

# Network Management & Monitoring





#### Introduction

### **Network Monitoring Tools**

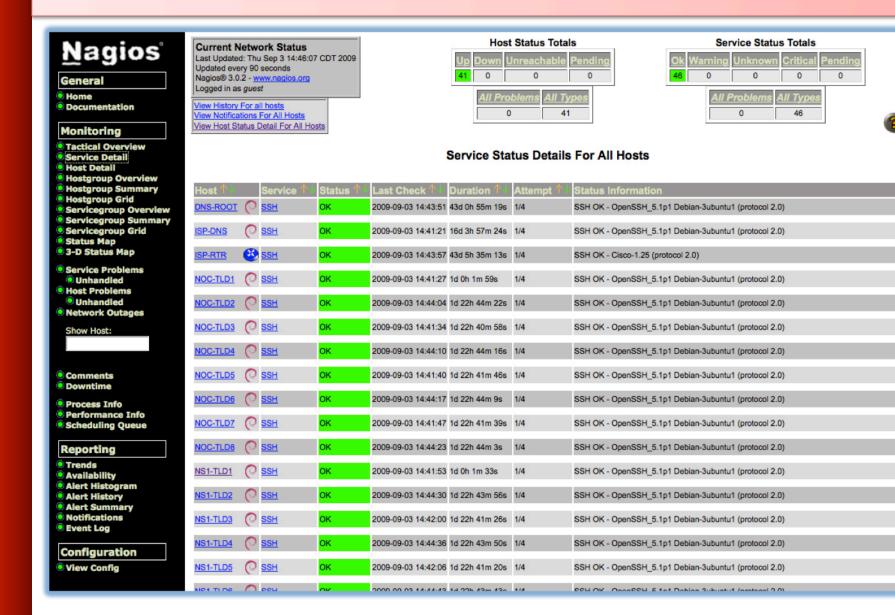
- Availability
- ➤ Reliability
- > Performance

Nagios actively monitors the availability of devices and services

### Introduction

- Possibly the most used open source network monitoring software
- Web interface for viewing status, browsing history, scheduling downtime etc
- Sends out alerts via E-mail. Can be configured to use other mechanisms, e.g. SMS

### **Example: Service Detail view**



### **Features**

### Utilizes topology to determine dependencies.

 Differentiates between what is down vs. what is unreachable. Avoids running unnecessary checks and sending redundant alarms

# Allows you to define how to send notifications based on combinations of:

- Contacts and lists of contacts
- Devices and groups of devices
- Services and groups of services
- Defined hours by persons or groups.
- The state of a service.

# **Plugins**

# Plugins are used to verify services and devices:

- Nagios architecture is simple enough that writing new plugins is fairly easy in the language of your choice.
- There are *many*, *many* plugins available (thousands).
  - √ http://exchange.nagios.org/
  - √ http://nagiosplugins.org/



# Pre-installed plugins in Ubuntu

#### /usr/lib/nagios/plugins

check\_apt check\_file\_age check\_bgpstate check flexin check breeze check\_ftp check\_host check\_by\_ssh check cland check\_hpid check cluster check\_http check\_dhcp check\_icmp check ide smart check\_diq check disk check\_ifoperstatus check ifstatus check\_disk\_smb check\_dns check\_imap check\_dummy check\_ircd

check\_jabber
check\_ldap
check\_ldaps
check\_linux\_raid
check\_load
check\_log
check\_mailq
check\_mrtg
check\_mrtgtraf
check\_mysql
check\_mysql\_query
check\_nagios

check\_nntp check\_ntp check\_ntp check\_ntp\_peer check\_ntp\_time check\_nwstat check\_oracle check\_overcr check\_pgsql check\_ping check\_pop

check\_procs
check\_radius
check\_real
check\_rpc
check\_rta\_multi
check\_sensors
check\_simap
check\_smtp
check\_snmp
check\_spop
check\_ssh
check\_ssntp

check\_swap check\_time check\_udp check\_ups check\_users check\_wave negate urlize utils.pm utils.sh

#### /etc/nagios-plugins/config

apt.cfg breeze.cfg dhcp.cfg disk.cfg disk-smb.cfg dns.cfg dummy.cfg flexlm.cfg fping.cfg ftp.cfg

games.cfg hppjd.cfg http.cfg ifstatus.cfg ldap.cfg load.cfg mail.cfg mailq.cfg mailq.cfg mrtg.cfg mysql.cfg

netware.cfg ping.cfg
news.cfg procs.cfg
nt.cfg radius.cfg
ntp.cfg real.cfg
pasal.cfa rpc-nfs.cfa

snmp.cfg ssh.cfg tcp\_udp.cfg telnet.cfg users.cfg

### How checks work

- Periodically Nagios calls a plugin to test the state of each service. Possible responses are:
  - OK
  - WARNING
  - CRITICAL
  - UNKNOWN
- If a service is not OK it goes into a "soft" error state. After a number of retries (default 3) it goes into a "hard" error state. At that point an alert is sent.
- You can also trigger external event handlers based on these state transitions

### How checks work continued

#### **Parameters**

- Normal checking interval
- Retry interval (i.e. when not OK)
- Maximum number of retries
- Time period for performing checks
- Time period for sending notifications

### Scheduling

- Nagios spreads its checks throughout the time period to even out the workload
- Web UI shows when next check is scheduled

# The concept of "parents"

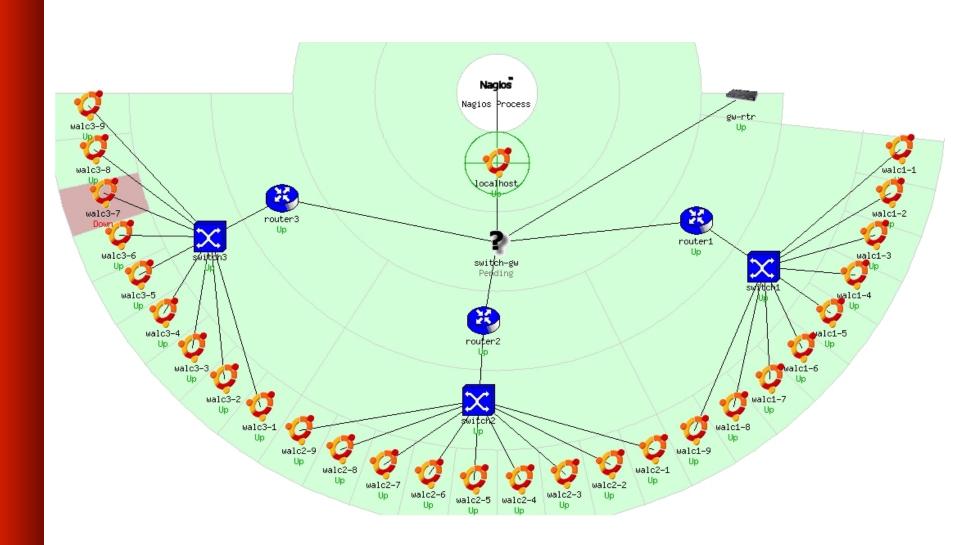
#### Hosts can have parents:

- The parent of a PC connected to a switch would be the switch.
- Allows us to specify the dependencies between devices.
- Avoids sending alarms when parent does not respond.
- A node can have multiple parents (dual homed).

# **Network viewpoint**

- Where you locate your Nagios server will determine your point of view of the network.
- The Nagios server becomes the "root" of your dependency tree

# **Network viewpoint**



# **Demo Nagios**

### Installation

#### In Debian/Ubuntu

```
# apt-get install nagios3
```

### Key directories

```
/etc/nagios3
/etc/nagios3/conf.d
/etc/nagios-plugins/config
/usr/lib/nagios/plugins
/usr/share/nagios3/htdocs/images/logos
```

### Nagios web interface is here:

http://pcN.ws.nsrc.org/nagios3/

# Configuration

- Configuration defined in text files
  - /etc/nagios3/conf.d/\*.cfg
  - Details at http://nagios.sourceforge.net/docs/3\_0/ objectdefinitions.html
- The default config is broken into several files with different objects in different files, but actually you can organise it how you like
- Always verify before restarting Nagios otherwise your monitoring system may die!
  - nagios3 —v /etc/nagios3/nagios.cfg

# Hosts and services configuration

### **Based on templates**

- This saves lots of time avoiding repetition

# There are default templates with default parameters for a:

- generic host (generic-host\_nagios2.cfg)
- generic service (generic-service\_nagios2.cfg)
- Individual settings can be overridden
- Defaults are all sensible

# Monitoring a single host

#### pcs.cfg

- This is a minimal working config
  - You are just pinging the host; Nagios will warn that you are not monitoring any services
- The filename can be anything ending .cfg
- Organise your devices however you like e.g. related hosts in the same file

# Generic host template

#### generic-host\_nagios2.cfg

```
define host {
                                generic-host ; The name of this host template
  name
  notifications enabled
                                1 : Host notifications are enabled
  event handler enabled
                                1 : Host event handler is enabled
  flap detection enabled
                                1 ; Flap detection is enabled
  failure prediction enabled
                                1 ; Failure prediction is enabled
  process perf data
                                1 ; Process performance data
  retain status information
                                1 ; Retain status information across program restarts
  retain nonstatus information 1
                                  : Retain non-status information across restarts
     check command
                                   check-host-alive
     max check attempts
                                  10
     notification interval
                                2.4×7
     notification period
     notification options
                              d,u,r
     contact groups
                                  admins
  register
                                0 : DON'T REGISTER THIS DEFINITION -
                                   ; IT'S NOT A REAL HOST, JUST A TEMPLATE!
```

### Overriding defaults

All settings can be overridden per host

#### pcs.cfg

# Defining services (direct way)

#### pcs.cfg

```
define host {
   host name pc1
   alias
               pc1 in group 1
   address
                 pc1.ws.nsrc.org
                 generic-host
   use
define service {
                                         service "pc1,HTTP"
   host name
                          pc1
   service_description
                          HTTP
                                             plugin
                          check http <
   check command
                          generic-service
   use
                                            service template
define service {
   host name
                          pc1
   service description
                          SSH
   check command
                          check ssh
                          generic-service
   use
```

### Service checks

- The combination of host + service is a unique identifier for the service check, e.g.
  - "pc1,HTTP"
  - "pc1,SSH"
  - "pc2,HTTP"
  - "pc2,SSH"
- check\_command points to the plugin
- service template pulls in settings for how often the check is done, and who and when to alert

# Generic service template

#### generic-service\_nagios2.cfg\*

```
define service{
                                         generic-service
        name
        active checks enabled
        passive checks enabled
        parallelize check
        obsess over service
        check freshness
        notifications enabled
        event handler enabled
        flap detection enabled
        failure prediction enabled
        process perf data
        retain status information
        retain nonstatus information
          notification interval
          is volatile
          check period
                                           24x7
          normal check interval
          retry check interval
          max check attempts
          notification period
                                          2.4x7
          notification options
                                          w,u,c,r
          contact groups
                                           admins
        register
                                              ; DONT REGISTER THIS DEFINITION
```

# Overriding defaults

Again, settings can be overridden per service

#### services\_nagios2.cfg

### Repeated service checks

- Often we are monitoring an identical service on many hosts
- To avoid duplication, a better way is to define a service check for all hosts in a hostgroup

# **Creating hostgroups**

#### hostgroups\_nagios2.cfg

```
define hostgroup {
  hostgroup_name http-servers
  alias HTTP servers
  members pc1,pc2
}

define hostgroup {
  hostgroup_name ssh-servers
  alias SSH servers
  members pc1,pc2
}
```

# Monitoring services in hostgroups

#### services\_nagios2.cfg

```
define service {
   hostgroup name
                        http-servers
   service description
                        HTTP
   check command
                        check http
                        generic-service
   use
define service {
   hostgroup name
                        ssh-servers
   service description
                        SSH
   check command
                        check ssh
                        generic-service
   use
```

e.g. if hostgroup "http-servers" contains pc1 and pc2 then Nagios creates HTTP service checks for both hosts. The service checks are called "pc1,HTTP" and "pc2,HTTP"

### **Alternative view**

- Instead of saying "this hostgroup contains these PCs" you can say "this PC belongs to these hostgroups"
- No need for the "members" line in hostgroups file

### Alternative group membership

#### pcs.cfg

```
define host {
  host name pc1
  alias pcl in group 1
  address pcl.ws.nsrc.org
              generic-host
  use
              ssh-servers, http-servers
  hostgroups
define host {
  host name
             pc2
  alias pc2 in group 1
  address
              pc2.ws.nsrc.org
              generic-host
  use
             ssh-servers, http-servers
  hostgroups
```

Hosts and services conveniently defined in the same place

# Other uses for hostgroups

Choosing icons for the status map

#### pcs.cfg

```
define host {
  host_name  pc1
  alias  pc1 in group 1
  address  pc1.ws.nsrc.org
  use  generic-host
  hostgroups ssh-servers,http-servers,debian-servers
}
```

#### extinfo\_nagios2.cfg

# **Optional: servicegroups**

- You can can also group together services into a "servicegroup"
- This is so related or dependent services can be viewed together in the web interface
- The services themselves must already exist

#### servicegroups.cfg

```
define servicegroup {
    servicegroup_name mail-services
    alias Services comprising the mail platform
    members web1,HTTP,web2,HTTP,mail1,IMAP,db1,MYSQL
}
```

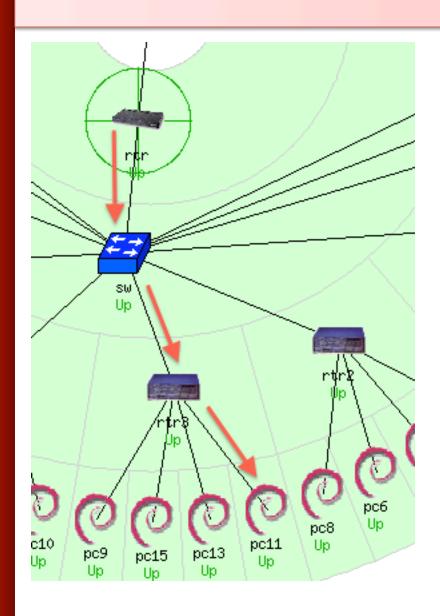
# Configuring topology

#### pcs.cfg

```
define host {
  host_name   pc1
  alias   pc1 in group 1
  address   pc1.ws.nsrc.org
  use   generic-host
  parents   rtr1 
parent host
```

- This means "pc1 is on the far side of rtr1"
- If rtr1 goes down, pc1 is marked "unreachable" rather than "down"
- Prevents a cascade of alerts if rtr1 goes down
- Also allows Nagios to draw cool status map

# Another view of configuration



```
RTR
define host {
                  generic-host
  use
  host name
                  rtr
  alias
                  Gateway Router
                  10.10.0.254
  address
SW
define host {
                  generic-host
  use
  host name
                  SW
                  Backbone Switch
  alias
                  10.10.0.253
  address
  parents
                  rtr
RTR3
define host {
                  generic-host
  use
                  rtr3
  host_name
  alias
                  router 3
  address
                  10.10.3.254
  parents
                  SW
```

PC11...

# Out-of-Band (OOB) notifications

A critical item to remember: an SMS or message system that is independent from your network.

- You can utilize a cell phone connected to the Nagios server, or a USB dongle with SIM card
- You can use packages like:

gammu: http://wammu.eu/

gnokii: http://www.gnokii.org/

sms-tools: http://smstools3.kekekasvi.com/

#### References

Nagios web site

http://www.nagios.org/

Nagios plugins site

http://www.nagiosplugins.org/

- Nagios System and Network Monitoring, by Wolfgang Barth. Good book about Nagios.
- Unofficial Nagios plugin site

http://nagios.exchange.org/

A Debian tutorial on Nagios

http://www.debianhelp.co.uk/nagios.htm

Commercial Nagios support

http://www.nagios.com/

# **Questions?**



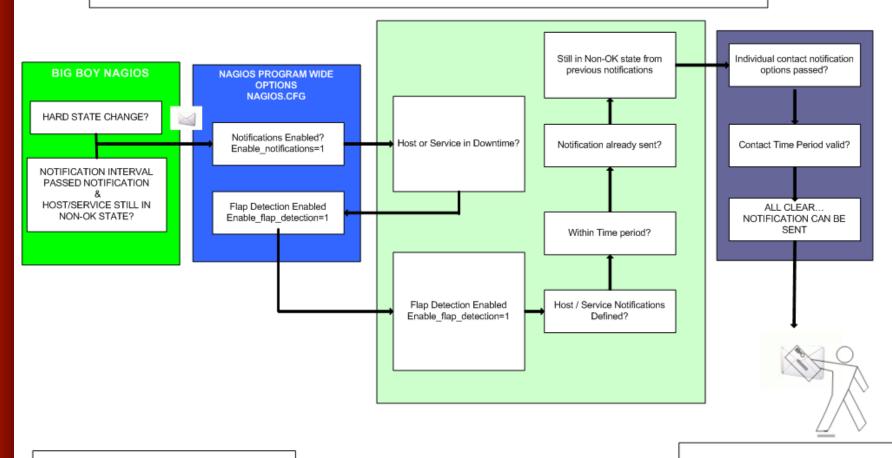
### **Additional Details**

A few additional slides you may find useful or informative...

### Features, features, features....

- Allows you to acknowledge an event.
  - A user can add comments via the GUI
- You can define maintenance periods
  - By device or a group of devices
- Maintains availability statistics and generates reports
- Can detect flapping and suppress additional notifications.
- Allows for multiple notification methods:
  - e-mail, pager, SMS, winpopup, audio, etc...
- Allows you to define notification levels for escalation

#### **NAGIOS - NOTIFICATION FLOW DIAGRAM**



NOTE: The flow will only continue when each of the listed filters are satisfied.

CONTACT GETS THE NOTIFICATION MESSAGE

## **Notification Options (Host)**

### **Host state:**

When configuring a host you can be notified on the following conditions:

- d: DOWN

- u: UNREACHABLE

-r: RECOVERY

- f: FLAPPING (start/end)

- s: SCHEDULED DOWNTIME (start/end)

-n: NONE

## **Notification Options (Service)**

### **Service state:**

When configuring a service you can be notified on the following conditions:

```
- w: WARNING
```

-c: CRITICAL

- u: UNKNOWN

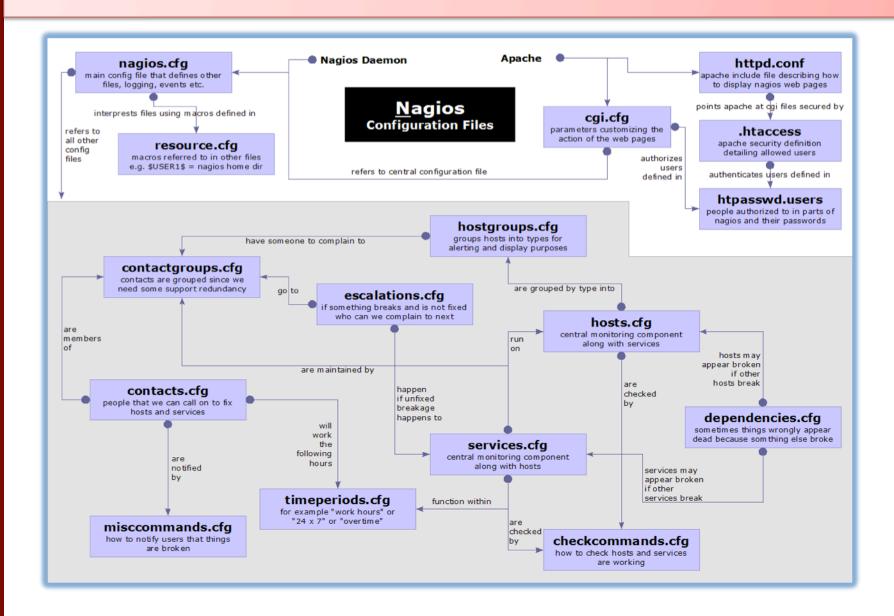
-r: RECOVERY

- f: FLAPPING (start/end)

- s: SCHEDULED DOWNTIME (start/end)

- n: NONE

# Configuration files (Official)



# Debian/Ubuntu config file layout

### Located in /etc/nagios3/

### Important files include:

nagios.cfg Main configuration file.

 cgi.cfg Controls the web interface and security options.

 commands.cfgThe commands that Nagios uses for notifications.

conf.d/\* All other configuration goes here!

### Configuration files continued

### **Under conf.d/\***

- contacts\_nagios2.cfg
- extinfo\_nagios2.cfg
- generic-host\_nagios2.cfg
- generic-service\_nagios2.cfg
- host-gateway\_nagios3.cfg
- hostgroups\_nagios2.cfg
- localhost\_nagios2.cfg
- services\_nagios2.cfg
- timeperiods\_nagios2.cfg

users and groups

make your UI pretty

default host template

default service template

upstream router definition

groups of nodes

definition of nagios host

what services to check

when to check who to notify

### Configuration files continued

# Under conf.d some other possible config files:

servicegroups.cfg services Groups of nodes and

pcs.cfg (hosts) Sample definition of PCs

switches.cfg (hosts) Definitions of switches

routers.cfg

Definitions of routers (hosts)

### Main configuration details

### **Global settings**

File: /etc/nagios3/nagios.cfg

- Says where other configuration files are.
- General Nagios behavior:
  - For large installations you should tune the installation via this file.
  - See: Tunning Nagios for Maximum
     Performance http://nagios.sourceforge.net/docs/3\_0/tuning.html

### **CGI** configuration

### /etc/nagios3/cgi.cfg

- You can change the CGI directory if you wish
- Authentication and authorization for Nagios use:
  - Activate authentication via Apache's .htpasswd mechanism, or using RADIUS or LDAP.
  - Users can be assigned rights via the following variables:
    - authorized\_for\_system\_information
    - authorized\_for\_configuration\_information
    - authorized\_for\_system\_commands
    - authorized\_for\_all\_services
    - authorized\_for\_all\_hosts
    - authorized\_for\_all\_service\_commands
    - authorized\_for\_all\_host\_commands

### **Time Periods**

# This defines the base periods that control checks, notifications, etc.

- Defaults: 24 x 7
- Could adjust as needed, such as work-week only.
- Could adjust a new time period for "outside of regular hours", etc.

```
# '24x7'
define timeperiod{
        timeperiod name 24x7
        alias
                         24 Hours A Day, 7 Days A Week
        sunday
                         00:00-24:00
        monday
                         00:00-24:00
        tuesday
                         00:00-24:00
        wednesday
                         00:00-24:00
        thursday
                         00:00-24:00
        friday
                         00:00-24:00
        saturday
                         00:00-24:00
```

## Configuring service/host checks

### /etc/nagios-plugins/config/ssh.cfg

```
define command {
  command_name   check_ssh
  command_line /usr/lib/nagios/plugins/check_ssh '$HOSTADDRESS$'
}

define command {
  command_name   check_ssh_port
  command_line /usr/lib/nagios/plugins/check_ssh -p '$ARG1$' '$HOSTADDRESS$'
}
```

- Notice the same plugin can be invoked in different ways ("commands")
- Command and arguments are separated by exclamation marks (!)
- e.g. to check SSH on a non-standard port, you can do it like this:

### **Notification commands**

# Allows you to utilize any command you wish. We could use this to generate tickets in RT.

From: nagios@nms.localdomain
To: router\_group@localdomain
Subject: Host DOWN alert for TLD1-RTR!

Date: Thu, 29 Jun 2006 15:13:30 -0700

Host: gw-rtr

In: Core\_Routers State: DOWN

Address: 192.0.2.100

Date/Time: 06-29-2006 15:13:30

Info: CRITICAL - Plugin timed out after 6 seconds

# Group service configuration

The "service\_description" is important if you plan to create Service Groups. Here is a sample Service Group definition:

### **Screen Shots**

A few sample screen shots from a Nagios install.

### **General View**

<b>Nagios</b>	Tactical Monitoring	Overview		Mo	nitoring Performand	20	
Lugios	Last Updated: Thu Sep 3						
General	Updated every 90 seconds Nagios® 3.0.2 - www.nagio			Se	rvice Check Execut	on Time:	0.01 / 4.07 / 0.115 sec
• Home	Logged in as guest	56.01 <u>Q</u>		Se	rvice Check Latency	<i>y</i> : 0	0.02 / 0.25 / 0.117 sec
Documentation				Ho	st Check Execution	Time: 0	0.01 / 0.13 / 0.018 sec
Monitoring				Ho	st Check Latency:	0	0.01 / 0.28 / 0.137 sec
Tactical Overview				# /	Active Host / Service	Checks: 4	11 / 46
Service Detail     Host Detail				<b>(?)</b> # ₽	Passive Host / Service	ce Checks: (	)/0
Hostgroup Overview							
<ul><li>Hostgroup Summary</li><li>Hostgroup Grid</li></ul>							
Servicegroup Overview	Network Outages					Network He	alth
<ul> <li>Servicegroup Summary</li> <li>Servicegroup Grid</li> </ul>	0 Outages					Host Health	n:
<ul><li>Status Map</li></ul>						Service Hea	alth:
3-D Status Map						OUT VICE TICE	
Service Problems Unhandled					_		
Host Problems	Hosts						
<ul><li>Unhandled</li><li>Network Outages</li></ul>	0 Down	0 Unreachable	41 Up	0 Pending			
Show Host:							
	Services						
© Comments	0 Critical	0 Warning	0 Unknown	46 Ok	0 Pending		
<ul><li>Downtime</li></ul>							
Process Info							
Performance Info Scheduling Queue	<b>Monitoring Features</b>						
	Flap Detection	Notifications	Event Handler	rs Active Cl	necks Passive	Checks	
Reporting	All Services Enabled	All Services Enable	0	•	•	ces Enabled	
<ul><li>Trends</li><li>Availability</li></ul>	All Services Enabled No Services Flapping All Hosts Enabled	All Hosts Enabled	All Hosts Enable	d All Hosts E	nabled	Enabled	
Alert Histogram	No Hosts Enabled	-	-	ш			
Alert History Alert Summary	110 Floors Flapping						
Notifications							
Event Log							
Configuration							
View Config							

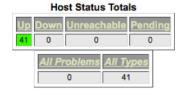
### **Host Detail**

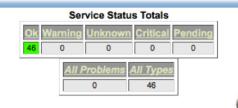




View Status Summary For All Host Groups

View Status Grid For All Host Groups





#### Host Status Details For All Host Groups

Host ↑↓	Status ↑↓	Last Check ↑↓	Duration ↑√	Status Information
DNS ROOT OF	UP	2009-09-03 14:51:41	43d 1h 7m 0s	PING OK - Packet loss = 0%, RTA = 0.33 ms
ISP-DNS (P\$	UP	2009-09-03 14:51:41	16d 4h 11m 25s	PING OK - Packet loss = 0%, RTA = 0.29 ms
ISP-RTR 🐸 🧗	UP	2009-09-03 14:51:51	43d 5h 47m 40s	PING OK - Packet loss = 0%, RTA = 1.24 ms
NOC-TLD1 (0)	UP	2009-09-03 14:52:01	1d 0h 10m 56s	PING OK - Packet loss = 0%, RTA = 4.02 ms
NOC-TLD2	UP	2009-09-03 14:52:01	1d 22h 53m 46s	PING OK - Packet loss = 0%, RTA = 2.23 ms
NOC-TLD3	UP	2009-09-03 14:52:11	1d 22h 53m 36s	PING OK - Packet loss = 0%, RTA = 2.62 ms
NOC-TLD4	UP	2009-09-03 14:52:21	1d 22h 53m 36s	PING OK - Packet loss = 0%, RTA = 1.09 ms
NOC-TLD5	UP	2009-09-03 14:52:31	1d 22h 54m 6s	PING OK - Packet loss = 0%, RTA = 5.20 ms
NOC-TLD6	UP	2009-09-03 14:52:31	1d 22h 53m 56s	PING OK - Packet loss = 0%, RTA = 10.49 ms
NOC-TLD7 (0)	UP	2009-09-03 14:52:41	1d 22h 53m 56s	PING OK - Packet loss = 0%, RTA = 1.05 ms
NOC-TLD8	UP	2009-09-03 14:52:51	1d 22h 53m 56s	PING OK - Packet loss = 0%, RTA = 1.00 ms
NS1-TLD1 P	UP	2009-09-03 14:53:01	1d 0h 10m 26s	PING OK - Packet loss = 0%, RTA = 10.19 ms
NS1-TLD2	UP	2009-09-03 14:53:01	1d 22h 53m 56s	PING OK - Packet loss = 0%, RTA = 5.06 ms
NS1-TLD3	UP	2009-09-03 14:53:11	1d 22h 53m 36s	PING OK - Packet loss = 0%, RTA = 1.03 ms
NS1-TLD4 OF	UP	2009-09-03 14:53:21	1d 22h 53m 36s	PING OK - Packet loss = 0%, RTA = 1.15 ms
NS1-TLD5	UP	2009-09-03 14:53:21	1d 22h 54m 6s	PING OK - Packet loss = 0%, RTA = 1.12 ms
NS1-TLD6	UP	2009-09-03 14:53:31	1d 22h 53m 36s	PING OK - Packet loss = 0%, RTA = 1.06 ms
NS1-TLD7	UP	2009-09-03 14:53:41	1d 22h 53m 46s	PING OK - Packet loss = 0%, RTA = 1.11 ms
NS1-TLD8	UP	2009-09-03 14:53:51	1d 22h 53m 36s	PING OK - Packet loss = 0%, RTA = 1.18 ms
TLD1-RTR 🐸 🧗	UP	2009-09-03 14:53:51	1d 22h 54m 6s	PING OK - Packet loss = 0%, RTA = 2.22 ms
TLD2-RTR	UP	2009-09-03 14:54:01	1d 22h 53m 46s	PING OK - Packet loss = 0%, RTA = 2.38 ms

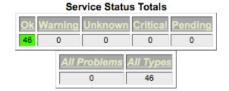
### **Host Groups Overview**



# Current Network Status Last Updated: Thu Sep 3 14:55:28 CDT 2009 Updated every 90 seconds Nagios® 3.0.2 - www.nagios.org Logged in as guest

View Service Status Detail For All Host Groups View Host Status Detail For All Host Groups View Status Summary For All Host Groups View Status Grid For All Host Groups

# Host Status Totals Down Unreachable Pending 0 0 0 0 All Problems All Types



#### Service Overview For All Host Groups

#### TRTI TLD1 Servers, Virtual Machines, Routers (TLD1)

Host	Status	Services	Actions
NOC-TLD1	UP	<u>1 0K</u>	Q 🕵 🔼
NS1-TLD1	UP	<u>1 0K</u>	Q 🕵 🔼
TLD1-RTR	UP	<u>1 0K</u>	Q 🕵 🔼
TRTI-TLD1	UP	<u>1.0K</u>	Q 🥵 🔼

#### TRTI TLD2 Servers, Virtual Machines, Routers (TLD2)

Host	Status	Services	Actions	
NOC-TLD2	UP	<u>1 0K</u>	Q 🕵 🔼	
NS1-TLD2	UP	<u>1 0K</u>	Q 🕵 🔼	
TLD2-RTR	UP	<u>1 0K</u>	Q 🕵 🔼	
TRTI-TLD2	UP	<u>1.0K</u>	Q 🕵 🔼	

#### TRTI TLD3 Servers, Virtual Machines, Routers (TLD3)

	(				
Host	Status	Services	Actions		
NOC-TLD3	UP	<u>1 OK</u>	Q 🕵 🔼		
NS1-TLD3	UP	<u>1 0K</u>	Q 🕵 🔼		
TLD3-RTR	UP	<u>1 0K</u>	Q 🕵 🔼		
TRTI-TLD3	UP	<u>1 OK</u>	Q 🌇 🔼		

#### TRTI TLD4 Servers, Virtual Machines, Routers (TLD4)

\ <u></u>			
Host	Status	Services	Actions
NOC-TLD4	UP	<u>1.0K</u>	Q 🕵 🔼
NS1-TLD4	UP	<u>1 0K</u>	Q 🕵 🔼
TLD4-RTR	UP	<u>1 0K</u>	Q 🕵 🔼
TRTI-TLD4	UP	<u>1 0K</u>	Q 🥵 🔼

#### TRTI TLD5 Servers, Virtual Machines, Routers (TLD5)

Host	Status	Services	Actions
NOC-TLD5	UP	<u>1 0K</u>	Q 🥵 🔼
NS1-TLD5	UP	<u>1 0K</u>	Q 🥵 🔼
TLD5-RTR	UP	<u>1 0K</u>	Q 🕵 🔼
TRTI-TLD5	UP	<u>1 0K</u>	Q 🥵 🚜

#### TRTI TLD6 Servers, Virtual Machines, Routers (TLD6)

	\-		
Host	Status	Services	Actions
NOC-TLD6	UP	<u>1 OK</u>	Q 🕵 🔼
NS1-TLD6	UP	<u>1 OK</u>	Q 🕵 🔼
TLD6-RTR	UP	1 OK	Q 🕵 🔼
TRTI-TLD6	UP	<u>1 OK</u>	Q 🥵 🔼

#### TRTI TLD7 Servers, Virtual Machines, Routers (TLD7)

Host	Status	Services	Actions
NOC-TLD7	UP	<u>1 OK</u>	Q 🕵 🗸
NS1-TLD7	LIP	1.0K	Q 🜇 🔻

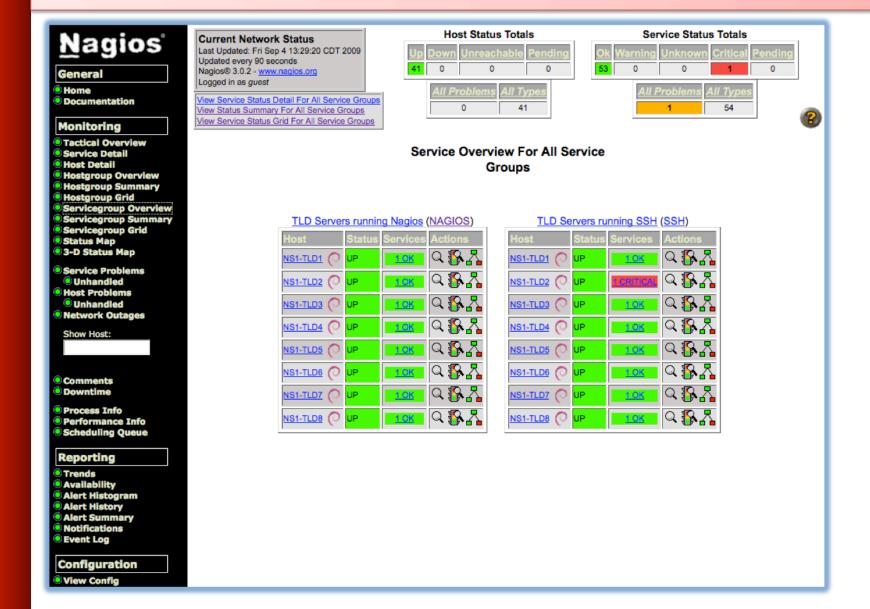
#### TRTI TLD8 Servers, Virtual Machines, Routers (TLD8)

Host	Status	Services	Actions
NOC-TLD8	UP	<u>1 0K</u>	Q 🚱 🔼
NS1-TLD8	LIP	1.0K	Q 🜇 🖯

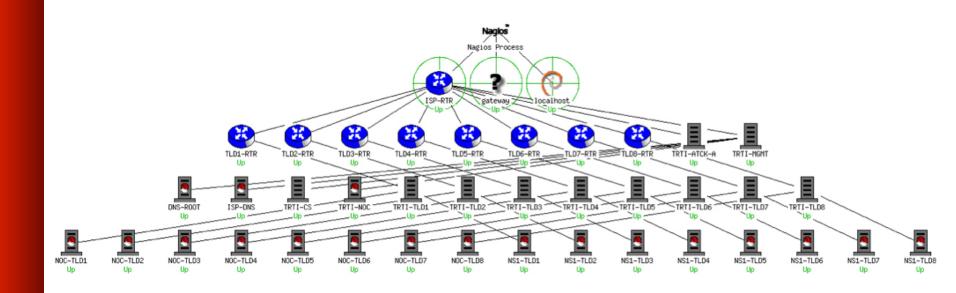
#### TRTI Management Virtual Machines (VM-mgmt)

Host	Status	Services Actions
DNS-ROOT	UP	<u> </u>
ISP-DNS (	UP	<u>10≪</u> Q <b>\$ \$ \$</b>

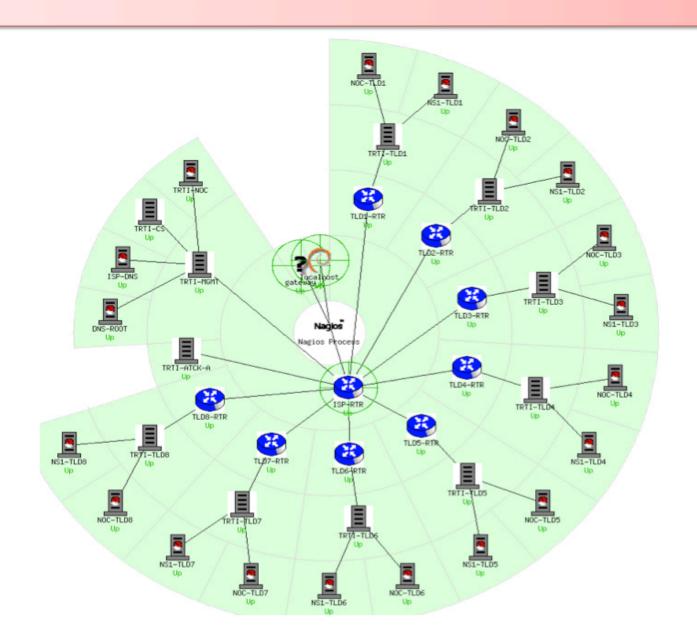
# Service Groups Overview



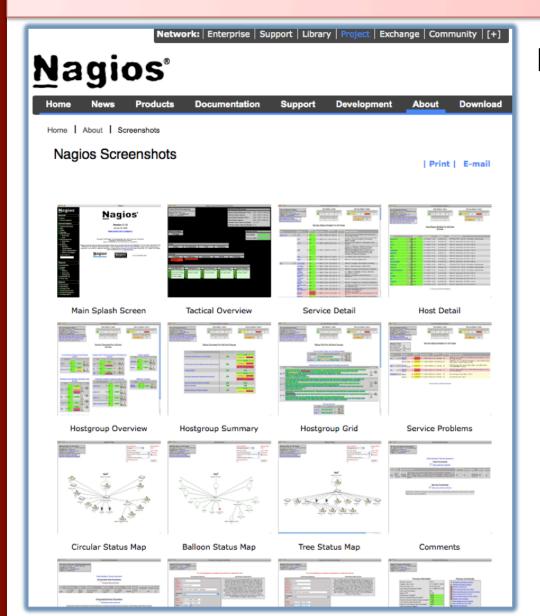
### Collapsed tree status map



## Marked-up circular status map



### More sample screenshots



Many more sample
Nagios screenshots
available here:

http://www.nagios.org/about/screenshots