

# Network Monitoring System and Alert System

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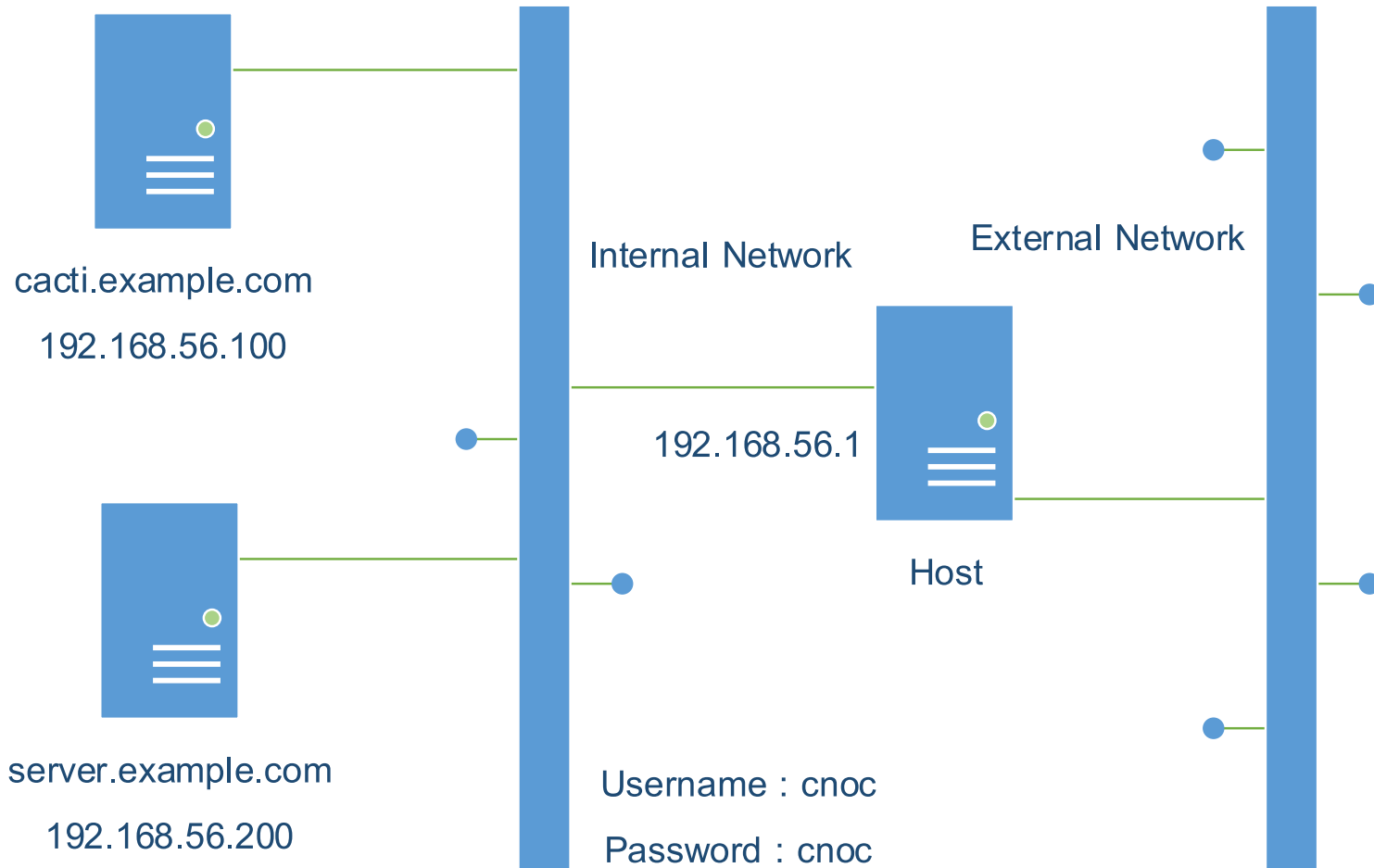
CCNA, RHCE

Computer Network Operation Center (**CNOC**)

Information Technology Service Center (**ITSC**)

Chiang Mai University

# Lab topology

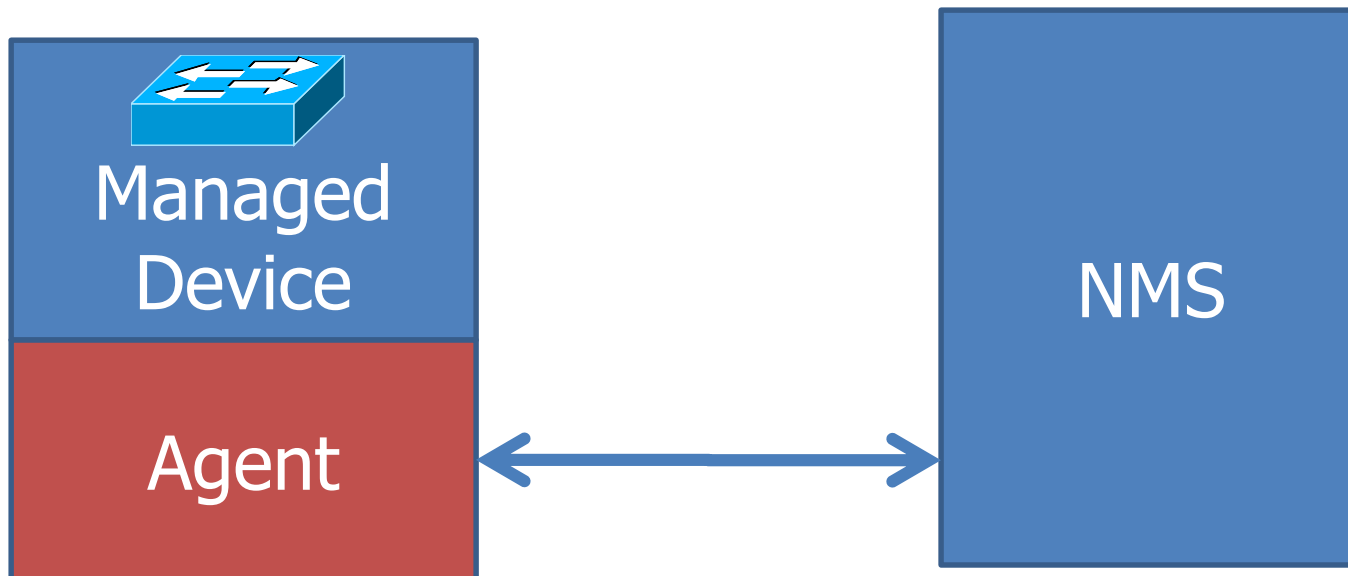


# SNMP

## Simple Network Management Protocol

# Component

- Managed Device : อุปกรณ์ที่มี snmp
- Agent : ซอฟต์แวร์ที่อยู่บนอุปกรณ์
- Network Management System (NMS) : เครื่องคอมพิวเตอร์ที่ติดต่อกับ Agent



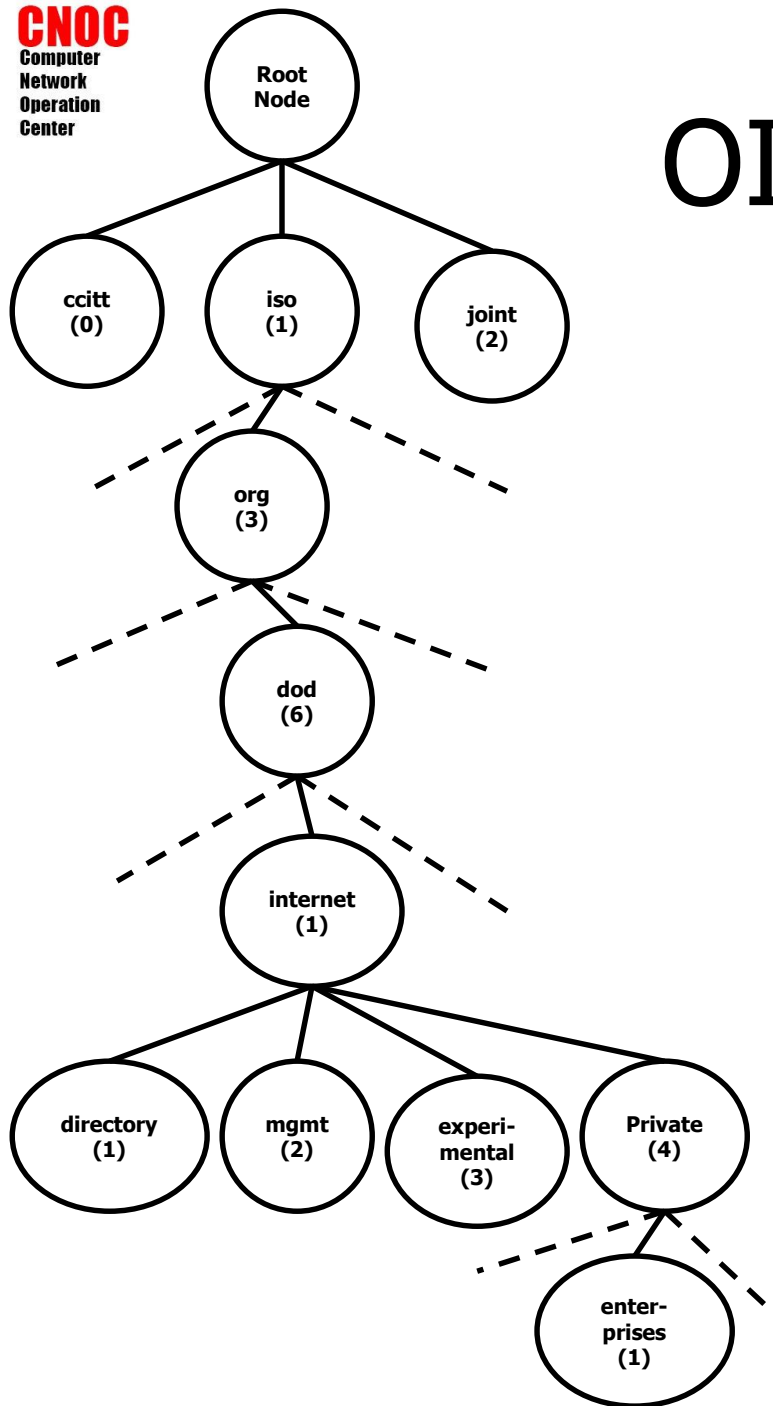
# Daemon & Port

- SNMP Agent (snmpd)  
udp 161
- SNMP Notification Receiver (snmptrapd)  
udp 162

# OID & MIB

- Object identifier (OID)
- Management Information Base (MIB)

# OID & MIB



OID	MIB
1.3	org
1.3.6	dod
1.3.6.1	internet
1.3.6.1.1	directory
1.3.6.1.2	mgmt
1.3.6.1.3	experimental
1.3.6.1.4	private
1.3.6.1.4.1	enterprises

# snmp & snmpd installation

- ที่ server.example.com
- **#apt-get install snmp snmpd**



# snmpd configuration

- แก้ไขไฟล์ **/etc/snmp/snmpd.conf**  
เปิดให้เครื่องอื่นสามารถมาดึงข้อมูล

```
#agentAddress udp:127.0.0.1:161  
agentAddress udp:161,udp6:[::1]:161  
rocommunity [community string] default
```

- เริ่ม snmpd ใหม่
  - **#service snmpd restart**

# snmp configuration

- ที่ cacti.example.com
- ติดตั้ง snmp, mibs
- **#apt-get install snmp snmp-mibs-downloader**
- นำเข้า mibs แก้ไขไฟล์  
**/etc/snmp/snmp.conf**

```
#คอมเมนต์ออก  
#mibs :
```

# snmp command

- Get
- GetNext
- Walk

# snmpget

- snmpget [OPTIONS] AGENT OID [OID]...
- OPTIONS
  - v : เวอร์ชันของ snmp {1, 2c, 3}
  - c : communitystring
  - On : แสดง OID เป็นตัวเลข

```
# snmpget -v 2c -c [community string] [ip] sysName.0  
SNMPv2-MIB::sysName.0 = STRING: cacti.example.com
```

```
# snmpget -v 2c -c [community string] -On [ip] sysName.0  
.1.3.6.1.2.1.1.5.0 = STRING: cacti.example.com
```

# snmpgetnext

- snmpgetnext [OPTIONS] AGENT OID [OID]...
- OPTIONS
  - v เวอร์ชันของ snmp {1, 2c, 3}
  - c : communitystring
  - On : แสดง OID เป็นตัวเลข

```
#snmpgetnext -v 2c -c [community string] [ip] system  
SNMPv2-MIB::sysDescr.0 = STRING: Linux cacti.example.com  
2.6.32-33-generic #72-Ubuntu SMP Fri Jul 29 21:08:37 UTC 2011  
i686
```

```
# snmpgetnext -v 2c -c [community string] -On [ip] system  
.1.3.6.1.2.1.1.1.0 = STRING: Linux cacti.example.com 2.6.32-33-  
generic #72-Ubuntu SMP Fri Jul 29 21:08:37 UTC 2011 i686
```

# snmpwalk

- snmpwalk [OPTIONS] AGENT [OID]
- OPTIONS
  - v เวอร์ชันของ snmp {1, 2c, 3}
  - c : communitystring
  - On : แสดง OID เป็นตัวเลข

# snmpwalk

```
# snmpwalk -v 2c -c public localhost system
SNMPv2-MIB::sysDescr.0 = STRING: Linux cacti.example.com 2.6.32-33-generic #72-Ubuntu SMP Fri Jul 29 21:08:37 UTC 2011 i686
SNMPv2-MIB::sysObjectID.0 = OID: NET-SNMP-MIB::netSnmpAgentOIDs.10
DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (156349) 0:26:03.49
SNMPv2-MIB::sysContact.0 = STRING: Root <root@localhost> (configure /etc/snmp/snmpd.local.conf)
SNMPv2-MIB::sysName.0 = STRING: cacti.example.com
SNMPv2-MIB::sysLocation.0 = STRING: Unknown (configure /etc/snmp/snmpd.local.conf)
SNMPv2-MIB::sysORLastChange.0 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORID.1 = OID: SNMP-FRAMEWORK-MIB::snmpFrameworkMIBCompliance
SNMPv2-MIB::sysORID.2 = OID: SNMP-MPD-MIB::snmpMPDCompliance
SNMPv2-MIB::sysORID.3 = OID: SNMP-USER-BASED-SM-MIB::usmMIBCompliance
SNMPv2-MIB::sysORID.4 = OID: SNMPv2-MIB::snmpMIB
SNMPv2-MIB::sysORID.5 = OID: TCP-MIB::tcpMIB
SNMPv2-MIB::sysORID.6 = OID: IP-MIB::ip
SNMPv2-MIB::sysORID.7 = OID: UDP-MIB::udpMIB
SNMPv2-MIB::sysORID.8 = OID: SNMP-VIEW-BASED-ACM-MIB::vacmBasicGroup
SNMPv2-MIB::sysORDescr.1 = STRING: The SNMP Management Architecture MIB.
SNMPv2-MIB::sysORDescr.2 = STRING: The MIB for Message Processing and Dispatching.
SNMPv2-MIB::sysORDescr.3 = STRING: The management information definitions for the SNMP User-based Security Model.
SNMPv2-MIB::sysORDescr.4 = STRING: The MIB module for SNMPv2 entities
SNMPv2-MIB::sysORDescr.5 = STRING: The MIB module for managing TCP implementations
SNMPv2-MIB::sysORDescr.6 = STRING: The MIB module for managing IP and ICMP implementations
SNMPv2-MIB::sysORDescr.7 = STRING: The MIB module for managing UDP implementations
SNMPv2-MIB::sysORDescr.8 = STRING: View-based Access Control Model for SNMP.
SNMPv2-MIB::sysORUpTime.1 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORUpTime.2 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORUpTime.3 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORUpTime.4 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORUpTime.5 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORUpTime.6 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORUpTime.7 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORUpTime.8 = Timeticks: (0) 0:00:00.00
```

# snmpwalk

```
# snmpwalk -v 2c -c public -On localhost system
.1.3.6.1.2.1.1.1.0 = STRING: Linux cacti.example.com 2.6.32-33-generic #72-Ubuntu SMP Fri Jul 29 21:08:37 UTC 2011 i686
.1.3.6.1.2.1.1.2.0 = OID: .1.3.6.1.4.1.8072.3.2.10
.1.3.6.1.2.1.1.3.0 = Timeticks: (159043) 0:26:30.43
.1.3.6.1.2.1.1.4.0 = STRING: Root <root@localhost> (configure /etc/snmp/snmpd.local.conf)
.1.3.6.1.2.1.1.5.0 = STRING: cacti.example.com
.1.3.6.1.2.1.1.6.0 = STRING: Unknown (configure /etc/snmp/snmpd.local.conf)
.1.3.6.1.2.1.1.8.0 = Timeticks: (0) 0:00:00.00
.1.3.6.1.2.1.1.9.1.2.1 = OID: .1.3.6.1.6.3.10.3.1.1
.1.3.6.1.2.1.1.9.1.2.2 = OID: .1.3.6.1.6.3.11.3.1.1
.1.3.6.1.2.1.1.9.1.2.3 = OID: .1.3.6.1.6.3.15.2.1.1
.1.3.6.1.2.1.1.9.1.2.4 = OID: .1.3.6.1.6.3.1
.1.3.6.1.2.1.1.9.1.2.5 = OID: .1.3.6.1.2.1.49
.1.3.6.1.2.1.1.9.1.2.6 = OID: .1.3.6.1.2.1.4
.1.3.6.1.2.1.1.9.1.2.7 = OID: .1.3.6.1.2.1.50
.1.3.6.1.2.1.1.9.1.2.8 = OID: .1.3.6.1.6.3.16.2.2.1
.1.3.6.1.2.1.1.9.1.3.1 = STRING: The SNMP Management Architecture MIB.
.1.3.6.1.2.1.1.9.1.3.2 = STRING: The MIB for Message Processing and Dispatching.
.1.3.6.1.2.1.1.9.1.3.3 = STRING: The management information definitions for the SNMP User-based Security Model.
.1.3.6.1.2.1.1.9.1.3.4 = STRING: The MIB module for SNMPv2 entities
.1.3.6.1.2.1.1.9.1.3.5 = STRING: The MIB module for managing TCP implementations
.1.3.6.1.2.1.1.9.1.3.6 = STRING: The MIB module for managing IP and ICMP implementations
.1.3.6.1.2.1.1.9.1.3.7 = STRING: The MIB module for managing UDP implementations
.1.3.6.1.2.1.1.9.1.3.8 = STRING: View-based Access Control Model for SNMP.
.1.3.6.1.2.1.1.9.1.4.1 = Timeticks: (0) 0:00:00.00
.1.3.6.1.2.1.1.9.1.4.2 = Timeticks: (0) 0:00:00.00
.1.3.6.1.2.1.1.9.1.4.3 = Timeticks: (0) 0:00:00.00
.1.3.6.1.2.1.1.9.1.4.4 = Timeticks: (0) 0:00:00.00
.1.3.6.1.2.1.1.9.1.4.5 = Timeticks: (0) 0:00:00.00
.1.3.6.1.2.1.1.9.1.4.6 = Timeticks: (0) 0:00:00.00
.1.3.6.1.2.1.1.9.1.4.7 = Timeticks: (0) 0:00:00.00
.1.3.6.1.2.1.1.9.1.4.8 = Timeticks: (0) 0:00:00.00
```



# snmpwalk : interface example

```
# snmpwalk -v 2c -c public localhost interface
IF-MIB::ifNumber.0 = INTEGER: 2
IF-MIB::ifIndex.1 = INTEGER: 1
IF-MIB::ifIndex.2 = INTEGER: 2
IF-MIB::ifDescr.1 = STRING: lo
IF-MIB::ifDescr.2 = STRING: eth0
IF-MIB::ifType.1 = INTEGER: softwareLoopback(24)
IF-MIB::ifType.2 = INTEGER: ethernetCsmacd(6)
IF-MIB::ifMtu.1 = INTEGER: 16436
IF-MIB::ifMtu.2 = INTEGER: 1500
IF-MIB::ifSpeed.1 = Gauge32: 10000000
IF-MIB::ifSpeed.2 = Gauge32: 10000000
IF-MIB::ifPhysAddress.1 = STRING:
IF-MIB::ifPhysAddress.2 = STRING: 8:0:27:84:95:58
IF-MIB::ifAdminStatus.1 = INTEGER: up(1)
IF-MIB::ifAdminStatus.2 = INTEGER: up(1)
IF-MIB::ifOperStatus.1 = INTEGER: up(1)
IF-MIB::ifOperStatus.2 = INTEGER: up(1)
IF-MIB::ifLastChange.1 = Timeticks: (0) 0:00:00.00
IF-MIB::ifLastChange.2 = Timeticks: (0) 0:00:00.00
มีต่อ
```

# snmpwalk : interface example

```
| IF-MIB::ifInOctets.1 = Counter32: 127825  
| IF-MIB::ifInOctets.2 = Counter32: 34684849  
| IF-MIB::ifInUcastPkts.1 = Counter32: 879  
| IF-MIB::ifInUcastPkts.2 = Counter32: 56367  
| IF-MIB::ifInNUcastPkts.1 = Counter32: 0  
| IF-MIB::ifInNUcastPkts.2 = Counter32: 0  
| IF-MIB::ifInDiscards.1 = Counter32: 0  
| IF-MIB::ifInDiscards.2 = Counter32: 0  
| IF-MIB::ifInErrors.1 = Counter32: 0  
| IF-MIB::ifInErrors.2 = Counter32: 115  
| IF-MIB::ifInUnknownProtos.1 = Counter32: 0  
| IF-MIB::ifInUnknownProtos.2 = Counter32: 0  
| IF-MIB::ifOutOctets.1 = Counter32: 127825  
| IF-MIB::ifOutOctets.2 = Counter32: 826065  
| IF-MIB::ifOutUcastPkts.1 = Counter32: 879  
| IF-MIB::ifOutUcastPkts.2 = Counter32: 8163  
| IF-MIB::ifOutNUcastPkts.1 = Counter32: 0  
| IF-MIB::ifOutNUcastPkts.2 = Counter32: 0  
| IF-MIB::ifOutDiscards.1 = Counter32: 0  
| IF-MIB::ifOutDiscards.2 = Counter32: 0  
| IF-MIB::ifOutErrors.1 = Counter32: 0  
| IF-MIB::ifOutErrors.2 = Counter32: 0  
| IF-MIB::ifOutQLen.1 = Gauge32: 0  
| IF-MIB::ifOutQLen.2 = Gauge32: 0  
| IF-MIB::ifSpecific.1 = OID: SNMPv2-SMI::zeroDotZero  
| IF-MIB::ifSpecific.2 = OID: SNMPv2-SMI::zeroDotZero  
|
```

# snmpwalk : cisco switch example

```
# snmpwalk -v 2c -c password 192.168.111.84 system
SNMPv2-MIB::sysDescr.0 = STRING: Cisco IOS Software, C2960 Software (C2960-LANBASE-M), Version 12.2(44)SE6,
RELEASE SOFTWARE (fc1)
Copyright (c) 1986-2009 by Cisco Systems, Inc.
Compiled Mon 09-Mar-09 13:49 by gereddy
SNMPv2-MIB::sysObjectID.0 = OID: SNMPv2-SMI::enterprises.9.1.950
DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (755500444) 87 days, 10:36:44.44
SNMPv2-MIB::sysContact.0 = STRING:
SNMPv2-MIB::sysName.0 = STRING: CNOC_2F_AdminRoom
SNMPv2-MIB::sysLocation.0 = STRING:
SNMPv2-MIB::sysServices.0 = INTEGER: 2
SNMPv2-MIB::sysORLastChange.0 = Timeticks: (0) 0:00:00.00
...
..
IF-MIB::ifDescr.10001 = STRING: FastEthernet0/1
IF-MIB::ifDescr.10002 = STRING: FastEthernet0/2
IF-MIB::ifDescr.10003 = STRING: FastEthernet0/3
IF-MIB::ifDescr.10004 = STRING: FastEthernet0/4
IF-MIB::ifDescr.10005 = STRING: FastEthernet0/5
IF-MIB::ifDescr.10006 = STRING: FastEthernet0/6
IF-MIB::ifDescr.10007 = STRING: FastEthernet0/7
IF-MIB::ifDescr.10008 = STRING: FastEthernet0/8
IF-MIB::ifDescr.10009 = STRING: FastEthernet0/9
IF-MIB::ifDescr.10010 = STRING: FastEthernet0/10
....
..
```

# GUI snmp client

- <http://www.ireasoning.com>
- Free MIB Browser

iReasoning MIB Browser

File Edit Operations Tools Bookmarks Help

Address: 192.168.56.10 Advanced... OID: .1.3.6.1.2.1 Operations: Get Next Go

SNMP MIBs

MIB Tree

- [-] RFC1213-MIB.iso.org.dod.internet.mib-2
  - [-] system
  - [-] interfaces
    - [-] at
    - [-] ip
    - [-] icmp
    - [-] tcp
    - [-] udp
    - [-] egp
    - [-] transmission
    - [-] snmp
  - [-] HOST-RESOURCES-MIB.iso.org.dod.internet...
  - [-] AIRESpace-WIRELESS-MIB.iso.org.dod.intern...

Name: mib-2  
OID: .1.3.6.1.2.1  
MIB: RFC1213-MIB

Result Table

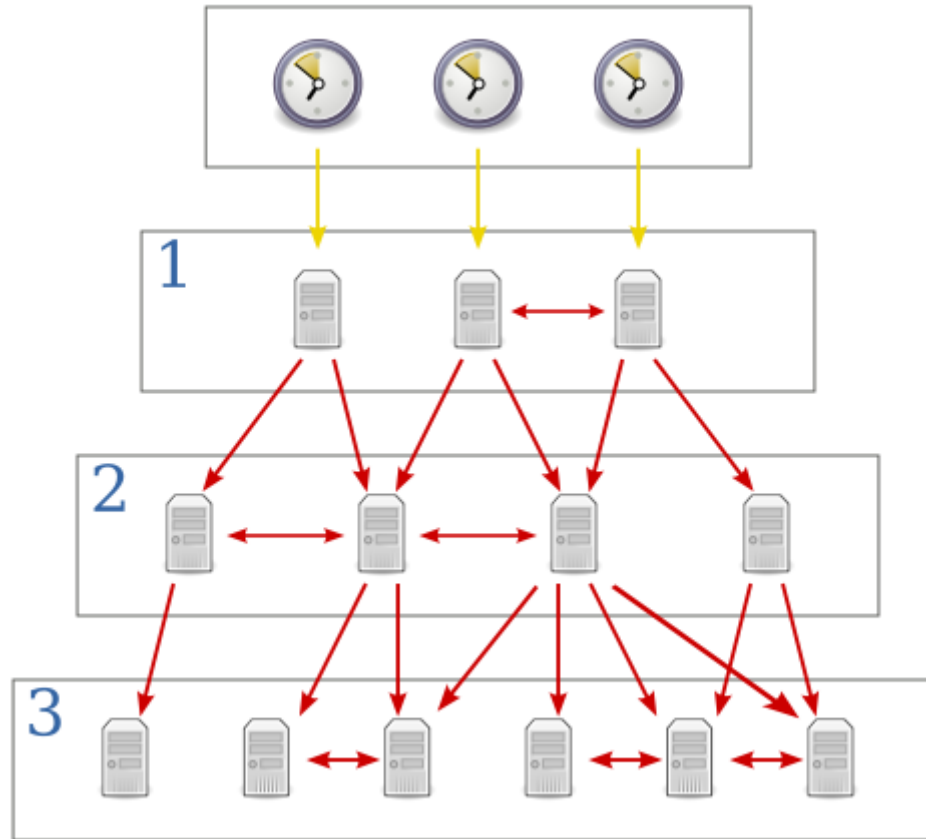
Name/OID	Value	Type
sysDescr.0	Linux cacti.example.com 2.6.32-33-generic #72-Ubuntu SMP Fri Jul 29 21:08:37 UTC ...	OctetString
sysObjectID.0	.1.3.6.1.4.1.8072.3.2.10	OID
sysUpTime.0	1 minute 19 seconds (7997)	TimeTicks
sysContact.0	Root <root@localhost> (configure /etc/snmp/snmpd.local.conf)	OctetString
sysName.0	cacti.example.com	OctetString
sysLocation.0	Unknown (configure /etc/snmp/snmpd.local.conf)	OctetString
.1.3.6.1.2.1.1.8.0	0 millisecond (0)	TimeTicks
.1.3.6.1.2.1.1.9.1.2.1	.1.3.6.1.6.3.10.3.1.1	OID
.1.3.6.1.2.1.1.9.1.2.2	.1.3.6.1.6.3.11.3.1.1	OID
.1.3.6.1.2.1.1.9.1.2.3	.1.3.6.1.6.3.15.2.1.1	OID
.1.3.6.1.2.1.1.9.1.2.4	snmpMIB	OID
.1.3.6.1.2.1.1.9.1.2.5	.1.3.6.1.2.1.49	OID
.1.3.6.1.2.1.1.9.1.2.6	ip	OID
.1.3.6.1.2.1.1.9.1.2.7	.1.3.6.1.2.1.50	OID
.1.3.6.1.2.1.1.9.1.2.8	.1.3.6.1.6.3.16.2.2.1	OID
.1.3.6.1.2.1.1.9.1.3.1	The SNMP Management Architecture MIB.	OctetString
.1.3.6.1.2.1.1.9.1.3.2	The MIB for Message Processing and Dispatching.	OctetString
.1.3.6.1.2.1.1.9.1.3.3	The management information definitions for the SNMP User-based Security Model.	OctetString
.1.3.6.1.2.1.1.9.1.3.4	The MIB module for SNMPv2 entities	OctetString
.1.3.6.1.2.1.1.9.1.3.5	The MIB module for managing TCP implementations	OctetString
.1.3.6.1.2.1.1.9.1.3.6	The MIB module for managing IP and ICMP implementations	OctetString
.1.3.6.1.2.1.1.9.1.3.7	The MIB module for managing UDP implementations	OctetString
.1.3.6.1.2.1.1.9.1.3.8	View-based Access Control Model for SNMP.	OctetString
.1.3.6.1.2.1.1.9.1.4.1	0 millisecond (0)	TimeTicks
.1.3.6.1.2.1.1.9.1.4.2	0 millisecond (0)	TimeTicks
.1.3.6.1.2.1.1.9.1.4.3	0 millisecond (0)	TimeTicks
.1.3.6.1.2.1.1.9.1.4.4	0 millisecond (0)	TimeTicks
.1.3.6.1.2.1.1.9.1.4.5	0 millisecond (0)	TimeTicks
.1.3.6.1.2.1.1.9.1.4.6	0 millisecond (0)	TimeTicks
.1.3.6.1.2.1.1.9.1.4.7	0 millisecond (0)	TimeTicks
.1.3.6.1.2.1.1.9.1.4.8	0 millisecond (0)	TimeTicks
ifNumber.0	2	Integer
ifIndex.1	1	Integer
ifIndex.2	2	Integer
ifDescr.1	lo	OctetString
ifDescr.2	eth0	OctetString
ifType.1	softwareLoopback (24)	Integer
ifType.2	ethernetCsmacd (6)	Integer
ifMtu.1	16436	Integer
ifMtu.2	1500	Integer
ifSpeed.1	10000000	Integer

.iso.org.dod.internet.mgmt.mib-2

# Date-Time Configuration

- ตั้ง Time Zone
  - `#ln -sf /usr/share/zoneinfo/Asia/Bangkok /etc/localtime`
- ทดสอบ
  - `#ls -l /etc/localtime`
  - `lrwxrwxrwx 1 root root 32 2009-07-02 19:51 /etc/localtime -> /usr/share/zoneinfo/Asia/Bangkok`
- ตั้งเวลา
  - `#ntpdate time1.nimt.or.th`

# NTP : Network Time Protocol



# NTP Configuration

- ติดตั้ง ntp
  - **#apt-get install ntp**
- แก้ไขไฟล์ **/etc/ntp.conf**

```
server time1.nimt.or.th  
server time.navy.mi.th  
server clock.nectec.or.th  
server ntp.ubuntu.com
```



# NTP Configuration

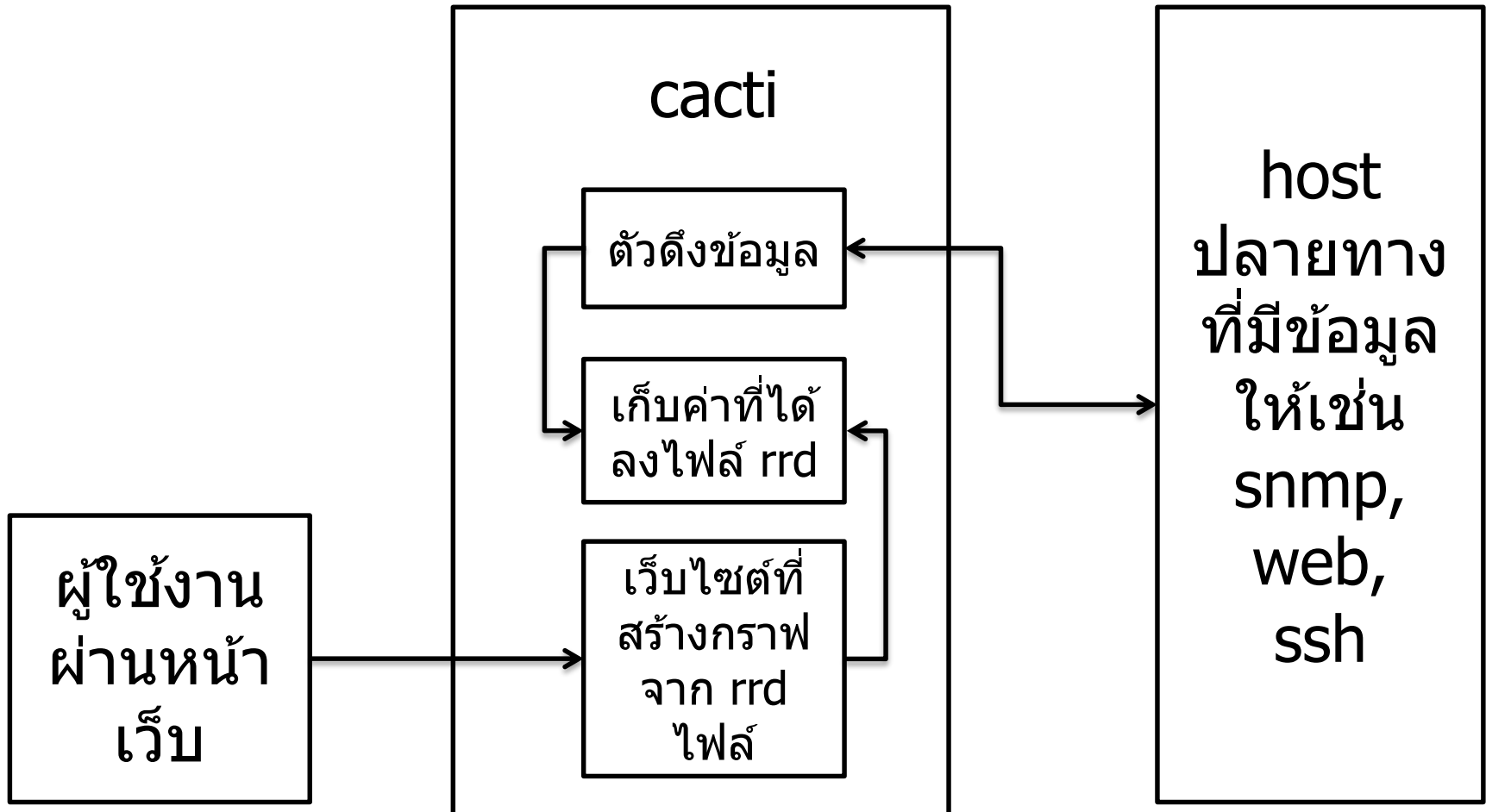
- เริ่ม ntp ใหม่
  - **#service ntp restart**
- ทดสอบ ntp
  - **#ntpq -np**
  - **#ntptrace**

# Cacti

# cacti

- <http://www.cacti.net>
- ใช้งานง่ายกว่า mrtg และความสามารถมากกว่า
- ใช้ rrdtool ในการทำกราฟ
- มี template หลากหลาย
- เก็บข้อมูลแบบปรับแต่งเองได้
- มี plugins หลากหลาย
- จัดการผู้ใช้ได้

# cacti



# installation

- **#apt-get install cacti**

```
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following extra packages will be installed:
  apache2 apache2-mpm-prefork apache2-utils apache2.2-common cacti-spine
  dbconfig-common libapache2-mod-php5 libapr1 libaprutil1 libart-2.0-2
  libdbd-mysql-perl libdbi-perl libfreetype6 libmysqlclient15off
  libnet-daemon-perl libphp-adodb libplrpc-perl libpng12-0 libpq5 librrd2
  mysql-client-5.0 mysql-common mysql-server mysql-server-5.0
  openssl-blacklist php5-cli php5-common php5-mysql php5-snmp rrdtool ssl-cert
Suggested packages:
  apache2-doc apache2-suexec apache2-suexec-custom virtual-mysql-client
  mysql-client postgresql-client php-pear php5-timezonedb dbshell
  libfreetype6-dev php5-adodb mysql-doc-5.0 tinyca mailx librrds-perl
The following NEW packages will be installed:
  apache2 apache2-mpm-prefork apache2-utils apache2.2-common cacti
  cacti-cactid cacti-spine dbconfig-common libapache2-mod-php5 libapr1
  libaprutil1 libart-2.0-2 libdbd-mysql-perl libdbi-perl libfreetype6
  libmysqlclient15off libnet-daemon-perl libphp-adodb libplrpc-perl libpng12-0
  libpq5 librrd2 mysql-client-5.0 mysql-common mysql-server mysql-server-5.0
  openssl-blacklist php5-cli php5-common php5-mysql php5-snmp rrdtool ssl-cert
0 upgraded, 33 newly installed, 0 to remove and 89 not upgraded.
Need to get 55.5MB of archives.
After this operation, 157MB of additional disk space will be used.
Do you want to continue [Y/n]? y_
```

# installation

- กำหนดรหัสผ่านของ mysql server

```
Package configuration

| Configuring mysql-server-5.0 |
While not mandatory, it is highly recommended that you set a password
for the MySQL administrative "root" user.

If that field is left blank, the password will not be changed.

New password for the MySQL "root" user:
*****
-----
<Ok>
```

# installation

- การแจ้งเตือน

Package configuration

## Configuring libphp-adodb

WARNING: include path for php has changed!

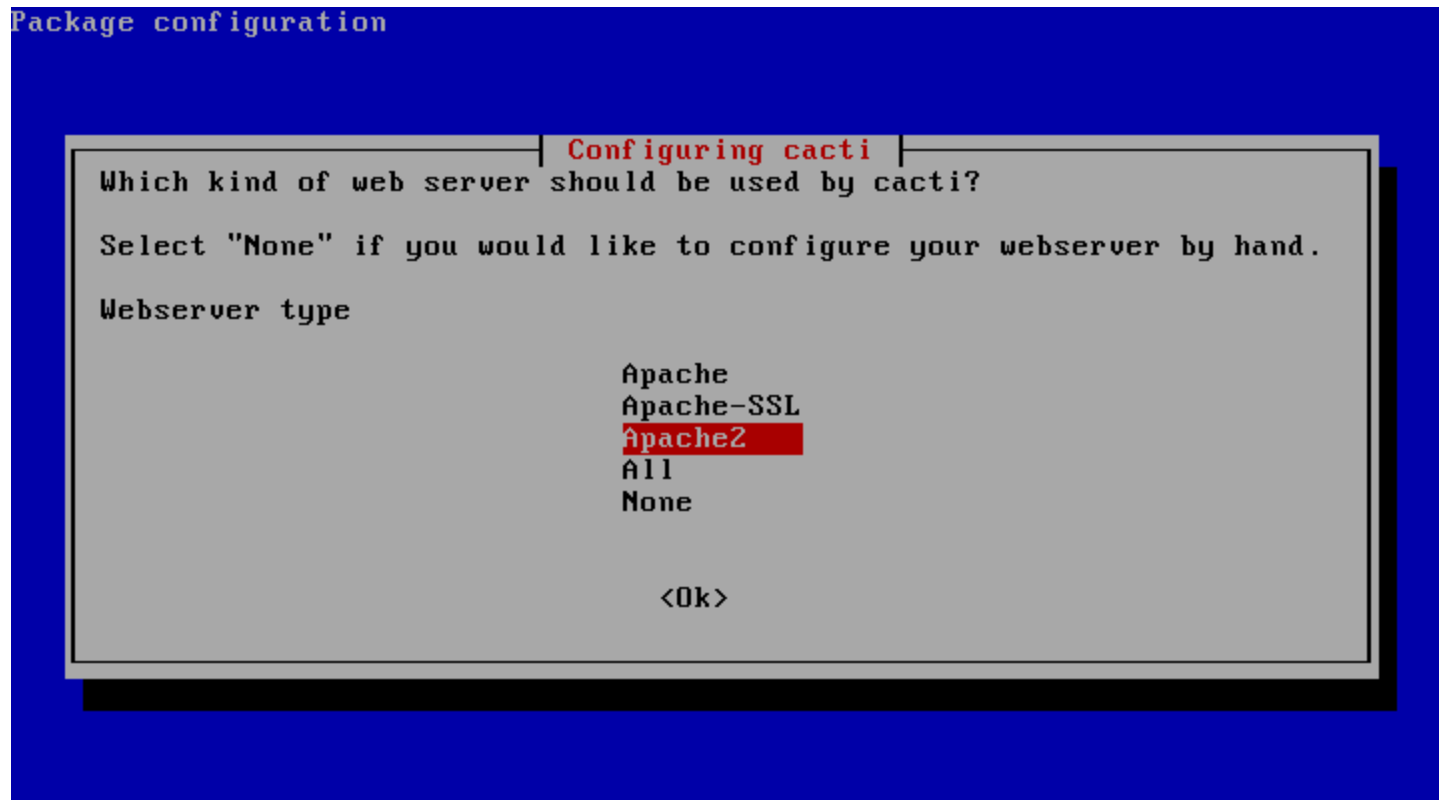
libphp-adodb is no longer installed in /usr/share/adodb. New installation path is now /usr/share/php/adodb.

Please update your php.ini file. Maybe you must also change your web-server configuraton.

<Ok>

# installation

- เลือกเว็บเซิร์ฟเวอร์เป็น apache2





# installation

- เลือกการตั้งค่า cacti ด้วย dbconfig-common

```
Package configuration

| Configuring cacti |
cacti must have a database installed and configured before it can be
used.  If you like, this can be handled with dbconfig-common.

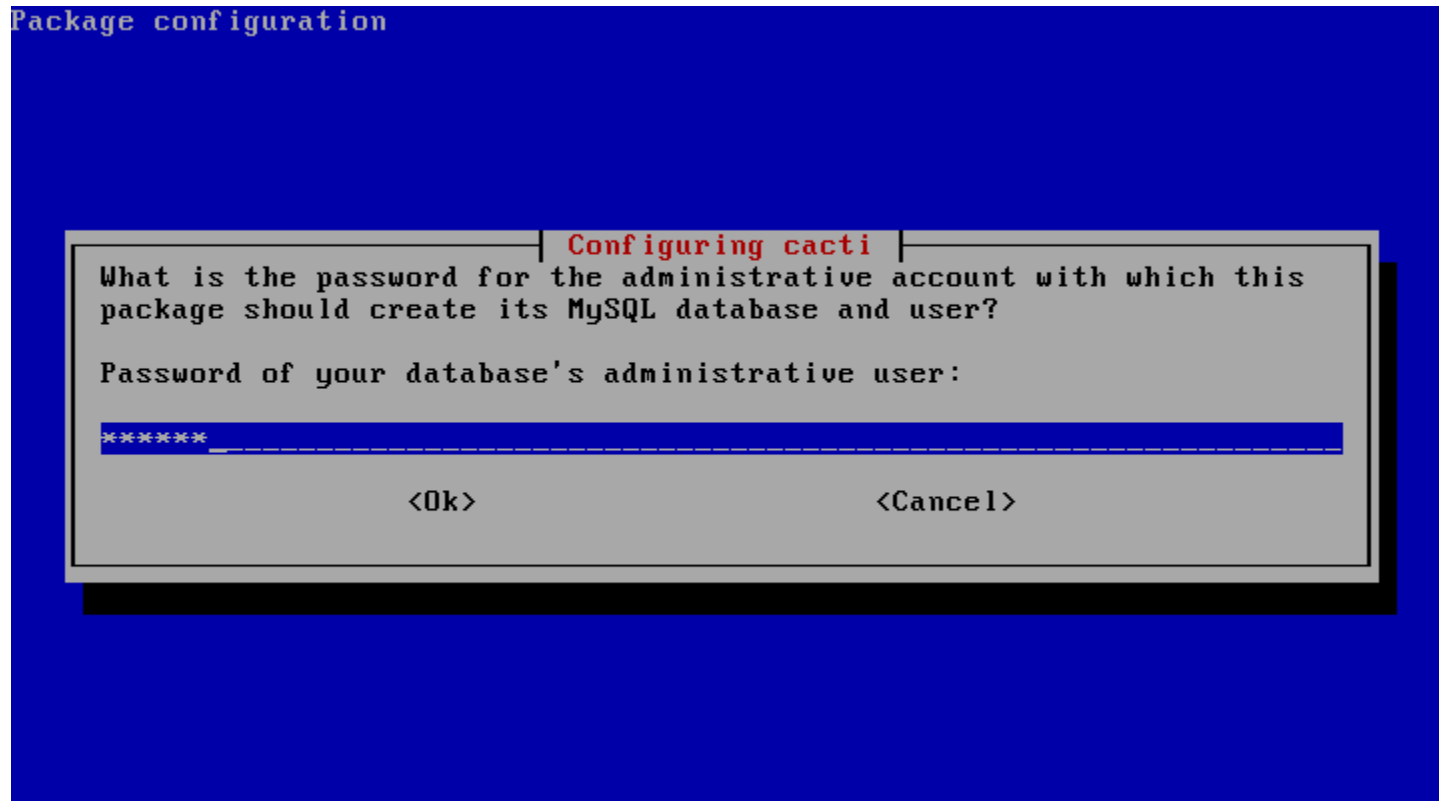
If you are an advanced database administrator and know that you want to
perform this configuration manually, or if your database has already
been installed and configured, you should refuse this option.  Details
on what needs to be done should most likely be provided in
/usr/share/doc/cacti.

Otherwise, you should probably choose this option.

Configure database for cacti with dbconfig-common?

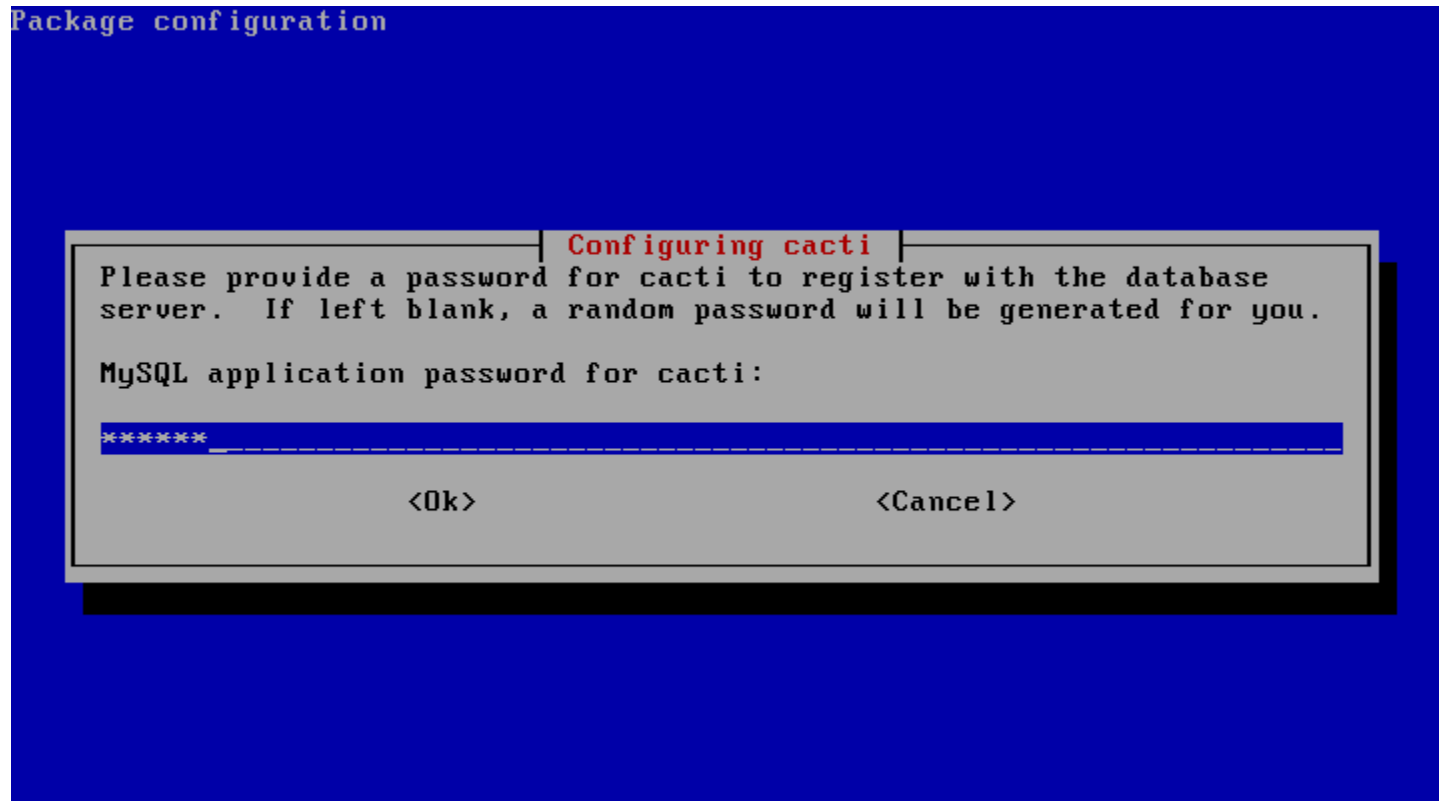
<Yes>                                <No>
```

- ระบุรหัสผ่านของ mysql server



# installation

- ระบุรหัสผ่านการใช้ฐานข้อมูลของ cacti



# installation

- เรียก cacti ผ่านเว็บเบราว์เซอร์  
– `http://{webserver-ip}/cacti`

**Cacti Installation Guide**

Thanks for taking the time to download and install cacti, the complete graphing solution for your network. Before you can start making cool graphs, there are a few pieces of data that cacti needs to know.

Make sure you have read and followed the required steps needed to install cacti before continuing. Install information can be found for [Unix](#) and [Win32](#)-based operating systems.

Also, if this is an upgrade, be sure to reading the [Upgrade](#) information file.

Cacti is licensed under the GNU General Public License, you must agree to its provisions before continuing:

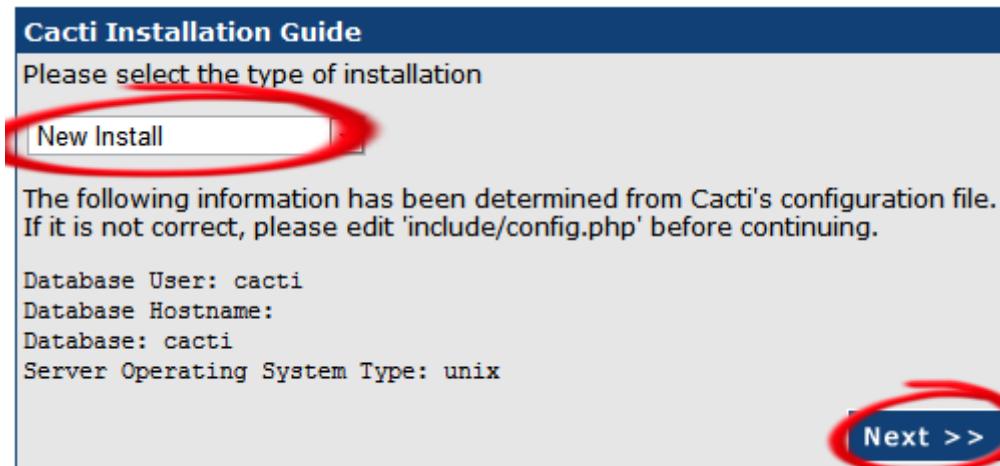
This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

[Next >>](#)

# installation

- เลือก New Install และ Next ตามลำดับ



**Cacti Installation Guide**

Please select the type of installation

The following information has been determined from Cacti's configuration file.  
If it is not correct, please edit 'include/config.php' before continuing.

Database User: cacti  
Database Hostname:  
Database: cacti  
Server Operating System Type: unix

[Next >>](#)

# installation

## Cacti Installation Guide

Make sure all of these values are correct before continuing.

**[FOUND] RRDTOOL Binary Path:** The path to the rrdtool binary.

[OK: FILE FOUND]

**[FOUND] PHP Binary Path:** The path to your PHP php recompile to get this file).

[OK: FILE FOUND]

**[FOUND] snmpwalk Binary Path:** The path to your

[OK: FILE FOUND]

**[FOUND] snmpget Binary Path:** The path to your

[OK: FILE FOUND]

**[FOUND] snmpbulkwalk Binary Path:** The path to your binary.

[OK: FILE FOUND]

**[FOUND] snmpgetnext Binary Path:** The path to your snmpgetnext binary.

[OK: FILE FOUND]

**[FOUND] Cacti Log File Path:** The path to your Cacti log file.

[OK: FILE FOUND]

**SNMP Utility Version:** The type of SNMP you have installed. Required if you are using SNMP v2c or don't have embedded SNMP support in PHP.

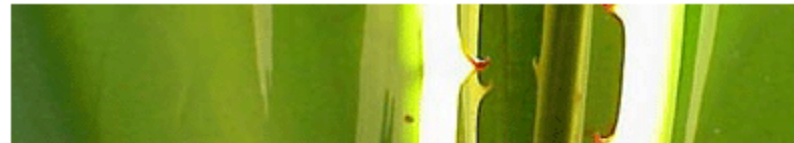
**RRDTOOL Utility Version:** The version of RRDTOOL that you have installed.

**NOTE:** Once you click "Finish", all of your settings will be saved and your database will be upgraded if this is an upgrade. You can change any of the settings on this screen at a later time by going to "Cacti Settings" from within Cacti.

**Finish**

# installation

- ใช้ User Name : admin
- Password : admin



## User Login

Please enter your Cacti user name and password below:

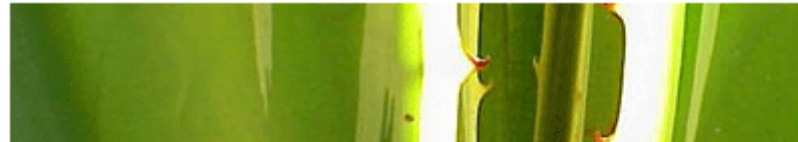
User Name:

Password:

Login

# installation

- บังคับให้เปลี่ยนรหัสผ่านในการใช้งานครั้งแรก



## User Login

**\*\*\* Forced Password Change \*\*\***

Please enter a new password for cacti:

Password:

Confirm:



# upgrade

- upgrade เป็น version ล่าสุด

```
#cd /usr/share/cacti  
#cp /root/cacti-0.8.8a.tar.gz ./
```

- Note : สามารถดาวน์โหลดไฟล์ต้นฉบับจาก [www.cacti.net](http://www.cacti.net)

# upgrade

- สำรองไฟล์เดิม และฐานข้อมูล

```
#mysqldump -uroot -p[รหัส] -l --add-drop-  
table cacti > mysql.cacti.sql  
#mv site site.old
```

- แยกไฟล์

```
#tar zxvf cacti-0.8.8a.tar.gz  
#mv cacti-0.8.8a site
```

# upgrade

- แก้ไฟล์ **site/include/config.php**

```
$database_type = "mysql";  
$database_default = "cacti";  
$database_hostname = "localhost";  
$database_username = "cacti";  
$database_password = "[รหัสผ่าน]";  
$database_port = "3306";
```

# upgrade

- แก้ไขห้องเพื่อให้ใช้งานข้อมูลเดิมได้

```
#cd site
```

```
#rm -rf rra
```

```
#ln -sf /var/lib/cacti/rra/ rra
```

- คัดลอกไฟล์ที่จำเป็นจากเดิมมาแต่จะทับเฉพาะอันที่ใหม่กว่าเท่านั้น

```
#cp -u -R ../site.old/scripts/* scripts/
```

```
#cp -u -R ../resource/* resource/
```

# upgrade

- เรียก cacti ผ่านเว็บเบราว์เซอร์
  - `http://{webserver-ip}/cacti`
- เลือก Upgrade from cacti 0.8.x และ Next ตามลำดับ จนเสร็จสิ้น

# add device

- Create
- New Graphs
- Management
- Graph Management
- Graph Trees
- Data Sources
- Devices**
- Collection Methods
- Data Queries
- Data Input Methods
- Templates
- Graph Templates
- Host Templates
- Data Templates
- Import/Export
- Import Templates
- Export Templates
- Configuration
- Settings
- Plugin Management
- Utilities
- System Utilities
- User Management
- Logout User

**Devices** **Add**

Type:  Status:  Search:  Rows per Page:  **go** **clear**

<< Previous Showing Rows 1 to 1 of 1 [1] Next >>

Description**	ID	Graphs	Data Sources	Status	Event Count	Hostname	Current (ms)	Average (ms)	Availability
Localhost	1	7	10	Up	0	127.0.0.1	2.9	2.94	100

<< Previous Showing Rows 1 to 1 of 1 [1] Next >>

Choose an action:  **go**

# add device

console graphs

Console -> Devices -> (Edit) Logged in as admin (Logout)

Create

New Graphs

Management

Graph Management

Graph Trees

Data Sources

**Devices**

Collection Methods

Data Queries

Data Input Methods

Templates

Graph Templates

Host Templates

Data Templates

Import/Export

Import Templates

Export Templates

Configuration

Settings


Plugin Management

Utilities

System Utilities

User Management

Logout User



## Devices [new]

**General Host Options**

**Description**  
Give this host a meaningful description.

**Hostname**  
Fully qualified hostname or IP address for this device.

**Host Template**  
Choose what type of host, host template this is. The host template will govern what kinds of data should be gathered from this type of host.

**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.*

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

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

**SNMP Options**

**SNMP Version**  
Choose the SNMP version for this device.

**SNMP Community**  
SNMP read community for this device.

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

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

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

**Additional Options**

**Notes**  
Enter notes to this host.

# create graph

## CNOC DATACENTER (192.168.101.65)

### SNMP Information

System: Cisco Internetwork Operating System Software IOS (tm) C2950 Software (C2950-I6Q4L2-M), Version 12.1(22)EA1, RELEASE SOFTWARE (fc1)  
Copyright (c) 1986-2004 by Cisco Systems, Inc. Compiled Mon 12-Jul-04 08:18 by madison  
Uptime: 293509391 (33 days, 23 hours, 18 minutes)  
Hostname: CNOC\_1F\_DataCenter  
Location:  
Contact:

- \* Create Graphs for this Host
- \* Data Source List
- \* Graph List

### Devices [edit: CNOC DATACENTER]

#### General Host Options

<b>Description</b> Give this host a meaningful description.	<input type="text" value="CNOC DATACENTER"/>
<b>Hostname</b> Fully qualified hostname or IP address for this device.	<input type="text" value="192.168.101.65"/>
<b>Host Template</b> Choose what type of host, host template this is. The host template will govern what kinds of data should be gathered from this type of host.	<input type="text" value="Cisco Router"/>
<b>Disable Host</b> Check this box to disable all checks for this host.	<input type="checkbox"/> Disable Host

#### Availability/Reachability Options

<b>Downed Device Detection</b> The method Cacti will use to determine if a host is available for polling. <i>NOTE: It is recommended that, at a minimum, SNMP always be selected.</i>	<input type="text" value="SNMP"/>
<b>Ping Timeout Value</b> The timeout value to use for host ICMP and UDP pinging. This host SNMP timeout value applies for SNMP pings.	<input type="text" value="400"/>
<b>Ping Retry Count</b> After an initial failure, the number of ping retries Cacti will attempt before failing.	<input type="text" value="1"/>




# create graph

console
graphs

Console -> Create New Graphs Logged in as admin (Logout)

- Create
- New Graphs**
- Management
- Graph Management
- Graph Trees
- Data Sources
- Devices
- Collection Methods
- Data Queries
- Data Input Methods
- Templates
- Graph Templates
- Host Templates
- Data Templates
- Import/Export
- Import Templates
- Export Templates
- Configuration
- Settings
- Plugin Management
- Utilities
- System Utilities
- User Management
- Logout User



## CNOC DATACENTER (192.168.101.65) Cisco Router

Host: CNOC DATACENTER (192.168.101.65) Graph Types: All

\*Edit this Host  
\*Create New Host

**Graph Templates**

Graph Template Name	
Create: Cisco - CPU Usage	<input checked="" type="checkbox"/>
Create: (Select a graph type to create)	<input type="checkbox"/>

**Data Query [SNMP - Interface Statistics]**

Index	Status	Description	Name (IF-MIB)	Alias (IF-MIB)	Type	Speed	Hardware Address	IP Address	
1	Up	FastEthernet0/1	Fa0/1	TO_VOICE_ROUTER	ethernetCsmacd(6)	100000000	00:11:20:54:F3:01		<input checked="" type="checkbox"/>
2	Up	FastEthernet0/2	Fa0/2		ethernetCsmacd(6)	100000000	00:11:20:54:F3:02		<input checked="" type="checkbox"/>
3	Up	FastEthernet0/3	Fa0/3		ethernetCsmacd(6)	100000000	00:11:20:54:F3:03		<input checked="" type="checkbox"/>
4	Down	FastEthernet0/4	Fa0/4		ethernetCsmacd(6)	100000000	00:11:20:54:F3:04		<input type="checkbox"/>
5	Down	FastEthernet0/5	Fa0/5		ethernetCsmacd(6)	100000000	00:11:20:54:F3:05		<input type="checkbox"/>
6	Down	FastEthernet0/6	Fa0/6		ethernetCsmacd(6)	100000000	00:11:20:54:F3:06		<input type="checkbox"/>
7	Down	FastEthernet0/7	Fa0/7		ethernetCsmacd(6)	100000000	00:11:20:54:F3:07		<input type="checkbox"/>
8	Down	FastEthernet0/8	Fa0/8		ethernetCsmacd(6)	100000000	00:11:20:54:F3:08		<input type="checkbox"/>
9	Up	FastEthernet0/9	Fa0/9		ethernetCsmacd(6)	100000000	00:11:20:54:F3:09		<input checked="" type="checkbox"/>
10	Down	FastEthernet0/10	Fa0/10		ethernetCsmacd(6)	100000000	00:11:20:54:F3:0A		<input type="checkbox"/>
11	Down	FastEthernet0/11	Fa0/11		ethernetCsmacd(6)	100000000	00:11:20:54:F3:0B		<input type="checkbox"/>
12	Down	FastEthernet0/12	Fa0/12		ethernetCsmacd(6)	100000000	00:11:20:54:F3:0C		<input type="checkbox"/>
13	Down	FastEthernet0/13	Fa0/13		ethernetCsmacd(6)	100000000	00:11:20:54:F3:0D		<input type="checkbox"/>
14	Down	FastEthernet0/14	Fa0/14		ethernetCsmacd(6)	100000000	00:11:20:54:F3:0E		<input type="checkbox"/>
15	Down	FastEthernet0/15	Fa0/15		ethernetCsmacd(6)	100000000	00:11:20:54:F3:0F		<input type="checkbox"/>
16	Up	FastEthernet0/16	Fa0/16		ethernetCsmacd(6)	100000000	00:11:20:54:F3:10		<input checked="" type="checkbox"/>
17	Down	FastEthernet0/17	Fa0/17		ethernetCsmacd(6)	100000000	00:11:20:54:F3:11		<input type="checkbox"/>
18	Up	FastEthernet0/18	Fa0/18	TO_CNOC_TrainingRoom	ethernetCsmacd(6)	100000000	00:11:20:54:F3:12		<input type="checkbox"/>

# create graph

16	Up	FastEthernet0/16	Fa0/16		ethernetCsmacd(6)	100000000	00:11:20:54:F3:10	<input checked="" type="checkbox"/>
17	Down	FastEthernet0/17	Fa0/17		ethernetCsmacd(6)	100000000	00:11:20:54:F3:11	<input type="checkbox"/>
18	Up	FastEthernet0/18	Fa0/18	TO_CNOC_TrainingRoom	ethernetCsmacd(6)	100000000	00:11:20:54:F3:12	<input type="checkbox"/>
19	Down	FastEthernet0/19	Fa0/19		ethernetCsmacd(6)	100000000	00:11:20:54:F3:13	<input type="checkbox"/>
20	Up	FastEthernet0/20	Fa0/20	TO_AdminRoom_2F	ethernetCsmacd(6)	100000000	00:11:20:54:F3:14	<input type="checkbox"/>
21	Down	FastEthernet0/21	Fa0/21		ethernetCsmacd(6)	100000000	00:11:20:54:F3:15	<input type="checkbox"/>
22	Down	FastEthernet0/22	Fa0/22		ethernetCsmacd(6)	100000000	00:11:20:54:F3:16	<input type="checkbox"/>
23	Down	FastEthernet0/23	Fa0/23		ethernetCsmacd(6)	100000000	00:11:20:54:F3:17	<input type="checkbox"/>
24	Down	FastEthernet0/24	Fa0/24		ethernetCsmacd(6)	100000000	00:11:20:54:F3:18	<input type="checkbox"/>
25	Up	GigabitEthernet0/1	Gi0/1	TO_COM_6500	ethernetCsmacd(6)	1000000000	00:11:20:54:F3:19	<input checked="" type="checkbox"/>
26	Down	GigabitEthernet0/2	Gi0/2		ethernetCsmacd(6)	100000000	00:11:20:54:F3:1A	<input type="checkbox"/>
27	Up	Null0	Nu0		other(1)	4294967295		<input type="checkbox"/>
28	Up	Vlan1	Vl1		propVirtual(53)	1000000000	00:11:20:54:F3:00 192.168.101.65	<input type="checkbox"/>
29	Down	Vlan3	Vl3		propVirtual(53)	1000000000	00:11:20:54:F3:00	<input type="checkbox"/>
30	Down	Vlan21	Vl21		propVirtual(53)	1000000000	00:11:20:54:F3:00	<input type="checkbox"/>

Select a graph type:

- In/Out Bits
- In/Out Bits (64-bit Counters)
- In/Out Bits with 95th Percentile
- In/Out Bits with Total Bandwidth
- In/Out Bytes
- In/Out Bytes (64-bit Counters)
- In/Out Bytes with Total Bandwidth
- In/Out Errors/Discarded Packets
- In/Out Non-Unicast Packets

ใช้ 64-bit Counters สำหรับ Gigabit Interface

# add device to graph tree

Console -> Graph Trees Logged in as admin (Logout)

Create

New Graphs

Management

Graph Management

**Graph Trees**

Data Sources

Devices

Graph Trees
Add

Name

Default Tree ✕

Console -> Graph Trees -> (Edit) Logged in as admin (Logout)

Create

New Graphs

Management

Graph Management

**Graph Trees**

Data Sources

Devices

Graph Trees [new]

**Name**  
A useful name for this graph tree.

**Sorting Type**  
Choose how items in this tree will be sorted. Alphabetic Ordering ▾

cancel
create

Console -> Devices Logged in as admin (Logout)

Create

New Graphs

Management

Graph Management

Graph Trees

**Devices**

Data Sources

Collection Methods

Data Queries

Data Input Methods

Templates

Graph Templates

Devices
Add

Type:  Status:  Search:  Rows per Page:  go clear

<< Previous
Showing Rows 1 to 2 of 2 [1]
Next >>

Description**	ID	Graphs	Data Sources	Status	Event Count	Hostname	Current (ms)	Average (ms)	Availability
CNOC DATACENTER	2	7	7	Up	0	192.168.101.65	10.45	10.45	100 <input checked="" type="checkbox"/>
localhost	1	7	10	Up	0	127.0.0.1	2.2	3.19	100 <input type="checkbox"/>

<< Previous
Showing Rows 1 to 2 of 2 [1]
Next >>

Place on a Tree (Switch)
go

Place on a Tree (Switch)

When you click save, the following hosts will be placed under the branch selected below.

- CNOC DATACENTER

**Destination Branch:**

▾

no
yes

# add device to graph tree



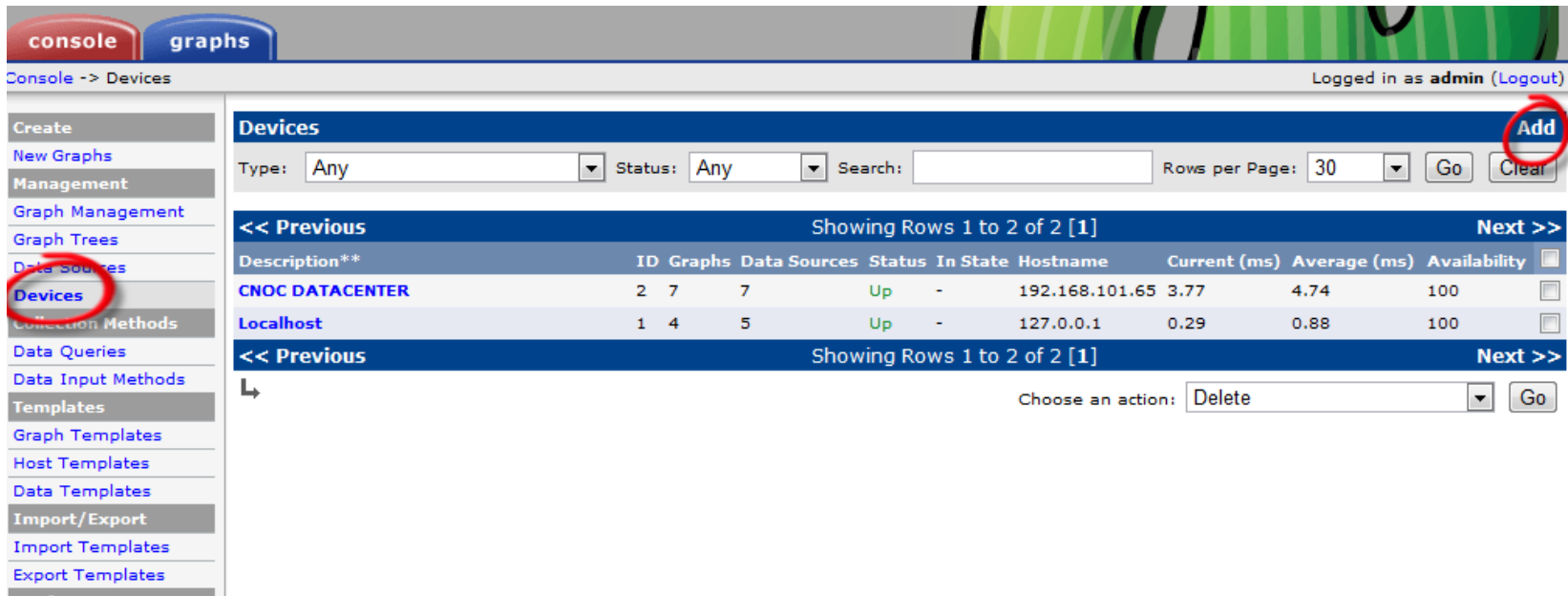
The screenshot shows the Cacti web interface in 'graphs' mode. The left sidebar shows a tree structure with 'Host: CNOC\_DATACENTER' selected. The main area displays two graphs for the selected host:

- Graph 1: CNOC DATACENTER - CPU Usage**  
Y-axis: percent (0 to 20)  
X-axis: Time (Sun 12:00 to Mon 06:00)  
Legend: CPU Usage  
Current: 24, Average: 23, Maximum: 24
- Graph 2: CNOC DATACENTER - Traffic - Fa0/1**  
Y-axis: bits per second (0 to 100 k)  
X-axis: Time (Sun 12:00 to Mon 06:00)  
Legend: Inbound  
Current: 89.31 k, Average: 89.31 k, Maximum: 89.31 k

Navigation and search options are visible at the top, including 'Presets', 'From', 'To', '1 Day', 'refresh', 'clear', 'Search', 'Graphs per Page', and 'Thumbnails'.

# Linux Server Monitoring

- Server ที่จะ monitor ต้องติดตั้งและเปิดใช้งาน snmpd แล้ว



The screenshot shows the Nagios Core web interface. The top navigation bar has 'console' and 'graphs' tabs. Below the navigation bar, the page title is 'Console -> Devices' and the user is logged in as 'admin'. The left sidebar contains a menu with 'Devices' highlighted and circled in red. The main content area shows a table of devices with columns for Description, ID, Graphs, Data Sources, Status, In State, Hostname, Current (ms), Average (ms), and Availability. Two devices are listed: 'CNOC DATACENTER' and 'Localhost'. The 'Add' button in the top right corner of the table is circled in red. Below the table, there is a 'Choose an action:' dropdown menu set to 'Delete' and a 'Go' button.

Description**	ID	Graphs	Data Sources	Status	In State	Hostname	Current (ms)	Average (ms)	Availability
CNOC DATACENTER	2	7	7	Up	-	192.168.101.65	3.77	4.74	100
Localhost	1	4	5	Up	-	127.0.0.1	0.29	0.88	100

# Linux Server Monitoring

**Devices [new]**

**General Host Options**

**Description**  
Give this host a meaningful description.

**Hostname**  
Fully qualified hostname or IP address for this device.

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

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

**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.*

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

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

**SNMP Options**

**SNMP Version**  
Choose the SNMP version for this device.

**SNMP Community**  
SNMP read community for this device.

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

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

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

**Additional Options**

**Notes**  
Enter notes to this host.

ip ของ server

# Linux Server Monitoring

## Associated Graph Templates

Graph Template Name	Status	
1) ucd/net - CPU Usage	Not Being Graphed	✘
2) ucd/net - Load Average	Not Being Graphed	✘
3) ucd/net - Memory Usage	Not Being Graphed	✘

Add Graph Template:

## Associated Data Queries

Data Query Name	Debugging	Re-Index Method	Status	
1) SNMP - Interface Statistics	(Verbose Query)	Uptime Goes Backwards	Success [20 Items, 2 Rows]	○ ✘
2) ucd/net - Get Monitored Partitions	(Verbose Query)	Uptime Goes Backwards	Success [42 Items, 14 Rows]	○ ✘

Add Data Query:

Re-Index Method:

# Linux Server Monitoring

**Save Successful.**

## Server (10.199.0.39)

### SNMP Information

System:Linux server.example.com 3.2.0-23-generic-pae #36-Ubuntu SMP Tue Apr  
10 22:19:09 UTC 2012 i686  
Uptime: 218724 (0 days, 0 hours, 36 minutes)  
Hostname: server.example.com  
Location: Sitting on the Dock of the Bay  
Contact: Me me@example.org

- \* **Create Graphs for this Host**
- \* **Data Source List**
- \* **Graph List**

**Devices** [edit: Server]



# Linux Server Monitoring

Server (10.199.0.39)

ucd/net SNMP Host

Host:  Graph Types:

[\\*Edit this Host](#)  
[\\*Create New Host](#)

Graph Templates	
Graph Template Name	<input type="checkbox"/>
Create: ucd/net - CPU Usage	<input checked="" type="checkbox"/>
Create: ucd/net - Load Average	<input checked="" type="checkbox"/>
Create: ucd/net - Memory Usage	<input checked="" type="checkbox"/>
Create: (Select a graph type to create)	<input type="text"/>

Data Query [SNMP - Get Mounted Partitions]			<input type="checkbox"/>
Index	Description	Storage Allocation Units	<input type="checkbox"/>
1	Physical memory	1024 Bytes	<input checked="" type="checkbox"/>
3	Virtual memory	1024 Bytes	<input type="checkbox"/>
6	Memory buffers	1024 Bytes	<input type="checkbox"/>
7	Cached memory	1024 Bytes	<input type="checkbox"/>
8	Shared memory	1024 Bytes	<input type="checkbox"/>
10	Swap space	1024 Bytes	<input type="checkbox"/>
31	/	4096 Bytes	<input checked="" type="checkbox"/>
32	/sys/fs/fuse/connections	4096 Bytes	<input type="checkbox"/>
33	/dev	4096 Bytes	<input type="checkbox"/>
34	/boot	1024 Bytes	<input type="checkbox"/>
35	/var	4096 Bytes	<input checked="" type="checkbox"/>
36	/home	4096 Bytes	<input checked="" type="checkbox"/>

Data Query [SNMP - Interface Statistics]										<input type="checkbox"/>
Index	Status	Description	Name (IF-MIB)	Alias (IF-MIB)	Type	Speed	High Speed	Hardware Address	IP Address	<input type="checkbox"/>
1	Up	lo	lo		softwareLoopback(24)	10000000	10		127.0.0.1	<input type="checkbox"/>
2	Up	eth1	eth1		ethernetCsmacd(6)	1000000000	1000	08:00:27:EC:E4:FB	10.199.0.39	<input checked="" type="checkbox"/>

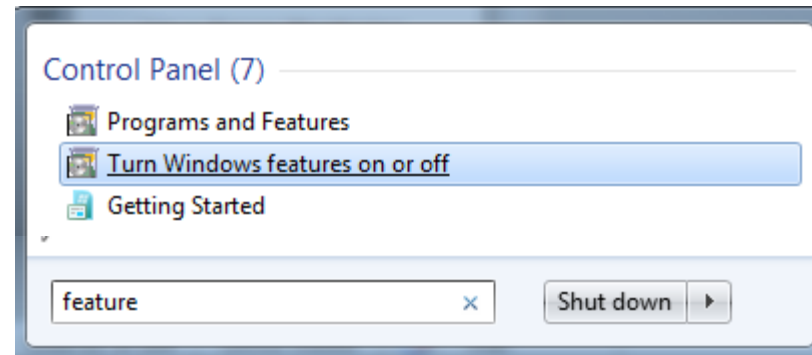
เลือกสิ่ง  
ที่จะ  
monitor

# Linux Server Monitoring

- เพิ่ม Graph tree ใหม่แล้วเพิ่ม device เข้าไปใน tree ที่สร้างเพื่อความเรียบร้อย(ทำหรือไม่ทำก็ได้)

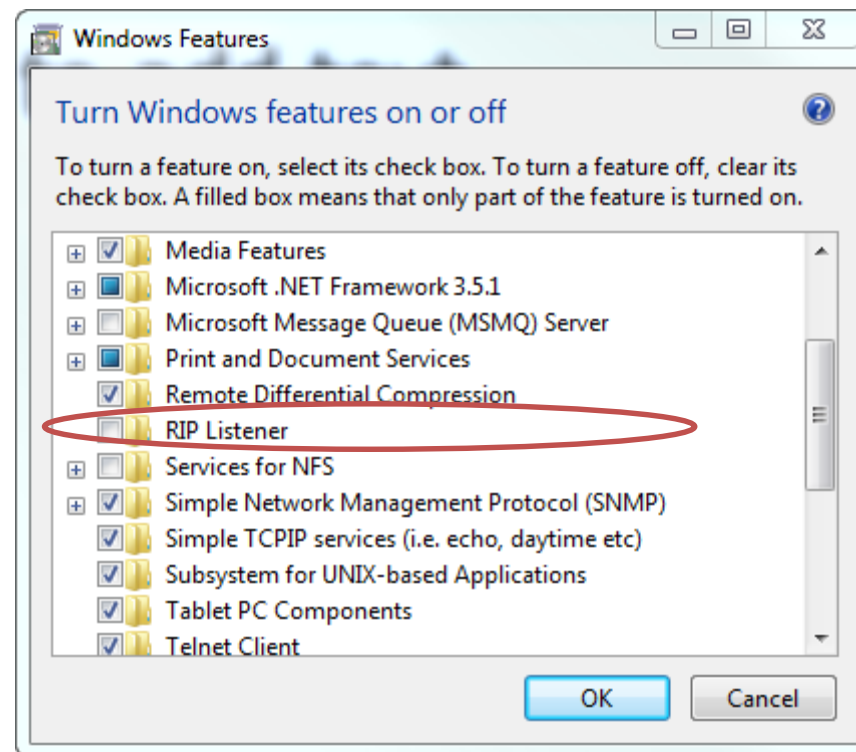
# Windows Monitoring

- เปิด snmp service บน Windows
- ยกตัวอย่าง Windows 7
- ไป start menu ค้น าคำว่า feature แล้วเลือก  
**Turn Windows features on or off**



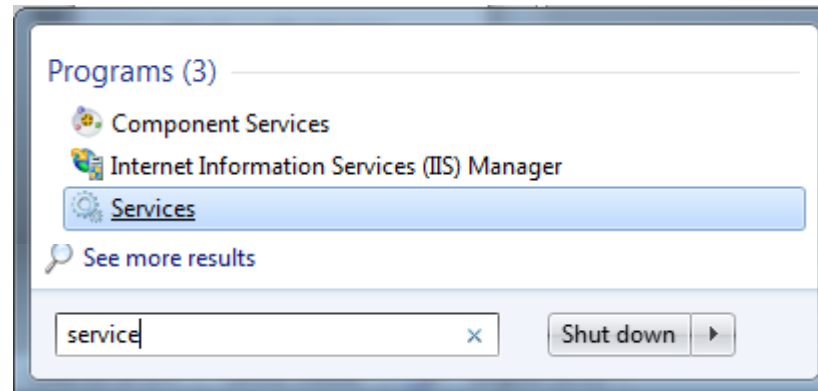
# Windows Monitoring

- เลือก Simple Network Management Protocol (SNMP) แล้วกด OK



# Windows Monitoring

- ที่ start menu ค้นคำว่า services แล้วเลือก **Services**



# Windows Monitoring

Services (Local)

### SNMP Service

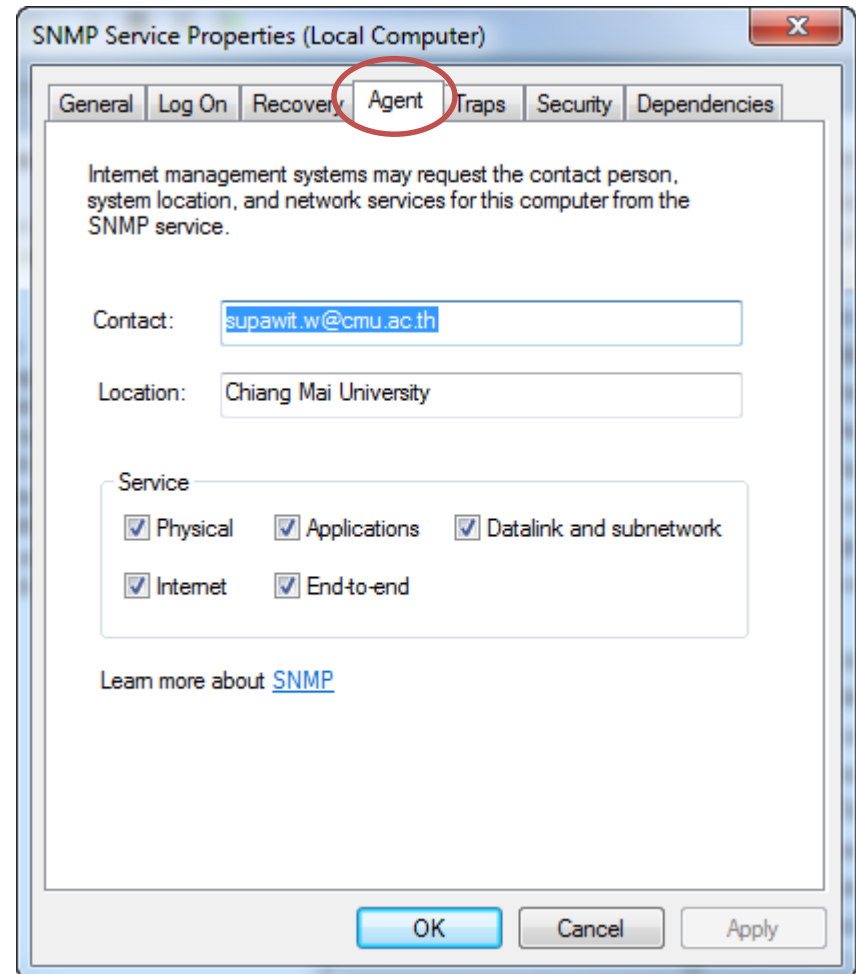
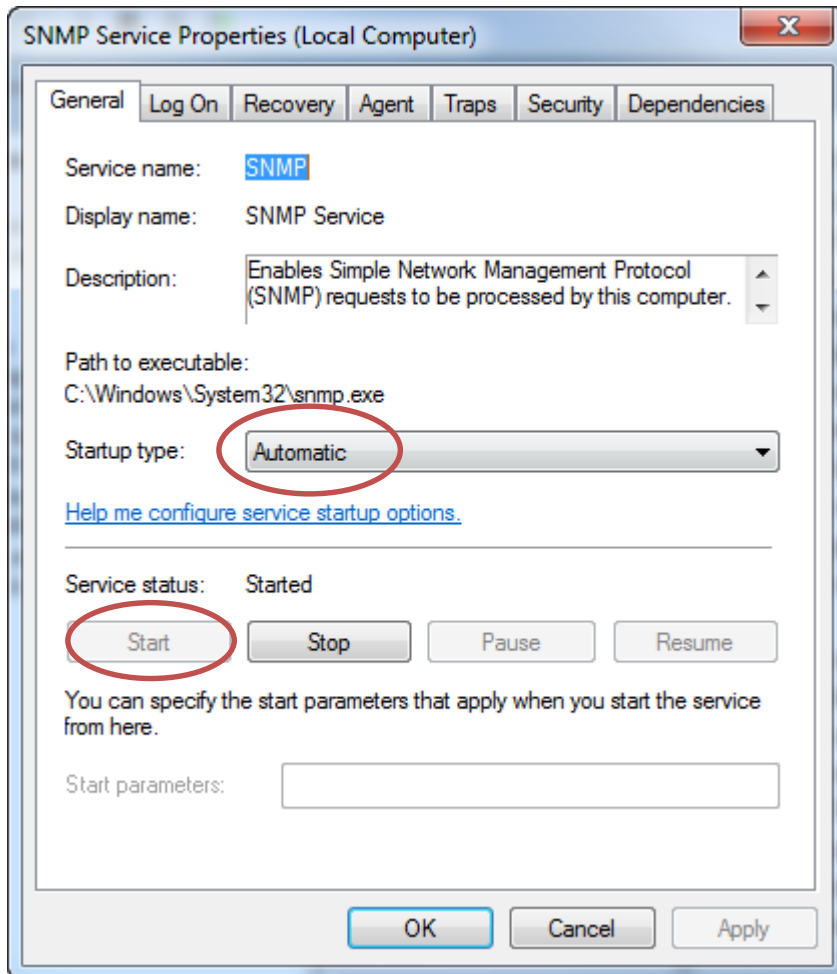
[Stop](#) the service  
[Restart](#) the service

Description:  
Enables Simple Network Management Protocol (SNMP) requests to be processed by this computer. If this service is stopped, the computer will be unable to process SNMP requests. If this service is disabled, any services that explicitly depend on it will fail to start.

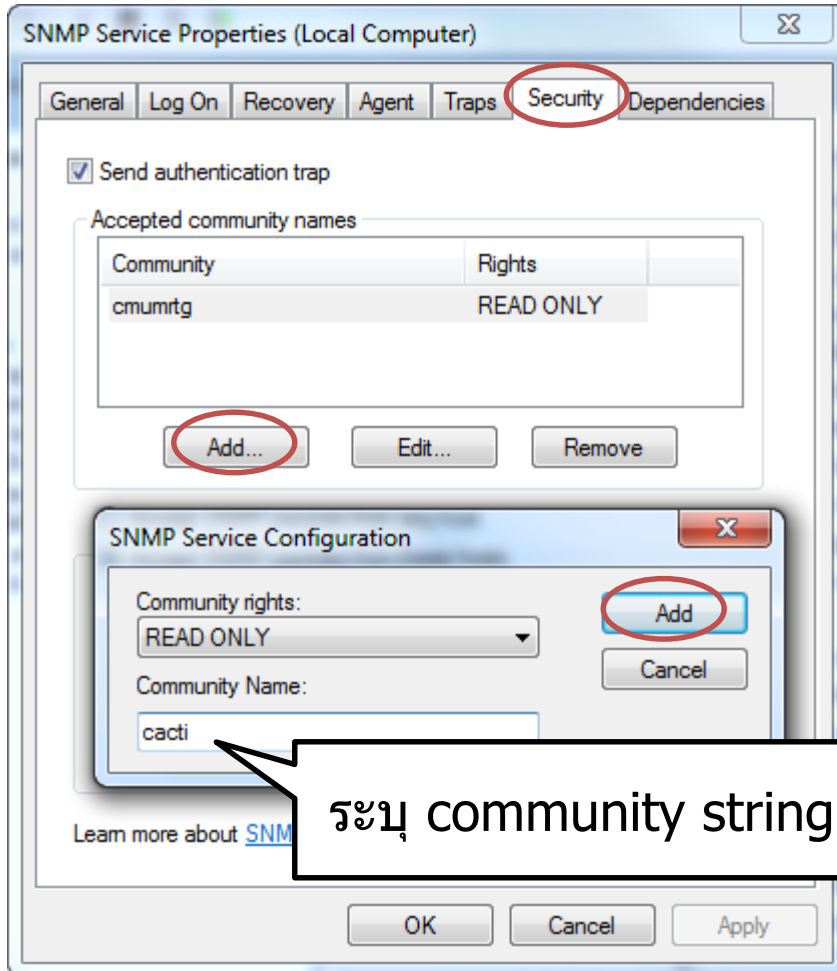
Name	Description	Status	Startup Type
Shell Hardware Detection	Provides no...	Started	Automatic
Simple TCP/IP Services	Supports th...	Started	Automatic
Smart Card	Manages ac...		Manual
Smart Card Removal Policy	Allows the s...		Manual
<b>SNMP Service</b>	Enables Sim...	Started	Automatic
SNMP Trap	Receiv...		al
Software Protection	Enable...		natic (D...
SPP Notification Service	Provid...		al
SSDP Discovery	Discov...		al
Storage Service	Enforc...		al
Superfetch	Maint...		natic
SwitchBoard			al
System Event Notification Service	Monit...		natic
Tablet PC Input Service	Enable...		al
Task Scheduler	Enable...		natic
TCP/IP NetBIOS Helper	Provid...		natic
Telephony	Provid...		al
Themes	Provides us...	Started	Automatic
Thread Ordering Server	Provides or...		Manual
TPM Base Services	Enables acc...		Manual

Start  
Stop  
Pause  
Resume  
Restart  
All Tasks  
Refresh  
**Properties**  
Help

# Windows Monitoring



# Windows Monitoring



SNMP Service Properties (Local Computer)

General Log On Recovery Agent Traps **Security** Dependencies

Send authentication trap

Community	Rights
cmumtq	READ ONLY

**Add...** Edit... Remove

SNMP Service Configuration

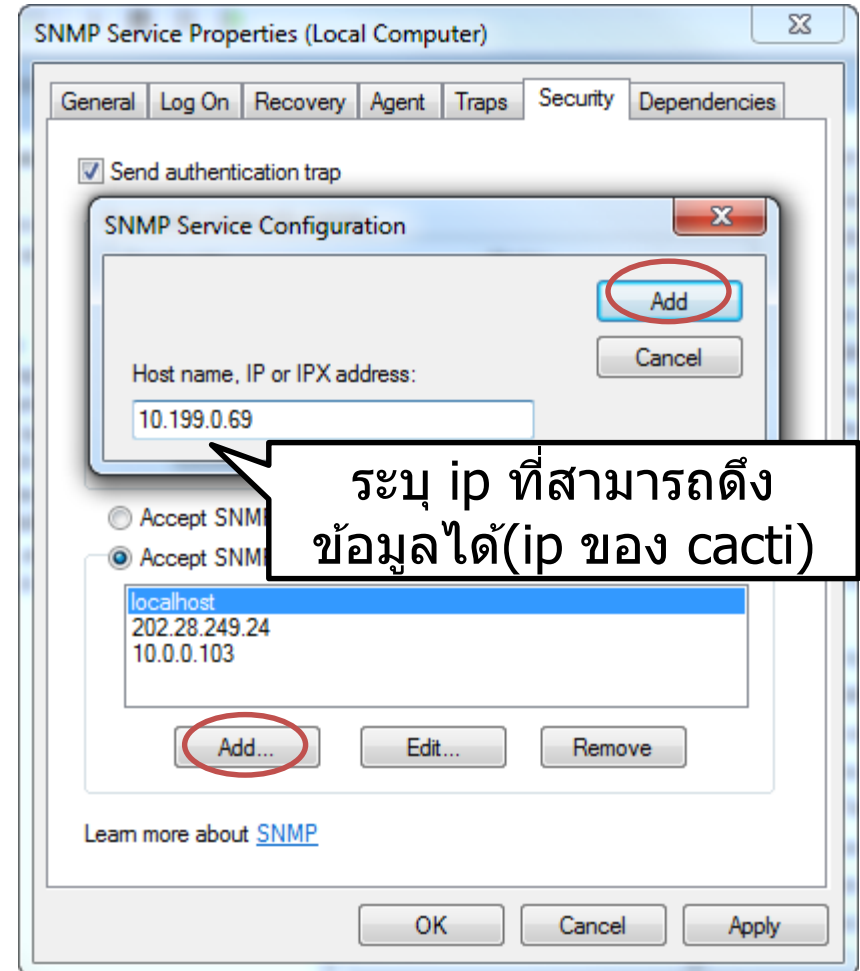
Community rights: READ ONLY **Add** Cancel

Community Name: cacti

Learn more about [SNMP](#)

OK Cancel Apply

ระบุ community string



SNMP Service Properties (Local Computer)

General Log On Recovery Agent Traps **Security** Dependencies

Send authentication trap

SNMP Service Configuration

Host name, IP or IPX address: 10.199.0.69 **Add** Cancel

Accept SNMP  
 Accept SNMP

localhost
202.28.249.24
10.0.0.103

**Add...** Edit... Remove

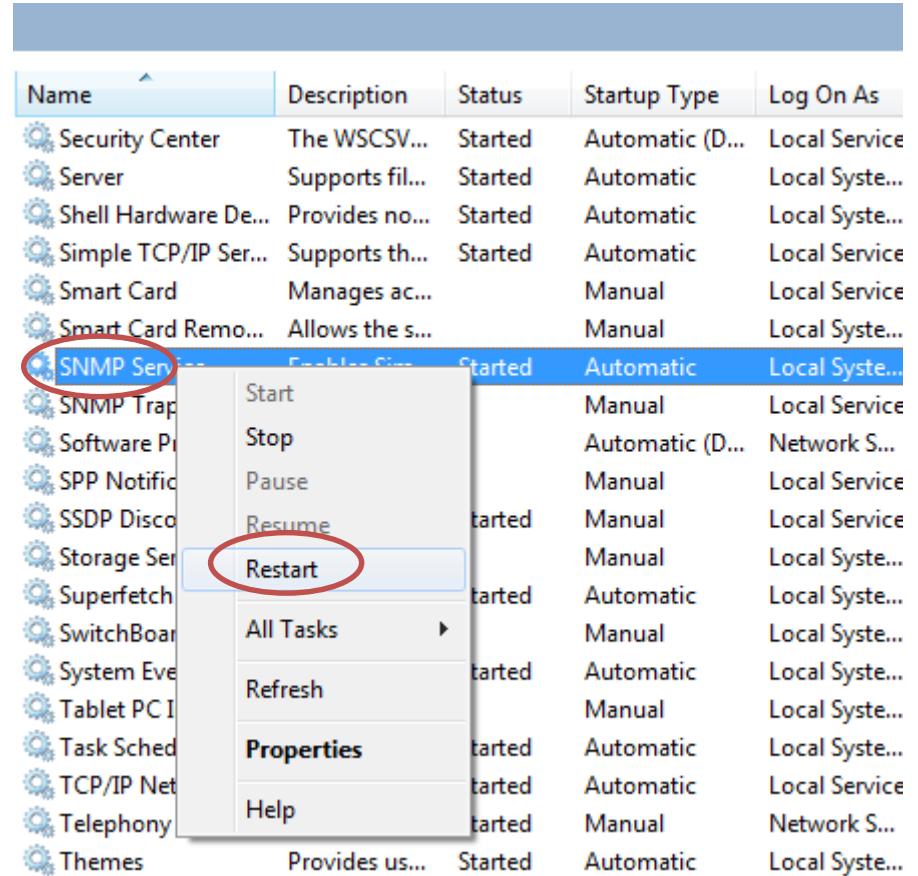
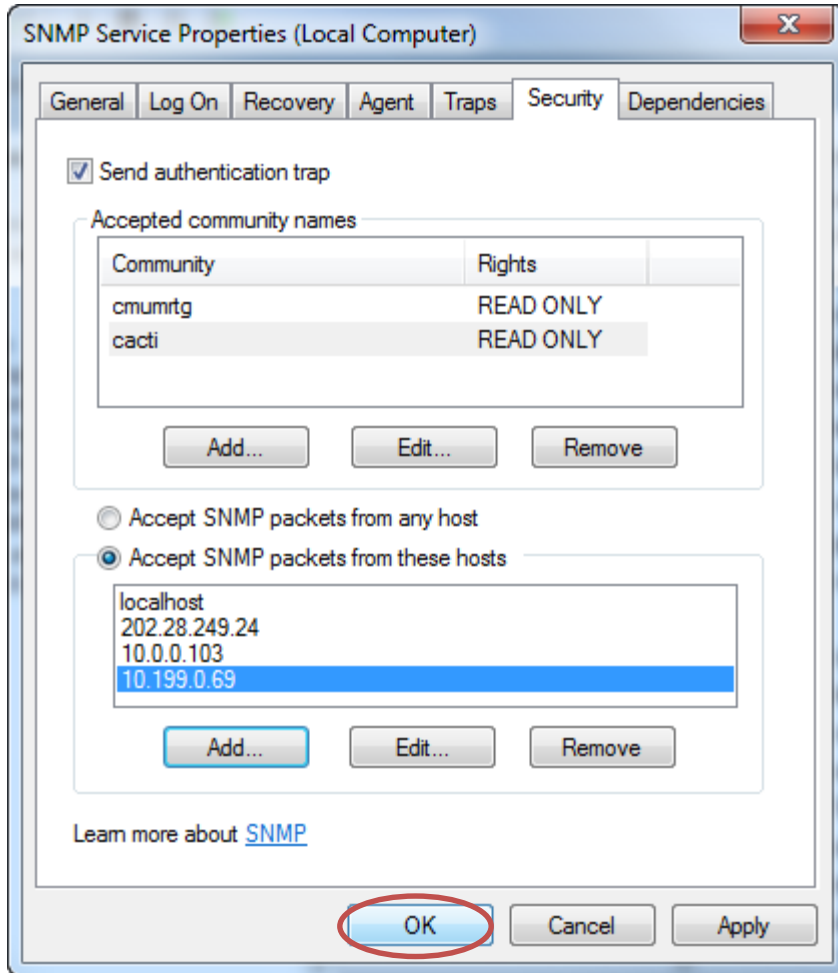
Learn more about [SNMP](#)

OK Cancel Apply

ระบุ ip ที่สามารถดึงข้อมูลได้(ip ของ cacti)

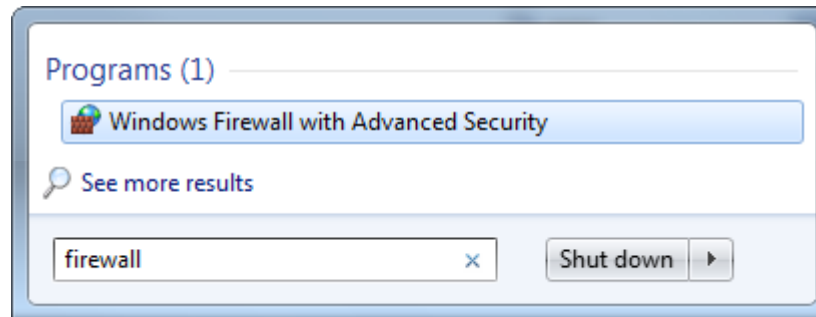


# Windows Monitoring

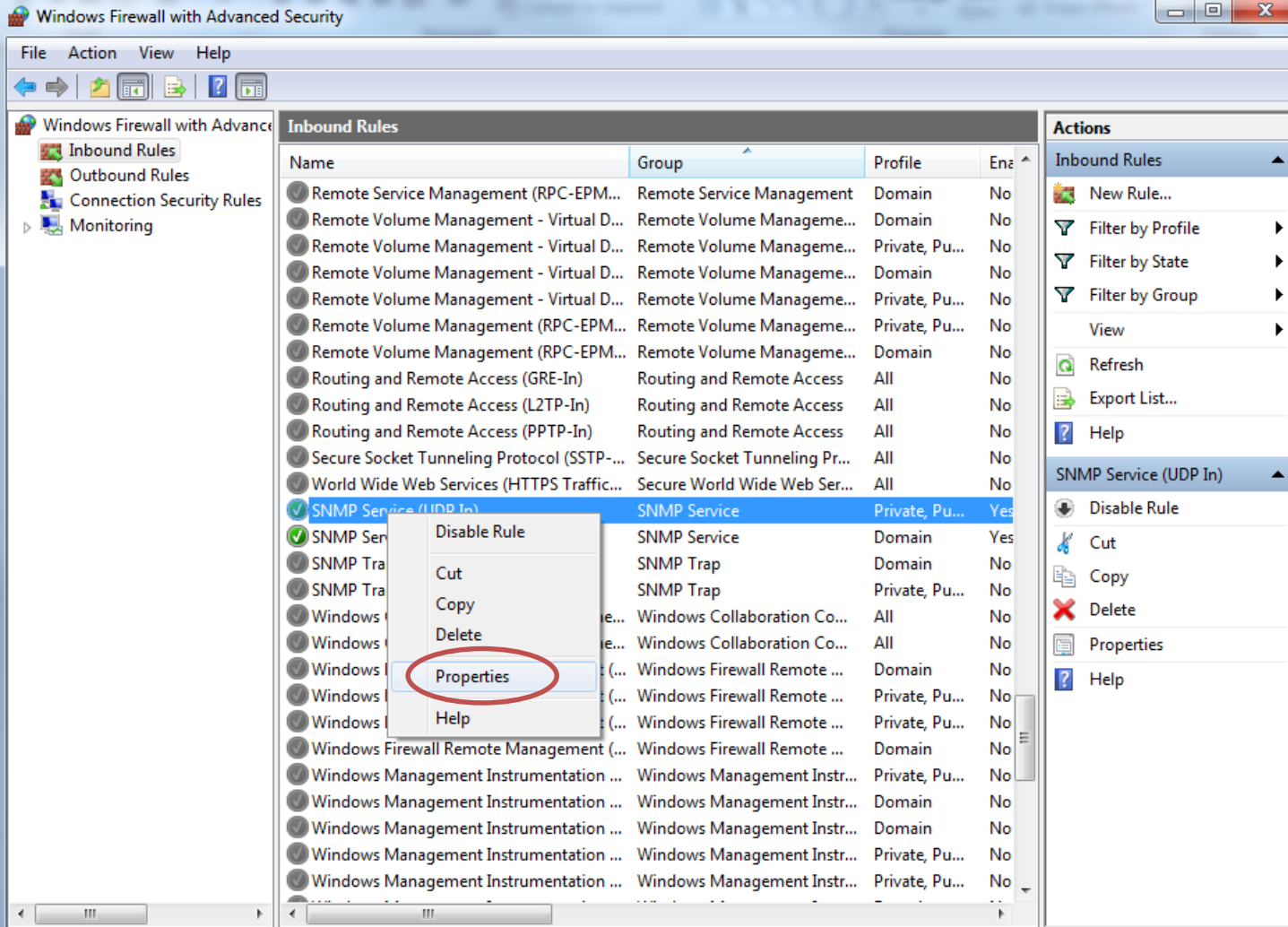


# Windows Monitoring

- แก้ rule ของ windows firewall อนุญาต ip ของ cacti ให้มาดึง snmp ได้



# Windows Monitoring



The screenshot shows the Windows Firewall with Advanced Security console. The 'Inbound Rules' list is displayed, and the context menu for the 'SNMP Service (UDP In)' rule is open. The 'Properties' option is highlighted with a red circle.

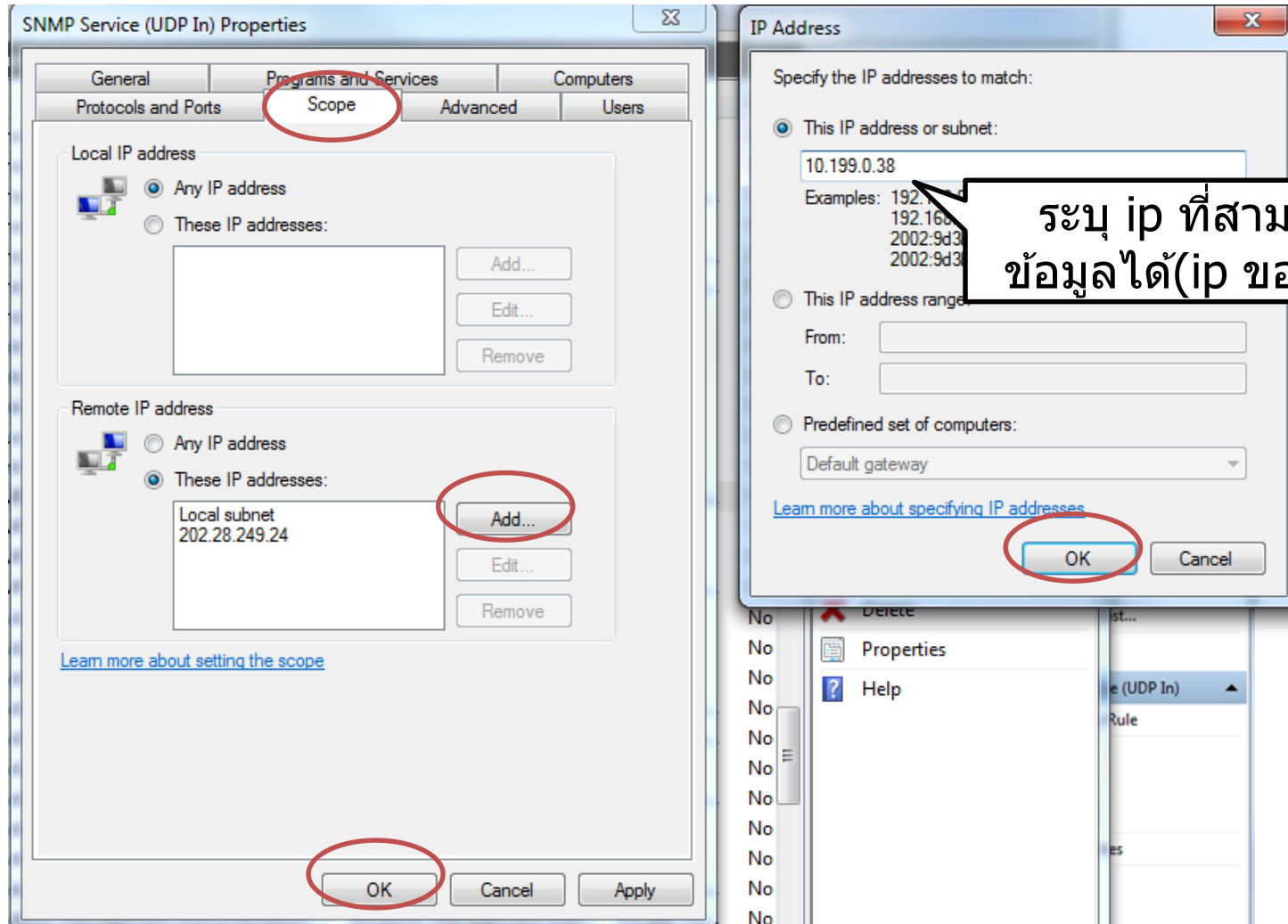
Name	Group	Profile	Enabled
Remote Service Management (RPC-EPM...)	Remote Service Management	Domain	No
Remote Volume Management - Virtual D...	Remote Volume Manageme...	Domain	No
Remote Volume Management - Virtual D...	Remote Volume Manageme...	Private, Pu...	No
Remote Volume Management - Virtual D...	Remote Volume Manageme...	Domain	No
Remote Volume Management - Virtual D...	Remote Volume Manageme...	Private, Pu...	No
Remote Volume Management (RPC-EPM...	Remote Volume Manageme...	Private, Pu...	No
Remote Volume Management (RPC-EPM...	Remote Volume Manageme...	Domain	No
Routing and Remote Access (GRE-In)	Routing and Remote Access	All	No
Routing and Remote Access (L2TP-In)	Routing and Remote Access	All	No
Routing and Remote Access (PPTP-In)	Routing and Remote Access	All	No
Secure Socket Tunneling Protocol (SSTP-...	Secure Socket Tunneling Pr...	All	No
World Wide Web Services (HTTPS Traffic...	Secure World Wide Web Ser...	All	No
SNMP Service (UDP In)	SNMP Service	Private, Pu...	Yes
SNMP Service (TCP In)	SNMP Service	Domain	Yes
SNMP Trap	SNMP Trap	Domain	No
SNMP Trap	SNMP Trap	Private, Pu...	No
Windows Collaboration Co...	Windows Collaboration Co...	All	No
Windows Collaboration Co...	Windows Collaboration Co...	All	No
Windows Firewall Remote ...	Windows Firewall Remote ...	Domain	No
Windows Firewall Remote ...	Windows Firewall Remote ...	Private, Pu...	No
Windows Firewall Remote ...	Windows Firewall Remote ...	Private, Pu...	No
Windows Firewall Remote Management (...)	Windows Firewall Remote ...	Domain	No
Windows Management Instru...	Windows Management Instr...	Private, Pu...	No
Windows Management Instru...	Windows Management Instr...	Domain	No
Windows Management Instru...	Windows Management Instr...	Domain	No
Windows Management Instru...	Windows Management Instr...	Private, Pu...	No
Windows Management Instru...	Windows Management Instr...	Private, Pu...	No

Context Menu Options:

- Disable Rule
- Cut
- Copy
- Delete
- Properties**
- Help

Opens the properties dialog box for the current selection.

# Windows Monitoring



SNMP Service (UDP In) Properties

General | **Programs and Services** | Computers

Protocols and Ports | **Scope** | Advanced | Users

Local IP address

Any IP address

These IP addresses:

Remote IP address

Any IP address

These IP addresses:

Local subnet  
202.28.249.24

Add... Edit... Remove

Learn more about setting the scope

IP Address

Specify the IP addresses to match:

This IP address or subnet:

10.199.0.38

Examples: 192.168.0.0  
192.168.0.0/24  
2002:9d38::3  
2002:9d38::3/64

This IP address range

From: To:

Predefined set of computers:

Default gateway

Learn more about specifying IP addresses

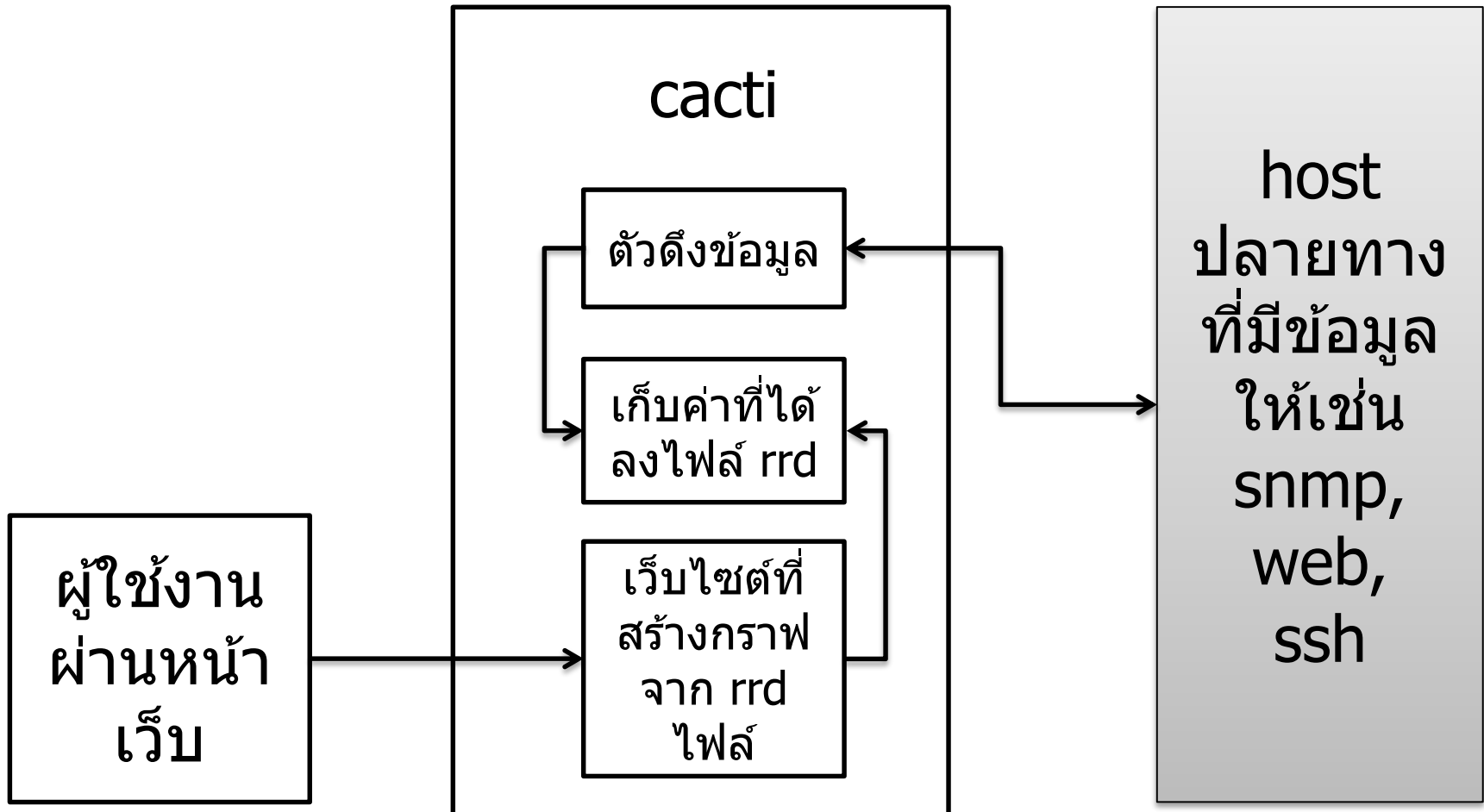
OK Cancel

ระบุ ip ที่สามารถดึงข้อมูลได้(ip ของ cacti)

# Windows Monitoring

- เพิ่ม device แบบเดียวกับ Linux Server
- เพิ่มเข้าไปใน graph tree ตามต้องการ

# cacti



# graphing with custom data input

- สร้างกราฟจาก script ที่เขียนเอง เนื่องจาก template ที่มีมาให้ไม่ครอบคลุม
  1. เขียน script
  2. สร้าง data input
  3. สร้าง data template
  4. สร้าง graph template
  5. เพิ่ม graph template ให้ device
  6. สร้าง graph จาก template

# CPU Usage Script

- สร้างไฟล์ script
- **#cp /root/cpload.php /usr/share/cacti/site/scripts/**

```
<?  
$host = $argv[1];  
$community = $argv[2];  
  
$result = snmpwalk($host,$community,'hrProcessorLoad');  
$result = str_replace('INTEGER: ','',$result);  
  
$output = "";  
foreach($result as $index => $value)  
{  
    $output .= "cpu$index:$value ";  
}  
echo trim($output);  
?>
```



# CPU Usage Script

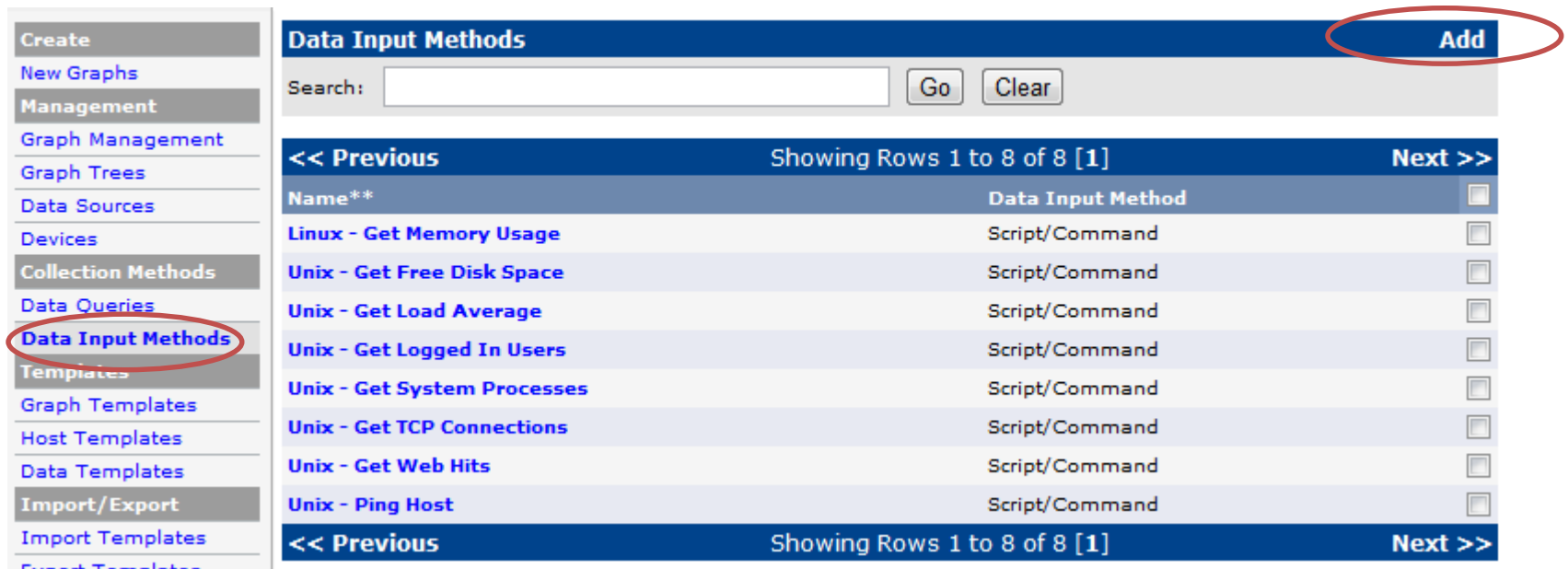
- ทดสอบสคริป

```
#cd /usr/share/cacti/site/scripts  
#php cpuload.php [ip] [community_string]  
cpu0:7 cpu1:7 cpu2:8 cpu3:7
```

- รูปแบบของ output คือ **output\_name:value** แยกด้วยช่องว่าง
- output แตกต่างตามจำนวน core ของ cpu ต้องสร้าง data template และ graph template ให้สอดคล้องกัน

# CPU Usage Script

- สร้าง data input



**Data Input Methods** **Add**

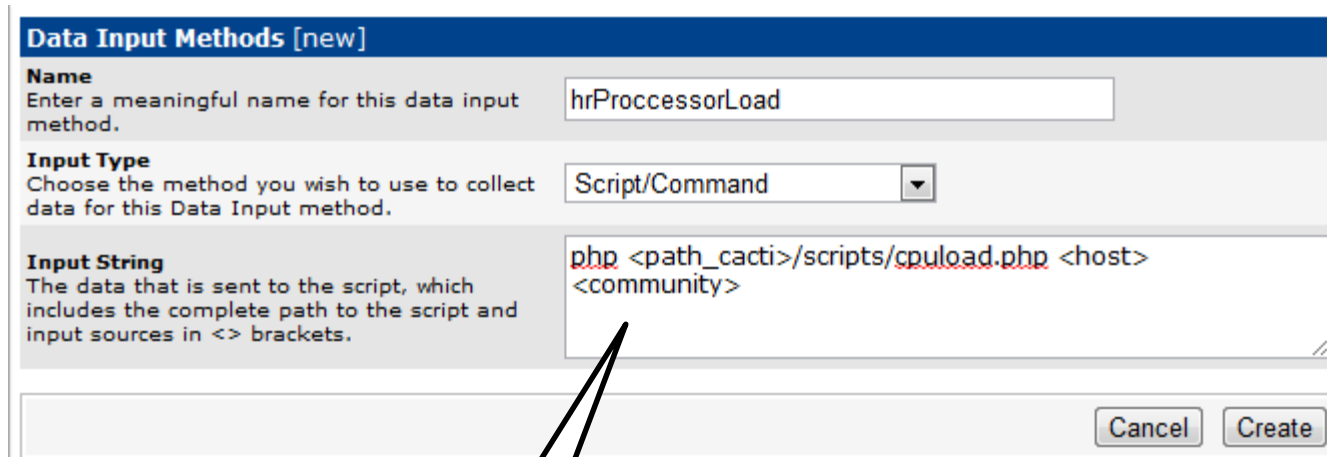
Search:

<< Previous		Showing Rows 1 to 8 of 8 [1]	Next >>
Name**	Data Input Method		<input type="checkbox"/>
Linux - Get Memory Usage	Script/Command		<input type="checkbox"/>
Unix - Get Free Disk Space	Script/Command		<input type="checkbox"/>
Unix - Get Load Average	Script/Command		<input type="checkbox"/>
Unix - Get Logged In Users	Script/Command		<input type="checkbox"/>
Unix - Get System Processes	Script/Command		<input type="checkbox"/>
Unix - Get TCP Connections	Script/Command		<input type="checkbox"/>
Unix - Get Web Hits	Script/Command		<input type="checkbox"/>
Unix - Ping Host	Script/Command		<input type="checkbox"/>

<< Previous      Showing Rows 1 to 8 of 8 [1]      Next >>

# CPU Usage Script

- กำหนดค่าต่างๆ ของ data input



```
php <path_cacti>/scripts/cpload.php <host> <community>
```

<path\_cacti> : ตัวแปรของ cacti อ้างถึง path ของ cacti

<host> :

<community> : ตัวแปรกำหนดเองสำหรับสคริป

# CPU Usage Script

- เพิ่ม input ให้สอดคล้องกับสคริป

**Data Input Methods** [edit: hrProcessorLoad]

**Name**  
Enter a meaningful name for this data input method.

**Input Type**  
Choose the method you wish to use to collect data for this Data Input method.

**Input String**  
The data that is sent to the script, which includes the complete path to the script and input sources in <> brackets.

**Input Fields** Add

Name	Field Order	Friendly Name
No Input Fields		

**Output Fields** Add

Name	Field Order	Friendly Name	Update RRA
No Output Fields			

# CPU Usage Script

- เพิ่ม input ให้สอดคล้องกับสคริป

**Input Fields** [edit: hrProcessorLoad]

**Field [Input]**  
Choose the associated field from the Input field.

**Friendly Name**  
Enter a meaningful name for this data input method.

**Regular Expression Match**  
If you want to require a certain regular expression to be matched against input data, enter it here (ereg format).

**Allow Empty Input**  
Check here if you want to allow NULL input in this field from the user.  Allow Empty Input

**Special Type Code**  
If this field should be treated specially by host templates, indicate so here. Valid keywords for this field are 'hostname', 'host\_id', 'snmp\_community', 'snmp\_username', 'snmp\_password', 'snmp\_auth\_protocol', 'snmp\_priv\_passphrase', 'snmp\_priv\_protocol', 'snmp\_', 'snmp\_'.

ใช้ตัวแปรของ cacti เพื่อใช้ hostname ของอุปกรณ์

# CPU Usage Script

- เพิ่ม input ให้สอดคล้องกับสคริป

**Input Fields** [edit: hrProcessorLoad]

**Field [Input]**  
Choose the associated field from the Input field.

**Friendly Name**  
Enter a meaningful name for this data input method.

**Regular Expression Match**  
If you want to require a certain regular expression to be matched against input data, enter it here (ereg format).

**Allow Empty Input**  
Check here if you want to allow NULL input in this field from the user.  Allow Empty Input

**Special Type Code**  
If this field should be treated specially by host templates, indicate so here. Valid keywords for this field are 'hostname', 'host\_id', 'snmp\_community', 'snmp\_username', 'snmp\_password', 'snmp\_auth\_protocol', 'snmp\_priv\_passphrase', 'snmp\_priv\_protocol', 'snmp', 'snmp'.

ใช้ตัวแปรของ cacti เพื่อใช้ community string ของอุปกรณ์

# CPU Usage Script

- เพิ่ม output ให้สอดคล้องกับสคริป

### Data Input Methods [edit: hrProcessorLoad]

**Name**  
Enter a meaningful name for this data input method.

**Input Type**  
Choose the method you wish to use to collect data for this Data Input method.

**Input String**  
The data that is sent to the script, which includes the complete path to the script and input sources in <> brackets.

### Input Fields

Name	Field Order	Friendly Name	Add
host	1	host ip address	✘
community	2	community string	✘

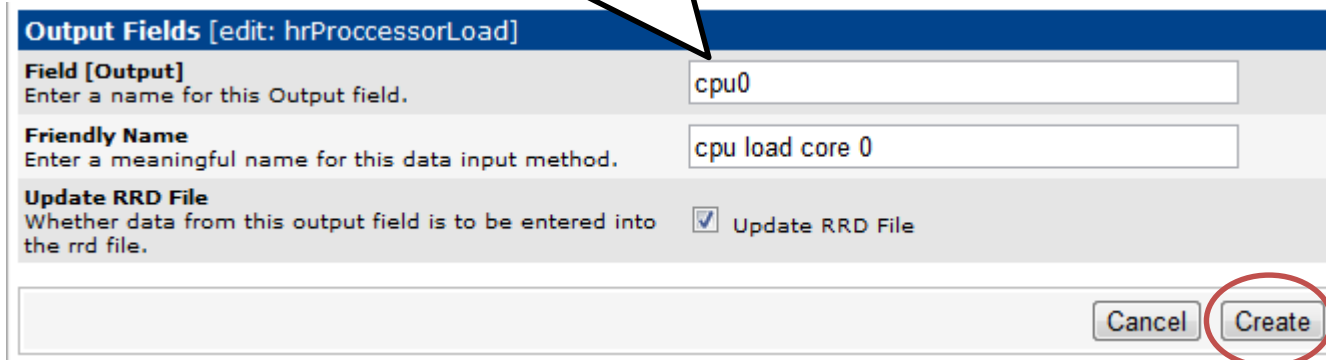
### Output Fields

Name	Field Order	Friendly Name	Update RRA	Add
No Output Fields				

# CPU Usage Script

- เพิ่ม output ให้สอดคล้องกับสคริป

ต้องเหมือน output\_name  
จาก script



**Output Fields** [edit: hrProcessorLoad]

**Field [Output]**  
Enter a name for this Output field.

**Friendly Name**  
Enter a meaningful name for this data input method.

**Update RRD File**  
Whether data from this output field is to be entered into the rrd file.  Update RRD File

- ทำ output ให้ครบทุก core ตาม output ของ script



# CPU Usage Script

- เสร็จสิ้นการสร้าง Data input

**Data Input Methods** [edit: hrProcessorLoad]

**Name**  
Enter a meaningful name for this data input method.

**Input Type**  
Choose the method you wish to use to collect data for this Data Input method.

**Input String**  
The data that is sent to the script, which includes the complete path to the script and input sources in <> brackets.

**Input Fields** Add

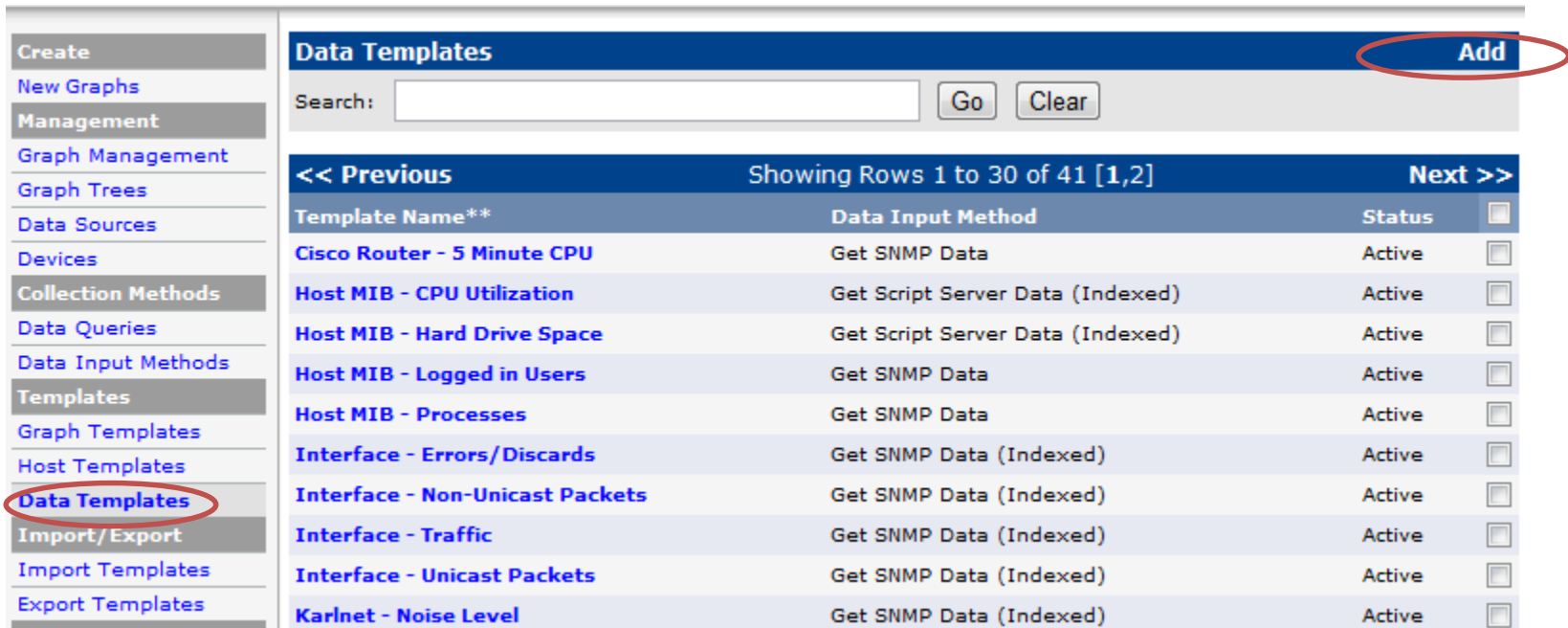
Name	Field Order	Friendly Name	
host	1	host ip address	✘
community	2	community string	✘

**Output Fields** Add

Name	Field Order	Friendly Name	Update RRA	
cpu0	0 (Not In Use)	cpu load core 0	Selected	✘
cpu1	0 (Not In Use)	cpu load core 1	Selected	✘
cpu2	0 (Not In Use)	cpu load core 2	Selected	✘
cpu3	0 (Not In Use)	cpu load core 3	Selected	✘

# CPU Usage Script

- สร้าง data template



**Data Templates** **Add**

Search:

<< Previous Showing Rows 1 to 30 of 41 [1,2] Next >>

Template Name**	Data Input Method	Status	<input type="checkbox"/>
Cisco Router - 5 Minute CPU	Get SNMP Data	Active	<input type="checkbox"/>
Host MIB - CPU Utilization	Get Script Server Data (Indexed)	Active	<input type="checkbox"/>
Host MIB - Hard Drive Space	Get Script Server Data (Indexed)	Active	<input type="checkbox"/>
Host MIB - Logged in Users	Get SNMP Data	Active	<input type="checkbox"/>
Host MIB - Processes	Get SNMP Data	Active	<input type="checkbox"/>
Interface - Errors/Discards	Get SNMP Data (Indexed)	Active	<input type="checkbox"/>
Interface - Non-Unicast Packets	Get SNMP Data (Indexed)	Active	<input type="checkbox"/>
Interface - Traffic	Get SNMP Data (Indexed)	Active	<input type="checkbox"/>
Interface - Unicast Packets	Get SNMP Data (Indexed)	Active	<input type="checkbox"/>
Karlnet - Noise Level	Get SNMP Data (Indexed)	Active	<input type="checkbox"/>

# CPU Usage Script

**Data Templates [new]**

**Name**  
The name given to this data template.

**Data Source**

**Name**  
 Use Per-Data Source Value (Ignore this Value)

**Data Input Method**  
*This field is always templated.*

**Associated RRA's**  
*This field is always templated.*

- Hourly (1 Minute Average)
- Daily (5 Minute Average)
- Weekly (30 Minute Average)
- Monthly (2 Hour Average)

**Step**  
 Use Per-Data Source Value (Ignore this Value)

**Data Source Active**  
 Use Per-Data Source Value (Ignore this Value)  Data Source Active

**Data Source Item []**

**Internal Data Source Name**  
 Use Per-Data Source Value (Ignore this Value)

**Minimum Value ('U' for No Minimum)**  
 Use Per-Data Source Value (Ignore this Value)

**Maximum Value ('U' for No Maximum)**  
 Use Per-Data Source Value (Ignore this Value)

**Data Source Type**  
 Use Per-Data Source Value (Ignore this Value)

**Heartbeat**  
 Use Per-Data Source Value (Ignore this Value)

# CPU Usage Script

- เพิ่ม Data Source Item

**Data Source Item [cpu0]** New

**Internal Data Source Name**  
 Use Per-Data Source Value (Ignore this Value)

**Minimum Value ('U' for No Minimum)**  
 Use Per-Data Source Value (Ignore this Value)

**Maximum Value ('U' for No Maximum)**  
 Use Per-Data Source Value (Ignore this Value)

**Data Source Type**  
 Use Per-Data Source Value (Ignore this Value)

**Heartbeat**  
 Use Per-Data Source Value (Ignore this Value)

**Output Field**  
 Use Per-Data Source Value (Ignore this Value)

---

**Custom Data [data input: hrProcessorLoad]**

**community string**  
 Use Per-Data Source Value (Ignore this Value)   
*Value will be derived from the host if this field is left empty.*

**host ip address**  
 Use Per-Data Source Value (Ignore this Value)   
*Value will be derived from the host if this field is left empty.*

# CPU Usage Script

1: **cpu0** ✖    2: **ds** ✖

**Data Source Item [ds]** New

**Internal Data Source Name**  
 Use Per-Data Source Value (Ignore this Value)   

**Minimum Value ('U' for No Minimum)**  
 Use Per-Data Source Value (Ignore this Value)   

**Maximum Value ('U' for No Maximum)**  
 Use Per-Data Source Value (Ignore this Value)   

**Data Source Type**  
 Use Per-Data Source Value (Ignore this Value)   

**Heartbeat**  
 Use Per-Data Source Value (Ignore this Value)   

**Output Field**  
 Use Per-Data Source Value (Ignore this Value)   

**Custom Data [data input: hrProcessorLoad]**

**community string**  
 Use Per-Data Source Value (Ignore this Value)      
*Value will be derived from the host if this field is left empty.*

**host ip address**  
 Use Per-Data Source Value (Ignore this Value)      
*Value will be derived from the host if this field is left empty.*

# CPU Usage Script

- สร้าง internal data source ให้ครบตาม output และเลือก output field ให้ตรง

1: cpu0 ✕   2: cpu1 ✕   3: cpu2 ✕   4: cpu3 ✕

**Data Source Item [cpu3] New**

**Internal Data Source Name**  
 Use Per-Data Source Value (Ignore this Value)   

**Minimum Value ('U' for No Minimum)**  
 Use Per-Data Source Value (Ignore this Value)   

**Maximum Value ('U' for No Maximum)**  
 Use Per-Data Source Value (Ignore this Value)   

**Data Source Type**  
 Use Per-Data Source Value (Ignore this Value)   

**Heartbeat**  
 Use Per-Data Source Value (Ignore this Value)   

**Output Field**  
 Use Per-Data Source Value (Ignore this Value)   

---

**Custom Data [data input: hrProcessorLoad]**

**community string**  
 Use Per-Data Source Value (Ignore this Value)      
*Value will be derived from the host if this field is left empty.*

**host ip address**  
 Use Per-Data Source Value (Ignore this Value)      
*Value will be derived from the host if this field is left empty.*

# CPU Usage Script

- สร้าง graph template



**Graph Templates** **Add**

Search:

<< Previous Showing Rows 1 to 30 of 33 [1,2] Next >>

Template Title**	<input type="checkbox"/>
Cisco - CPU Usage	<input type="checkbox"/>
Host MIB - Available Disk Space	<input type="checkbox"/>
Host MIB - CPU Utilization	<input type="checkbox"/>
Host MIB - Logged in Users	<input type="checkbox"/>
Host MIB - Processes	<input type="checkbox"/>
Interface - Errors/Discards	<input type="checkbox"/>
Interface - Non-Unicast Packets	<input type="checkbox"/>
Interface - Traffic (bits/sec)	<input type="checkbox"/>
Interface - Traffic (bits/sec, 95th Percentile)	<input type="checkbox"/>
Interface - Traffic (bits/sec, Total Bandwidth)	<input type="checkbox"/>

# CPU Usage Script

Template [new]	
<b>Name</b> The name given to this graph template.	<input type="text" value="hrProcessorLoad-Template"/>
Graph Template	
<b>Title (--title)</b> <input type="checkbox"/> Use Per-Graph Value (Ignore this Value)	<input type="text" value=" host_description  - hrProcessorLoad"/>
<b>Image Format (--imgformat)</b> <input type="checkbox"/> Use Per-Graph Value (Ignore this Value)	<input type="text" value="PNG"/>
<b>Height (--height)</b> <input type="checkbox"/> Use Per-Graph Value (Ignore this Value)	<input type="text" value="120"/>
<b>Width (--width)</b> <input type="checkbox"/> Use Per-Graph Value (Ignore this Value)	<input type="text" value="500"/>
<b>Slope Mode (--slope-mode)</b> <input type="checkbox"/> Use Per-Graph Value (Ignore this Value)	<input checked="" type="checkbox"/> Slope Mode (--slope-mode)
<b>Auto Scale</b> <input type="checkbox"/> Use Per-Graph Value (Ignore this Value)	<input checked="" type="checkbox"/> Auto Scale
<b>Auto Scale Options</b> <input type="checkbox"/> Use Per-Graph Value (Ignore this Value)	<input type="radio"/> Use --alt-autoscale (ignoring given limits) <input checked="" type="radio"/> Use --alt-autoscale-max (accepting a lower limit) <input type="radio"/> Use --alt-autoscale-min (accepting an upper limit, requires rrdtool 1.2.x) <input type="radio"/> Use --alt-autoscale (accepting both limits, rrdtool default)



# CPU Usage Script

<b>Logarithmic Scaling (--logarithmic)</b> <input type="checkbox"/> Use Per-Graph Value (Ignore this Value)	<input type="checkbox"/> Logarithmic Scaling (--logarithmic)
<b>SI Units for Logarithmic Scaling (--units=si)</b> <input type="checkbox"/> Use Per-Graph Value (Ignore this Value)	<input type="checkbox"/> SI Units for Logarithmic Scaling (--units=si)
<b>Rigid Boundaries Mode (--rigid)</b> <input type="checkbox"/> Use Per-Graph Value (Ignore this Value)	<input type="checkbox"/> Rigid Boundaries Mode (--rigid)
<b>Auto Padding</b> <input type="checkbox"/> Use Per-Graph Value (Ignore this Value)	<input checked="" type="checkbox"/> Auto Padding
<b>Allow Graph Export</b> <input type="checkbox"/> Use Per-Graph Value (Ignore this Value)	<input checked="" type="checkbox"/> Allow Graph Export
<b>Upper Limit (--upper-limit)</b> <input type="checkbox"/> Use Per-Graph Value (Ignore this Value)	<input type="text" value="100"/>
<b>Lower Limit (--lower-limit)</b> <input type="checkbox"/> Use Per-Graph Value (Ignore this Value)	<input type="text" value="0"/>
<b>Base Value (--base)</b> <input type="checkbox"/> Use Per-Graph Value (Ignore this Value)	<input type="text" value="1000"/>
<b>Unit Grid Value (--unit/--y-grid)</b> <input type="checkbox"/> Use Per-Graph Value (Ignore this Value)	<input type="text"/>
<b>Unit Exponent Value (--units-exponent)</b> <input type="checkbox"/> Use Per-Graph Value (Ignore this Value)	<input type="text"/>
<b>Vertical Label (--vertical-label)</b> <input type="checkbox"/> Use Per-Graph Value (Ignore this Value)	<input type="text"/>

# CPU Usage Script

- เพิ่ม graph item

Graph Template Items [edit: hrProcessorLoad-Template] <span style="float: right; border: 1px solid red; border-radius: 50%; padding: 2px;">Add</span>				
Graph Item	Data Source	Graph Item Type	CF Type	Item Color
<i>No Items</i>				

Graph Item Inputs <span style="float: right;">Add</span>
Name
<i>No Inputs</i>

# CPU Usage Script

**Graph Template Items [edit graph: hrProcessorLoad-Template]**

<b>Data Source</b> The data source to use for this graph item.	hrProcessorLoad-Template - (cpu0)
<b>Color</b> The color to use for the legend.	00CF00
<b>Opacity/Alpha Channel</b> The opacity/alpha channel of the color. Not available for rrdtool-1.0.x.	100%
<b>Graph Item Type</b> How data for this item is represented visually on the graph.	LINE1
<b>Consolidation Function</b> How data for this item is represented statistically on the graph.	AVERAGE
<b>CDEF Function</b> A CDEF (math) function to apply to this item on the graph.	None
<b>Value</b> The value of an HRULE or VRULE graph item.	
<b>GPRINT Type</b> If this graph item is a GPRINT, you can optionally choose another format here. You can define additional types under "GPRINT Presets".	Normal
<b>Text Format</b> Text that will be displayed on the legend for this graph item.	Core0
<b>Insert Hard Return</b> Forces the legend to the next line after this item.	<input type="checkbox"/> Insert Hard Return
<b>Sequence</b>	

# CPU Usage Script

**Graph Template Items** [edit graph: hrProcessorLoad-Template]

<b>Data Source</b> The data source to use for this graph item.	hrProcessorLoad-Template - (cpu0) ▾
<b>Color</b> The color to use for the legend.	None ▾
<b>Opacity/Alpha Channel</b> The opacity/alpha channel of the color. Not available for rrdtool-1.0.x.	100% ▾
<b>Graph Item Type</b> How data for this item is represented visually on the graph.	GPRINT ▾
<b>Consolidation Function</b> How data for this item is represented statistically on the graph.	LAST ▾
<b>CDEF Function</b> A CDEF (math) function to apply to this item on the graph.	None ▾
<b>Value</b> The value of an HRULE or VRULE graph item.	<input type="text"/>
<b>GPRINT Type</b> If this graph item is a GPRINT, you can optionally choose another format here. You can define additional types under "GPRINT Presets".	Normal ▾
<b>Text Format</b> Text that will be displayed on the legend for this graph item.	Current: <input type="text"/>
<b>Insert Hard Return</b> Forces the legend to the next line after this item.	<input type="checkbox"/> Insert Hard Return
<b>Sequence</b>	

# CPU Usage Script

**Graph Template Items** [edit graph: hrProcessorLoad-Template]

<b>Data Source</b> The data source to use for this graph item.	hrProcessorLoad-Template - (cpu0) ▾
<b>Color</b> The color to use for the legend.	None ▾
<b>Opacity/Alpha Channel</b> The opacity/alpha channel of the color. Not available for rrdtool-1.0.x.	100% ▾
<b>Graph Item Type</b> How data for this item is represented visually on the graph.	GPRINT ▾
<b>Consolidation Function</b> How data for this item is represented statistically on the graph.	AVERAGE ▾
<b>CDEF Function</b> A CDEF (math) function to apply to this item on the graph.	None ▾
<b>Value</b> The value of an HRULE or VRULE graph item.	
<b>GPRINT Type</b> If this graph item is a GPRINT, you can optionally choose another format here. You can define additional types under "GPRINT Presets".	Normal ▾
<b>Text Format</b> Text that will be displayed on the legend for this graph item.	Average: <input type="text"/>
<b>Insert Hard Return</b> Forces the legend to the next line after this item.	<input type="checkbox"/> Insert Hard Return
<b>Sequence</b>	

# CPU Usage Script

**Graph Template Items** [edit graph: hrProcessorLoad-Template]

<b>Data Source</b> The data source to use for this graph item.	hrProcessorLoad-Template - (cpu0) ▾
<b>Color</b> The color to use for the legend.	None ▾
<b>Opacity/Alpha Channel</b> The opacity/alpha channel of the color. Not available for rrdtool-1.0.x.	100% ▾
<b>Graph Item Type</b> How data for this item is represented visually on the graph.	GPRINT ▾
<b>Consolidation Function</b> How data for this item is represented statistically on the graph.	MAX ▾
<b>CDEF Function</b> A CDEF (math) function to apply to this item on the graph.	None ▾
<b>Value</b> The value of an HRULE or VRULE graph item.	<input type="text"/>
<b>GPRINT Type</b> If this graph item is a GPRINT, you can optionally choose another format here. You can define additional types under "GPRINT Presets".	Normal ▾
<b>Text Format</b> Text that will be displayed on the legend for this graph item.	Max: <input type="text"/>
<b>Insert Hard Return</b> Forces the legend to the next line after this item.	<input checked="" type="checkbox"/> Insert Hard Return
<b>Sequence</b>	

# CPU Usage Script

- เพิ่ม Graph items ให้ครบตาม output

Graph Template Items [edit: hrProcessorLoad-Template]					Add
Graph Item	Data Source	Graph Item Type	CF Type	Item Color	
Item # 1	(cpu0): Core0	LINE1	AVERAGE	00CF00	⬇ ⬆ ✖
Item # 2	(cpu0): Current:	GPRINT	LAST		⬇ ⬆ ✖
Item # 3	(cpu0): Average:	GPRINT	AVERAGE		⬇ ⬆ ✖
Item # 4	(cpu0): Max:<HR>	GPRINT	MAX		⬇ ⬆ ✖
Item # 5	(cpu1): Core1	LINE1	AVERAGE	FF0000	⬇ ⬆ ✖
Item # 6	(cpu1): Current:	GPRINT	LAST		⬇ ⬆ ✖
Item # 7	(cpu1): Average:	GPRINT	AVERAGE		⬇ ⬆ ✖
Item # 8	(cpu1): Max:<HR>	GPRINT	LAST		⬇ ⬆ ✖
Item # 9	(cpu2): Core2	LINE1	AVERAGE	0000FF	⬇ ⬆ ✖
Item # 10	(cpu2): Current:	GPRINT	LAST		⬇ ⬆ ✖
Item # 11	(cpu2): Average:	GPRINT	AVERAGE		⬇ ⬆ ✖
Item # 12	(cpu2): Max:<HR>	GPRINT	MAX		⬇ ⬆ ✖
Item # 13	(cpu3): Core3	LINE1	AVERAGE	F9FD5F	⬇ ⬆ ✖
Item # 14	(cpu3): Current:	GPRINT	LAST		⬇ ⬆ ✖
Item # 15	(cpu3): Average:	GPRINT	AVERAGE		⬇ ⬆ ✖
Item # 16	(cpu3): Max:<HR>	GPRINT	MAX		⬇ ⬆ ✖

Graph Item Inputs		Add
Name		
Data Source [cpu0]		✖
Data Source [cpu1]		✖
Data Source [cpu2]		✖
Data Source [cpu3]		✖

# CPU Usage Script

- เพิ่ม graph template ให้ device

Associated Graph Templates		
Graph Template Name	Status	
1) ucd/net - CPU Usage	Not Being Graphed	✘
2) ucd/net - Load Average	Not Being Graphed	✘
3) ucd/net - Memory Usage	Not Being Graphed	✘
Add Graph Template:	hrProcessorLoad-Template	Add



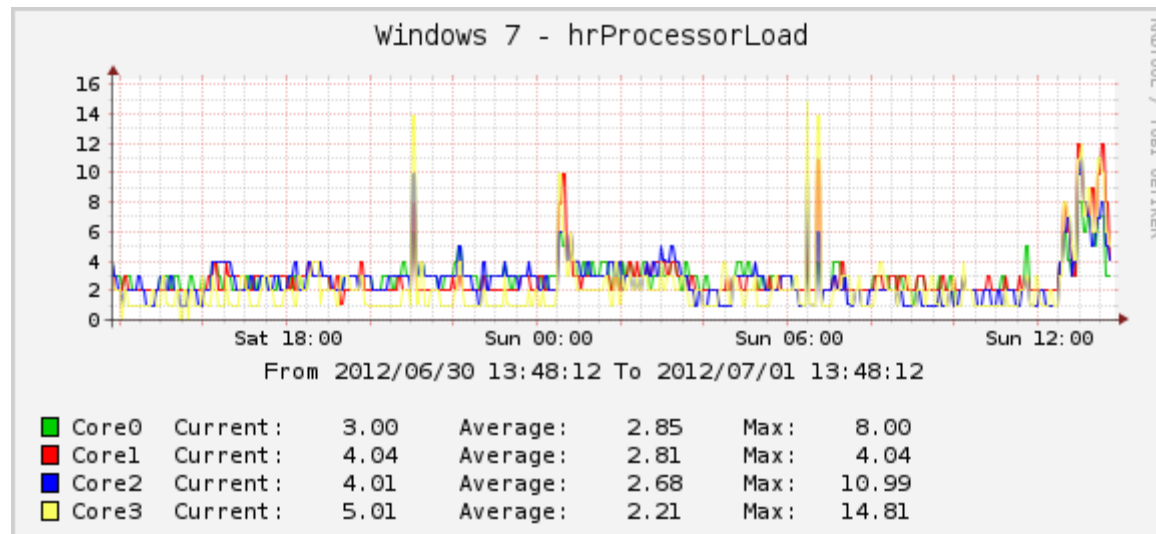
# CPU Usage Script

- สร้างกราฟ

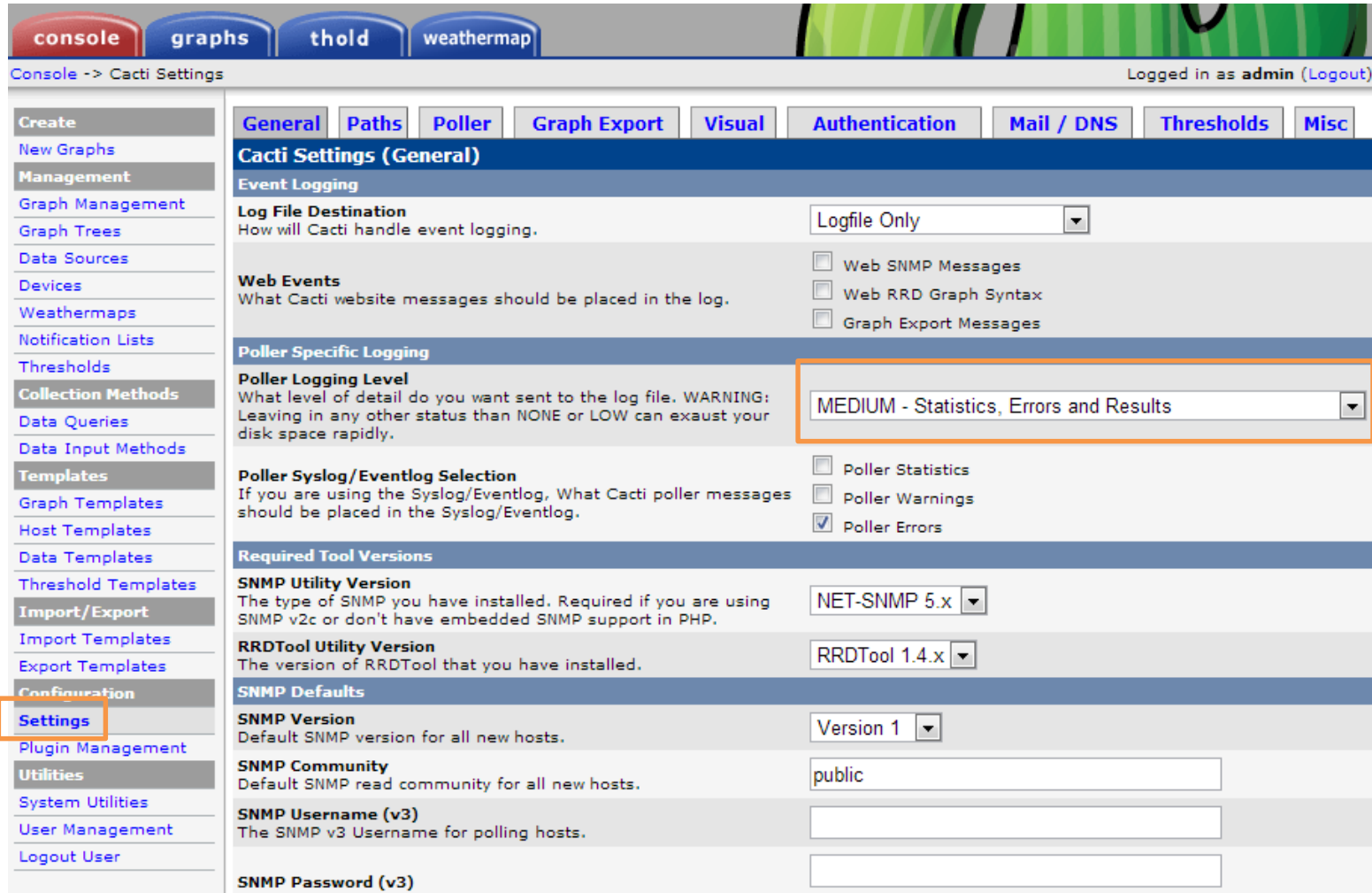
Graph Templates

Graph Template Name	
Create: hrProcessorLoad-Template	<input checked="" type="checkbox"/>
Create: ucd/net - CPU Usage	<input type="checkbox"/>
Create: ucd/net - Load Average	<input type="checkbox"/>
Create: ucd/net - Memory Usage	<input type="checkbox"/>
Create: (Select a graph type to create)	<input type="button" value="v"/>

# CPU Usage Script

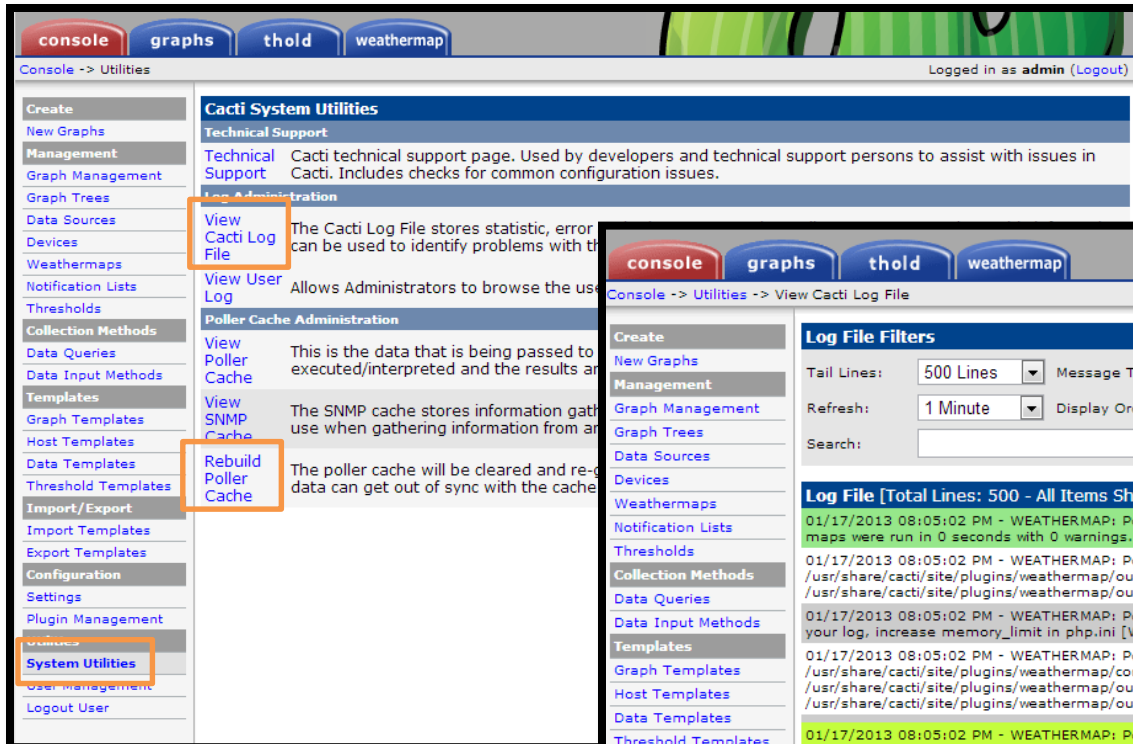


# Troubleshooting



The screenshot shows the Cacti web interface. At the top, there are navigation buttons for 'console', 'graphs', 'thold', and 'weathermap'. Below this is a breadcrumb 'Console -> Cacti Settings' and a user status 'Logged in as admin (Logout)'. A sidebar on the left contains a menu with categories like 'Create', 'Management', 'Collection Methods', 'Templates', 'Import/Export', 'Configuration', 'Plugin Management', 'Utilities', and 'System Utilities'. The 'Settings' link under 'Configuration' is highlighted with an orange box. The main content area is titled 'Cacti Settings (General)' and has several tabs: 'General', 'Paths', 'Poller', 'Graph Export', 'Visual', 'Authentication', 'Mail / DNS', 'Thresholds', and 'Misc'. The 'General' tab is active. It contains several sections: 'Event Logging' with a 'Log File Destination' dropdown set to 'Logfile Only'; 'Web Events' with three unchecked checkboxes for 'Web SNMP Messages', 'Web RRD Graph Syntax', and 'Graph Export Messages'; 'Poller Specific Logging' with a 'Poller Logging Level' dropdown set to 'MEDIUM - Statistics, Errors and Results' (highlighted with an orange box); 'Poller Syslog/Eventlog Selection' with three checkboxes, where 'Poller Errors' is checked; 'Required Tool Versions' with 'SNMP Utility Version' set to 'NET-SNMP 5.x' and 'RRDTool Utility Version' set to 'RRDTool 1.4.x'; and 'SNMP Defaults' with 'SNMP Version' set to 'Version 1', 'SNMP Community' set to 'public', and empty fields for 'SNMP Username (v3)' and 'SNMP Password (v3)'.

# Troubleshooting



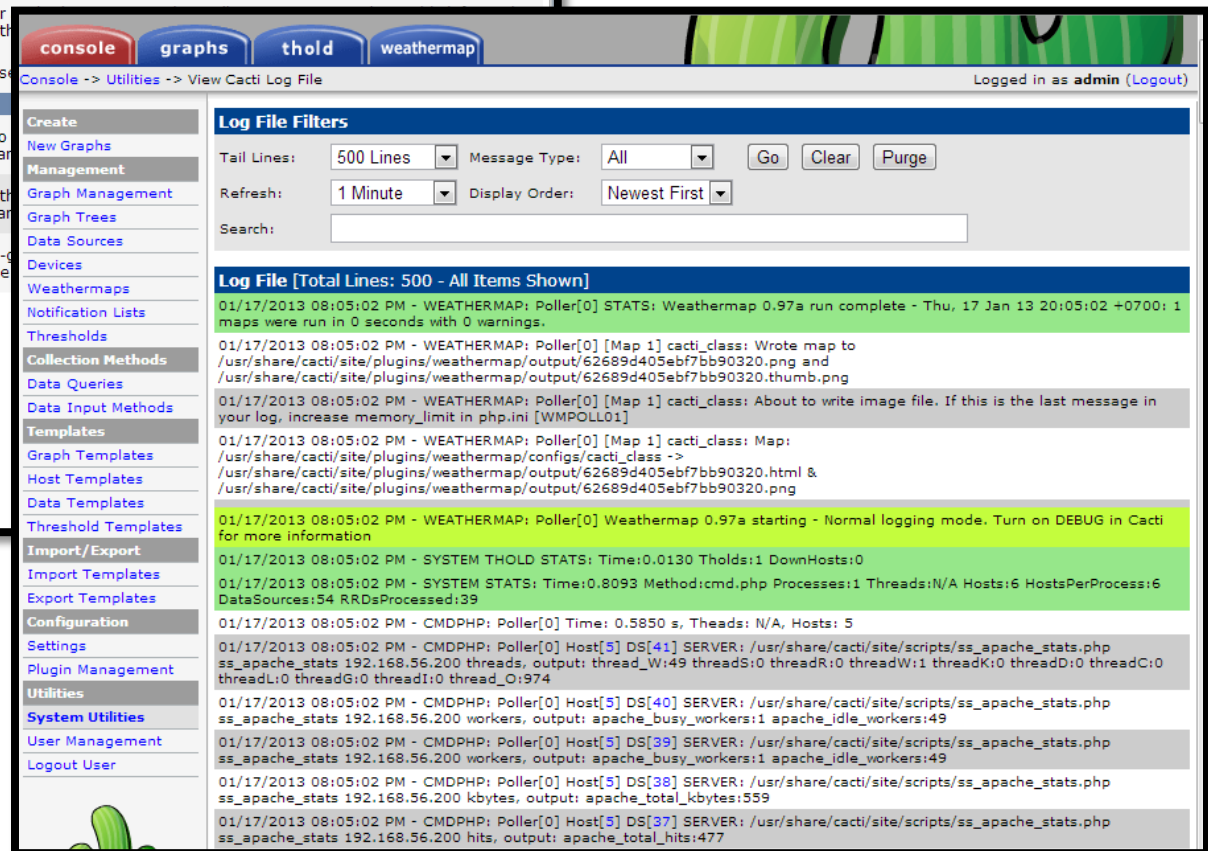
console graphs thold weathermap

Console -> Utilities Logged in as admin (Logout)

**Cacti System Utilities**

- Technical Support**
- Technical Support** Cacti technical support page. Used by developers and technical support persons to assist with issues in Cacti. Includes checks for common configuration issues.
- User Administration**
- View Cacti Log File** The Cacti Log File stores statistic, error logs and can be used to identify problems with the system.
- View User Log** Allows Administrators to browse the user logs.
- Poller Cache Administration**
- View Poller Cache** This is the data that is being passed to the poller to be executed/interpreted and the results are returned.
- View SNMP Cache** The SNMP cache stores information gathered from the poller use when gathering information from arrays.
- Rebuild Poller Cache** The poller cache will be cleared and re-generated. Data can get out of sync with the cache.

System Utilities



console graphs thold weathermap

Console -> Utilities -> View Cacti Log File Logged in as admin (Logout)

**Log File Filters**

Tail Lines: 500 Lines Message Type: All Go Clear Purge

Refresh: 1 Minute Display Order: Newest First

Search:

**Log File [Total Lines: 500 - All Items Shown]**

```
01/17/2013 08:05:02 PM - WEATHERMAP: Poller[0] STATS: Weathermap 0.97a run complete - Thu, 17 Jan 13 20:05:02 +0700: 1 maps were run in 0 seconds with 0 warnings.
01/17/2013 08:05:02 PM - WEATHERMAP: Poller[0] [Map 1] cacti_class: Wrote map to /usr/share/cacti/site/plugins/weathermap/output/62689d405ebf7bb90320.png and /usr/share/cacti/site/plugins/weathermap/output/62689d405ebf7bb90320.thumb.png
01/17/2013 08:05:02 PM - WEATHERMAP: Poller[0] [Map 1] cacti_class: About to write image file. If this is the last message in your log, increase memory_limit in php.ini [WMPOLL01]
01/17/2013 08:05:02 PM - WEATHERMAP: Poller[0] [Map 1] cacti_class: Map: /usr/share/cacti/site/plugins/weathermap/configs/cacti_class -> /usr/share/cacti/site/plugins/weathermap/output/62689d405ebf7bb90320.html & /usr/share/cacti/site/plugins/weathermap/output/62689d405ebf7bb90320.png
01/17/2013 08:05:02 PM - WEATHERMAP: Poller[0] Weathermap 0.97a starting - Normal logging mode. Turn on DEBUG in Cacti for more information
01/17/2013 08:05:02 PM - SYSTEM THOLD STATS: Time:0.0130 Tholds:1 DownHosts:0
01/17/2013 08:05:02 PM - SYSTEM STATS: Time:0.8093 Method:cmd.php Processes:1 Threads:N/A Hosts:6 HostsPerProcess:6 DataSourcees:54 RRDsProcessed:39
01/17/2013 08:05:02 PM - CMDPHP: Poller[0] Time: 0.5850 s, Theads: N/A, Hosts: 5
01/17/2013 08:05:02 PM - CMDPHP: Poller[0] Host[5] DS[41] SERVER: /usr/share/cacti/site/scripts/ss_apache_stats.php ss_apache_stats 192.168.56.200 threads, output: thread_W:49 threads:0 threadR:0 threadW:1 threadK:0 threadD:0 threadC:0 threadL:0 threadG:0 threadI:0 thread_O:974
01/17/2013 08:05:02 PM - CMDPHP: Poller[0] Host[5] DS[40] SERVER: /usr/share/cacti/site/scripts/ss_apache_stats.php ss_apache_stats 192.168.56.200 workers, output: apache_busy_workers:1 apache_idle_workers:49
01/17/2013 08:05:02 PM - CMDPHP: Poller[0] Host[5] DS[39] SERVER: /usr/share/cacti/site/scripts/ss_apache_stats.php ss_apache_stats 192.168.56.200 workers, output: apache_busy_workers:1 apache_idle_workers:49
01/17/2013 08:05:02 PM - CMDPHP: Poller[0] Host[5] DS[38] SERVER: /usr/share/cacti/site/scripts/ss_apache_stats.php ss_apache_stats 192.168.56.200 kbytes, output: apache_total_kbytes:559
01/17/2013 08:05:02 PM - CMDPHP: Poller[0] Host[5] DS[37] SERVER: /usr/share/cacti/site/scripts/ss_apache_stats.php ss_apache_stats 192.168.56.200 hits, output: apache_total_hits:477
```

# monitor apache statistic with template

- ที่เครื่องที่รัน apache ต้องเพิ่ม module status และอนุญาตให้เครื่อง cacti เข้าดู
- ต้องมีการ configuration apache เพิ่มเติม
- แก้ไขไฟล์ **`/etc/apache2/mod-enabled/status.conf`**
- หลังจากแก้ไขไฟล์เสร็จให้เริ่ม apache2 ใหม่
- **`#service apache2 restart`**

# monitor apache statistic with template

```
LoadModule status_module modules/mod_status.so

<IfModule mod_status.c>
#
# Allow server status reports generated by mod_status,
# with the URL of http://servername/server-status
# Uncomment and change the ".example.com" to allow
# access from other hosts.
#
ExtendedStatus On
<Location /server-status>
    SetHandler server-status
    Order deny,allow
    Deny from all
    Allow from localhost ip6-localhost
    Allow from [ip ของเครื่อง cacti]
#    Allow from .example.com
</Location>

</IfModule>
```

# monitor apache statistic with template

- ทดสอบการเข้าดูสถานะของ apache

```
#apt-get install elinks  
#elinks --dump http://[ip ของ server]/server-status?auto  
Total Accesses: 13830 Total kBytes: 425283 CPUload:  
.86846 Uptime: 2676  
ReqPerSec: 5.16816 BytesPerSec: 162739 BytesPerReq:  
31488.8 BusyWorkers:  
11 IdleWorkers: 10 Scoreboard:
```

```
WW__._WW.C_W_W...._W._C_.W...W.....  
.....  
.....
```

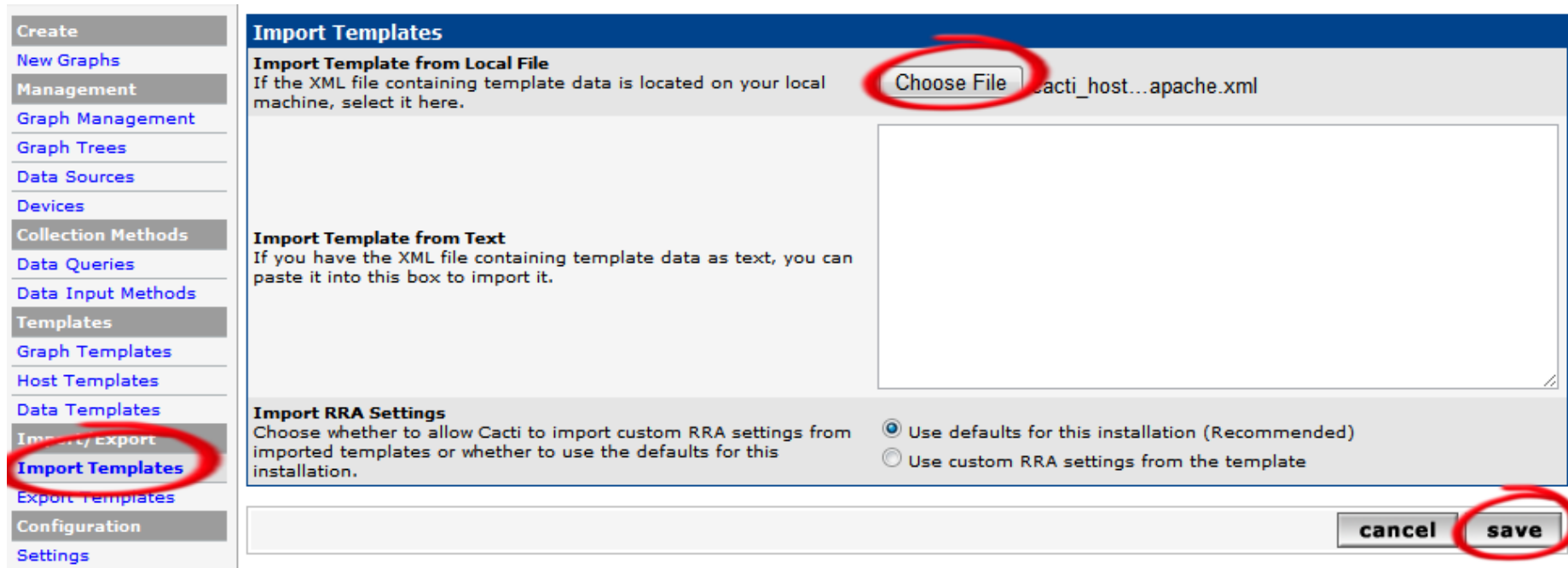
# monitor apache statistic with template

- ดาวโหลด script
- `#cd /tmp`
- `#cp /root/ApacheStats_0.8.2.zip ./`
- (<http://forums.cacti.net/viewtopic.php?t=25227>)
- `#apt-get install unzip`
- `#unzip ApacheStats_0.8.2.zip`
- `#cp ApacheStats_0.8.2/ss_apache_stats.php  
/usr/share/cacti/site/scripts/`
- ดาวโหลด script มาไว้ที่เครื่องใช้งานเว็บ  
บราวเซอร์และแยกไฟล์



# monitor apache statistic with template

- นำเข้าไฟล์ `cacti_host_template_webserver_-_apache.xml`



The screenshot shows the Cacti web interface for importing templates. On the left sidebar, the 'Import Templates' menu item is highlighted with a red circle. The main content area is titled 'Import Templates' and contains three sections: 'Import Template from Local File', 'Import Template from Text', and 'Import RRA Settings'. In the 'Import Template from Local File' section, the 'Choose File' button is circled in red, and the filename 'cacti\_host...apache.xml' is visible. In the 'Import RRA Settings' section, the 'Use defaults for this installation (Recommended)' radio button is selected. At the bottom right of the interface, the 'save' button is circled in red.

# monitor apache statistic with template

## Import Results

Cacti has imported the following items:

### CDEF

```
[success] Trend [new]
[success] Turn Bytes into Bits [update]
[success] Total All Data Sources [update]
[success] Apache08 - Clean value for DEF a [new]
[success] Apache08 - Clean value for DEF b [new]
[success] Apache08 - Limit output to zero min and max [new]
[success] Apache08 - Calculate Bytes / Request [new]
[success] Apache08 - Calculate A as % of C [new]
[success] Apache08 - A plus C [new]
[success] Apache08 - Calculate A as % of E [new]
[success] Apache08 - Calculate C as % of E [new]
```

### GPRINT Preset

```
[success] Normal [update]
[success] Exact Numbers [update]
```

### Data Input Method

```
[success] ApacheStats08 - CPU Load [new]
[success] ApacheStats08 - Total Hits [new]
[success] ApacheStats08 - Total kBytes [new]
[success] ApacheStats08 - Workers [new]
[success] ApacheStats08 - Threads [new]
```

### Data Template

```
[success] ApacheStats08 - CPU Load [new]
[success] ApacheStats08 - Total Hits [new]
[success] ApacheStats08 - Total kBytes [new]
[success] ApacheStats08 - Workers [new]
[success] ApacheStats08 - Threads [new]
```

### Graph Template

```
[success] WebServer - ApacheStats08 - A - CPU Usage [new]
[success] WebServer - ApacheStats08 - B - Hits / s [new]
[success] WebServer - ApacheStats08 - C - kBits / s [new]
[success] WebServer - ApacheStats08 - E - Thread Details [new]
[success] WebServer - ApacheStats08 - G - Thread Scoreboard [new]
[success] WebServer - ApacheStats08 - D - Bytes / Hit - same data source as (Hits / s) and (kBits / s) [new]
[success] WebServer - ApacheStats08 - F - Thread Details (%) - same data source as (Thread Details) [new]
```

### Host Template

```
[success] WebServer - Apache [new]
```

# monitor apache statistic with template

- เพิ่ม device โดยใช้ Host template เป็น **WebServer - Apache**

**Devices [new]**

**General Host Options**

**Description**  
Give this host a meaningful description.

**Hostname**  
Fully qualified hostname or IP address for this device.

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

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

**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.*

**Ping Method**  
The type of ping packet to sent.   
*NOTE: ICMP on Linux/UNIX requires root privileges.*

**Ping Port**  
TCP or UDP port to attempt connection.

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

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

**SNMP Options**

**SNMP Version**  
Choose the SNMP version for this device.

**Additional Options**

**Notes**  
Enter notes to this host.

# monitor apache statistic with template

- สร้างกราฟจาก template
- เพิ่ม host ใน tree ตามต้องการ

**Apache Web Server (10.199.0.39) WebServer - Apache**

Host:  Graph Types:

[\\*Edit this Host](#)  
[\\*Create New Host](#)

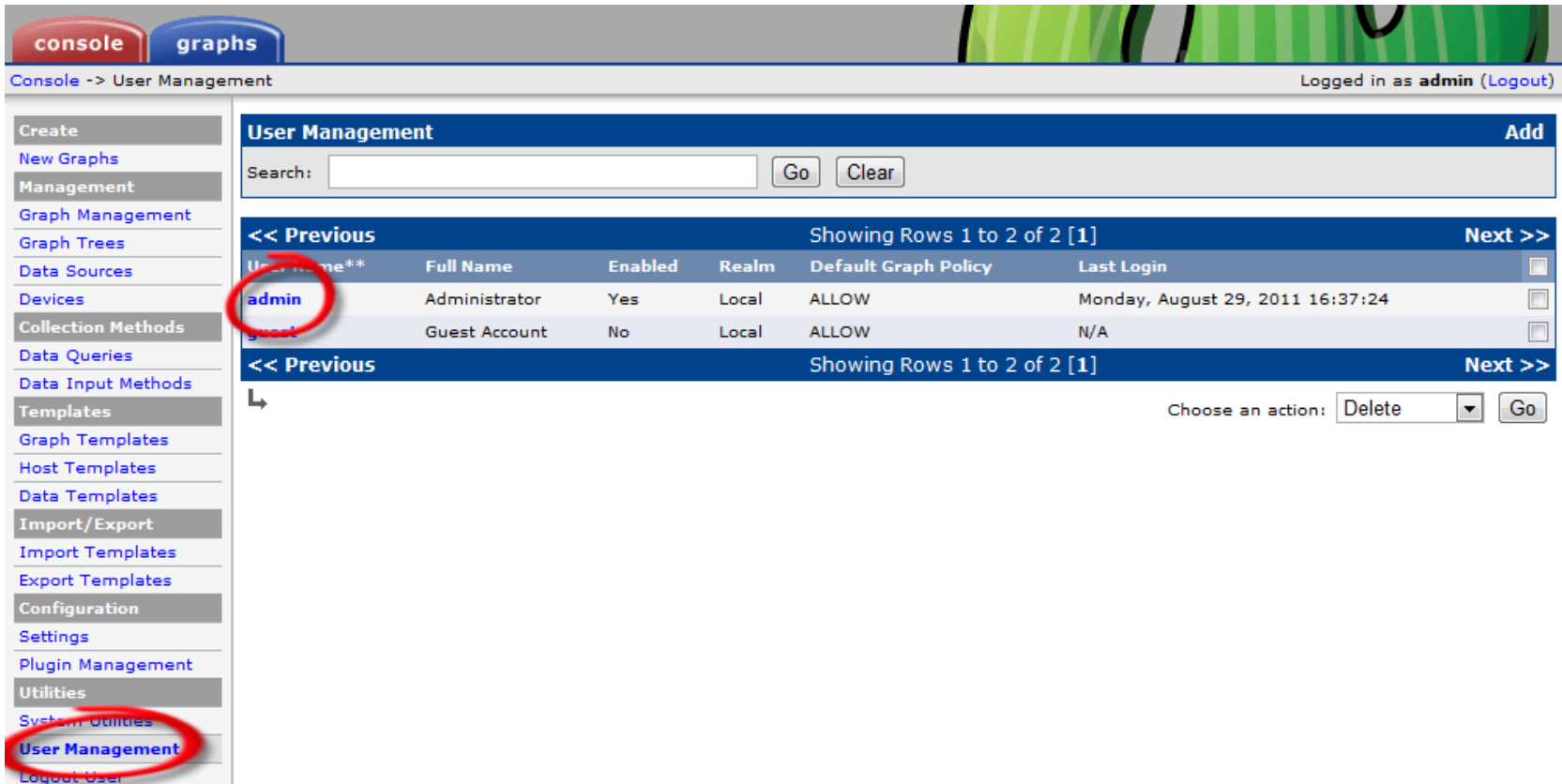
Graph Templates	
Graph Template Name	<input type="checkbox"/>
Create: WebServer - ApacheStats08 - A - CPU Usage	<input checked="" type="checkbox"/>
Create: WebServer - ApacheStats08 - B - Hits / s	<input checked="" type="checkbox"/>
Create: WebServer - ApacheStats08 - C - kBits / s	<input checked="" type="checkbox"/>
Create: WebServer - ApacheStats08 - D - Bytes / Hit - same data source as (Hits / s) and (kBits / s)	<input checked="" type="checkbox"/>
Create: WebServer - ApacheStats08 - E - Thread Details	<input checked="" type="checkbox"/>
Create: WebServer - ApacheStats08 - F - Thread Details (%) - same data source as (Thread Details)	<input checked="" type="checkbox"/>
Create: WebServer - ApacheStats08 - G - Thread Scoreboard	<input checked="" type="checkbox"/>

Create:

# Cacti plugins

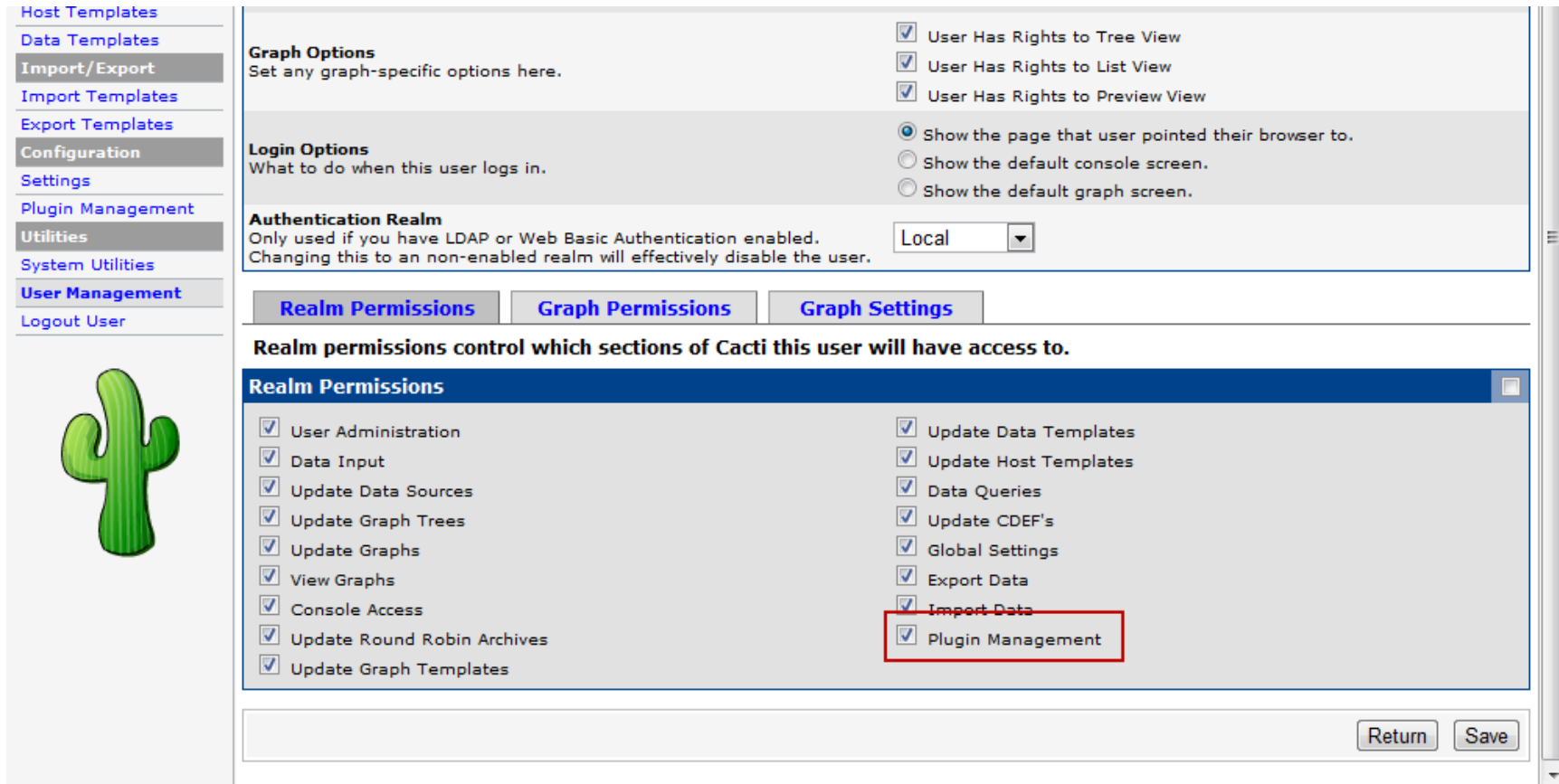
# plugin architecture

- เปิดการใช้งาน PIA



The screenshot shows the 'User Management' interface. The sidebar on the left contains the following menu items: Create, New Graphs, Management, Graph Management, Graph Trees, Data Sources, Devices, Collection Methods, Data Queries, Data Input Methods, Templates, Graph Templates, Host Templates, Data Templates, Import/Export, Import Templates, Export Templates, Configuration, Settings, Plugin Management, Utilities, System Utilities, and User Management. The 'User Management' item is circled in red. The main content area displays a table of users with the following columns: User Name, Full Name, Enabled, Realm, Default Graph Policy, and Last Login. The 'admin' user is circled in red. The table shows two users: 'admin' (Administrator, Enabled, Local, ALLOW, Monday, August 29, 2011 16:37:24) and 'Guest' (Guest Account, Disabled, Local, ALLOW, N/A). The interface also includes a search bar, navigation buttons (Previous, Next), and an action dropdown menu (Delete, Go).

# plugin architecture



The screenshot shows the Cacti user configuration interface. On the left is a navigation menu with items like Host Templates, Data Templates, Import/Export, Configuration, Settings, Plugin Management, Utilities, System Utilities, User Management, and Logout User. A green cactus icon is visible below the menu. The main content area is titled 'Graph Options' and 'Login Options'. Below these are 'Authentication Realm' settings with a dropdown menu set to 'Local'. There are three tabs: 'Realm Permissions', 'Graph Permissions', and 'Graph Settings'. The 'Realm Permissions' tab is active, showing a list of permissions with checkboxes. The 'Plugin Management' checkbox is highlighted with a red box. At the bottom right are 'Return' and 'Save' buttons.

**Host Templates**  
**Data Templates**  
**Import/Export**  
Import Templates  
Export Templates  
**Configuration**  
Settings  
Plugin Management  
**Utilities**  
System Utilities  
**User Management**  
Logout User

**Graph Options**  
Set any graph-specific options here.

- User Has Rights to Tree View
- User Has Rights to List View
- User Has Rights to Preview View

**Login Options**  
What to do when this user logs in.

- Show the page that user pointed their browser to.
- Show the default console screen.
- Show the default graph screen.

**Authentication Realm**  
Only used if you have LDAP or Web Basic Authentication enabled.  
Changing this to an non-enabled realm will effectively disable the user.

Local

**Realm Permissions** | **Graph Permissions** | **Graph Settings**

Realm permissions control which sections of Cacti this user will have access to.

**Realm Permissions**

- User Administration
- Data Input
- Update Data Sources
- Update Graph Trees
- Update Graphs
- View Graphs
- Console Access
- Update Round Robin Archives
- Update Graph Templates
- Update Data Templates
- Update Host Templates
- Data Queries
- Update CDEF's
- Global Settings
- Export Data
- Import Data
- Plugin Management**

Return Save

# install plugin : settings

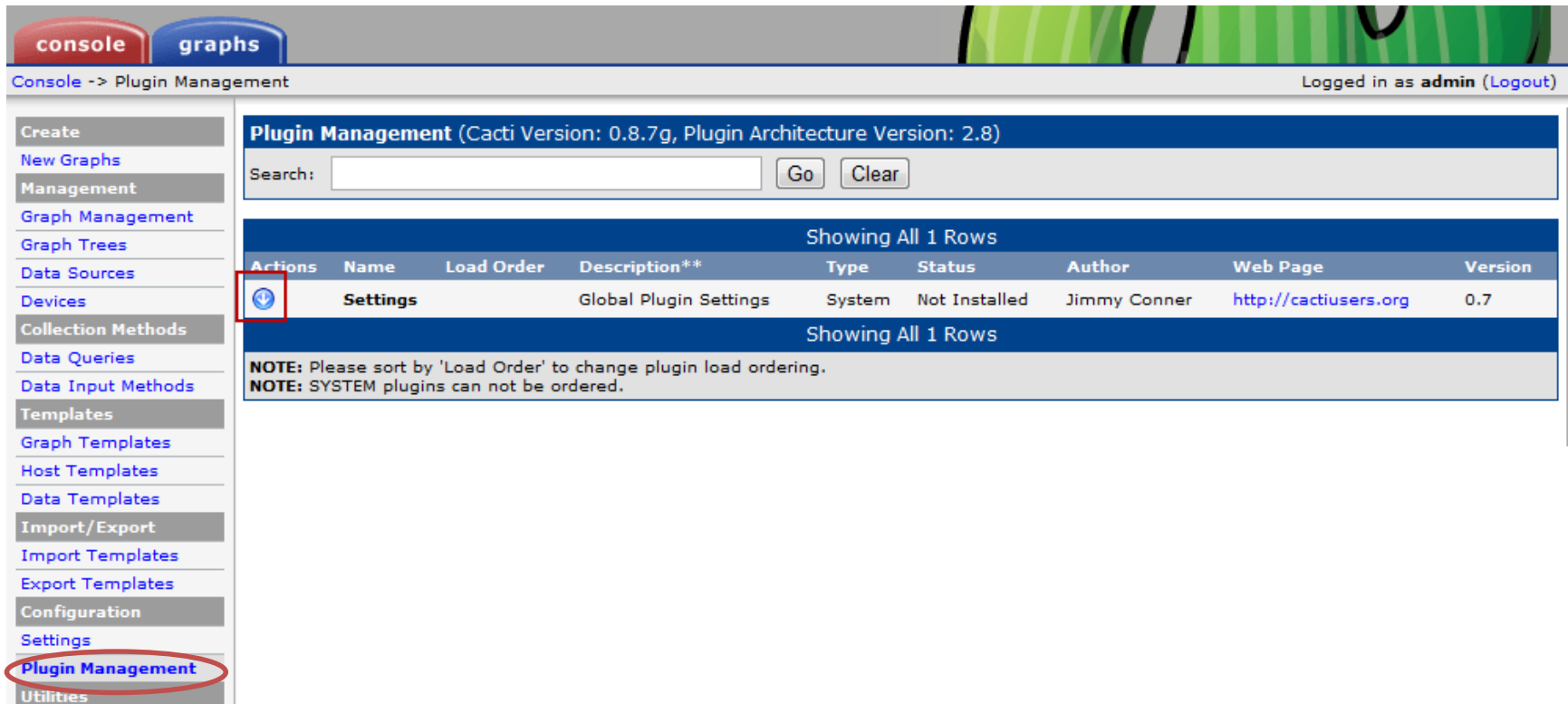
- ดาวน์โหลดไฟล์  
(<http://docs.cacti.net/plugin:settings>)

```
#cd /tmp  
#cp /root/settings-v0.71-1.tgz ./  
#tar zxvf settings-v0.71-1.tgz  
#mv settings  
/usr/share/cacti/site/plugins/
```



# install plugin : settings

- ทำให้ plugin เริ่มทำงาน



The screenshot shows the Cacti web interface for Plugin Management. The breadcrumb trail is "Console -> Plugin Management". The user is logged in as "admin". The interface title is "Plugin Management (Cacti Version: 0.8.7g, Plugin Architecture Version: 2.8)". There is a search bar with "Go" and "Clear" buttons. A table lists the installed plugins, with one row highlighted: "Settings" (Global Plugin Settings, System, Not Installed, Jimmy Conner, http://cactiusers.org, 0.7). The "Settings" row is circled in red. Below the table, there are two notes: "NOTE: Please sort by 'Load Order' to change plugin load ordering." and "NOTE: SYSTEM plugins can not be ordered." The left sidebar contains a menu with "Plugin Management" circled in red.

console graphs


Console -> Plugin Management Logged in as admin (Logout)

Create  
New Graphs  
Management  
Graph Management  
Graph Trees  
Data Sources  
Devices  
Collection Methods  
Data Queries  
Data Input Methods  
Templates  
Graph Templates  
Host Templates  
Data Templates  
Import/Export  
Import Templates  
Export Templates  
Configuration  
Settings  
**Plugin Management**  
Utilities

**Plugin Management** (Cacti Version: 0.8.7g, Plugin Architecture Version: 2.8)

Search:

Showing All 1 Rows

Actions	Name	Load Order	Description**	Type	Status	Author	Web Page	Version
	<b>Settings</b>		Global Plugin Settings	System	Not Installed	Jimmy Conner	<a href="http://cactiusers.org">http://cactiusers.org</a>	0.7

Showing All 1 Rows

**NOTE:** Please sort by 'Load Order' to change plugin load ordering.  
**NOTE:** SYSTEM plugins can not be ordered.

# ตั้งค่าการส่ง email

- ติดตั้ง MTA (Mail Transfer Agent)

```
#apt-get install postfix
```

- เลือก Internet Site

# ตั้งค่าการส่ง email

- ใช้ gmail หรือ hotmail เป็น relay host
- gmail host : **smtp.gmail.com:587**
- hotmail host : **smtp.live.com:587**
- สร้างไฟล์รหัสผ่าน  
**/etc/postfix/sasl\_passwd**

**[smtp host] [email address]:[password]**

เช่น

**smtp.gmail.com user@gmai.com:passwd**

# ตั้งค่าการส่ง email

- สร้าง hash ของรหัสผ่าน
- **#postmap /etc/postfix/sasl\_passwd**
- ลบรหัสผ่านแบบ plaintext
- **#rm /etc/postfix/sasl\_passwd**
- **#chmod 400**  
**/etc/postfix/sasl\_passwd.db**

# ตั้งค่าการส่ง email

- แก้ไขไฟล์ **/etc/postfix/main.cf**

เพิ่มบรรทัด

```
smtp_sasl_auth_enable = yes
```

```
smtp_sasl_password_maps = hash:/etc/postfix/sasl_passwd
```

```
smtp_sasl_security_options = noanonymous
```

```
smtp_sasl_tls_security_options = noanonymous
```

```
smtp_use_tls = yes
```

แก้บรรทัด


```
relayhost = [smtp host]:587
```

- เริ่ม postfix ใหม่
- **#service postfix restart**

# ตั้งค่าการส่ง email

Configuration

- Settings
- Plugin Management
- Utilities
- System Utilities
- User Management
- Logout User



General Paths Poller Graph Export Visual Authentication Mail / DNS

### Cacti Settings (Mail / DNS)

Send a Test Email

**Emailing Options**

**Test Email**  
This is a email account used for sending a test message to ensure everything is working properly.

**Mail Services**  
Which mail service to use in order to send mail

**From Email Address**  
This is the email address that the email will appear from.

**From Name**  
This is the actual name that the email will appear from.

**Word Wrap**  
This is how many characters will be allowed before a line in the email is automatically word wrapped. (0 = Disabled)

**Sendmail Options**

**Sendmail Path**  
This is the path to sendmail on your server. (Only used if Sendmail is selected as the Mail Service)   
[OK; FILE FOUND]

**SMTP Options**

**SMTP Hostname**  
This is the hostname/IP of the SMTP Server you will send the email to.

**SMTP Port**  
This is the port on the SMTP Server that SMTP uses.

**SMTP Username**  
This is the username to authenticate with when sending via SMTP. (Leave blank if you do not require authentication.)

**SMTP Password**  
This is the password to authenticate with when sending via SMTP. (Leave blank if you do not require authentication.)

**DNS Options**

**Primary DNS IP Address**  
Enter the primary DNS IP Address to utilize for reverse lookups.

**Secondary DNS IP Address**  
Enter the secondary DNS IP Address to utilize for reverse lookups.

**DNS Timeout**  
Please enter the DNS timeout in milliseconds. Cacti uses a PHP based DNS resolver.

Save

ให้เหมือน email ที่ใช้ relay

# install plugin : thold

- เป็น plugin สำหรับแจ้งเตือนเห็นการต่างๆ
- ดาวน์โหลดไฟล์ plugin  
(<http://docs.cacti.net/plugin:thold>)

```
#cd /tmp
```

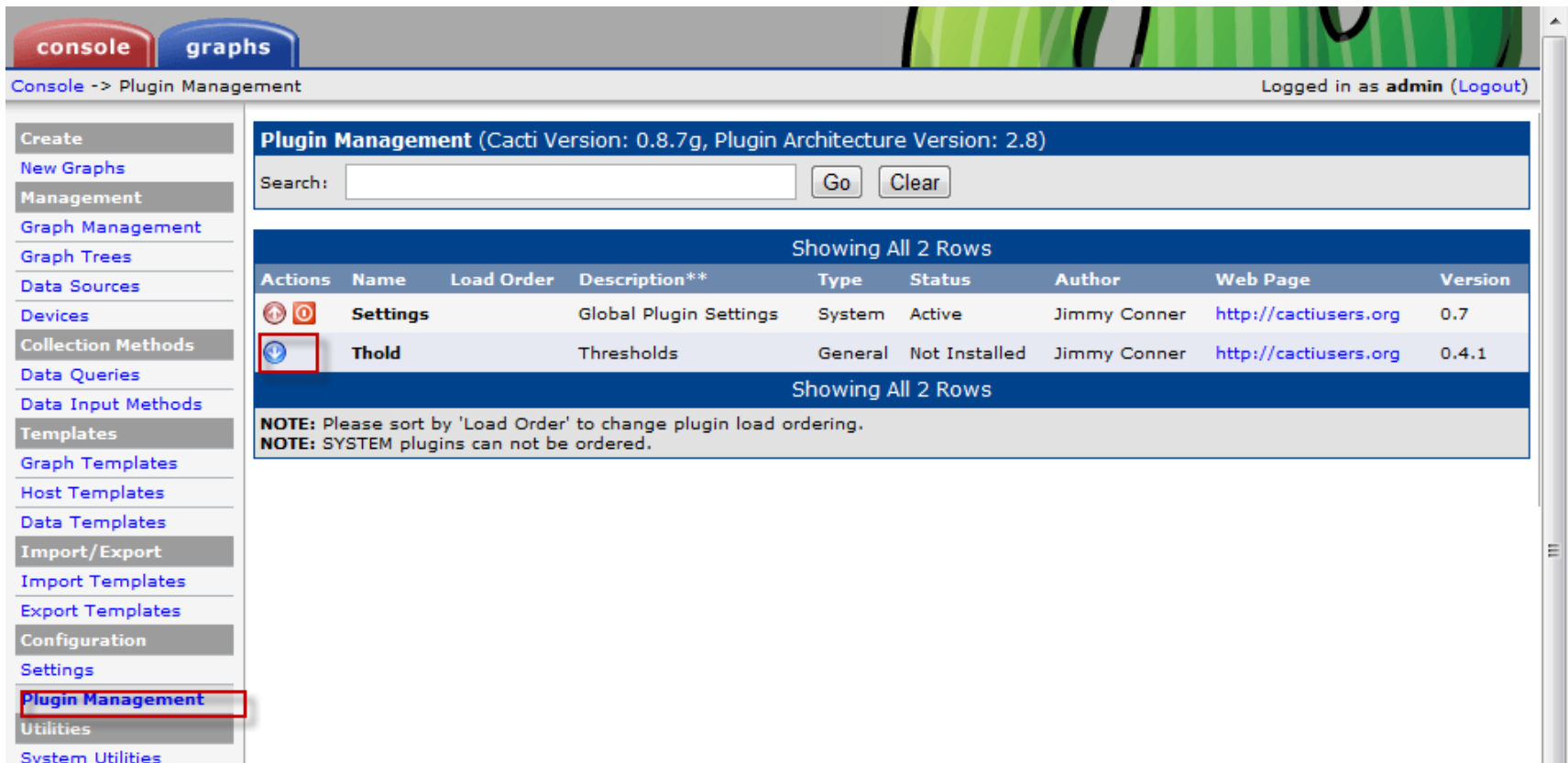
```
#cp /root/thold-v0.5.0.tgz ./
```

```
#tar zxvf thold-v0.5.0.tgz
```

```
#mv thold /usr/share/cacti/site/plugins/
```

# install plugin : thold

- ทำให้ plugin เริ่มทำงาน



The screenshot shows the Cacti web interface for Plugin Management. The left sidebar contains a menu with 'Plugin Management' highlighted. The main content area displays a table of installed and available plugins. The 'Thold' plugin is listed as 'Not Installed' and is highlighted with a red box. Below the table, there are two notes: 'NOTE: Please sort by 'Load Order' to change plugin load ordering.' and 'NOTE: SYSTEM plugins can not be ordered.'

console graphs

Console -> Plugin Management Logged in as **admin** (Logout)

**Plugin Management** (Cacti Version: 0.8.7g, Plugin Architecture Version: 2.8)

Search:

Showing All 2 Rows

Actions	Name	Load Order	Description**	Type	Status	Author	Web Page	Version
	<b>Settings</b>		Global Plugin Settings	System	Active	Jimmy Conner	<a href="http://cactiusers.org">http://cactiusers.org</a>	0.7
	<b>Thold</b>		Thresholds	General	Not Installed	Jimmy Conner	<a href="http://cactiusers.org">http://cactiusers.org</a>	0.4.1

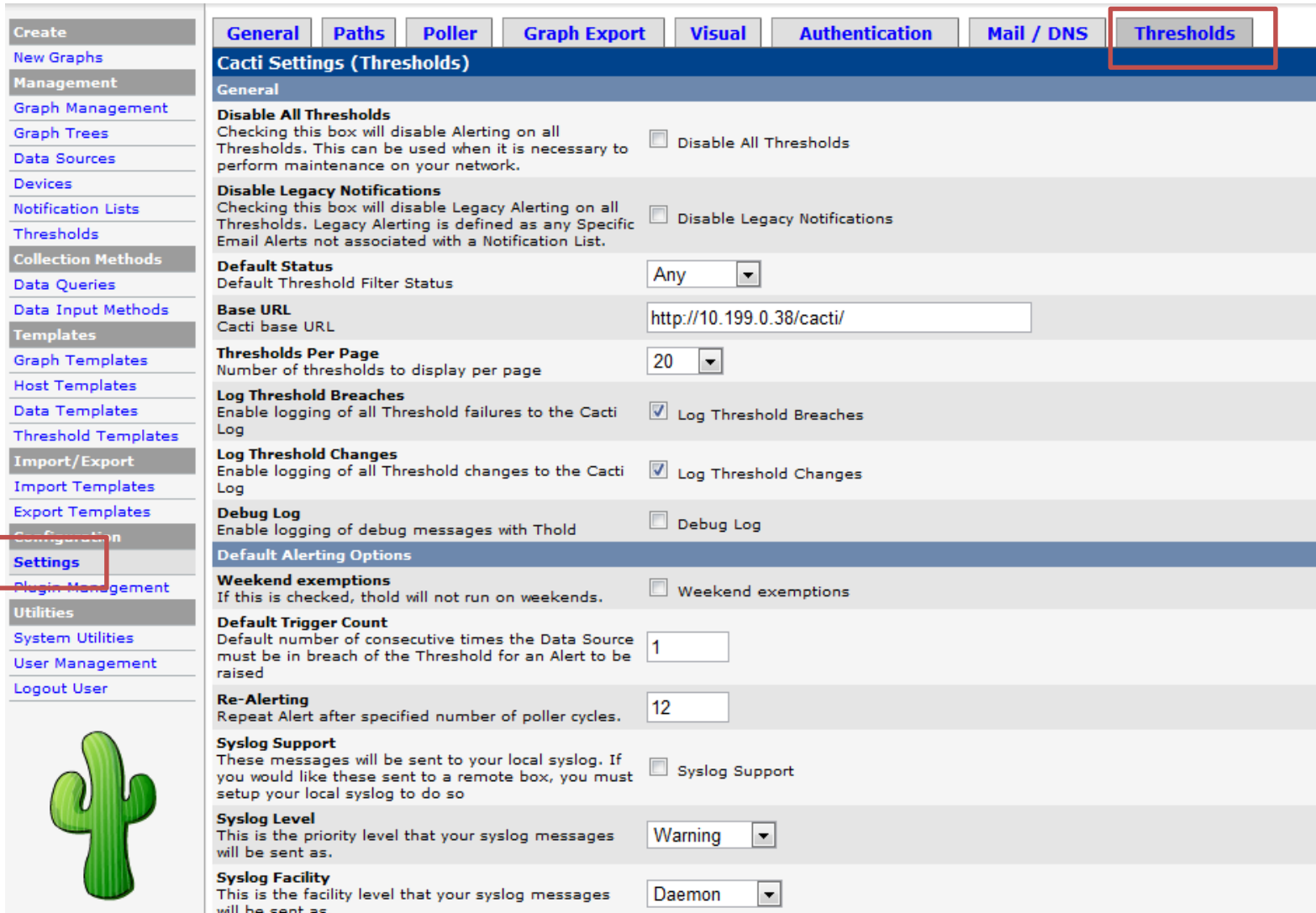
Showing All 2 Rows

**NOTE:** Please sort by 'Load Order' to change plugin load ordering.  
**NOTE:** SYSTEM plugins can not be ordered.

Plugin Management



# config plugin : thold



The screenshot shows the Cacti Settings (Thresholds) configuration page. The left sidebar contains a navigation menu with 'Settings' highlighted. The main content area has tabs for 'General', 'Paths', 'Poller', 'Graph Export', 'Visual', 'Authentication', 'Mail / DNS', and 'Thresholds'. The 'Thresholds' tab is selected and highlighted with a red box. The configuration options are as follows:

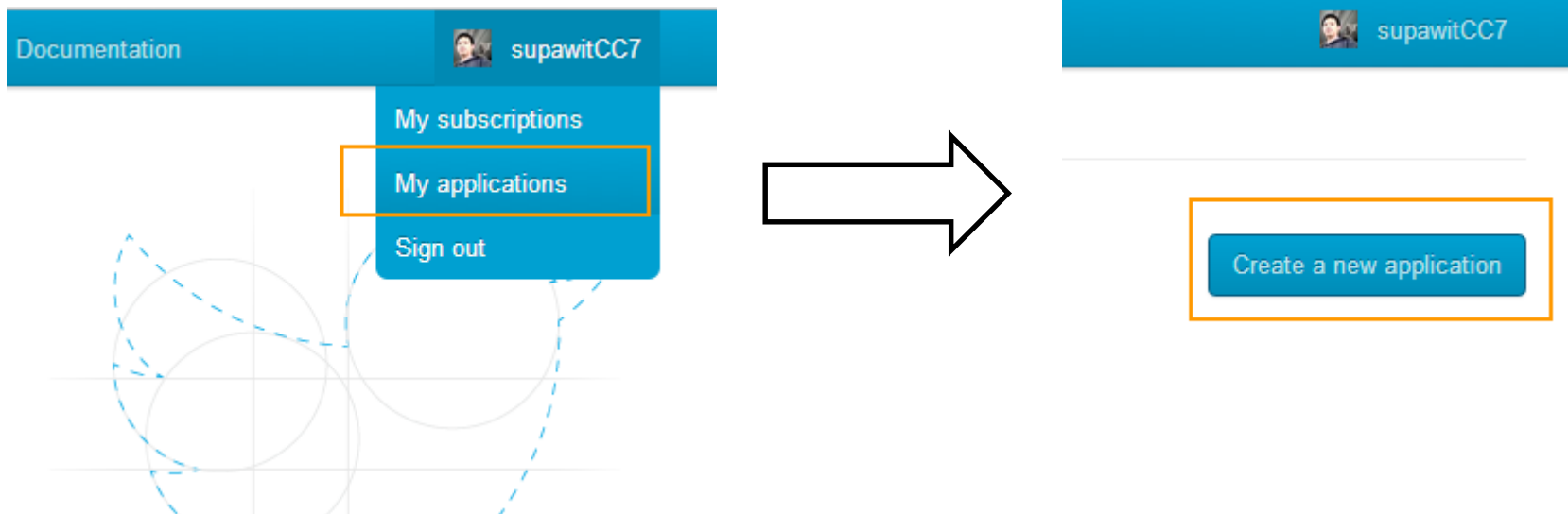
- General**
  - Disable All Thresholds**:  Disable All Thresholds
  - Disable Legacy Notifications**:  Disable Legacy Notifications
  - Default Status**: Default Threshold Filter Status: Any
  - Base URL**: Cacti base URL:
  - Thresholds Per Page**: Number of thresholds to display per page: 20
  - Log Threshold Breaches**:  Log Threshold Breaches
  - Log Threshold Changes**:  Log Threshold Changes
  - Debug Log**:  Debug Log
- Default Alerting Options**
  - Weekend exemptions**:  Weekend exemptions
  - Default Trigger Count**: Default number of consecutive times the Data Source must be in breach of the Threshold for an Alert to be raised:
  - Re-Alerting**: Repeat Alert after specified number of poller cycles:
  - Syslog Support**:  Syslog Support
  - Syslog Level**: This is the priority level that your syslog messages will be sent as: Warning
  - Syslog Facility**: This is the facility level that your syslog messages will be sent as: Daemon

# config plugin : thold

Emailing Options	
<b>Send Emails with Urgent Priority</b> Allows you to set e-mails with urgent priority	<input checked="" type="checkbox"/> Send Emails with Urgent Priority
<b>Dead Hosts Notifications</b> Enable Dead/Recovering host notification	<input checked="" type="checkbox"/> Dead Hosts Notifications
<b>Dead Host Notifications Email</b> This is the Email Address that the Dead Host Notifications will be sent to if the Global Notification List is selected.	<input type="text"/>
<b>Down Host Subject</b> This is the Email subject that will be used for Down Host Messages.	<input type="text" value="Host Error: &lt;DESCRIPTION&gt; (&lt;HOSTNAME&gt;) is DOWN"/>
<b>Down Host Message</b> This is the message that will be displayed as the message body of all UP / Down Host Messages (255 Char MAX). HTML is allowed, but will be removed for text only Emails. There are several descriptors that may be used. <HOSTNAME> <DESCRIPTION> <UPTIME> <UPTIMETEXT> <DOWNTIME> <MESSAGE> <SUBJECT> <DOWN/UP> <SNMP_HOSTNAME> <SNMP_LOCATION> <SNMP_CONTACT> <SNMP_SYSTEM> <LAST_FAIL> <AVAILABILITY> <TOT_POLL> <FAIL_POLL> <CUR_TIME> <AVG_TIME> <NOTES>	<input type="text" value="System Error : &lt;DESCRIPTION&gt; (&lt;HOSTNAME&gt;) is &lt;DOWN/UP&gt;&lt;br&gt;Reason: &lt;MESSAGE&gt;&lt;br&gt;&lt;br&gt;Average system response : &lt;AVG_TIME&gt; ms&lt;br&gt;System availability: &lt;AVAILABILITY&gt;&lt;br&gt;Total Checks Since Clear: &lt;TOT_POLL&gt;&lt;br&gt;Total Failed Checks: &lt;FAIL_POLL&gt;&lt;br&gt;Last Date Checked DOWN : &lt;LAST_FAIL&gt;&lt;br&gt;Host Previously UP for: &lt;DOWNTIME&gt;&lt;br&gt;NOTE: &lt;NOTES&gt;"/>
<b>Recovering Host Subject</b> This is the Email subject that will be used for Recovering Host Messages.	<input type="text" value="Host Notice: &lt;DESCRIPTION&gt; (&lt;HOSTNAME&gt;) returned from DOWN state"/>
<b>Recovering Host Message</b> This is the message that will be displayed as the message body of all UP / Down Host Messages (255 Char MAX). HTML is allowed, but will be removed for text only Emails. There are several descriptors that may be used. <HOSTNAME> <DESCRIPTION> <UPTIME> <UPTIMETEXT> <DOWNTIME> <MESSAGE> <SUBJECT> <DOWN/UP> <SNMP_HOSTNAME> <SNMP_LOCATION> <SNMP_CONTACT> <SNMP_SYSTEM> <LAST_FAIL> <AVAILABILITY> <TOT_POLL> <FAIL_POLL> <CUR_TIME> <AVG_TIME> <NOTES>	<input type="text" value="&lt;br&gt;System &lt;DESCRIPTION&gt; (&lt;HOSTNAME&gt;) status: &lt;DOWN/UP&gt;&lt;br&gt;&lt;br&gt;Current ping response: &lt;CUR_TIME&gt; ms&lt;br&gt;Average system response : &lt;AVG_TIME&gt; ms&lt;br&gt;System availability: &lt;AVAILABILITY&gt;&lt;br&gt;Total Checks Since Clear: &lt;TOT_POLL&gt;&lt;br&gt;Total Failed Checks: &lt;FAIL_POLL&gt;&lt;br&gt;Last Date Checked UP: &lt;LAST_FAIL&gt;&lt;br&gt;Host Previously"/>
<b>From Email Address</b> This is the Email address that the threshold will appear from.	<input type="text" value="supawit.wannapila@gmail.com"/>
<b>From Name</b> This is the actual name that the threshold will appear from.	<input type="text" value="cacti"/>
<b>Threshold Alert Message</b> This is the message that will be displayed at the top of all Threshold Alerts (255 Char MAX). HTML is allowed, but will be removed for text only Emails. There are several descriptors that may be used. <DESCRIPTION> <HOSTNAME> <TIME> <URL> <GRAPHID> <CURRENTVALUE> <THRESHOLDNAME> <DSNAME> <SUBJECT> <GRAPH>	<input type="text" value="An Alert has been issued that requires your attention. &lt;br&gt;&lt;br&gt;&lt;strong&gt;Host&lt;/strong&gt;: &lt;DESCRIPTION&gt; (&lt;HOSTNAME&gt;)&lt;br&gt;&lt;strong&gt;URL&lt;/strong&gt;: &lt;URL&gt;&lt;br&gt;&lt;strong&gt;Message&lt;/strong&gt;: &lt;SUBJECT&gt;&lt;br&gt;&lt;br&gt;&lt;GRAPH&gt;"/>

# tweet via php

- สร้าง app สำหรับ tweet ไปที่ <https://dev.twitter.com> ทำการ login
- ไปที่ My applications แล้วคลิก Create a new application



# tweet via php

[Home](#) → [My applications](#)

## Create an application

### Application Details

Name: \*

Your application name. This is used to attribute the source of a tweet and in user-facing authorization screens.

Description: \*

Your application description, which will be shown in user-facing authorization screens.

WebSite: \*

Your application's publicly accessible home page, where users can go to download, make use of, or find out more information about your application. This fully-qualified URL is used in the source attribution for tweets created by your application and will be shown in user-facing authorization screens.

(If you don't have a URL yet, just put a placeholder here but remember to change it later.)

Callback URL:

Where should we return after successfully authenticating? For [@Anywhere applications](#), only the domain specified in the callback will be used. [OAuth 1.0a](#) applications should explicitly specify their `oauth_callback` URL on the request token step, regardless of the value given here. To restrict your application from using callbacks, leave this field blank.

# tweet via php

## cacti\_example

Details **Settings** @Anywhere domains Reset keys Delete


### Application Details

**Name: \***  
cacti\_example  
Your application name. This is used to attribute the source of a tweet and in user-facing authorization screens.

**Description: \***  
cacti class example  
Your application description, which will be shown in user-facing authorization screens.

**Web Site: \***  
http://cacti.example.com  
Your application's publicly accessible home page, where users can go to download, make use of, or find out more information about your application. This fully-qualified URL is used in the source attribution for tweets created by your application and will be shown in user-facing authorization screens.  
(If you don't have a URL yet, just put a placeholder here but remember to change it later.)

### Application Icon

Change icon:  
  No file chosen  
Maximum size of 700k. JPG, GIF, PNG.

### Application Type

Access:  
 Read only  
 Read and Write  
 Read, Write and Access direct messages

# tweet via php

- ที่ tab detail กด Create my access token ด้านล่าง
- ขั้นตอนนี้จะได้ค่า 4 ค่าซึ่งจะใช้ในขั้นตอนต่อไป
  - Consumer key
  - Consumer secret
  - Access token
  - Access token secret

# tweet via php

- ดาวน์โหลดไฟล์ไฟล์ class สำหรับการ tweet  
(<https://github.com/abraham/twitteroauth>)

```
#mkdir /usr/share/cacti/tweet
```

```
#cd /usr/share/cacti/tweet
```

```
#cp /root/ twitteroauth-master.zip ./
```

```
#unzip twitteroauth-master.zip
```

```
#mv twitteroauth-master/twitteroauth ./
```

# tweet via php

- ดาวโหลดไฟล์ script ที่ใช้ tweet
- **#cd /usr/shar/cacti/tweet/**
- **#cp /root/tweet.php.gz ./**
- **#gunzip tweet.php.gz**



# tweet via php

```
<?  
$msg = $argv[1];  
$consumerKey = '[มาจากเว็บ twitter]';  
$consumerSecret = '[มาจากเว็บ twitter]';  
$oAuthToken = '[มาจากเว็บ twitter]';  
$oAuthSecret = '[มาจากเว็บ twitter]';  
  
require_once('/usr/share/cacti/tweet/twitteroauth/twitteroauth.php');  
  
// create a new instance  
$tweet = new TwitterOAuth($consumerKey, $consumerSecret,  
$oAuthToken, $oAuthSecret);  
  
//send a tweet  
$tweet->post('statuses/update', array('status' => $msg));  
?>
```

# tweet via php

- ติดตั้ง curl

```
#apt-get install php5-curl
```

- ทดสอบ tweet

```
#php tweet.php 'Hello cacti class test'
```

# thold alert to twitter

- สำรองไฟล์

```
#cp /usr/share/cacti/site/plugins/thold/  
thold_functions.php{,.ori}
```

- แก้ไขไฟล์

```
/usr/share/cacti/site/plugins/thold/  
thold_functions.php
```

# thold alert to twitter

- ค้นหาคำว่า **function thold\_mail**
- แล้วเพิ่มบรรทัด

```
function thold_mail($to, $from, $subject, $message, $filename, $headers  
= ") {  
    system("/usr/bin/php /usr/share/cacti/tweet/tweet.php  
'$subject');  
    global $config;
```

# สร้าง notification list

- Create
- New Graphs
- Management
- Graph Management
- Graph Trees
- Data Sources
- Devices
- Notification Lists**
- Thresholds

**Notification Lists** Add

Search:

No Rows Found

List Name**	Description	Emails	
No Notification Lists			

Choose an action:

**General Settings [new]**

**Name**  
Enter a name for this Notification List

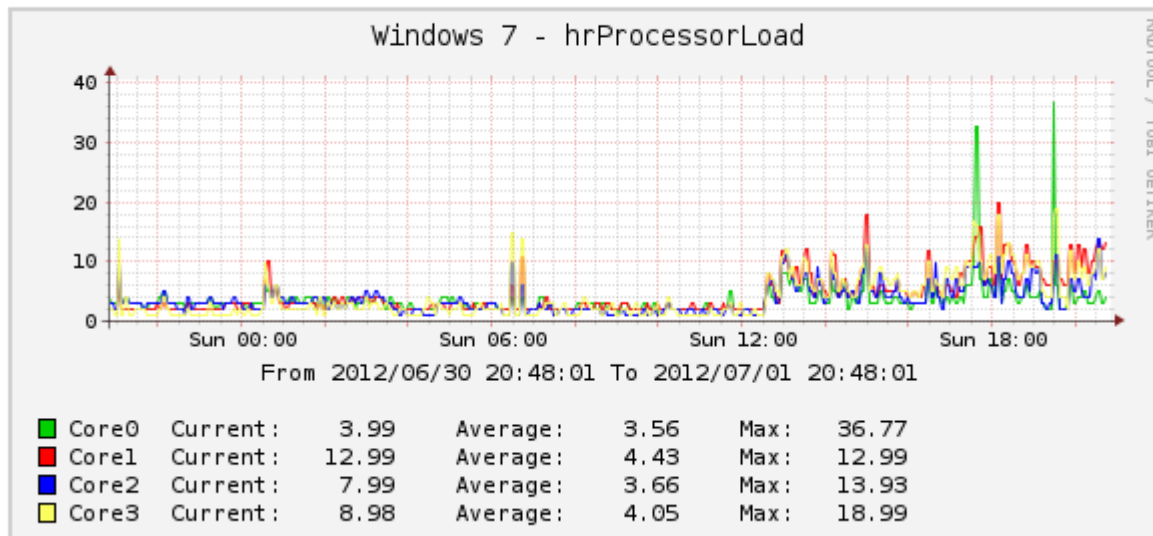
**Description**  
Enter a description for this Notification List

**Email Addresses**  
Enter a comma separated list of Email addresses for this notification list.



# สร้าง threshold

Graph Template: hrProcessorLoad-Template



# สร้าง threshold

**Create Threshold from Template**

There are no Threshold Templates associated with the following Graph

- Windows 7 - hrProcessorLoad

**Please select an action**

Create a new Threshold ▼

Cancel Go

# สร้าง threshold

**Threshold Creation Wizard**

Please press "Create" to activate your Threshold

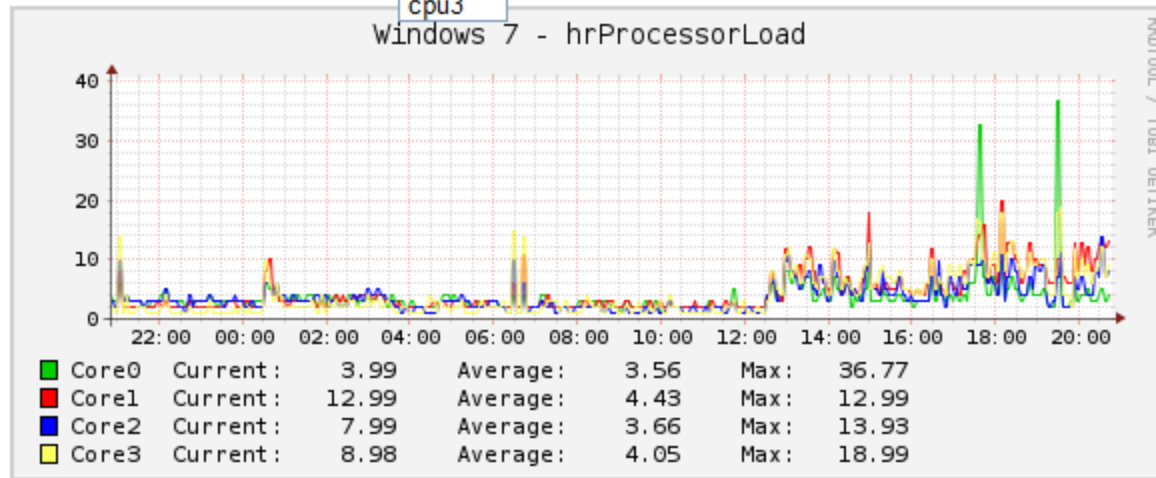
Host: Windows 7 (202.28.250.228) ▼

Graph: Windows 7 - hrProcessorLoad ▼

Data Source: cpu0 ▼

- cpu0
- cpu1
- cpu2
- cpu3

Create



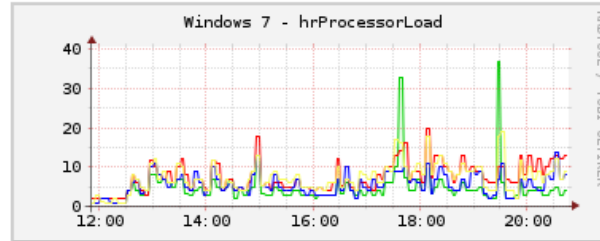


# สร้าง threshold

Data Source Description:  
**cpuload**

Associated Graph (graphs that use this RRD):

26 - Windows 7 - hrProcessorLoad ▾



1: **cpu0**  
n/a

2: **cpu1**  
n/a

3: **cpu2**  
n/a

4: **cpu3**  
n/a

Data Source Item [cpu0] - Current value: [4]

### Template settings

**Template Propagation Enabled**

Whether or not these settings will be propagated from the threshold template.

Template Propagation Enabled

### Mandatory settings

**Threshold Name**

Provide the THold a meaningful name

cpuload [cpu0]

**Threshold Enabled**

Whether or not this threshold will be checked and alerted upon.

Threshold Enabled

**Weekend Exemption**

If this is checked, this Threshold will not alert on weekends.

Weekend Exemption

**Disable Restoration Email**

If this is checked, Thold will not send an alert when the threshold has returned to normal status.

Disable Restoration Email

**Threshold Type**

The type of Threshold that will be monitored.

High / Low Values ▾

**Re-Alert Cycle**

Repeat alert after this amount of time has pasted since the last alert.

Every Hour ▾

### Warning High / Low Settings

**Warning High Threshold**

If set and data source value goes above this number, warning will be triggered

90

**Warning Low Threshold**

If set and data source value goes below this number, warning will be triggered

0

**Warning Breach Duration**

The amount of time the data source must be in breach of the threshold for a warning to be raised.

5 Minutes ▾

# สร้าง threshold

**Alert High / Low Settings**

**High Threshold**  
If set and data source value goes above this number, alert will be triggered

**Low Threshold**  
If set and data source value goes below this number, alert will be triggered

**Breach Duration**  
The amount of time the data source must be in breach of the threshold for an alert to be raised.

**Data Manipulation**

**Data Type**  
Special formatting for the given data.

**Other Settings**

**Warning Notification List**  
You may specify choose a Notification List to receive Warnings for this Data Source

**Alert Notification List**  
You may specify choose a Notification List to receive Alerts for this Data Source

**Alert Emails**  
You may specify here extra Emails to receive alerts for this data source (comma separated)

**Warning Emails**  
You may specify here extra Emails to receive warnings for this data source (comma separated)

เลือกรายชื่อที่จะ  
ได้รับการแจ้งเตือน

เลือกรายชื่อที่จะ  
ได้รับการแจ้งเตือน  
เพิ่มเติม

# ทดสอบ threshold

- แก้ไขไฟล์  
**/usr/share/cacti/site/scripts/  
cpuload.php**

```
$output = "";  
$result[0] = '95'; //เพิ่มบรรทัดนี้  
foreach($result as $index => $value)
```

- หลังจากทดสอบเสร็จแก้ไขให้เหมือนเดิม

# ทดสอบ threshold

Thresholds Log Host Status

**Threshold Status**

Template: All Host: All Status: All Rows: 20 Search:  Go Clear

<< Previous Showing Rows 1 to 1 of 1 [1] Next >>

Actions	Name	ID	Type**	Trigger	Duration	Repeat	Warn Hi/Lo	Alert Hi/Lo	BL Hi/Lo	Current	Triggered	Enabled
	cpuload [cpu0]	1	High/Low	5 Minutes	N/A	Every Hour	90/0	50/0	N/A	95	yes	Enabled

<< Previous Showing Rows 1 to 1 of 1 [1] Next >>

Alarm Baseline Alarm Warning Notice Ok Disabled

ALERT: cpuload [cpu0] [cpu0] went above threshold of 50 with 95

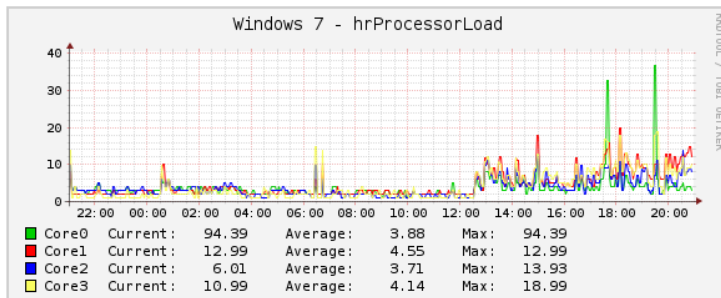
cacti เพิ่มในรายชื่อผู้ติดต่อ  
ถึง supawit.w@hotmail.co.th

An Alert has been issued that requires your attention.

Host: Windows 7 (202.28.250.228)

URL: [http://10.199.0.38/cacti//graph.php?local\\_graph\\_id=26&rra\\_id=1](http://10.199.0.38/cacti//graph.php?local_graph_id=26&rra_id=1)

Message: ALERT: cpuload [cpu0] [cpu0] went above threshold of 50 with 95



ทวีต

 **Supawit Wannapila** @supawitCC7 1 นาที

ALERT: cpuload [cpu0] [cpu0] went above threshold of 50 with 95

แสดง ◀️ ตอบกลับ 🗉 ลบ ★ ชื่นชอบ

# ทดสอบ threshold

NORMAL: cpuload [cpu0] [cpu0] Restored to Normal Threshold with Value 10

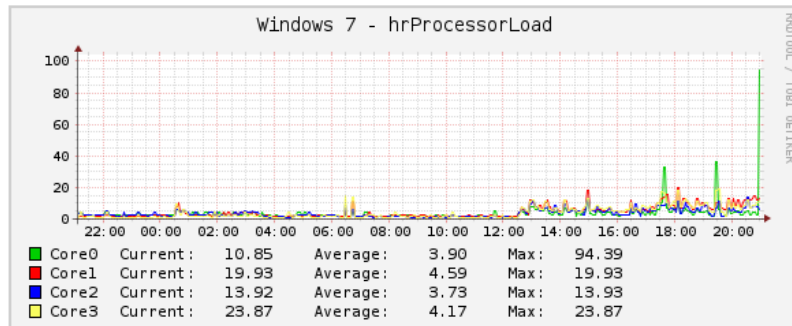
□ cacti [เพิ่มในรายชื่อผู้ติดต่อ](#)  
ถึง supawit.w@hotmail.co.th

An Alert has been issued that requires your attention.

**Host:** Windows 7 (202.28.250.228)

**URL:** [http://10.199.0.38/cacti//graph.php?local\\_graph\\_id=26&rra\\_id=1](http://10.199.0.38/cacti//graph.php?local_graph_id=26&rra_id=1)

**Message:** NORMAL: cpuload [cpu0] [cpu0] Restored to Normal Threshold with Value 10



**Supawit Wannapila** @supawitCC7

29 วินาที

NORMAL: cpuload [cpu0] [cpu0] Restored to Normal Threshold with Value 10

แสดง ◀️ ตอบกลับ 📧 ลบ ★ ชั้นชอบ

# ทดสอบ host up/down

Devices [edit: Windows 7]	
<b>General Host Options</b>	
<b>Description</b> Give this host a meaningful description.	Windows 7
<b>Hostname</b> Fully qualified hostname or IP address for this device.	202.28.250.228
<b>Host Template</b> Choose the Host Template to use to define the default Graph Templates and Data Queries associated with this Host.	ucd/net SNMP Host
<b>Number of Collection Threads</b> The number of concurrent threads to use for polling this device. This applies to the Spine poller only.	1 Thread (default)
<b>Disable Host</b> Check this box to disable all checks for this host.	<input type="checkbox"/> Disable Host
<b>Thold Up/Down Email Notification</b> Which Notification List(s) of should be notified about Host Up/Down events?	List Below
<b>Notification List</b> Additional Email address, separated by commas for multi Emails.	Server Admin
<b>Availability/Reachability Options</b>	
<b>Downed Device Detection</b> The method Cacti will use to determine if a host is available for polling. <i>NOTE: It is recommended that, at a minimum, SNMP always be selected.</i>	SNMP Uptime
<b>Ping Timeout Value</b> The timeout value to use for host ICMP and UDP pinging. This host SNMP timeout value applies for SNMP pings.	400
<b>Ping Retry Count</b> After an initial failure, the number of ping retries Cacti will attempt before failing.	1
<b>SNMP Options</b>	
<b>SNMP Version</b> Choose the SNMP version for this device.	Version 2
<b>SNMP Community</b> SNMP read community for this device.	cacti1
<b>SNMP Port</b> Enter the UDP port number to use for SNMP (default is 161).	161
<b>SNMP Timeout</b> The maximum number of milliseconds Cacti will wait for an SNMP response (does not work with php-snmp support).	500
<b>Maximum OID's Per Get Request</b> Specified the number of OID's that can be obtained in a single SNMP Get request.	10

แก้ไขให้ผิด เพื่อ  
จำลอง host down

แก้ไขให้ถูกต้องเมื่อ  
ทดสอบเสร็จ

# ทดสอบ host up/down

Host Error: Windows 7 (202.28.250.228) is DOWN

□ cacti [เพิ่มในรายชื่อผู้ติดต่อ](#)  
ถึง supawit.w@hotmail.co.th

System Error : Windows 7 (202.28.250.228) is DOWN  
Reason: Host did not respond to SNMP

Average system response : 4.14 ms

System availability: 98.98 %

Total Checks Since Clear: 687

Total Failed Checks: 7

Last Date Checked DOWN : 0000-00-00 00:00:00

Host Previously UP for: 15522d 15h 50m 4s

NOTE:



**Supawit Wannapila** @supawitCC7

5 นาที

Host Error: Windows 7 (202.28.250.228) is DOWN

[แสดง](#)

ควร protect twitter ที่ใช้แจ้งเตือน

# ทดสอบ host up/down

Host Notice: Windows 7 (202.28.250.228) returned from DOWN state

□ cacti เห็นในรายชื่อผู้ติดต่อ  
ถึง supawit.w@hotmail.co.th

System Windows 7 (202.28.250.228) status: UP

Current ping response: 2.44 ms

Average system response : 4.14 ms

System availability: 98.84 %

Total Checks Since Clear: 691

Total Failed Checks: 8

Last Date Checked UP: 0000-00-00 00:00:00

Host Previously DOWN for: 15522d 16h 10m 14s

Snmp Info:

Name - supawit-PC

Location - Chiang Mai University

Uptime - 2d 11h 16m (21339390 ms)

System - Hardware: Intel64 Family 6 Model 30 Stepping 5 AT/AT COMPATIBLE -

Software: Windows Version 6.1 (Build 7601 Multiprocessor Free)

NOTE:



**Supawit Wannapila** @supawitCC7

3 นาที

Host Notice: Windows 7 (202.28.250.228) returned from DOWN state

[แสดง](#) [←](#) [ตอบกลับ](#) [พิมพ์](#) [★](#) [ชื่นชอบ](#)





# Network Weather Map

# install

- ดาวน์โหลดไฟล์ (<http://www.network-weathermap.com>)

```
#cd /tmp
```

```
#cp /root/php-weathermap-0.97c.zip ./
```

```
#unzip php-weathermap-0.97c.zip
```

```
#mv weathermap
```

```
/usr/share/cacti/site/plugins/
```

# install

- แก้ไขไฟล์ เพิ่มบรรทัดต่อท้ายไฟล์  
**/usr/share/cacti/site/include/config  
.php**

```
$plugins = array();  
$plugins[] = 'weathermap';  
?>
```

# install

- เปลี่ยน permission ของไฟล์

```
#cd  
/usr/share/cacti/site/plugins/weathermap  
#chmod 770 configs  
#chgrp www-data configs  
#chmod 770 output  
#chgrp www-data output
```

# install

- สร้างไฟล์ password สำหรับ editor

```
#htpasswd -c /etc/apache2/cactipasswd  
admin
```

- แก้ไขต่อท้ายไฟล์

**/etc/cacti/apache.conf**

```
<Directory /usr/share/cacti/site/plugins/weathermap>  
  <Files editor.php >  
    AuthType basic  
    AuthName "Authorized Access Only!!!"  
    AuthUserFile /etc/apache2/cactipasswd  
    Require valid-user  
  </Files>  
</Directory>
```

# install

- ติดตั้ง php5-gd และ restart apache

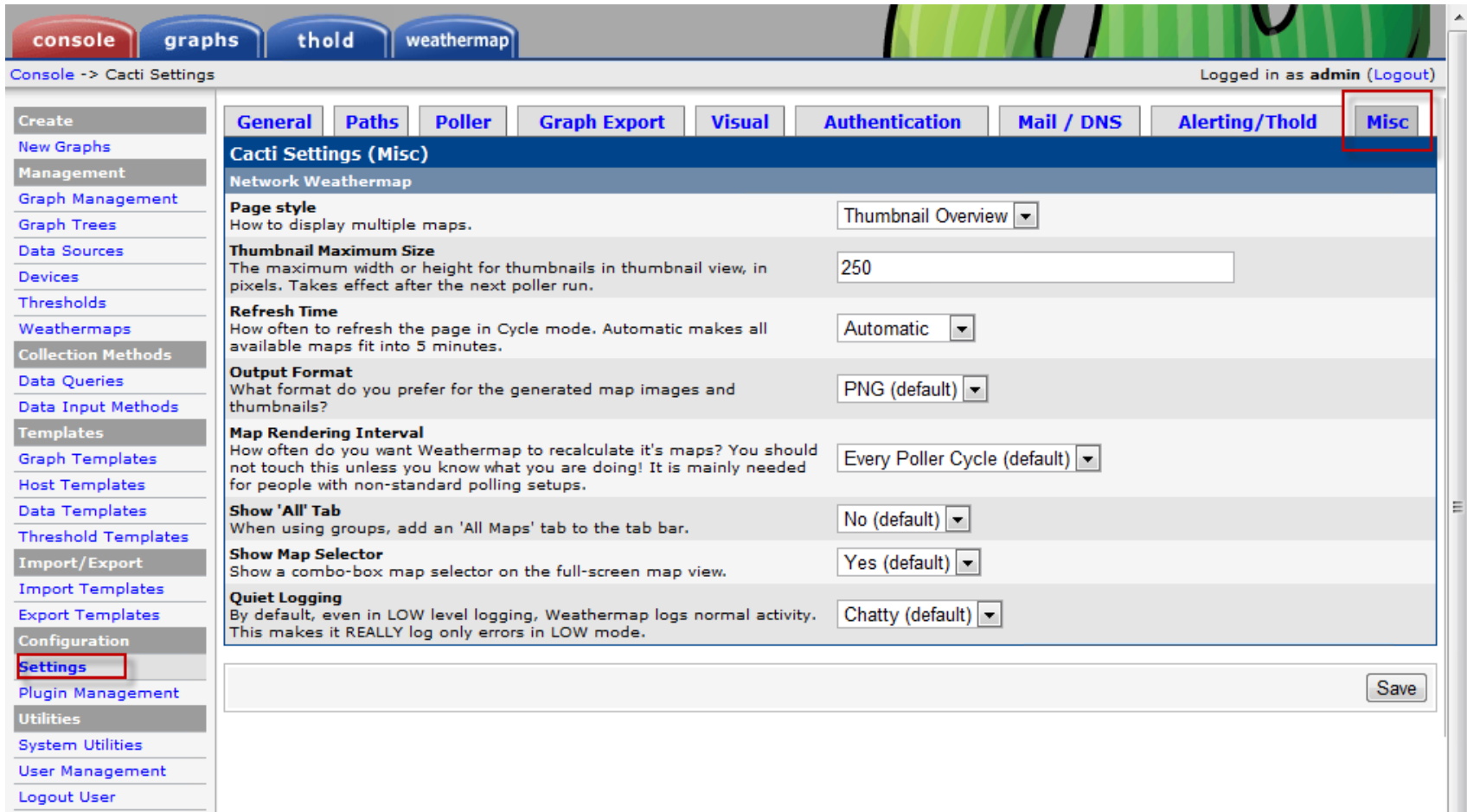
```
#apt-get install php5-gd  
#service apache2 restart
```

- แก้ไขไฟล์

```
/usr/share/cacti/site/plugins/weath  
ermap/editor.php
```

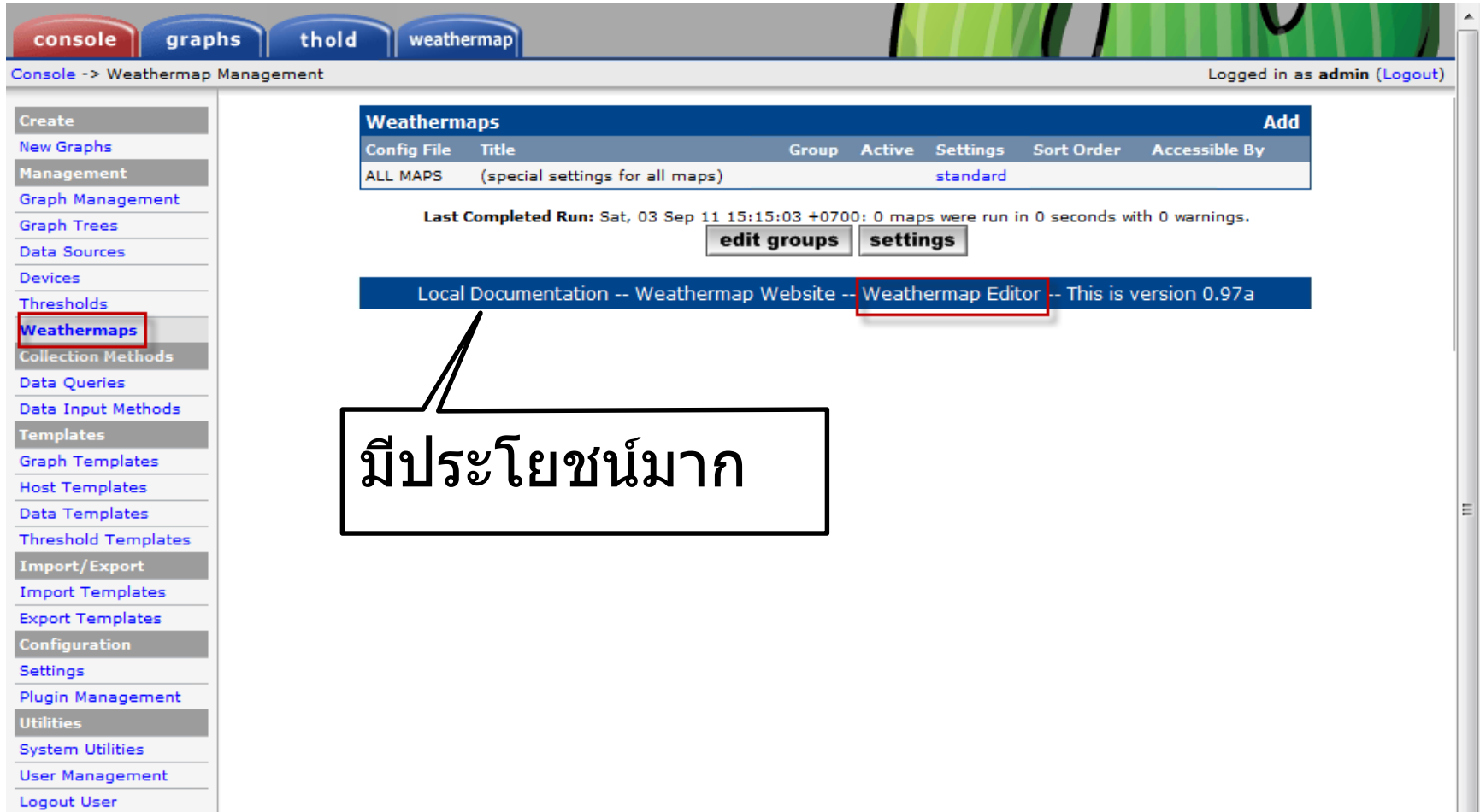
```
$ENABLED=true;
```

# settings



The screenshot shows the Cacti web interface. At the top, there are navigation tabs for 'console', 'graphs', 'thold', and 'weathermap'. Below these, the breadcrumb 'Console -> Cacti Settings' is visible, along with the user 'admin' being logged in. A sidebar on the left contains a menu with categories like 'Create', 'Management', 'Templates', 'Import/Export', 'Configuration', and 'Utilities'. The 'Settings' option is highlighted with a red box. The main content area has tabs for 'General', 'Paths', 'Poller', 'Graph Export', 'Visual', 'Authentication', 'Mail / DNS', 'Alerting/Thold', and 'Misc', with 'Misc' also highlighted by a red box. The 'Cacti Settings (Misc)' section includes several configuration items: 'Page style' (Thumbnail Overview), 'Thumbnail Maximum Size' (250), 'Refresh Time' (Automatic), 'Output Format' (PNG (default)), 'Map Rendering Interval' (Every Poller Cycle (default)), 'Show 'All' Tab' (No (default)), 'Show Map Selector' (Yes (default)), and 'Quiet Logging' (Chatty (default)). A 'Save' button is located at the bottom right of the settings area.

# Weathermap : editor



console graphs thold weathermap

Console -> Weathermap Management Logged in as admin (Logout)

**Weathermaps** Add

Config File	Title	Group	Active	Settings	Sort Order	Accessible By
ALL MAPS	(special settings for all maps)			standard		

Last Completed Run: Sat, 03 Sep 11 15:15:03 +0700: 0 maps were run in 0 seconds with 0 warnings.

[edit groups](#) [settings](#)

Local Documentation -- Weathermap Website -- [Weathermap Editor](#) -- This is version 0.97a

**มีประโยชน์มาก**

- Create
- New Graphs
- Management
  - Graph Management
  - Graph Trees
- Data Sources
- Devices
- Thresholds
- Weathermaps**
- Collection Methods
- Data Queries
- Data Input Methods
- Templates
  - Graph Templates
  - Host Templates
  - Data Templates
  - Threshold Templates
- Import/Export
  - Import Templates
  - Export Templates
- Configuration
  - Settings
  - Plugin Management
- Utilities
  - System Utilities
  - User Management
  - Logout User



# editor

## Welcome

Welcome to the PHP Weathermap 0.97c editor.

**NOTE:** This editor is not finished! There are many features of Weathermap that you will be missing out on if you choose to use the editor only. These include: curves, node offsets, font definitions, colour changing, per-node/per-link settings and image uploading. You CAN use the editor without damaging these features if you added them by hand, however.

Do you want to:

Create A New Map:

Named:

OR

Create A New Map as a copy of an existing map:

Named:  based on

OR

Open An Existing Map (looking in configs):

**cacti.conf** - *(no title)*  
(read-only)**simple.conf** - *test*

PHP Weathermap 0.97c Copyright © 2005-2013 Howard Jones - howie@thingy.com  
The current version should always be [available here](#), along with other related software.  
PHP Weathermap is licensed under the GNU Public License, version 2. See COPYING for details. This distribution also includes the Overlib library by Erik Bosrup.

# Map Properties

Add Link	Position Legend	Position Timestamp	Map Properties	Map Style	Manage Colors	Manage Images	Editor Settings	Position ---, ---
----------	-----------------	--------------------	----------------	-----------	---------------	---------------	-----------------	-------------------

## Map Properties

[Cancel](#) [Submit](#)

**Map Title**

**Legend Text**

**Timestamp Text**

**Default Link Width**  pixels

**Default Link Bandwidth**  bit/sec in,  bit/sec out

**Map Size**  x  pixels

**Output Image Filename**

**Output HTML Filename**

**Background Image Filename**

This is where help appears for maps

# Map Style

## Map Style

[Cancel](#) [Submit](#)

Link Labels

HTML Style

Arrow Style

Node Font

Link Label Font

Legend Font

Font Samples:

(Drawn using your PHP install)

Helpful text will appear here, depending on the current item selected. It should wrap onto several lines, if it's necessary for it to do that.

# Add map

- Create
- New Graphs
- Management
- Graph Management
- Graph Trees
- Data Sources
- Devices
- Weathermaps**
- Notification Lists
- Thresholds

**Weathermaps** [Add](#)

Config File	Title	Group	Active	Settings	Sort Order	Accessible By
No Weathermaps Configured						

Last Completed Run: Sun, 01 Jul 12 21:40:14 +0700: 0 maps were run in 0 seconds with 0 warnings.

[edit groups](#) [settings](#)

Local Documentation -- Weathermap Website -- Weathermap Editor -- This is version 0.97a

**Available Weathermap Configuration Files**

		Config File	Title
<a href="#">Add</a>	<a href="#">View</a>	.htaccess	(no title)
<a href="#">Add</a>	<a href="#">View</a>	cacti class	cacti class
<a href="#">Add</a>	<a href="#">View</a>	simple.conf	test

# Add map

Weathermaps							Add
Config File	Title	Group	Active	Settings	Sort Order	Accessible By	
ALL MAPS	(special settings for all maps)			standard			
cacti class	cacti class	Weathermaps	Yes	standard	↑↓	admin	

Last Completed Run: Sun, 01 Jul 12 22:50:07 +0700: 0 maps were run in 0 seconds with 0 warnings.

[edit groups](#) [settings](#)

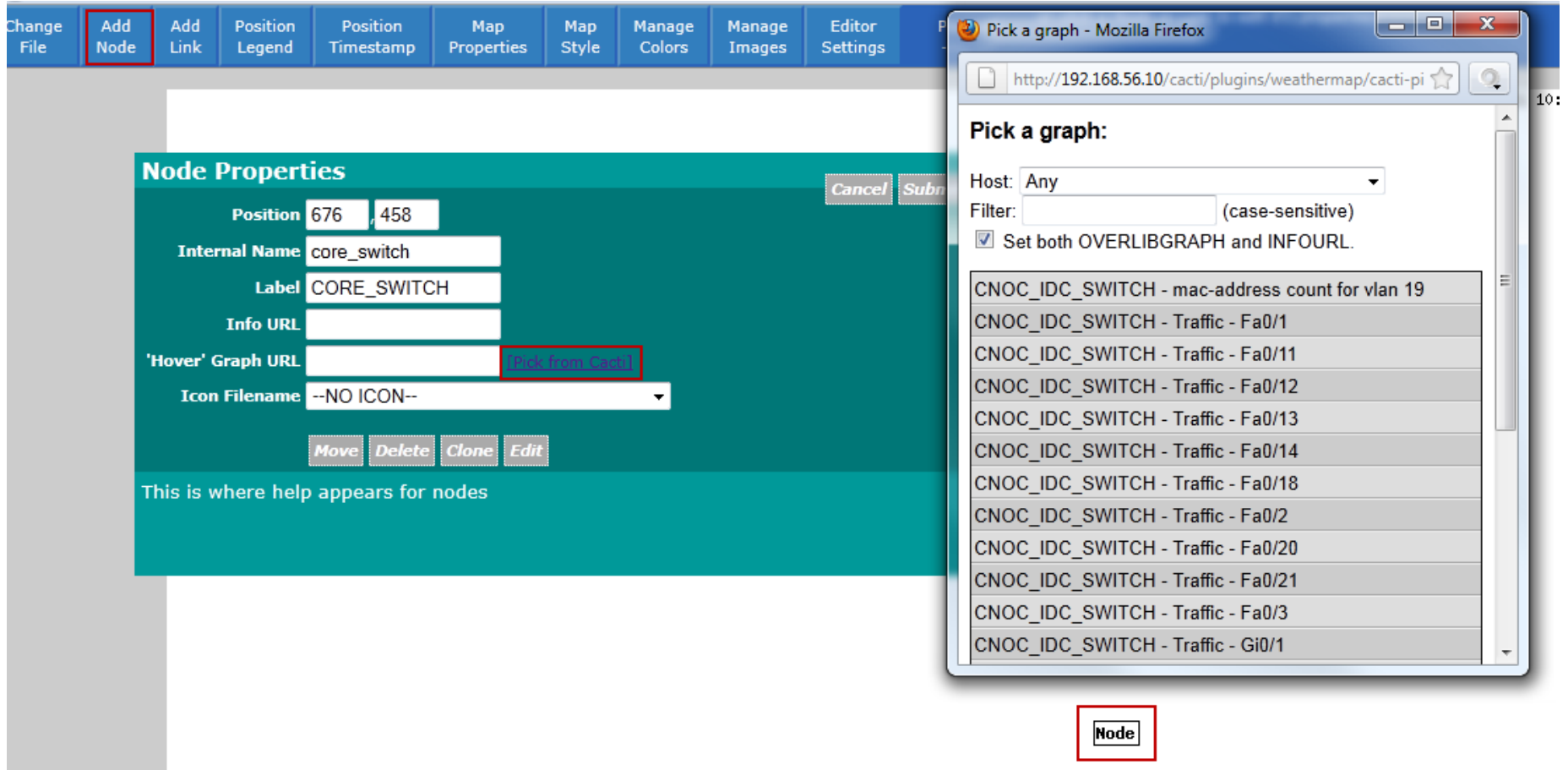
Local Documentation -- Weathermap Website -- Weathermap Editor -- This is version 0.97a

### Edit permissions for Weathermap 2: cacti class

Username
admin

Allow  to see this map

# Add node



Change File **Add Node** Add Link Position Legend Position Timestamp Map Properties Map Style Manage Colors Manage Images Editor Settings

### Node Properties

Position: 676, 458  
Internal Name: core\_switch  
Label: CORE\_SWITCH  
Info URL:  
'Hover' Graph URL: [Pick from Cacti](#)  
Icon Filename: --NO ICON--

Cancel Submit

Move Delete Clone Edit

This is where help appears for nodes

### Pick a graph - Mozilla Firefox

http://192.168.56.10/cacti/plugins/weathermap/cacti-pi

Pick a graph:

Host: Any  
Filter: (case-sensitive)  
 Set both OVERLIBGRAPH and INFOURL.

- CNOC\_IDC\_SWITCH - mac-address count for vlan 19
- CNOC\_IDC\_SWITCH - Traffic - Fa0/1
- CNOC\_IDC\_SWITCH - Traffic - Fa0/11
- CNOC\_IDC\_SWITCH - Traffic - Fa0/12
- CNOC\_IDC\_SWITCH - Traffic - Fa0/13
- CNOC\_IDC\_SWITCH - Traffic - Fa0/14
- CNOC\_IDC\_SWITCH - Traffic - Fa0/18
- CNOC\_IDC\_SWITCH - Traffic - Fa0/2
- CNOC\_IDC\_SWITCH - Traffic - Fa0/20
- CNOC\_IDC\_SWITCH - Traffic - Fa0/21
- CNOC\_IDC\_SWITCH - Traffic - Fa0/3
- CNOC\_IDC\_SWITCH - Traffic - Gi0/1

**Node**

# Change LABEL

**Node Properties** Cancel Submit

Position

Internal Name

Label

Info URL

'Hover' Graph URL  [\[Pick from Cacti\]](#)

Icon Filename

Move Delete Clone Edit

The name used for this node when defining links

เปลี่ยน label เป็น | CORE\_SWITCH |

| CORE\_SWITCH |

# Manual Edit Node

Add Node | Add Link | Position Legend | Position Timestamp | Map Properties | Map Style | Manage Colors | Manage Images | Editor Settings | Position ---, --- *or click a Node or Link to edit it's properties*

Created: Sep 07 2011 :

### Node Properties

Position

Internal Name

Label

Info URL

'Hover' Graph URL  [\[Pick from Cache\]](#)

Icon Filename

The name used for this node when defining links

Node

| CORE\_SWITCH |



# Relative Position

## Edit Map Object

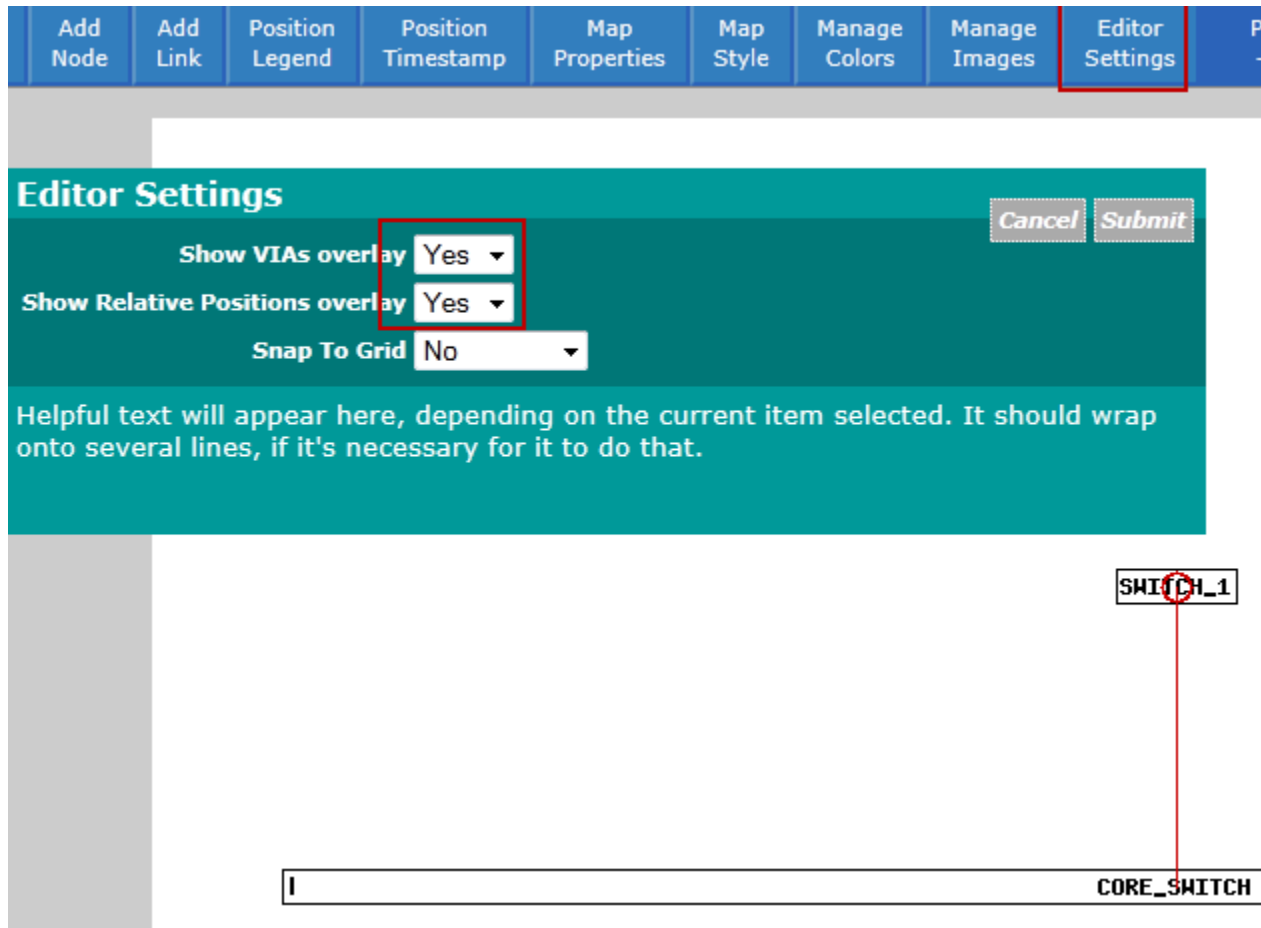
Cancel Submit

You can edit the map items directly here.

```
NODE SWITCH_1
  LABEL SWITCH_1
  POSITION core_switch 0 -150
```

Helpful text will appear here, depending on the current item selected. It should wrap onto several lines, if it's necessary for it to do that.

# Relative Position



The screenshot displays the 'Editor Settings' panel of a software application. The panel is titled 'Editor Settings' and includes 'Cancel' and 'Submit' buttons. The settings are as follows:

- Show VIAs overlay: Yes
- Show Relative Positions overlay: Yes
- Snap To Grid: No

Below the settings, there is a teal text area containing the following text:

Helpful text will appear here, depending on the current item selected. It should wrap onto several lines, if it's necessary for it to do that.

At the bottom of the screenshot, a diagram shows a red line connecting a box labeled 'SWITCH\_1' to a box labeled 'CORE\_SWITCH'.

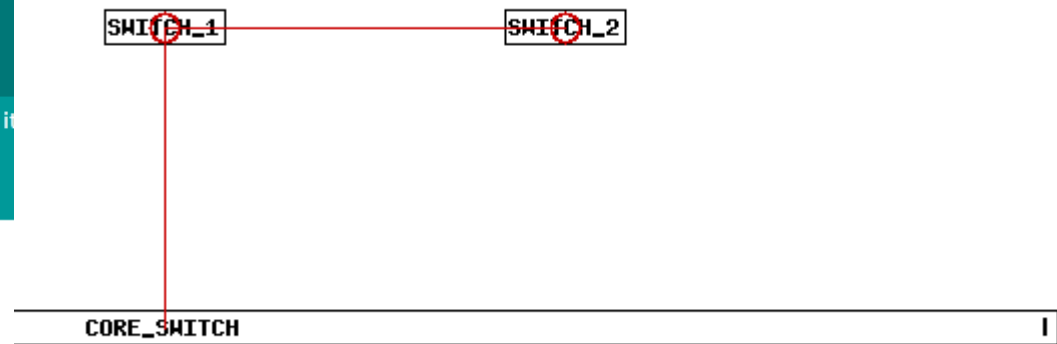
# Relative Position

**Edit Map Object** Cancel Submit

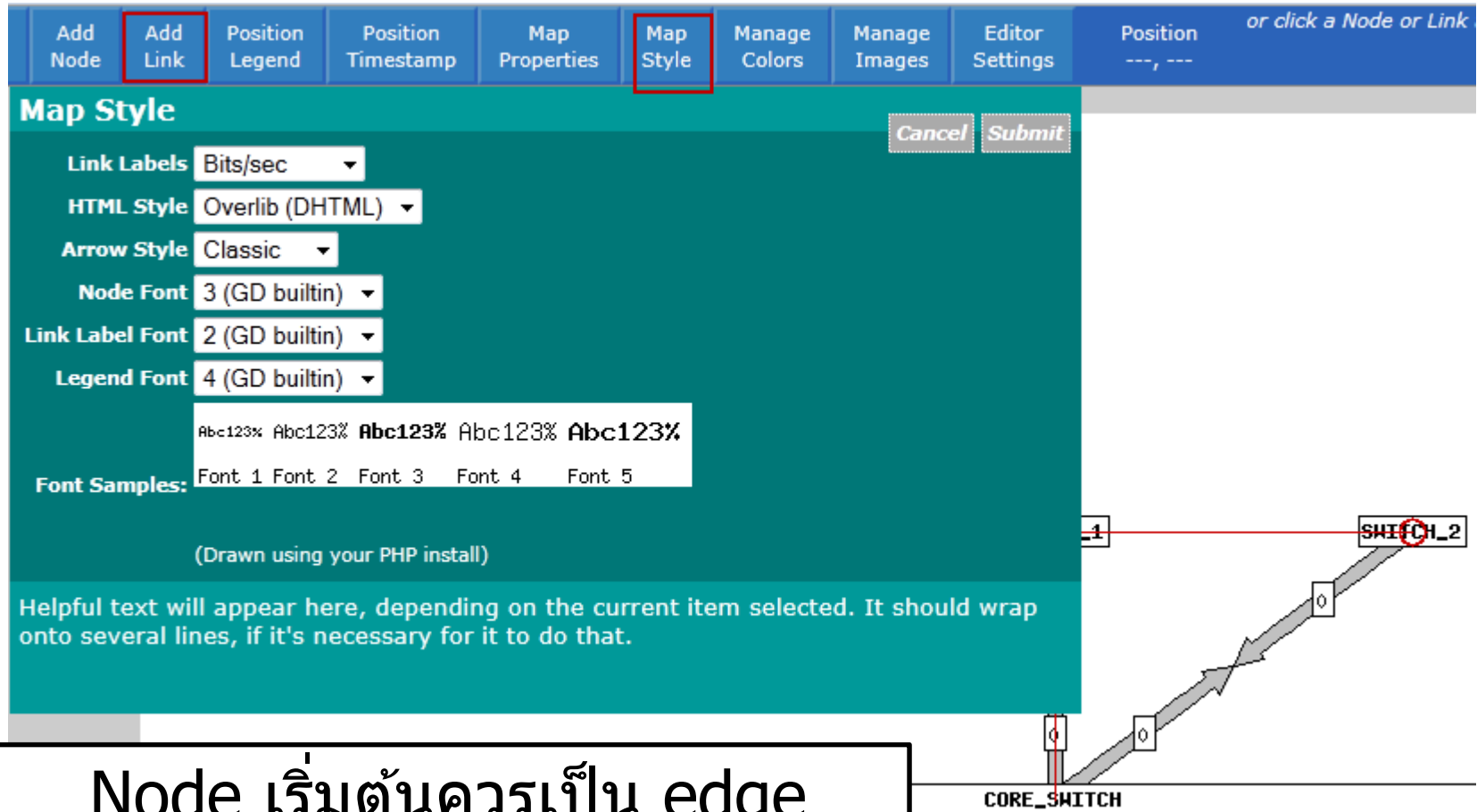
You can edit the map items directly here.

```
NODE SWITCH_2  
  LABEL SWITCH_2  
  POSITION SWITCH 1 200 0
```

Helpful text will appear here, depending on the current item, and it can wrap onto several lines, if it's necessary for it to do that.



# Add link



Map Style

Link Labels: Bits/sec

HTML Style: Overlib (DHTML)

Arrow Style: Classic

Node Font: 3 (GD builtin)

Link Label Font: 2 (GD builtin)

Legend Font: 4 (GD builtin)

Font Samples: Abc123% Abc123% **Abc123%** Abc123% Abc123%

Font 1 Font 2 Font 3 Font 4 Font 5

(Drawn using your PHP install)

Helpful text will appear here, depending on the current item selected. It should wrap onto several lines, if it's necessary for it to do that.

Cancel Submit

or click a Node or Link

---, ---

CORE\_SWITCH

SWITCH\_2

1

0

0

Node เริ่มต้นควรเป็น edge  
Node ปลายทางควรเป็น core

# Edit link

Add Link Position Legend Position Timestamp Map Properties Map Style Manage Colors Manage Images Editor Settings Position ---, --- *or click a Node or Link to edit it's properties*

### Link Properties

Link from 'SWITCH\_1' to 'core\_switch'

Maximum Bandwidth Into 'SWITCH\_1' 1G bits/sec

Maximum Bandwidth Out of 'SWITCH\_1'  Same As 'In' or  bits/sec

Data Source /usr/share/cacti/site/rrr **(Pick from Cacti)**

Link Width 4 pixels

Info URL /cacti/graph.php?rra\_id=all&loca

'Hover' Graph URL /cacti/graph\_image.php?local\_gi

IN Comment  95% ▼

OUT Comment  5% ▼

Delete Link Edit Vert Horiz Via

This is where help appears for links

Pick a data source - Mozilla Firefox

http://192.168.56.10/cacti/plugins/weathermap/cacti-pi

Pick a data source:

Host: Any ▼

Filter:  (case-sensitive)

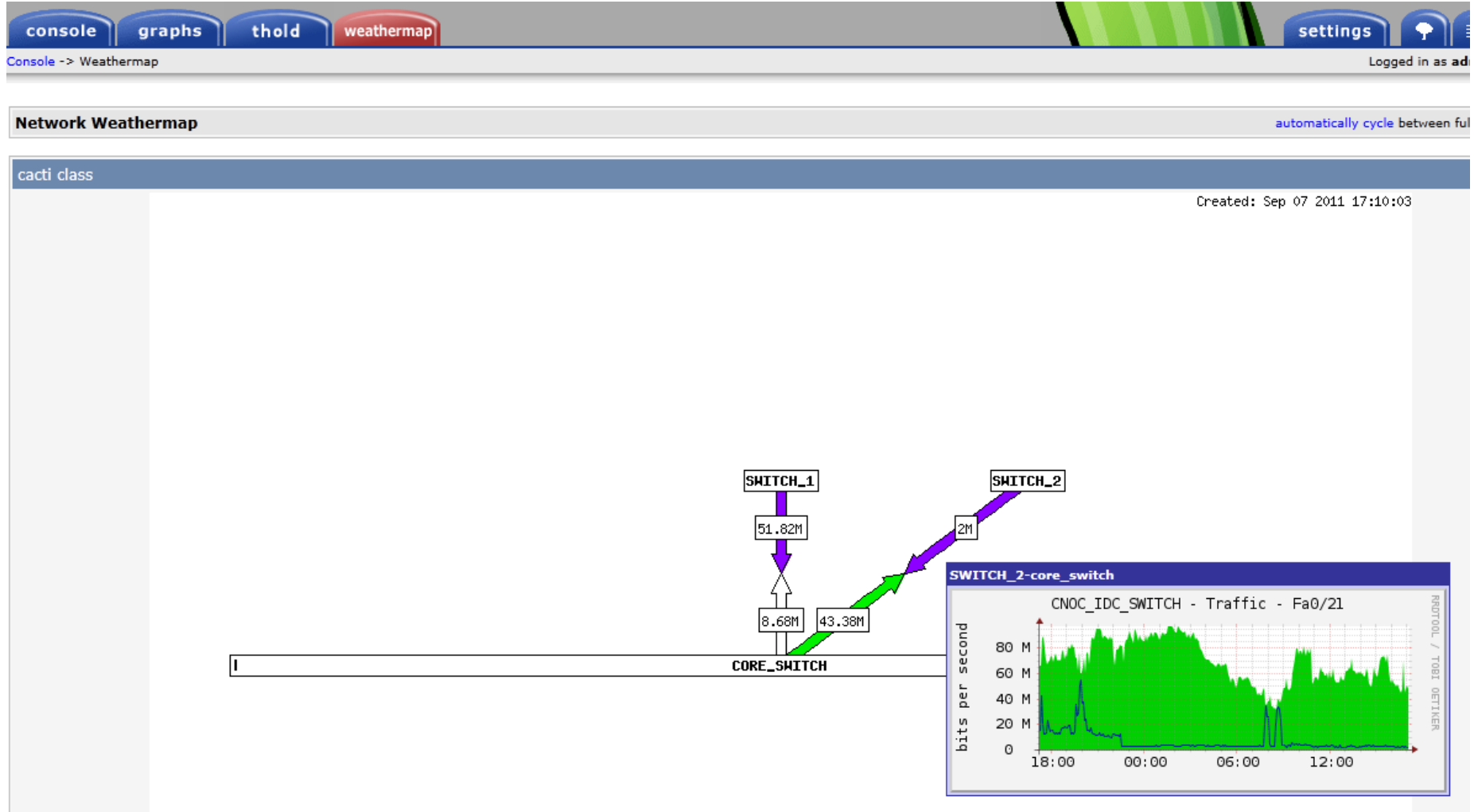
Also set OVERLIBGRAPH and INFOURL.

Append TARGET to existing one (Aggregate)

CNOC_IDC_SWITCH - mac_address count
CNOC_IDC_SWITCH - Traffic - Fa0/1
CNOC_IDC_SWITCH - Traffic - Fa0/11
CNOC_IDC_SWITCH - Traffic - Fa0/12
CNOC_IDC_SWITCH - Traffic - Fa0/13
CNOC_IDC_SWITCH - Traffic - Fa0/14
CNOC_IDC_SWITCH - Traffic - Fa0/18
CNOC_IDC_SWITCH - Traffic - Fa0/2
CNOC_IDC_SWITCH - Traffic - Fa0/20
CNOC_IDC_SWITCH - Traffic - Fa0/21
CNOC_IDC_SWITCH - Traffic - Fa0/3

กราฟที่จะแสดงบนลิงค์ต้องเป็น  
กราฟของ node เริ่มต้น

# Map re-create every polling period



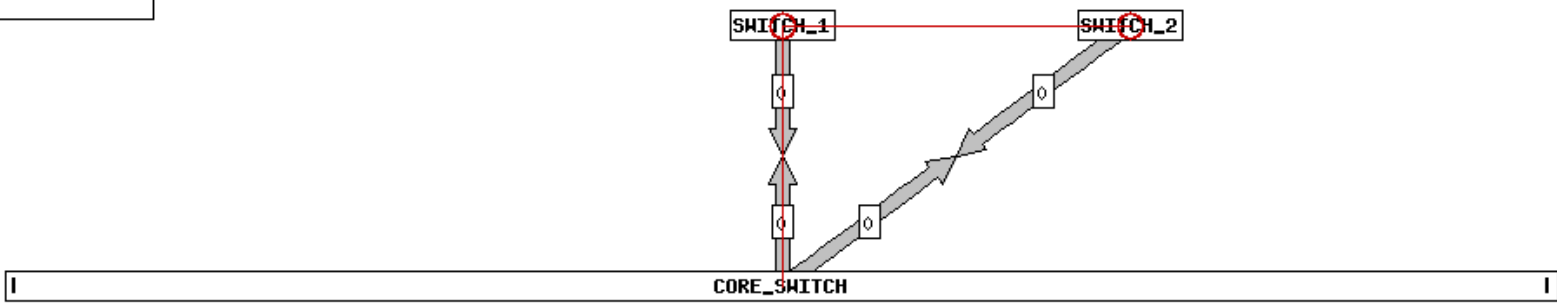
# Legend and Timestamp

Add Link **Position Legend** Position Timestamp Map Properties Map Style Manage Colors Manage Images Editor Settings Position ---, --- *or click a Node or Link to edit its properties*

Created: Sep 07 2011 17:18:15

**Traffic Load**

- 0-1%
- 1-10%
- 10-25%
- 25-40%
- 40-55%
- 55-70%
- 70-85%
- 85-100%



The diagram illustrates a network topology with three switches: CORE\_SWITCH, SWITCH\_1, and SWITCH\_2. CORE\_SWITCH is at the bottom, connected to SWITCH\_1 above it and SWITCH\_2 to its right. SWITCH\_1 and SWITCH\_2 are also connected to each other. Traffic flow is indicated by arrows: from CORE\_SWITCH to SWITCH\_1, from CORE\_SWITCH to SWITCH\_2, and from SWITCH\_1 to SWITCH\_2. Small boxes with the number '0' are placed along the links, likely representing traffic load or delay. The SWITCH\_1 and SWITCH\_2 nodes are circled in red.

# parallel link : offset

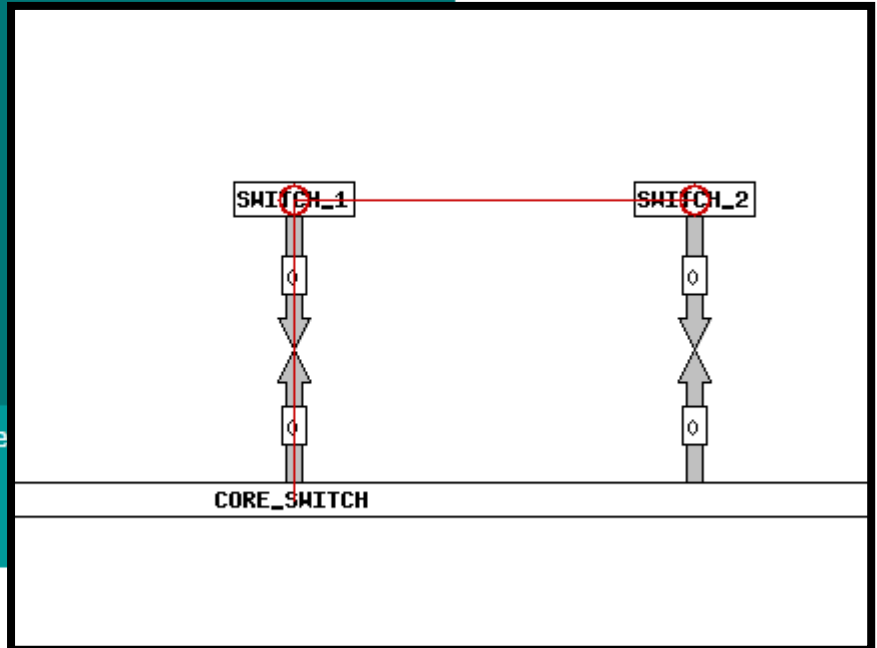
## Edit Map Object

Cancel Submit

You can edit the map items directly here.

```
LINK SWITCH_2-core_switch
  INFOURL /cacti
  /graph.php?rra_id=all&local_graph_id=14
  OVERLIBGRAPH /cacti
  /graph_image.php?local_graph_id=14&
  rra_id=0&graph_nolegend=true&
  graph_height=100&graph_width=300
  TARGET /usr/share/cacti/site/rra
  /cnoc_idc_switch_traffic_in_17.rrd
  NODES SWITCH_2 core_switch:200:0
```

Helpful text will appear here, depending on the current item  
onto several lines, if it's necessary for it to do that.





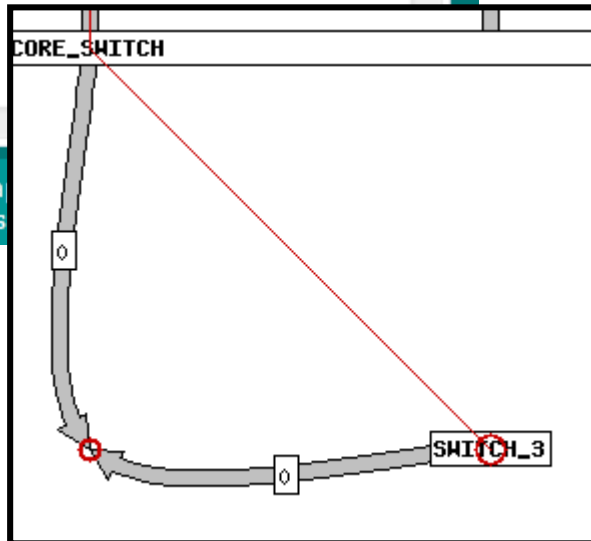
# curve link : via

## Edit Map Object

You can edit the map items directly here.

```
LINK SWITCH3-core_switch
  INFOURL /cacti
  /graph.php?rra_id=all&local_graph_id=13
  OVERLIBGRAPH /cacti
  /graph_image.php?local_graph_id=13&
  rra_id=0&graph_nolegend=true&
  graph_height=100&graph_width=300
  TARGET /usr/share/cacti/site/rra
  /cnoc_idc_switch_traffic_in_16.rrd
  NODES SWITCH3 core_switch
  VIA SWITCH3 -200 0
```

Helpful text will appear onto several lines

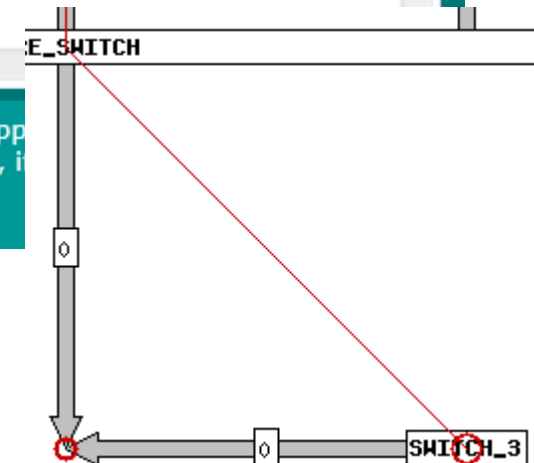


## Edit Map Object

You can edit the map items directly here.

```
LINK SWITCH3-core_switch
  INFOURL /cacti
  /graph.php?rra_id=all&local_graph_id=13
  OVERLIBGRAPH /cacti
  /graph_image.php?local_graph_id=13&
  rra_id=0&graph_nolegend=true&
  graph_height=100&graph_width=300
  TARGET /usr/share/cacti/site/rra
  /cnoc_idc_switch_traffic_in_16.rrd
  NODES SWITCH3 core_switch
  VIA SWITCH3 -200 0
  VIASTYLE angled
```

Helpful text will appear onto several lines, i



# host status legend

- แก้ไขไฟล์ config ของ map แบบ manual ใน  
ห้อง

**/usr/share/cacti/site/plugins/weathermap/configs/**

**KEYPOS host 50 50 Host Status**

**KEYSTYLE host tags 250**

**SCALE host 0 0.5 192 192 192 Disabled**

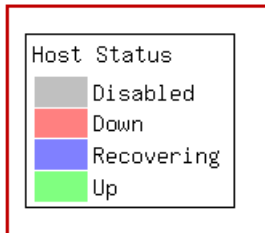
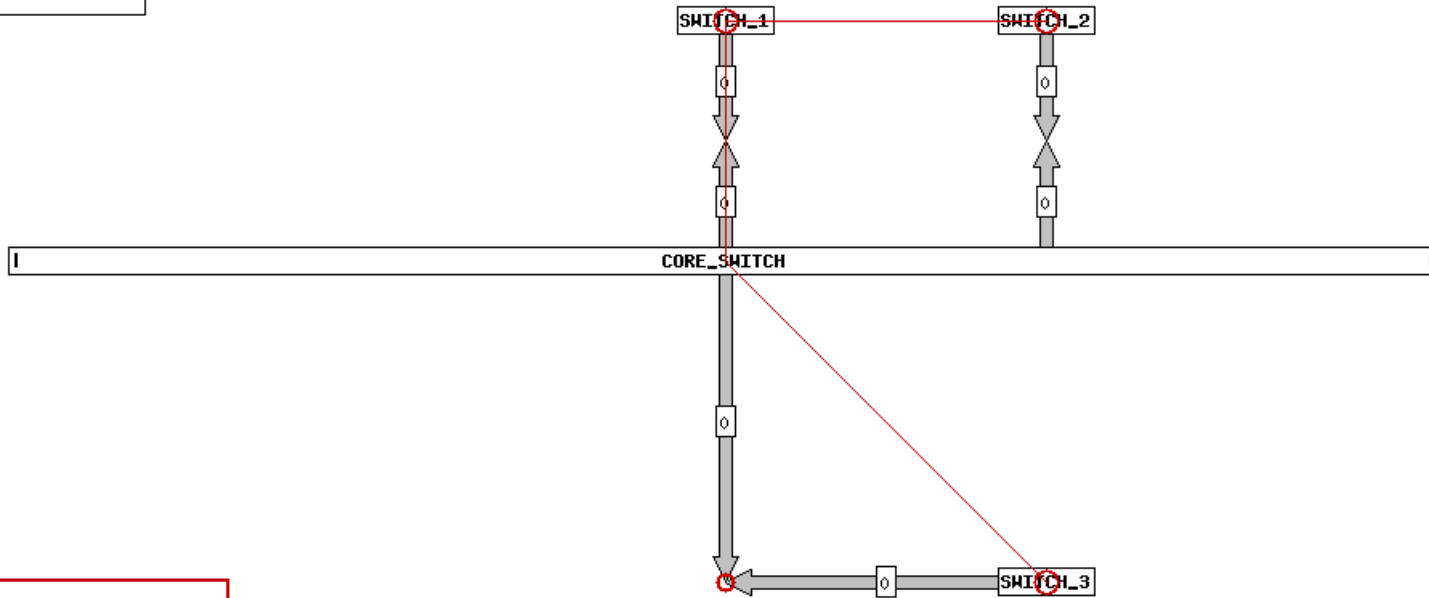
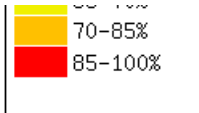
**SCALE host 0.5 1.5 255 128 128 Down**

**SCALE host 1.5 2.5 128 128 255 Recovering**

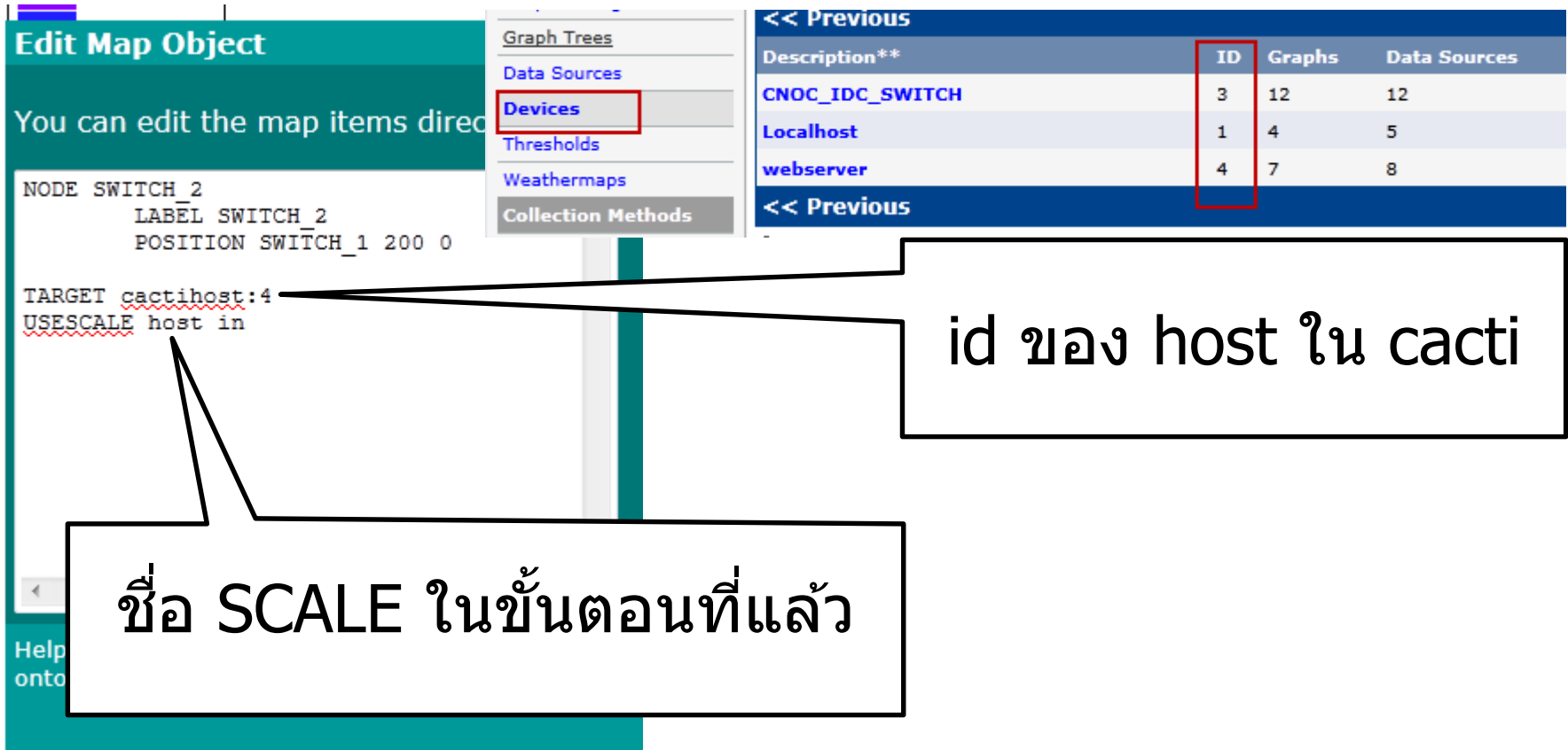
**SCALE host 2.5 3.5 128 255 128 Up**

**# End of global section**

# host status legend



# host status legend



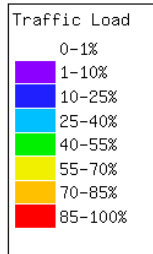
The screenshot shows the Nagios web interface. On the left, the 'Edit Map Object' section displays configuration for a node named SWITCH\_2. The configuration includes a label and position, and a target named 'cactihost:4'. Below this, the text 'USESCALE host in' is visible. A callout box points to 'cactihost:4' with the text 'ชื่อ SCALE ในขั้นตอนที่แล้ว'. On the right, a table titled '<< Previous' lists host data. The 'ID' column is highlighted with a red box. A callout box points to this 'ID' column with the text 'id ของ host ใน cacti'.

Description**	ID	Graphs	Data Sources
CNOC_IDC_SWITCH	3	12	12
Localhost	1	4	5
webserver	4	7	8

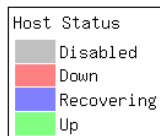
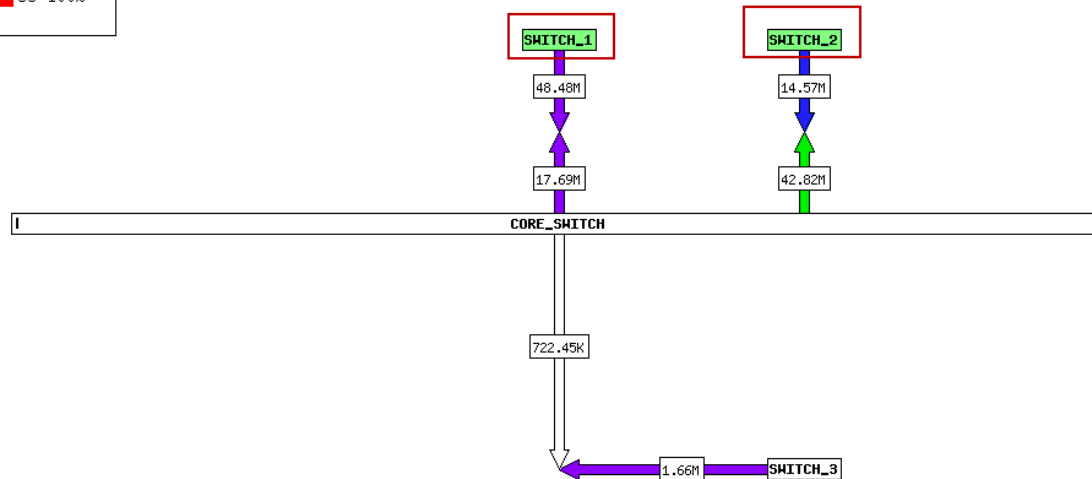
ชื่อ SCALE ในขั้นตอนที่แล้ว

id ของ host ใน cacti

# host status legend



Created: Sep 08 2011 11:10:03



# gammu-smsd

# gammu-smsd

- <http://wammu.eu/smsd/>
- อ่านค่าจากฐานข้อมูลแล้วส่ง sms
- ใช้งานได้กับโทรศัพท์มือถือหลายรุ่น  
<http://wammu.eu/phones/>
- ที่ใช้งานอยู่เป็น nokia 1202 และสาย data link ซื่อแยก

# install

- **#apt-get install gammu-smsd**

```
root@cacti:~# apt-get install gammu-smsd
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following extra packages will be installed:
  libbluetooth3 libgammu-i18n libgammu7 libgsm7 libltdl7 libodbc1 libpq5 usb-modeswitch usb-modeswitch-data
Suggested packages:
  gammu gammu-doc libmyodbc odbc-postgresql tdsodbc unixodbc-bin comgt wvdial
The following NEW packages will be installed:
  gammu-smsd libbluetooth3 libgammu-i18n libgammu7 libgsm7 libltdl7 libodbc1 libpq5 usb-modeswitch
  usb-modeswitch-data
0 upgraded, 10 newly installed, 0 to remove and 2 not upgraded.
Need to get 1,372 kB of archives.
After this operation, 4,909 kB of additional disk space will be used.
Do you want to continue [Y/n]? y
```



# config : database

- **#mysql -uroot -p[รหัสผ่าน]**
- **mysql> CREATE DATABASE `gammu-smsd`**
- **-> DEFAULT CHARACTER SET utf8**
- **-> DEFAULT COLLATE utf8\_general\_ci;**
- **Query OK, 1 row affected (0.02 sec)**
- **quit**

# config : database

- **#cp /usr/share/doc/gammu-smsd/examples/mysql.sql.gz /tmp/**
- **#gunzip /tmp/mysql.sql.gz**
- **#mysql -uroot -pqwerty gammu-smsd < /tmp/mysql.sql**

# config : gammu

- แก้ไขไฟล์ /etc/gammu-smsdrc

```
[gammu]  
port = /dev/ttyUSB0 (หรือตามพอร์ทที่เชื่อมต่อ)  
connection = fbus
```

```
[smsd]  
CheckSecurity = 0  
CheckBattery = 0  
CheckSignal = 0  
ResetFrequency = 0  
StatusFrequency = 0  
MaxRetries = 3  
debuglevel = 0  
commtimeout = 30  
sendtimeout = 90
```

# config : gammu

- แก้ไขไฟล์ /etc/gammu-smsdrc (ต่อ)

```
service = SQL  
Driver = native_mysql  
logfile = syslog  
user = root  
password = [รหัสฐานข้อมูล]  
database = gammu-smsd  
pc = localhost
```

- เริ่ม gammu-smsd ใหม่
- **#service gammu-smsd restart**

# send sms

- เพิ่มข้อมูลลงไปในฐานะข้อมูล gammu-smsd ตาราง outbox ระบบจะส่งข้อความไปอัตโนมัติดังตัวอย่าง

```
INSERT INTO outbox SET  
DestinationNumber = 'หมายเลขผู้รับ',  
TextDecoded = 'ข้อความ',  
CreatorID = 'หมายเหตุการส่ง',  
Coding = 'Unicode_No_Compression'
```

- ส่วน log การส่งจะอยู่ในฐานข้อมูลและ syslog สามารถเข้าไปดูได้ผ่าน phpmyadmin

# SARAN

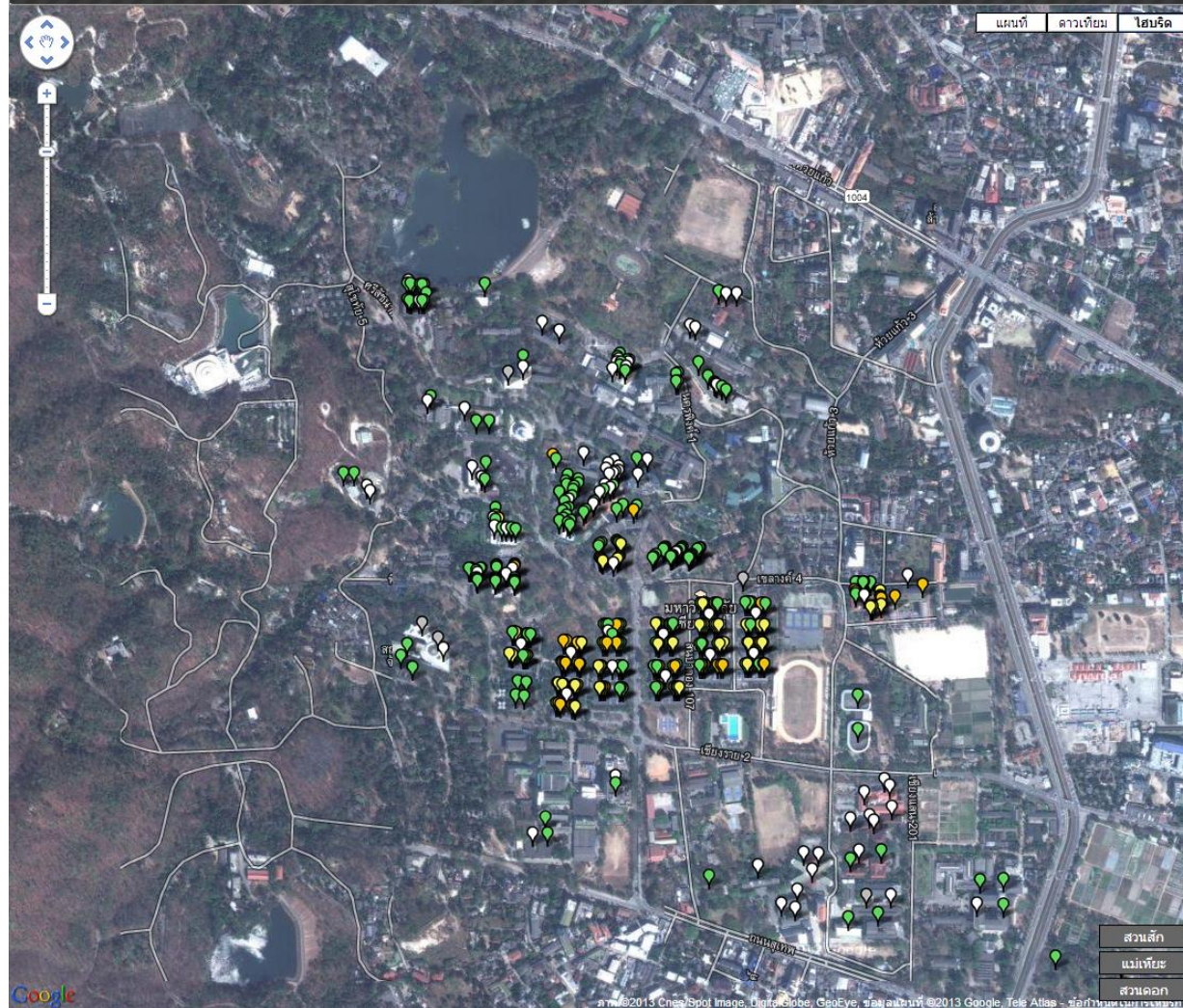
## Access Point Monitoring

# SARAN

- ระบบตรวจสอบการทำงานของ access point
- เขียน script เพื่อดึงข้อมูลโดยผลลัพธ์ของ script ต้องเป็นรูปแบบที่กำหนด
- เก็บข้อมูลโดย rrdtool และแสดงผลเป็นกราฟ
- วางจุดติดตั้ง access point ลงบนแผนที่โดยใช้ google map api

# SARAN

Access Point Monitoring System | Computer Network Operation Center, Chiangmai University



log in

Status Top Ten Statistic Status table



jumbomaps

Access Point

218 : 218\_StB\_F3\_Club

Down AP

Maintenance AP

- 3 : สำนักอธิการบดี ห้องประชุม 3
- 4 : CNOC F2
- 7 : คณะมนุษยศาสตร์ ห้องศูนย์เทคโนโลยี
- 9 : คณะมนุษยศาสตร์ ห้องสมุด
- 12 : คณะวิทยาศาสตร์ ห้องสมุด
- 19 : arc\_studio3
- 56 : หอพักคณะศึกษาศาสตร์ ชั้น 1
- 60 : หอประชุมมช. เรือนประพูน
- 63 : คณะพยาบาล ห้องศูนย์เทคโนโลยี
- 70 : ห้องสมุดคณะวิศวกรรมศาสตร์
- 77 : คณะพยาบาล ห้องสมุด
- 106 : หอประชุมใหญ่
- 130 : คลินิกโสต

Map display mode Standard Monitor

ส่วนลึก  
แผนที่ขยาย  
ส่วนนอก



# Require software

- Ubuntu
- **#apt-get install lamp-server^ mysql-server rrdtool php5-curl**
- Centos
- install additional package **php-bcmath**

# installation

- คัดลอกไฟล์
- **#cd /tmp**
- **#cp /root/saran.tar.gz ./**
- **#tar zxvf saran.tar.gz**
- **#mv saran /usr/share/**
- **#cd /usr/share/saran/**

# installation

- นำเข้าฐานข้อมูล
- **#mysql -u[username] -p[password]  
< config/saran.sql**
- แก้ไขไฟล์ **html/connect.php**

```
$db_host = "localhost";  
$db_user = "[username]";  
$db_pass = "[password]";  
$db_name = "saran";
```

# installation

- แก้ไขไฟล์ **/etc/apache2/sites-enabled/000-default**

```
DocumentRoot /var/www
```

```
<Directory />
```

```
Options FollowSymLinks MultiViews
```

```
AllowOverride None
```

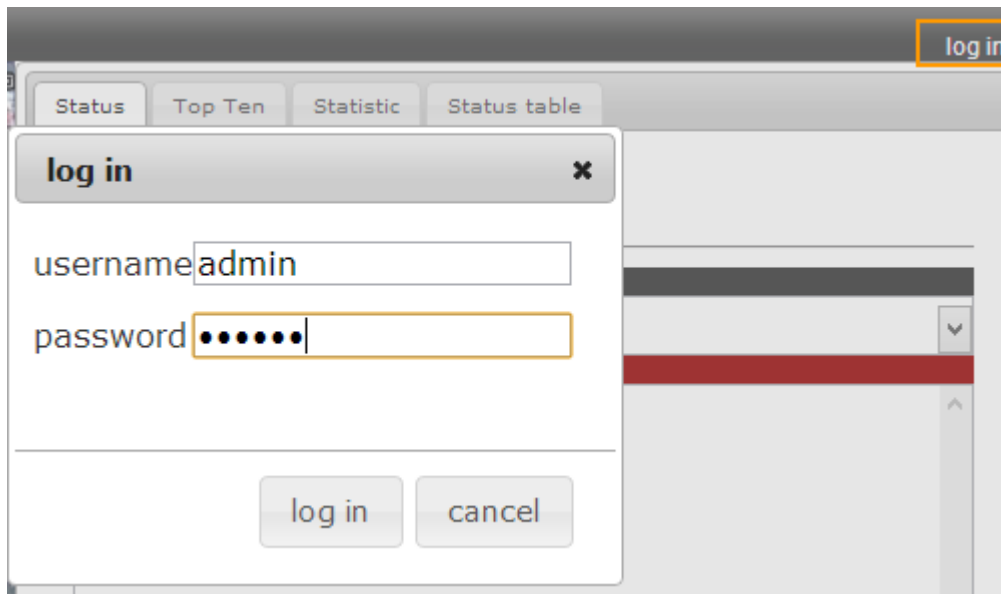
```
</Directory>
```

# installation

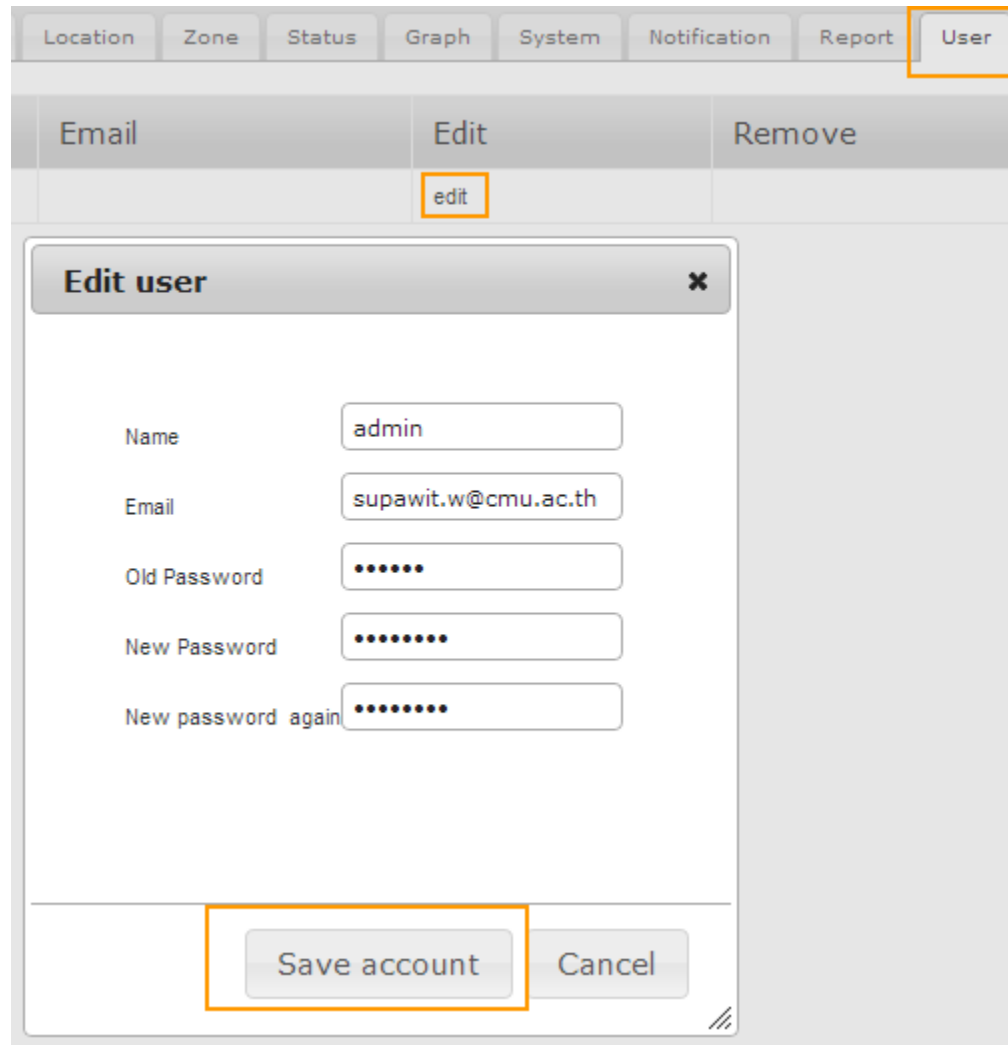
- **#cp config/saran\_apache2.conf /etc/apache2/conf.d/**
- **#cp config/saran\_crontab /etc/cron.d/**
- เริ่ม apache2 ใหม่
- **#service apache2 restart**
- เรียกเว็บ `http://{server-ip}/saran`

# Log in

- default username : admin  
password : qwerty



# Change default password



The screenshot shows a web interface for user management. At the top, there is a navigation bar with tabs: Location, Zone, Status, Graph, System, Notification, Report, and User. The 'User' tab is selected and highlighted with an orange box. Below the navigation bar, there is a table with columns: Email, Edit, and Remove. The 'Edit' column contains a button labeled 'edit', which is also highlighted with an orange box. A modal dialog box titled 'Edit user' is open, containing the following fields:

- Name: admin
- Email: supawit.w@cmu.ac.th
- Old Password: [masked with 6 dots]
- New Password: [masked with 7 dots]
- New password again: [masked with 7 dots]

At the bottom of the dialog box, there are two buttons: 'Save account' (highlighted with an orange box) and 'Cancel'.

# Add/remove user

Access Point Update Script Location Zone Status Graph System Notification Report **User** admin | log out

Name	Email	Edit	Remove
admin	supawit.w@cmu.ac.th	edit	
supawit	supawit.w@365.cmu.ac.th	edit	remove

Create new user




# Graph Option

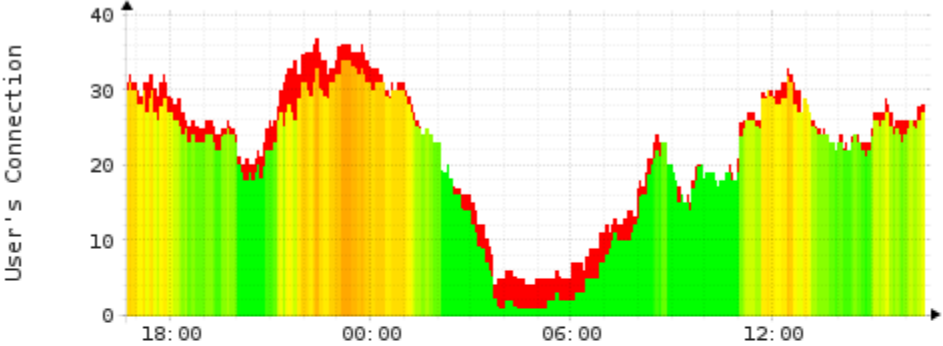
Access Point | Update Script | Location | Zone | Status | **Graph** | System | Notification | Report | User | admin | log out

### Graph Configuration

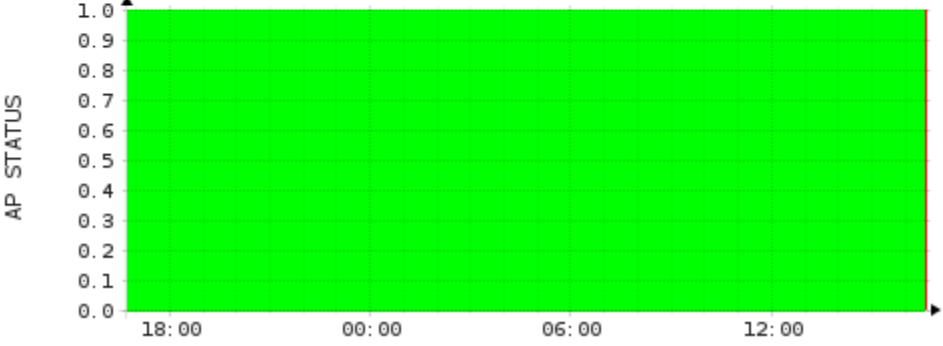
Minimum Gradient Border	20
Maximum Gradient Border	35



← slide to change →



User's Connection



AP STATUS

# Access Point Color

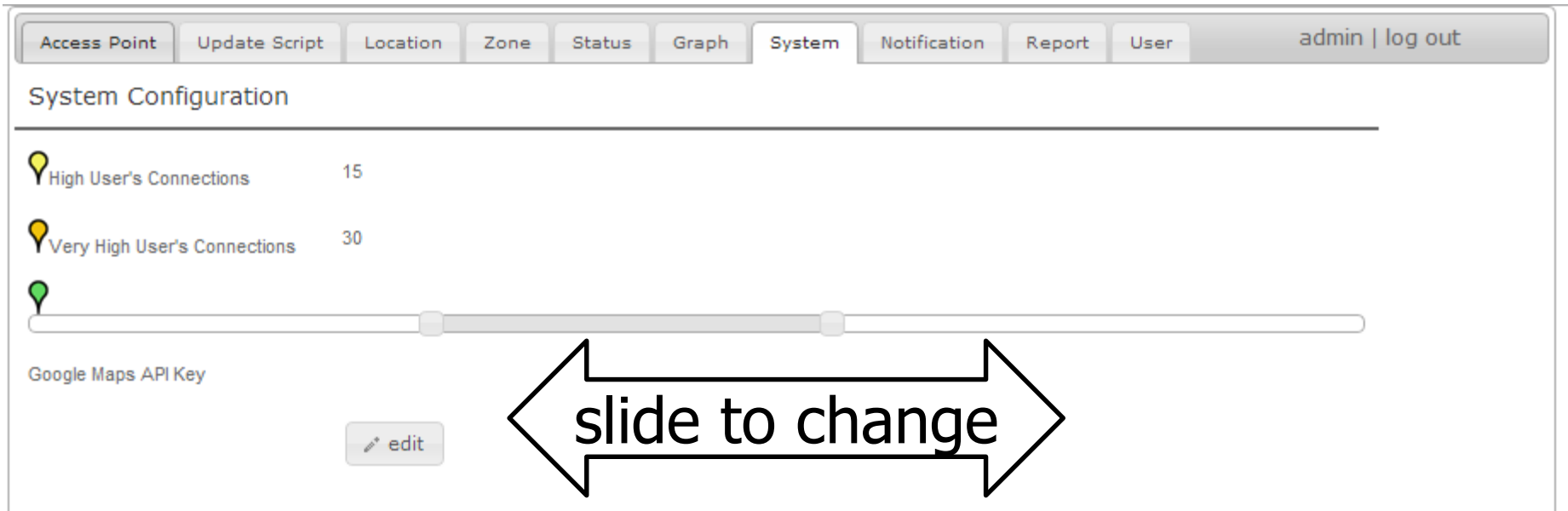
Access Point | Update Script | Location | Zone | Status | Graph | System | Notification | Report | User | admin | log out

### System Configuration

High User's Connections	15
Very High User's Connections	30

Google Maps API Key

slide to change



# Add Zone

Access Point | Update Script | Location | **Zone** | Status | Graph | System | Notification | Report | User | admin | log out

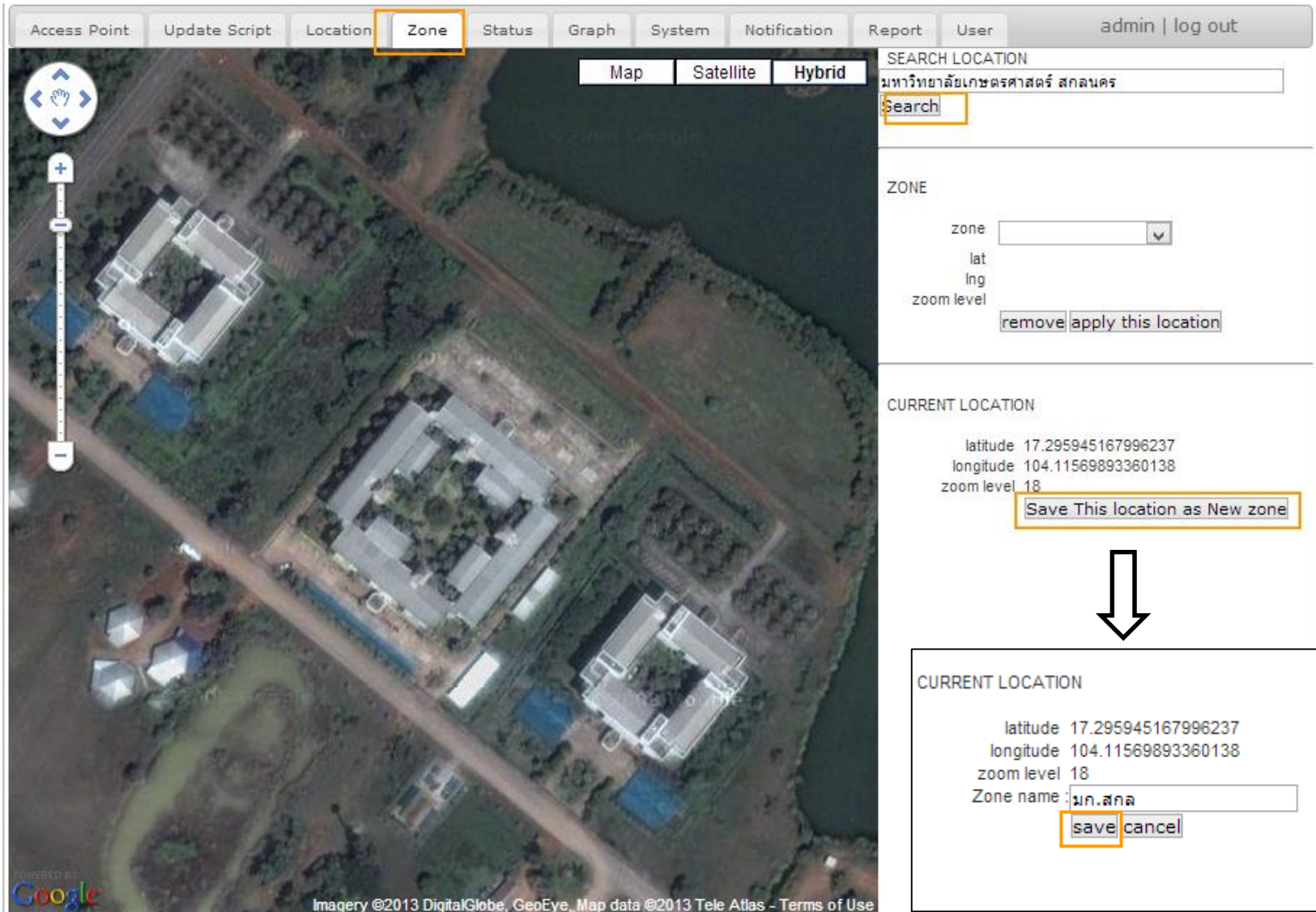
Map | Satellite | Hybrid

SEARCH LOCATION  
มหาวิทยาลัยเกษตรศาสตร์ สกลนคร  
Search

ZONE  
zone  
lat  
lng  
zoom level  
remove apply this location

CURRENT LOCATION  
latitude 17.295945167996237  
longitude 104.11569893360138  
zoom level 18  
Save This location as New zone

CURRENT LOCATION  
latitude 17.295945167996237  
longitude 104.11569893360138  
zoom level 18  
Zone name: มก.สกล  
save cancel



# Add update script

Access Point | **Update Script** | Location | Zone | Status | Graph | System | Notification | Report | User | admin | log out

---

script

Script

**Command**

Argument Access Point Name

Mode

format for single: AUTHEN:number of Success Authentication User:TOTAL:total connection

example single AUTHEN:10:TOTAL:12

format for multiple: Access Point ID:AUTHEN:number of Success Authentication User:TOTAL:total connection

example multiple 1:AUTHEN:10:TOTAL:12

Script Mode Multiple Execution Test

Script output

Script result

# Add update script

Access Point Update Script Location Zone Status Graph Sys

script

Script

Command

Argument

Mode

format for single: AUTHEN:number of Success Authentication User:TOTAL:total connection

example single AUTHEN:10:TOTAL:12

format for multiple: Access Point ID:AUTHEN:number of Success Authentication User:TOTAL:total connection

example multiple 1:AUTHEN:10:TOTAL:12

Script Mode Multiple Execution Test

Script output

```
1:AUTHEN:17:TOTAL:32
2:AUTHEN:21:TOTAL:31
3:AUTHEN:20:TOTAL:25
4:AUTHEN:23:TOTAL:32
5:AUTHEN:24:TOTAL:29
6:AUTHEN:13:TOTAL:32
7:AUTHEN:10:TOTAL:32
```

Script result

```
Script name test
Command /usr/bin/php /usr/share/saran/script/test.php
execution time 0 seconds
Correct Format 500 of 500
Apply Script to APs on List
```

# Script

- อาจเป็น php, perl หรือ shell script ก็ได้ เมื่อรันแล้วไปดึงค่าจากอุปกรณ์แล้วนำมาประมวลผลเพื่อให้ได้ผลลัพธ์ออกมาในรูปแบบดังต่อไปนี้

**AP ID:AUTHEN:SuccessAuthenticationUser:TOTAL:Total User**

- เช่น

**1:AUTHEN:20:TOTAL:25**

**2:AUTHEN:33:TOTAL:34**

# cisco controller script example

- **/usr/share/saran/script/cisco.php**
- สามารถรันโดย
- **# /usr/bin/php**  
**/usr/share/saran/script/cisco.php**  
**{ip} {community string}**

# Add access point : manual

Access Point Information

add

ID

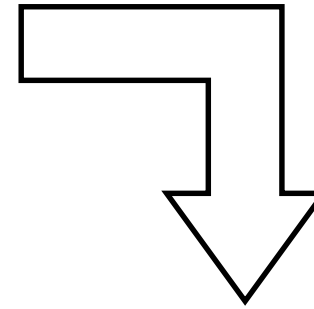
Name

Description

IP Address

update script

edit remove



Access Point

manual script

ID 1

Name ตัวที่ 1

IP Address STATIC DHCP

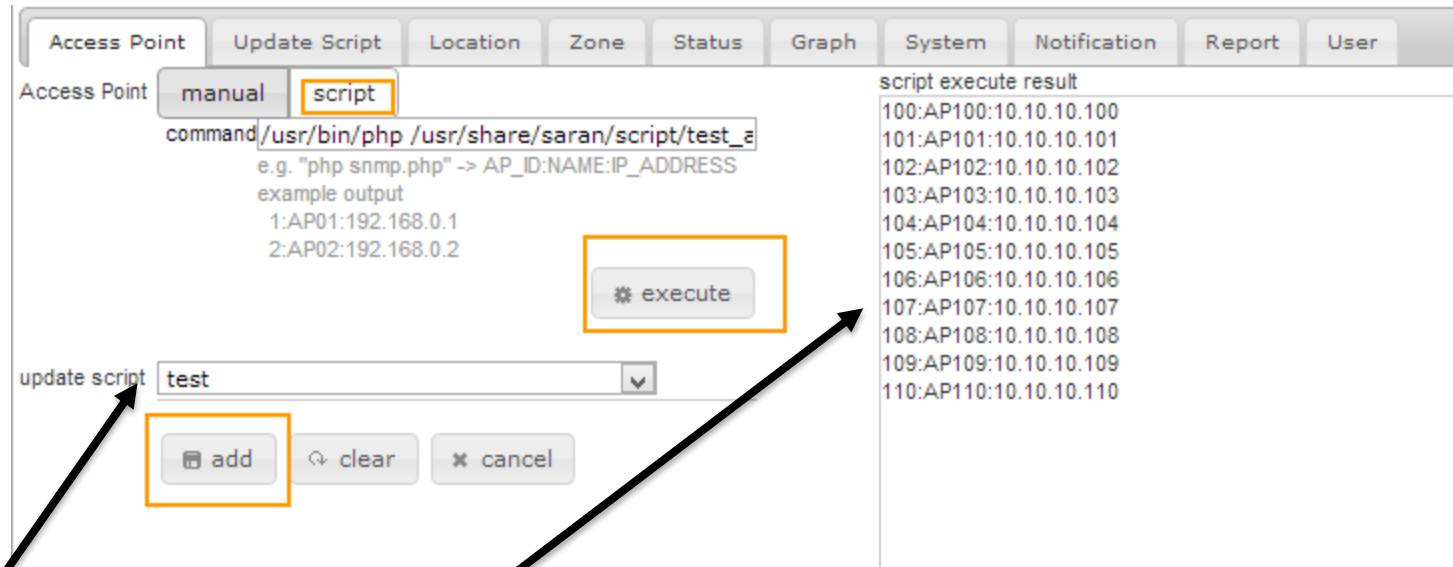
update script test

add clear cancel

id จะต้องมึใน output  
ของ update script ที่เลือก



# Add access point : script



Access Point Update Script Location Zone Status Graph System Notification Report User

Access Point manual **script**

command `/usr/bin/php /usr/share/saran/script/test_*`  
e.g. "php snmp.php" -> AP\_ID:NAME:IP\_ADDRESS  
example output  
1:AP01:192.168.0.1  
2:AP02:192.168.0.2

update script test

**execute**

**add** clear cancel

script execute result

- 100:AP100:10.10.10.100
- 101:AP101:10.10.10.101
- 102:AP102:10.10.10.102
- 103:AP103:10.10.10.103
- 104:AP104:10.10.10.104
- 105:AP105:10.10.10.105
- 106:AP106:10.10.10.106
- 107:AP107:10.10.10.107
- 108:AP108:10.10.10.108
- 109:AP109:10.10.10.109
- 110:AP110:10.10.10.110

id จาก output ของ script จะต้องอยู่ใน output ของ update script ที่เลือก

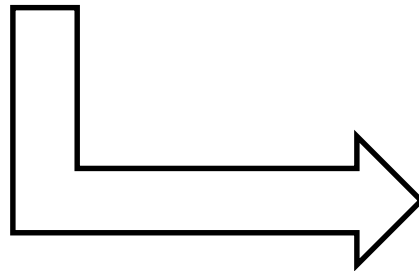
# Edit access point

Access Point Information add

ID	105
Name	AP105
Description	
IP Address	10.10.10.105
update script	test

edit remove

1 : ตัวที่ 1  
100 : AP100  
101 : AP101  
102 : AP102  
103 : AP103  
104 : AP104  
105 : AP105  
106 : AP106  
107 : AP107  
108 : AP108  
109 : AP109  
110 : AP110  
200 : ตัวที่ 200



Access Point Information add

ID	105
Name	<input type="text" value="AP105"/>
Description	<input type="text"/>
IP Address	<input type="text" value="10.10.10.105"/> <input checked="" type="radio"/> manual <input type="radio"/> DHCP
update script	<input type="text" value="test"/>

save cancel

# Access point location

Access Point | Update Script | **Location** | Zone | Status | Graph | System | Notification | Report | User | admin | log out

Map | Satellite | Hybrid

Information

AP 1

Name ตัวที่ 1

Description -

Order By | ID | Name | Location

1 : ตัวที่ 1
100 : AP100
101 : AP101
102 : AP102
103 : AP103
104 : AP104
105 : AP105
106 : AP106
107 : AP107
108 : AP108
109 : AP109
110 : AP110
200 : ตัวที่ 200

มก.สกล  
มก.สกล2

POWERED BY Google

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# Access point location

Access Point   Update Script   **Location**   Zone   Status   Graph   System   Notification   Report   User   admin | log out

Map   Satellite   Hybrid

Information   remove location

AP 107
Name AP107
Description -

Order By | ID | Name | Location

1 : ตัวที่ 1
100 : AP100
101 : AP101
102 : AP102
103 : AP103
104 : AP104
105 : AP105
106 : AP106
<b>107 : AP107</b>
108 : AP108
109 : AP109
110 : AP110
200 : ตัวที่ 200

เลือก AP แล้วลากจุดบนแผนที่ไปยังตำแหน่งที่ต้องการ

# Access point status

Access Point	Update Script	Location	Zone	Status	Graph	System	Notification	Report	User	admin   log out
Search: <input type="text"/>										
ID ^	Name ^	Description ^	IP ^	Status	Script ^	Enable				
1	ตัวที่ 1		DHCP	By Script	test	<input checked="" type="radio"/> Script <input type="radio"/> Maintainance				
100	AP100		10.10.10.100	By Script	test	<input checked="" type="radio"/> Script <input type="radio"/> Maintainance				
101	AP101		10.10.10.101	By Script	test	<input checked="" type="radio"/> Script <input type="radio"/> Maintainance				
102	AP102		10.10.10.102	By Script	test	<input checked="" type="radio"/> Script <input type="radio"/> Maintainance				
103	AP103		10.10.10.103	By Script	test	<input checked="" type="radio"/> Script <input type="radio"/> Maintainance				
104	AP104		10.10.10.104	By Script	test	<input checked="" type="radio"/> Script <input type="radio"/> Maintainance				
105	AP105		10.10.10.105	By Script	test	<input checked="" type="radio"/> Script <input type="radio"/> Maintainance				
106	AP106		10.10.10.106	By Script	test	<input checked="" type="radio"/> Script <input type="radio"/> Maintainance				
107	AP107		10.10.10.107	By Script	test	<input checked="" type="radio"/> Script <input type="radio"/> Maintainance				

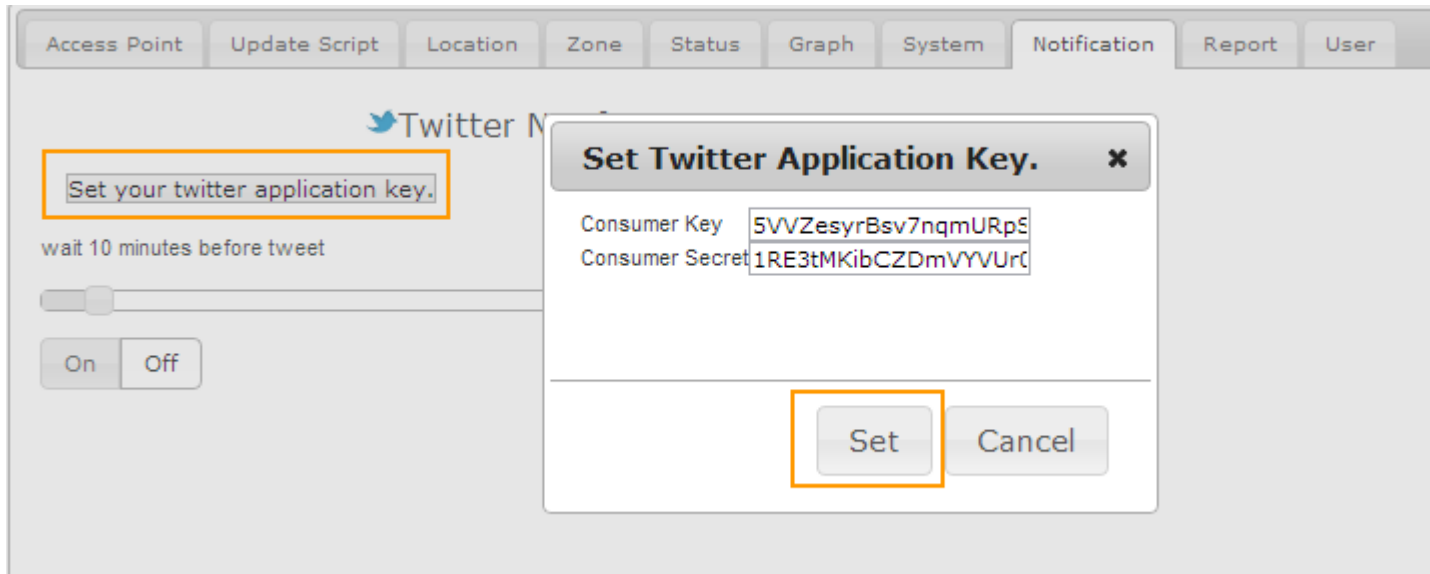
# Access point report

Access Point   Update Script   Location   Zone   Status   Graph   System   Notification   Report   User   admin | log out

begin 16/1/2013   15 ▾ : 0 ▾   end 16/1/2013   16 ▾ : 0 ▾   Generate

ID	Name	Description	Average Users	Authentication Success rate (%)	Availability (%)
1	ตัวที่ 1		4	71	23.08
100	AP100		4	72	23.08
107	AP107		4	44	23.08
200	ตัวที่ 200		4	72	23.08

# Access point up/down notification via twitter



Access Point Update Script Location Zone Status Graph System Notification Report User

Twitter M

Set your twitter application key.

wait 10 minutes before tweet

On Off

**Set Twitter Application Key.** ✕

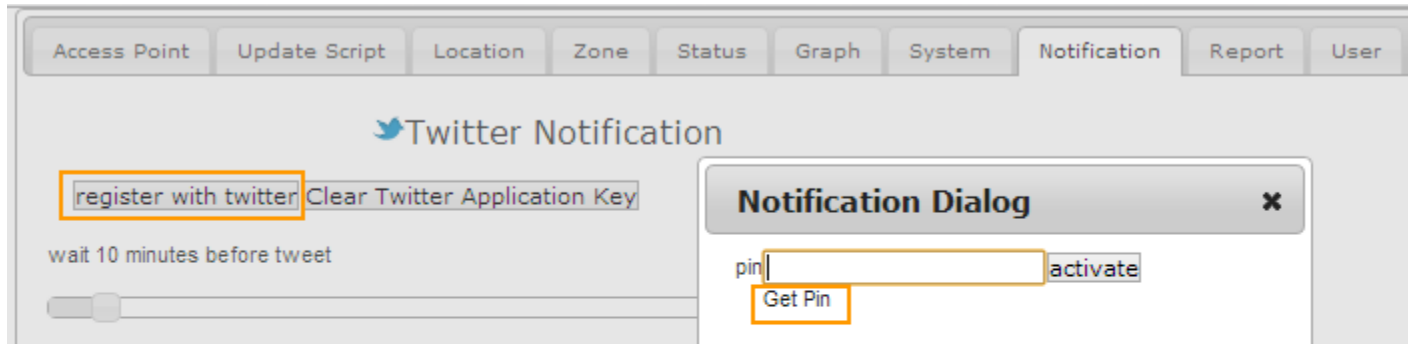
Consumer Key 5VVZesyrbSv7nqmURpE

Consumer Secret 1RE3tMKibCZDmVYVUrC

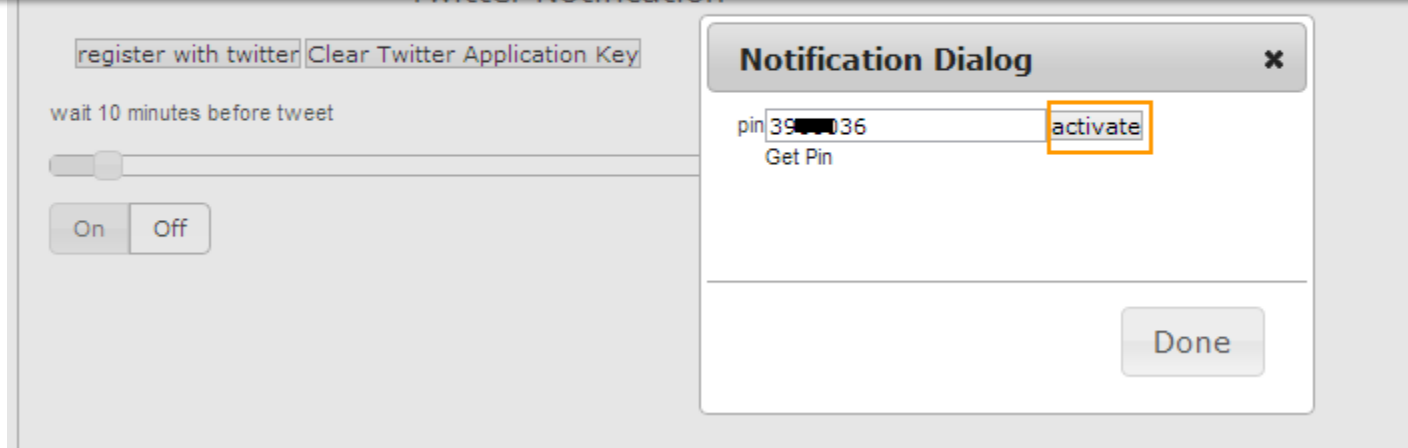
Set Cancel

สร้าง twitter application ที่ <https://dev.twitter.com>  
หรือใช้ application เดิมจาก cacti notification ก็ได้  
สิ่งที่ต้องการคือ **ConsumerKey** และ **ConsumerSecret**

# Access point up/down notification via twitter

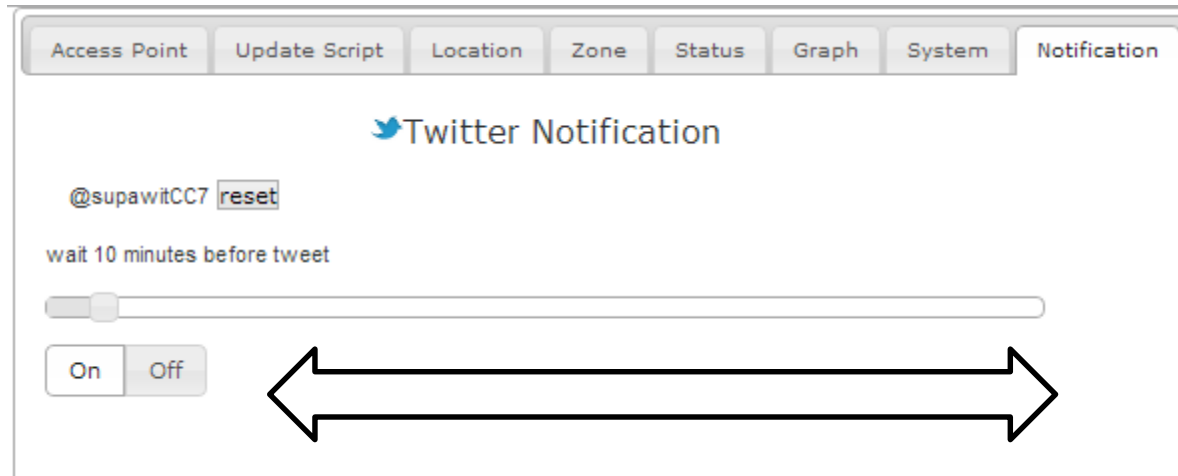


คลิก **Get Pin** จะเปิดหน้าต่าง twitter ขึ้นมา  
ให้ลงชื่อเข้าใช้ด้วยบัญชี twitter ที่ต้องการ  
หลังจากลงชื่อสำเร็จให้นำ pin มาใส่แล้วคลิก activate





# Access point up/down notification via twitter



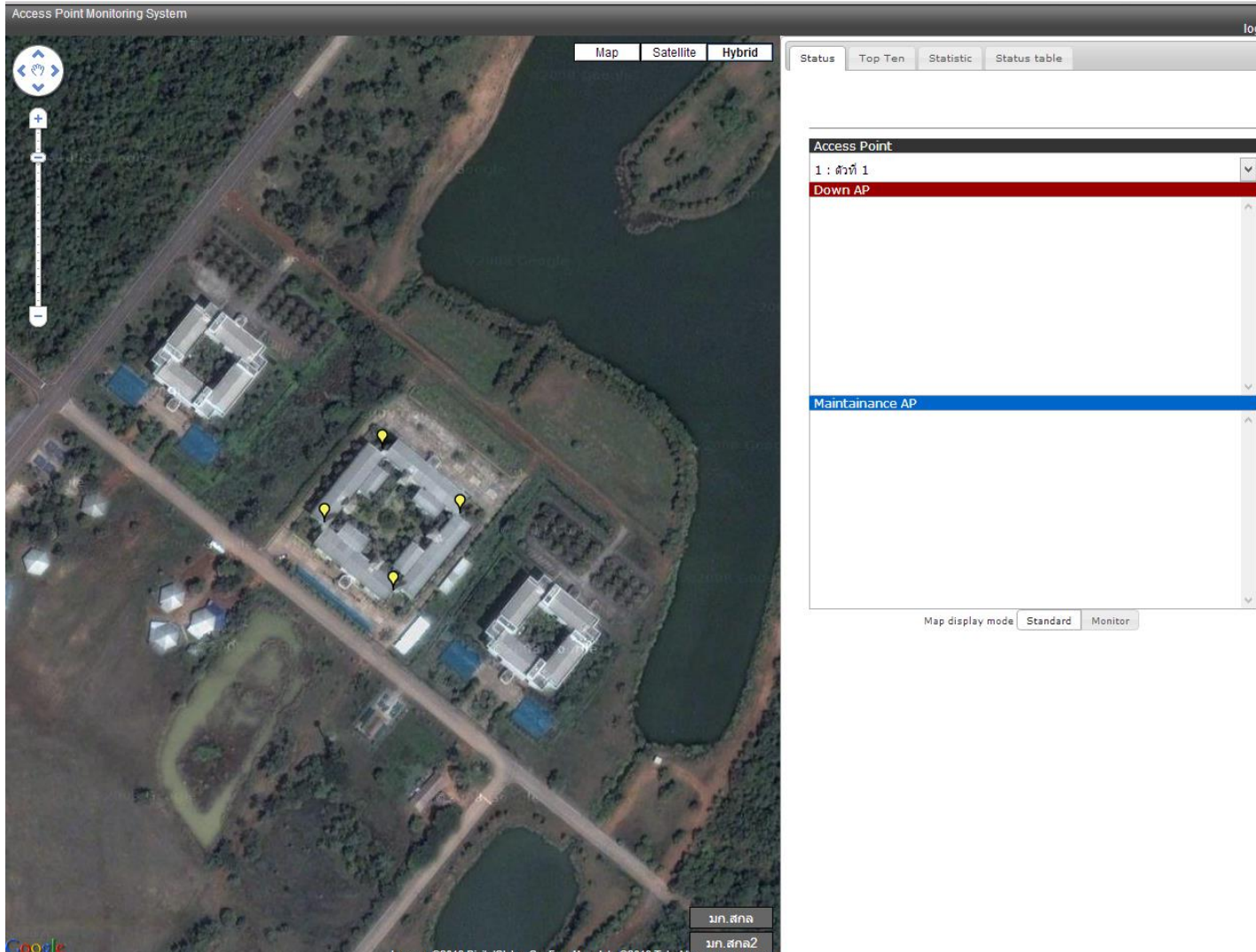
เลื่อนเพื่อเลือกเวลาในการแจ้งเตือน การเลือกเวลาน้อยเกินไปอาจทำให้แจ้งเตือนเยอะจน api limit เต็ม  
กรณีเกิดการ flapping ของ access point

# Test access point down

- แก้ไฟล์ script  
**`/usr/share/saran/script/test.php`**

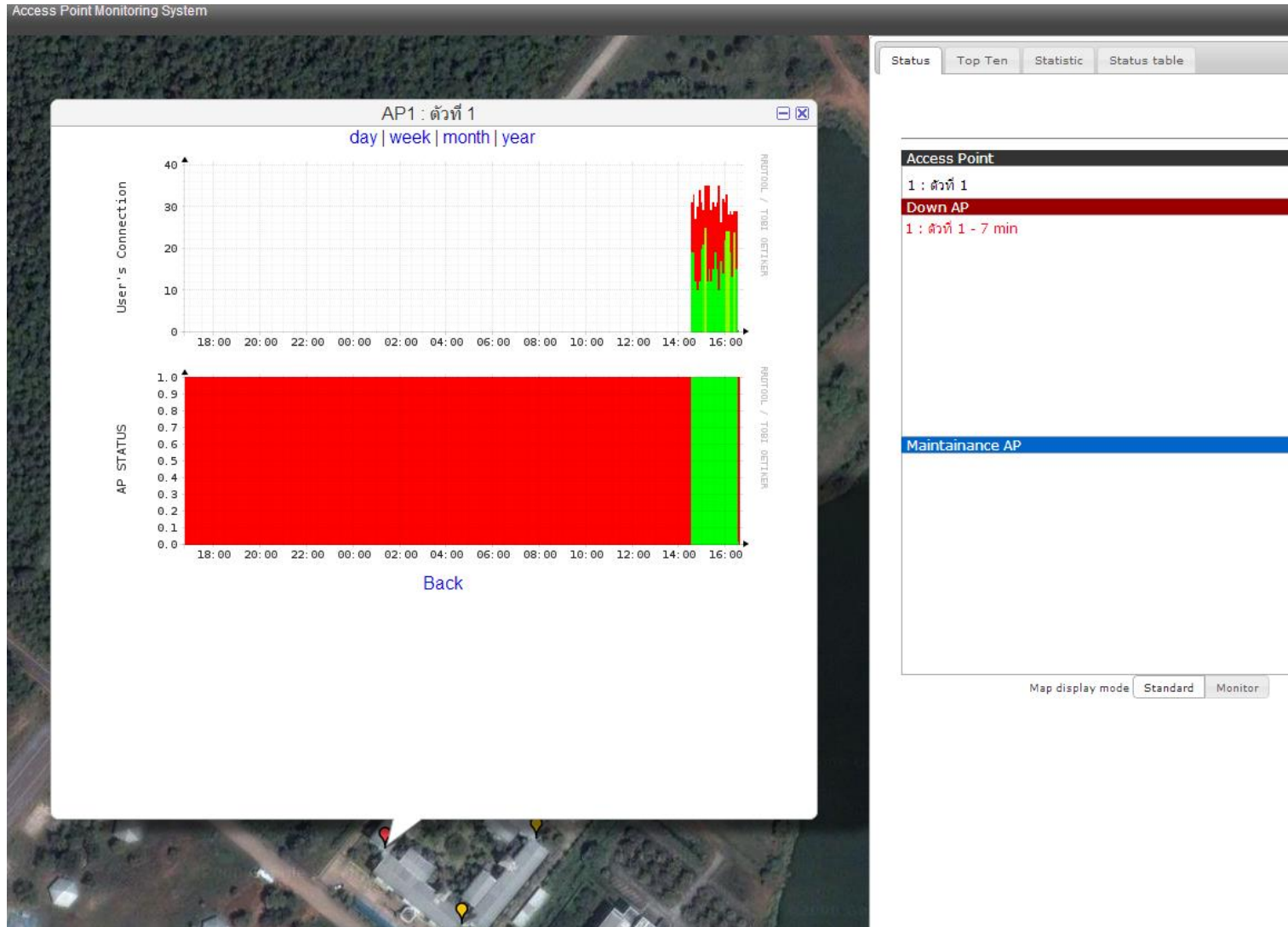
```
<?  
$row = 1;  
while($row<501)  
{  
if($row<>1) //แก้คืนหลังจากทดสอบเสร็จ  
{  
    echo "$row:AUTHEN:".rand(10,25).":TOTAL:".rand(25,35)."\n";  
}  
$row++;  
}  
?>
```

# Access point status



The screenshot displays the 'Access Point Monitoring System' interface. On the left, a satellite map shows a campus with several buildings and a lake. Three yellow location pins are visible on the map. The interface includes a navigation panel on the left with a compass and zoom controls. At the top right, there are tabs for 'Map', 'Satellite', and 'Hybrid'. Below the map, there are tabs for 'Status', 'Top Ten', 'Statistic', and 'Status table'. The main content area shows a list of 'Access Point' entries. The first entry is '1 : ตัวที่ 1' with a status of 'Down AP' highlighted in red. The second entry is 'Maintenance AP' highlighted in blue. At the bottom right, there are buttons for 'Map display mode', 'Standard', and 'Monitor'. In the bottom left corner, there are labels for 'บ.ก. สก.ล' and 'บ.ก. สก.ล2'.

# Access point status

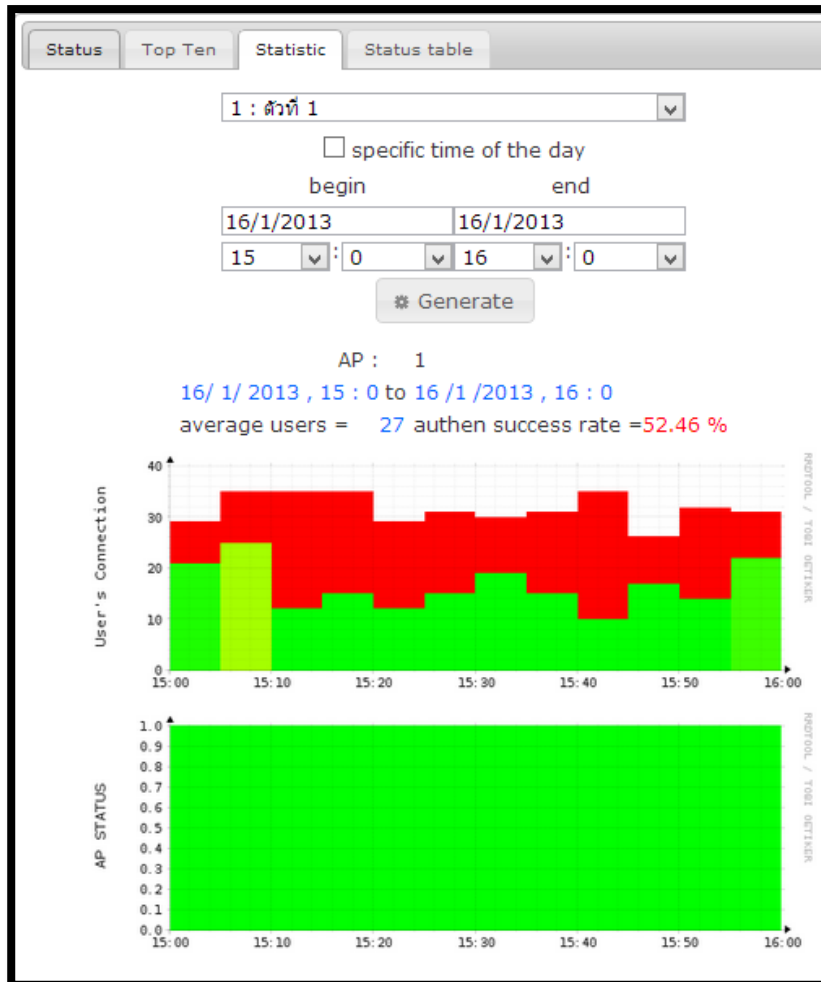


# Top Ten access point usage

log in

Status	Top Ten	Statistic	Status table
sort by total			
		authen	total
100 : AP100		23	30
1 : ตัวที่ 1		24	29
107 : AP107		20	26
200 : ตัวที่ 200		19	25

# Statistic and Status table



107 : AP107

16/1/2013

time	status
16/01/2013 , 15:40:00	up
16/01/2013 , 15:35:00	up
16/01/2013 , 15:30:00	up
16/01/2013 , 15:25:00	up
16/01/2013 , 15:20:00	up
16/01/2013 , 15:15:00	up
16/01/2013 , 15:10:00	up
16/01/2013 , 15:05:00	up
16/01/2013 , 15:00:00	up
16/01/2013 , 14:55:00	up
16/01/2013 , 14:50:00	up
16/01/2013 , 14:45:00	up
16/01/2013 , 14:40:00	down
16/01/2013 , 14:35:00	down
16/01/2013 , 14:30:00	down
16/01/2013 , 14:25:00	down
16/01/2013 , 14:20:00	down
16/01/2013 , 14:15:00	down
16/01/2013 , 14:10:00	down
16/01/2013 , 14:05:00	down
16/01/2013 , 14:00:00	down
16/01/2013 , 13:55:00	down

# Lab Resource

- <http://myweb.cmu.ac.th/supawit.w/cacti>
- <http://docs.cacti.net>
- <http://www.network-weathermap.com>
- <https://developers.google.com/maps>
- <https://dev.twitter.com>