to get 4190 kB of archives.
After this operation, 7890 kB of additional disk space will be used.
Do you want to continue? [Y/n]
```

Konfigurasi

- # vim /etc/snmp/snmpd.conf

```
#####
#connect failed: Connection refused
#onAGENTfBEHAVIOURnnection refused
#connect failed: Connection refused
connect failed: Connection refused
#onListenafordconnectionsfromthe local system only
agentAddressudp:127.0.0.1:161
#onListenafordconnectionsnonealleinterfaces (both IPv4 *and* IPv6)
#agentAddressludp:161;udp6:[::1]:161
connect failed: Connection refused
connect failed: Connection refused
connect failed: Connection refused
#####
```

agentAddress 161

recommunity public

```
iso.3.6.1.2.1.1.9.1.3.5 = STRING: "View-based Access Control Model for SNMP."
#####
#iso.3.6.1.2.1.1.9.1.3.7 = STRING: "The MIB module for managing IP and ICMP implementati
# ACCESS CONTROL
#iso.3.6.1.2.1.1.9.1.3.8 = STRING: "The MIB module for managing UDP implementations"
#iso.3.6.1.2.1.1.9.1.3.9 = STRING: "The MIB modules for managing SNMP Notification, plus
iso.3.6.1.2.1.1.9.1.3.10 = STRING: "The MIB module for logging SNMP Notifications."
iso.3.6.1.2.1.1.9.1.4.1 = Timeticks: (1) 0:00:00.01 # system + hrSystem groups only
view systemonly included .1.3.6.1.2.1.10:00.01
view systemonly included .1.3.6.1.2.1.25.1
iso.3.6.1.2.1.1.9.1.4.4 = Timeticks: (1) 0:00:00.01
iso.3.6.1.2.1.1.9.1.4.5 = Timeticks: (1) 0:00:00.01 # Full access from the local host
#rocommunity public localhost
rocommunity public
iso.3.6.1.2.1.1.9.1.4.7 = Timeticks: (1) 0:00:00.01
iso.3.6.1.2.1.1.9.1.4.8 = Timeticks: (1) 0:00:00.01 # Default access to basic system info
```

/etc/init.d/snmpd restart

Ujicoba

- # snmpwalk -c public -v 1 <ip addr>

```
root@client:/home/student# snmpwalk -c public -v 1 10.252.209.102
iso.3.6.1.2.1.1.1.0 = STRING: "Linux server 4.9.0-8-amd64 #1 SMP Debian 4.9.144-3 (2019-02-02) x86_64"
iso.3.6.1.2.1.1.2.0 = OID: iso.3.6.1.4.1.8072.3.2.10
iso.3.6.1.2.1.1.3.0 = Timeticks: (951) 0:00:09.51
iso.3.6.1.2.1.1.4.0 = STRING: "Me <me@example.org>"
iso.3.6.1.2.1.1.5.0 = STRING: "server"
iso.3.6.1.2.1.1.6.0 = STRING: "Sitting on the Dock of the Bay"
iso.3.6.1.2.1.1.7.0 = INTEGER: 72
iso.3.6.1.2.1.1.8.0 = Timeticks: (1) 0:00:00.01
iso.3.6.1.2.1.1.9.1.2.1 = OID: iso.3.6.1.6.3.11.3.1.1
iso.3.6.1.2.1.1.9.1.2.2 = OID: iso.3.6.1.6.3.15.2.1.1
iso.3.6.1.2.1.1.9.1.2.3 = OID: iso.3.6.1.6.3.10.3.1.1
iso.3.6.1.2.1.1.9.1.2.4 = OID: iso.3.6.1.6.3.1.4.1
iso.3.6.1.2.1.1.9.1.2.5 = OID: iso.3.6.1.6.3.16.2.2.1
iso.3.6.1.2.1.1.9.1.2.6 = OID: iso.3.6.1.2.1.49
iso.3.6.1.2.1.1.9.1.2.7 = OID: iso.3.6.1.2.1.4
iso.3.6.1.2.1.1.9.1.2.8 = OID: iso.3.6.1.2.1.50
iso.3.6.1.2.1.1.9.1.2.9 = OID: iso.3.6.1.6.3.13.3.1.3
iso.3.6.1.2.1.1.9.1.2.10 = OID: iso.3.6.1.2.1.92
iso.3.6.1.2.1.1.9.1.3.1 = STRING: "The MIB for Message Processing and Dispatching."
iso.3.6.1.2.1.1.9.1.3.2 = STRING: "The management information definitions for the SNMP User-based Security Model."
iso.3.6.1.2.1.1.9.1.3.3 = STRING: "The SNMP Management Architecture MIB."
iso.3.6.1.2.1.1.9.1.3.4 = STRING: "The MIB module for SNMPv2 entities"
iso.3.6.1.2.1.1.9.1.3.5 = STRING: "View-based Access Control Model for SNMP."
iso.3.6.1.2.1.1.9.1.3.6 = STRING: "The MIB module for managing TCP implementations"
iso.3.6.1.2.1.1.9.1.3.7 = STRING: "The MIB module for managing IP and ICMP implementations"
iso.3.6.1.2.1.1.9.1.3.8 = STRING: "The MIB module for managing UDP implementations"
iso.3.6.1.2.1.1.9.1.3.9 = STRING: "The MIB modules for managing SNMP Notification, plus filtering."
iso.3.6.1.2.1.1.9.1.3.10 = STRING: "The MIB module for logging SNMP Notifications."
iso.3.6.1.2.1.1.9.1.4.1 = Timeticks: (0) 0:00:00.00
iso.3.6.1.2.1.1.9.1.4.2 = Timeticks: (0) 0:00:00.00
iso.3.6.1.2.1.1.9.1.4.3 = Timeticks: (0) 0:00:00.00
iso.3.6.1.2.1.1.9.1.4.4 = Timeticks: (1) 0:00:00.01
iso.3.6.1.2.1.1.9.1.4.5 = Timeticks: (1) 0:00:00.01
iso.3.6.1.2.1.1.9.1.4.6 = Timeticks: (1) 0:00:00.01
iso.3.6.1.2.1.1.9.1.4.7 = Timeticks: (1) 0:00:00.01
iso.3.6.1.2.1.1.9.1.4.8 = Timeticks: (1) 0:00:00.01
iso.3.6.1.2.1.1.9.1.4.9 = Timeticks: (1) 0:00:00.01
iso.3.6.1.2.1.1.9.1.4.10 = Timeticks: (1) 0:00:00.01
```

CACTI

Instalasi

- # apt-get install cacti cacti-spine

```
root@client:/home/student# apt-get install cacti cacti-spine
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils dbconfig-common dbconfig-mysql default-mysql-client
  default-mysql-server fontconfig fontconfig-config fonts-dejavu-core galera-3 gawk javascript-common libaio1
  libapache2-mod-php libapache2-mod-php7.0 libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap libcairo2
  libcgi-fast-perl libcgi-pm-perl libdatrie1 libdbd-mysql-perl libdbi-perl libdbi1 libencode-locale-perl libfcgi-perl
  libfontconfig1 libgraphite2-3 libharfbuzz0b libhtml-parser-perl libhtml-tagset-perl libhtml-template-perl
  libhttp-date-perl libhttp-message-perl libio-html-perl libjemalloc1 libjs-jquery libjs-jquery-cookie
  libjs-jquery-jstree libjs-jquery-ui libjs-jquery-ui-theme-ui-lightness liblua5.2-0 liblwp-mediatypes-perl
  libmariadbclient18 libpango-1.0-0 libpangocairo-1.0-0 libpangoft2-1.0-0 libphp-adodb libpixmap-1-0 libreadline5
  librrd8 libsigsegv2 libterm-readkey-perl libthai-data libthai0 libtimedate-perl liburi-perl libxcb-render0
  libxcb-shm0 libxrender1 libxslt1.1 mariadb-client-10.1 mariadb-client-core-10.1 mariadb-common mariadb-server-10.1
  mariadb-server-core-10.1 mysql-common php-common php-mbstring php-mysql php-snmp php-xml php7.0-cli php7.0-common
  php7.0-json php7.0-mbstring php7.0-mysql php7.0-opcache php7.0-readline php7.0-snmp php7.0-xml psmisc rrdtool rsync
  socat ssl-cert
```

Configuring cacti

Please select the web server for which Cacti should be automatically configured.
Select "None" if you would like to configure the web server manually.

Web server:

☒ apache2
☐ lighttpd
☐ None

<Ok>

Configuring cacti

The cacti package must have a database installed and configured before it can be used. This can be optionally handled with dbconfig-common.

If you are an advanced database administrator and know that you want to perform this configuration manually, or if your database has already been installed and configured, you should refuse this option. Details on what needs to be done should most likely be provided in /usr/share/doc/cacti.

Otherwise, you should probably choose this option.

Configure database for cacti with dbconfig-common?

☒ Yes ☐ No

Configuring cacti

Please provide a password for cacti to register with the database server. If left blank, a random password will be generated.

MySQL application password for cacti:

<Ok> <Cancel>

Configuring cacti

Password confirmation:

<Ok> <Cancel>

Konfigurasi

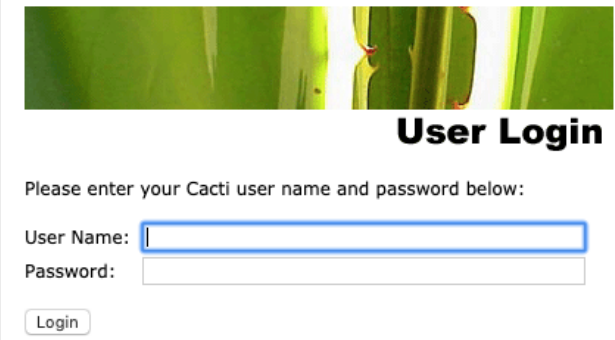
- Akses via browser <http://localhost/cacti>

- Reset password

```
# mysql -u cacti -p cacti -e "UPDATE user_auth SET  
password=md5('admin') WHERE username='admin';"
```

- User: admin

- Pass: admin



User Login

Please enter your Cacti user name and password below:

User Name:

Password:



Konfigurasi

Management

[Graph Management](#)[Graph Trees](#)[Data Sources](#)[Devices](#)Logged In as **admin** ([Logout](#))[Add](#)

Device [new]

General Host Options

Description

Give this host a meaningful description.

web server

Hostname

Fully qualified hostname or IP address for this device.

10.252.209.102

Host Template

Choose the Host Template to use to define the default Graph Templates and Data Queries associated with this Host.

Generic SNMP-enabled Host

Number of Collection Threads

The number of concurrent threads to use for polling this device. This applies to the Spine poller only.

1 Thread (default)

Disable Host

Check this box to disable all checks for this host.

☐ Disable Host

Availability/Reachability Options

Downed Device Detection

The method Cacti will use to determine if a host is available for polling.

NOTE: It is recommended that, at a minimum, SNMP always be selected.

SNMP Uptime

Ping Timeout Value

The timeout value to use for host ICMP and UDP pinging. This host SNMP timeout value applies for SNMP pings.

400

Ping Retry Count

After an initial failure, the number of ping retries Cacti will attempt before failing.

1

SNMP Options

SNMP Version

Choose the SNMP version for this device.

Version 1

SNMP Community

SNMP read community for this device.

public

SNMP Port

Enter the UDP port number to use for SNMP (default is 161).

161

SNMP Timeout

The maximum number of milliseconds Cacti will wait for an SNMP response (does not work with php-snmp support).

500

Maximum OID's Per Get Request

Specified the number of OID's that can be obtained in a single SNMP Get request.

10

Additional Options

Notes

Enter notes to this host.

Save Successful.**web server (10.252.209.102)****SNMP Information****System:**Linux server 4.9.0-8-amd64 #1 SMP Debian 4.9.144-3 (2019-02-02) x86_64**Uptime:** 7923601 (0 days, 22 hours, 0 minutes)**Hostname:** server**Location:** Sitting on the Dock of the Bay**Contact:** Me me@example.org

- * [Create Graphs for this Host](#)
- * [Data Source List](#)
- * [Graph List](#)

Konfigurasi

Graph Templates

Graph Template Name

Create: (Select a graph type to create)

Data Query [SNMP - Interface Statistics]

Showing All Items

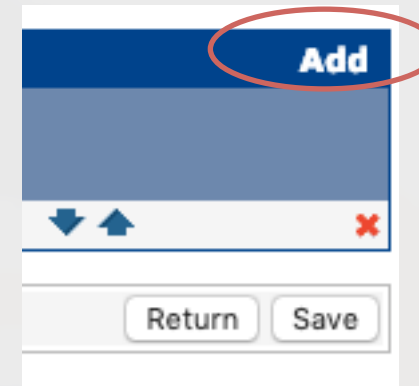
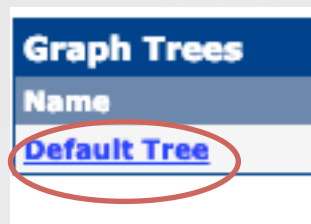
Index	Status	Description	Name (IF-MIB)	Alias (IF-MIB)	Type	Speed	High Speed	Hardware Address	IP Address	
1	Up	lo	lo		24	100000000	10		127.0.0.1	☐
2	Up	Intel Corporation 82545EM Gigabit Ethernet Controller (Copper)	ens32		6	10000000000	1000	00:50:56:B5:3C:2A	10.252.209.102	☒

Select a graph type: In/Out Bits

New Graphs for [web server (10.252.209.102) Generic SNMP

- Created graph: web server - Traffic - ens32

Konfigurasi

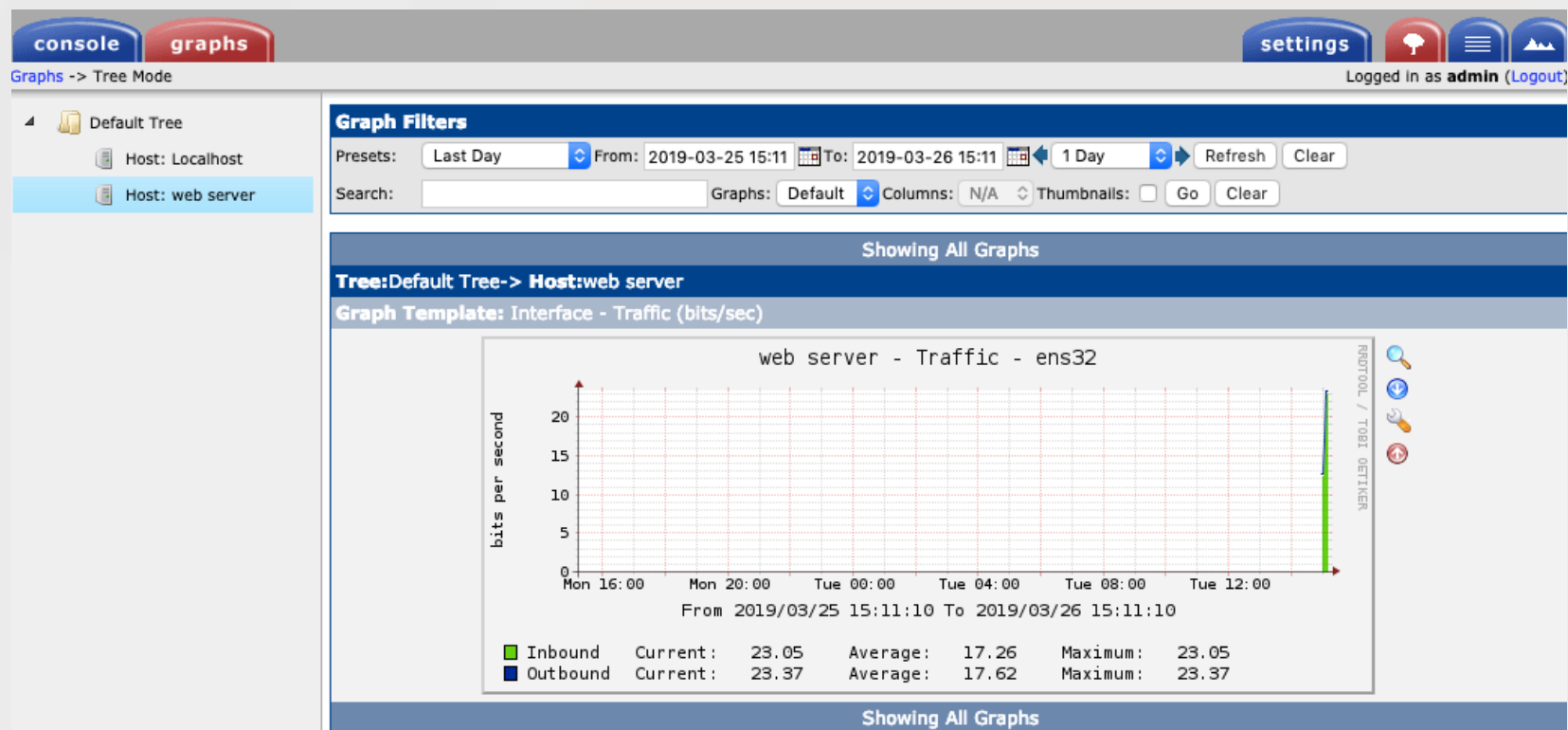


Tree Items	
Parent Item Choose the parent for this header/graph.	[root] ▾
Tree Item Type Choose what type of tree item this is.	Host ▾
Tree Item Value	
Host Choose a host here to add it to the tree.	web server (10.252.209.102) ▾
Graph Grouping Style Choose how graphs are grouped when drawn for this particular host on the tree.	Graph Template ▾
Round Robin Archive Choose a round robin archive to control how Graph Thumbnails are displayed when using Tree Export.	Hourly (1 Minute Average) ▾
Cancel Create	

Tree Items	
Expand All Collapse All	
Item	
Host:	Localhost (127.0.0.1) (Edit host)
Host:	web server (10.252.209.102) (Edit host)

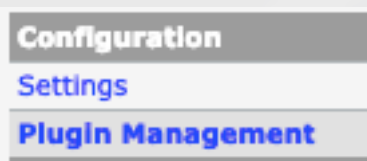
Testing

- Jalankan IPERF
- Akses menu graph



Plugins

- `# wget http://idris.lecturer.pens.ac.id/files/admin_jarkom/monitor-v1.3-1.IW.tgz`
- `# tar xzvf monitor-v1.3-1.IW.tgz`
- `# mv monitor /usr/share/cacti/site/plugins/`



Plugin Management (Cacti Version: 0.8.8h, Plugin Architecture Version: 3.1)				
Search:		Rows: Default Go Clear		
Actions	Name	Version	Load Order	Desc
	Monitor	1.3		Device
NOTE: Please sort by 'Load Order' to change plugin load ordering. NOTE: SYSTEM plugins can not be ordered.				

Klik untuk install

Actions	Name
 	Monitor

Klik untuk mengaktifkan

console graphs monitor

Console -> Plugin Management

Create

New Graphs

Management

Graph Management

Graph Trees

Data Sources

Devices

Collection Methods

Data Queries

Data Input Methods

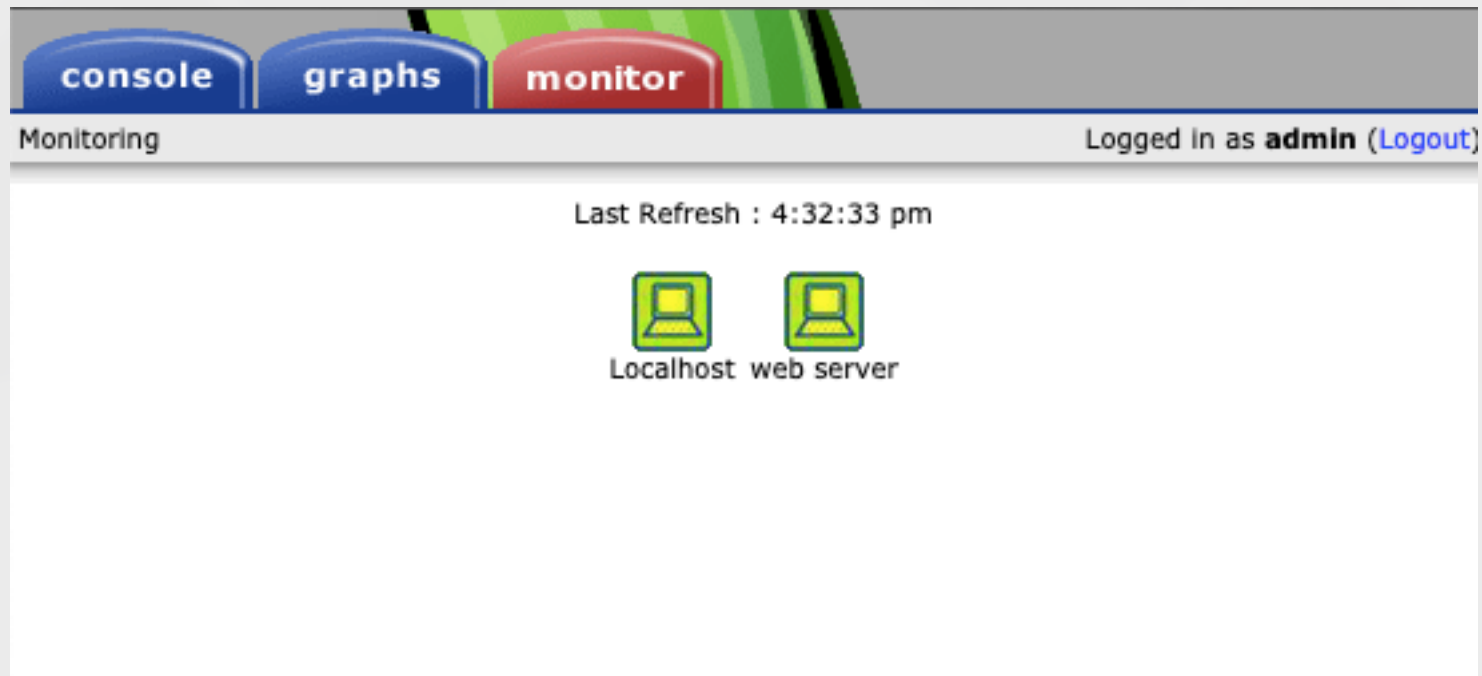
Plugin Management (Cacti Vers

Search:

Actions	Name
 	Monitor

NOTE: Please sort by 'Load Order' to cha
NOTE: SYSTEM plugins can not be order

Plugins



TERIMA KASIH