

Network Monitoring & Management: Nagios

Network Startup Resource Center
www.nsrc.org



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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

Introduction

Nagios actively monitors the
availability

- of Hosts (devices)
- and Services

Nagios: General View

Nagios

General

- Home
- Documentation

Monitoring

- Tactical Overview
- Service Detail
- Host Detail
- Hostgroup Overview
- Hostgroup Summary
- Hostgroup Grid
- Servicegroup Overview
- Servicegroup Summary
- Servicegroup Grid
- Status Map
- 3-D Status Map
- Service Problems
 - Unhandled
- Host Problems
 - Unhandled
- Network Outages

Show Host:

- Comments
- Downtime
- Process Info
- Performance Info
- Scheduling Queue

Reporting

- Trends
- Availability
- Alert Histogram
- Alert History
- Alert Summary
- Notifications
- Event Log

Configuration

- View Config

Tactical Monitoring Overview
 Last Updated: Thu Sep 3 15:37:00 CDT 2009
 Updated every 60 seconds
 Nagios® 3.0.2 - www.nagios.org
 Logged in as guest

Monitoring Performance

Service Check Execution Time:	0.01 / 4.07 / 0.115 sec
Service Check Latency:	0.02 / 0.25 / 0.117 sec
Host Check Execution Time:	0.01 / 0.13 / 0.018 sec
Host Check Latency:	0.01 / 0.28 / 0.137 sec
# Active Host / Service Checks:	41 / 48
# Passive Host / Service Checks:	0 / 0

Network Outages

0 Outages

Network Health

Host Health:

Service Health:

Hosts

0 Down	0 Unreachable	41 Up	0 Pending
--------	---------------	-------	-----------

Services

0 Critical	0 Warning	0 Unknown	46 Ok	0 Pending
------------	-----------	-----------	-------	-----------

Monitoring Features

	Flap Detection	Notifications	Event Handlers	Active Checks	Passive Checks
Enable	All Services Enabled No Services Flapping All Hosts Enabled No Hosts Flapping	Enable	All Services Enabled All Hosts Enabled	Enable	All Services Enabled All Hosts Enabled

Host Detail View

Nagios

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- Host Detail**
- Hostgroup Overview
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- Hostgroup Grid
- Servicegroup Overview
- Servicegroup Summary
- Servicegroup Grid
- Status Map
- 3-D Status Map

Service Problems

- Unhandled

Host Problems

- Unhandled

Network Outages

Show Host:

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- Downline
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Current Network Status
 Last Updated: Thu Sep 01 14:52:41 CDT 2005
 Updated every 30 seconds
 Nagios 3.0.2 - www.nagios.org
 rlogan@cs.uoregon.edu

[View Service Status - Grid For All Host Groups](#)
[View Status Overview For All Host Groups](#)
[View Status Summary For All Host Groups](#)
[View Status Grid For All Host Groups](#)

Host Status Totals

Up	Down	Unreachable	Pending
48	0	0	0
AV Problems		All Types	
0		41	

Service Status Totals

OK	Warning	Unknown	Critical	Pending
48	0	0	0	0
AV Problems		All Types		
0		41		

Host Status Details For All Host Groups

Host	Status	Last Check	Duration	Status Information
NSR-TL01	UP	2005-09-01 14:51:41	49d 7h 1m 0s	PING OK - Packet loss = 0% RTA = 0.33 ms
NSR-TL02	UP	2005-09-01 14:51:41	16d 4h 11m 26s	PING OK - Packet loss = 0% RTA = 0.35 ms
NSR-TL03	UP	2005-09-01 14:51:41	43d 7h 47m 40s	PING OK - Packet loss = 0% RTA = 1.24 ms
NSR-TL04	UP	2005-09-01 14:52:31	1d 2h 10m 50s	PING OK - Packet loss = 0% RTA = 4.62 ms
NSR-TL05	UP	2005-09-01 14:52:31	1d 22h 53m 76s	PING OK - Packet loss = 0% RTA = 2.33 ms
NSR-TL06	UP	2005-09-01 14:52:31	1d 22h 53m 36s	PING OK - Packet loss = 0% RTA = 2.63 ms
NSR-TL07	UP	2005-09-01 14:52:31	1d 22h 53m 50s	PING OK - Packet loss = 0% RTA = 1.68 ms
NSR-TL08	UP	2005-09-01 14:52:31	1d 22h 54m 0s	PING OK - Packet loss = 0% RTA = 0.85 ms
NSR-TL09	UP	2005-09-01 14:52:31	1d 22h 53m 86s	PING OK - Packet loss = 0% RTA = 10.48 ms
NSR-TL10	UP	2005-09-01 14:52:31	1d 22h 53m 96s	PING OK - Packet loss = 0% RTA = 1.15 ms
NSR-TL11	UP	2005-09-01 14:52:31	1d 22h 53m 96s	PING OK - Packet loss = 0% RTA = 1.05 ms
NSR-TL12	UP	2005-09-01 14:52:31	1d 2h 10m 20s	PING OK - Packet loss = 0% RTA = 10.15 ms
NSR-TL13	UP	2005-09-01 14:52:31	1d 22h 53m 56s	PING OK - Packet loss = 0% RTA = 5.68 ms
NSR-TL14	UP	2005-09-01 14:52:31	1d 22h 53m 36s	PING OK - Packet loss = 0% RTA = 1.03 ms
NSR-TL15	UP	2005-09-01 14:52:31	1d 22h 53m 36s	PING OK - Packet loss = 0% RTA = 1.48 ms
NSR-TL16	UP	2005-09-01 14:52:31	1d 22h 53m 36s	PING OK - Packet loss = 0% RTA = 1.12 ms
NSR-TL17	UP	2005-09-01 14:52:31	1d 22h 53m 36s	PING OK - Packet loss = 0% RTA = 1.08 ms
NSR-TL18	UP	2005-09-01 14:52:31	1d 22h 53m 46s	PING OK - Packet loss = 0% RTA = 1.11 ms
NSR-TL19	UP	2005-09-01 14:52:31	1d 22h 53m 36s	PING OK - Packet loss = 0% RTA = 1.18 ms
NSR-TL20	UP	2005-09-01 14:52:31	1d 22h 54m 6s	PING OK - Packet loss = 0% RTA = 2.22 ms
NSR-TL21	UP	2005-09-01 14:52:31	1d 22h 53m 46s	PING OK - Packet loss = 0% RTA = 2.38 ms

Service Detail View

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- Status Map
- 3-D Status Map
- Service Problems
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Slide Hosts:

- Comments
- Downtime
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- View Config

Current Network Status
 Last Update: Thu Sep 3 16:43:07 CDT 2009
 Up: 2390 (92.5%) / 90 (3.000%)
 Nagios 3.5.2 - www.nagios.org
 Licensed to NSRC

Host Status Totals

Up	Down	Unreachable	Pending
23	2	0	0
All Problems		All Types	
2		4	

Service Status Totals

OK	Warning	Unknown	Critical	Pending
44	0	0	0	0
All Problems		All Types		
0		44		

Service Status Details For All Hosts

Host	Service	Status	Last Check	Duration	Attempt	Status Information
NSR-N001	SSH	OK	2009-09-03 14:43:07	334.0s (39m 15s)	34	SSH OK - OpenSSH_5.1p1 Debian-3ubuntu1 (protocol 2.0)
NSR-N005	SSH	OK	2009-09-03 14:43:21	341.0s (5m 24s)	34	SSH OK - OpenSSH_5.1p1 Debian-3ubuntu1 (protocol 2.0)
NSR-N006	SSH	OK	2009-09-03 14:43:07	334.0s (39m 13s)	34	SSH OK - Cisco-1.25 (protocol 2.0)
NOC-TL01	SSH	OK	2009-09-03 14:43:27	34.0s (1m 28s)	34	SSH OK - OpenSSH_5.1p1 Debian-3ubuntu1 (protocol 2.0)
NOC-TL02	SSH	OK	2009-09-03 14:44:04	34.20s (34m 29s)	34	SSH OK - OpenSSH_5.1p1 Debian-3ubuntu1 (protocol 2.0)
NOC-TL03	SSH	OK	2009-09-03 14:43:34	34.20s (34m 26s)	34	SSH OK - OpenSSH_5.1p1 Debian-3ubuntu1 (protocol 2.0)
NOC-TL04	SSH	OK	2009-09-03 14:43:00	34.20s (34m 16s)	34	SSH OK - OpenSSH_5.1p1 Debian-3ubuntu1 (protocol 2.0)
NOC-TL05	SSH	OK	2009-09-03 14:41:00	34.20s (31m 16s)	34	SSH OK - OpenSSH_5.1p1 Debian-3ubuntu1 (protocol 2.0)
NOC-TL06	SSH	OK	2009-09-03 14:44:37	34.20s (44m 5s)	34	SSH OK - OpenSSH_5.1p1 Debian-3ubuntu1 (protocol 2.0)
NOC-TL07	SSH	OK	2009-09-03 14:41:47	34.20s (41m 39s)	34	SSH OK - OpenSSH_5.1p1 Debian-3ubuntu1 (protocol 2.0)
NOC-TL08	SSH	OK	2009-09-03 14:44:29	34.20s (34m 3s)	34	SSH OK - OpenSSH_5.1p1 Debian-3ubuntu1 (protocol 2.0)
N01-TL01	SSH	OK	2009-09-03 14:41:00	34.0s (1m 33s)	34	SSH OK - OpenSSH_5.1p1 Debian-3ubuntu1 (protocol 2.0)
N01-TL02	SSH	OK	2009-09-03 14:44:20	34.20s (34m 26s)	34	SSH OK - OpenSSH_5.1p1 Debian-3ubuntu1 (protocol 2.0)
N01-TL03	SSH	OK	2009-09-03 14:43:00	34.20s (34m 26s)	34	SSH OK - OpenSSH_5.1p1 Debian-3ubuntu1 (protocol 2.0)
N01-TL04	SSH	OK	2009-09-03 14:44:26	34.20s (34m 26s)	34	SSH OK - OpenSSH_5.1p1 Debian-3ubuntu1 (protocol 2.0)
N01-TL05	SSH	OK	2009-09-03 14:43:00	34.20s (41m 20s)	34	SSH OK - OpenSSH_5.1p1 Debian-3ubuntu1 (protocol 2.0)

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 for Ubuntu

/usr/lib/nagios/plugins

```
nsro@s1:~$ ls /usr/lib/nagios/plugins
check_apc          check_disk        check_hpjd        check_jobbar      check_mysql        check_ntp_time    check_real        check_ssh         check_wave
check_breeze      check_disk_smb   check_http        check_ldap        check_mysql_query  check_nrs-sat     check_rpc         check_ssmtp      negate
check_by_ssh      check_dns        check_cmp         check_ldapns     check_nagios      check_nrocle     check_rta_multi  check_swap       online
check_clamd       check_dummy      check_fde_smart   check_load        check_nttp        check_overcr     check_sensors    check_tcp        u_i15.pm
check_cluster     check_file_age   check_fuserstatus check_log          check_nntp        check_pgsql      check_simap      check_time       utils.sh
check_dbi         check_flexlm     check_ifstatus    check_mailq       check_nt          check_ping       check_sntp       check_udp
check_dhcp        check_frp        check_imap        check_mrtg        check_ntp         check_pop        check_snmp       check_ups
check_dig         check_host       check_ircd        check_mrtgtraf   check_ntp_peer    check_procs      check_spop       check_users
```

/etc/nagios-plugins/config

```
nsro@s1:~$ ls /etc/nagios-plugins/config/
apc.cfg          disk_smb.cfg    ftp.cfg          http.cfg         mail.cfg         network.cfg      postgres.cfg     real.cfg         tcp_udp.cfg
breeze.cfg      dns.cfg         games.cfg       ifstatus.cfg    mailq.cfg       news.cfg         ping.cfg        rpc-nfs.cfg     telnet.cfg
dhcp.cfg        dummy.cfg       hping2.cfg     ldap.cfg         mrtg.cfg        nro.cfg         procs.cfg       snmp.cfg        users.cfg
disk.cfg        flexlm.cfg     hppid.cfg      load.cfg         mysql.cfg       ntp.cfg         radius.cfg      ssh.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

Hierarchy: The Concept of Parents

Hosts can have parents:

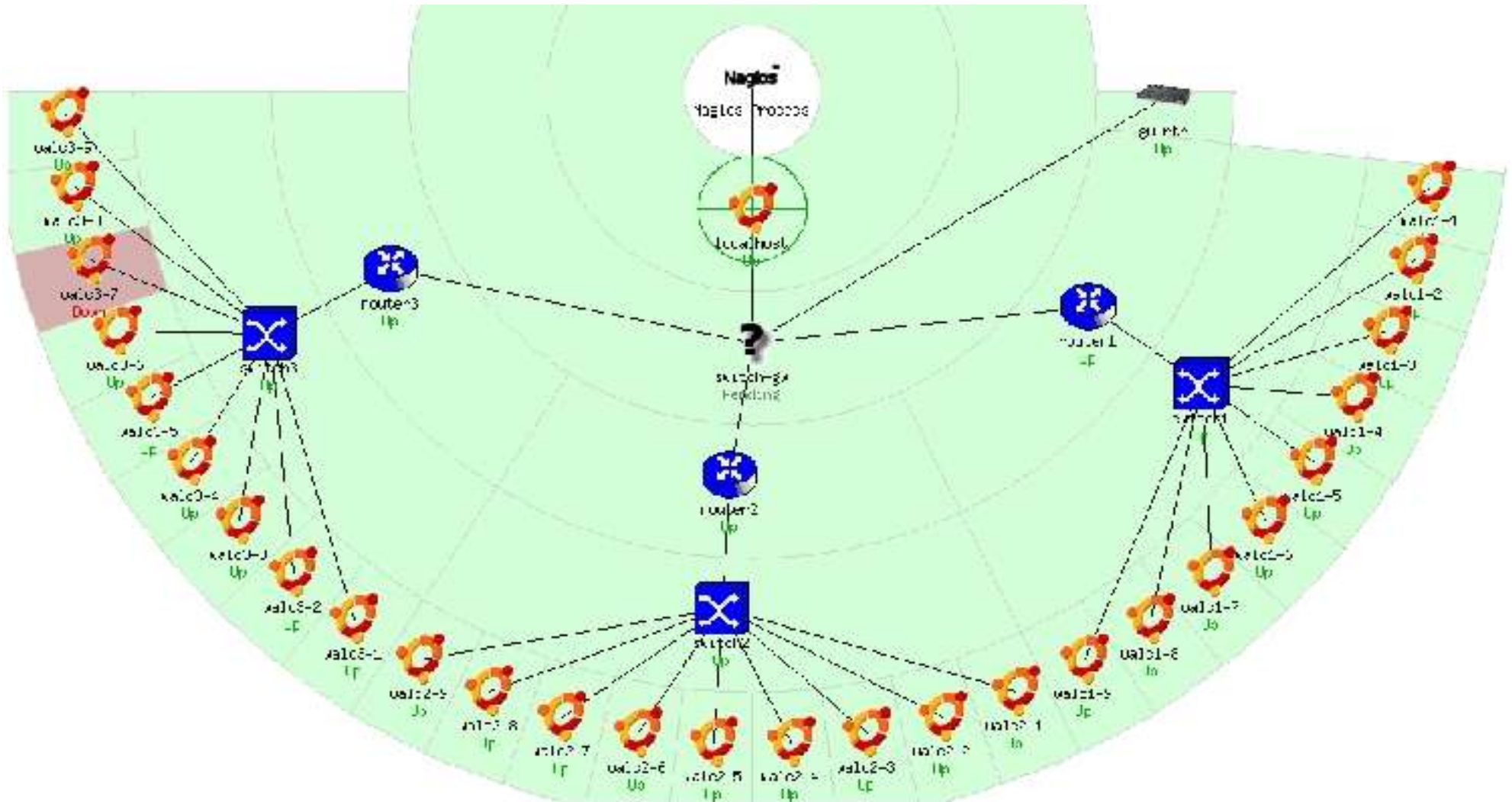
- The parent of a **PC** connected to a **switch** would be the **switch**.
- Allows us to specify the dependencies between devices.
- Avoids sending alarms when parent does not respond.
- A node can have multiple parents (dual homed).



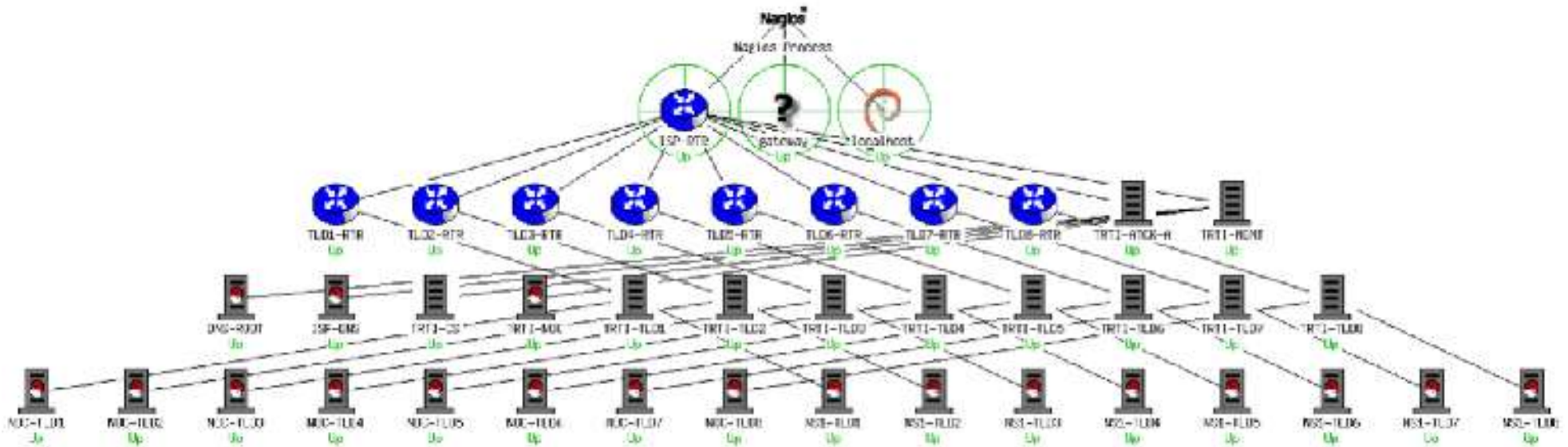
Network Viewpoint

- 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



Collapsed Tree Network View



Demo of Nagios

<http://noc.ws.nsrc.org/nagios3/>

nagiosadmin: lab_password

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/>

Host 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

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`

Monitoring a Single Host

pcs.cfg

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

copy settings from this template

- 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 {
    name                generic-host      ; The name of this host template
    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 0
    notification_period   24x7
    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

```
define host {
    host_name          pc1
    alias              pc1 in group 1
    address            pc1.ws.nsrc.org
    use                generic-host
    notification_interval 120
    contact_groups      admins,managers
}
```

Defining Services: Direct Way

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

pcs.cfg

```
define service {  
  host_name      pc1  
  service_description HTTP  
  check_command  check_http  
  use            generic-service  
}
```

```
define service {  
  host_name      pc1  
  service_description SSH  
  check_command  check_ssh  
  use            generic-service  
}
```

service
"pc1,HTTP"

plug
in

service
template

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 Templates

```
define service{
    name                generic-service
    active_checks_enabled 1
    passive_checks_enabled 1
    parallelize_check    1
    obsess_over_service  1
    check_freshness      0
    notifications_enabled 1
    event_handler_enabled 1
    flap_detection_enabled 1
    failure_prediction_enabled 1
    process_perf_data    1
    retain_status_information 1
    retain_nonstatus_information 1
    notification_interval 0
    is_volatile           0
    check_period          24x7
    normal_check_interval 5
    retry_check_interval  1
    max_check_attempts   4
    notification_period   24x7
    notification_options  w,u,c,r
    contact_groups        admins
    register              0 ; DONT REGISTER THIS DEFINITION
}
```

generic-service_nagios2.cfg

(comments have been removed)

Overriding Defaults

Again, settings can be overridden per service

services_nagios2.cfg

```
define service {
    host_name           pc1
    service_description HTTP
    check_command       check_http
    use                 generic-service
    contact_groups    admins,managers
    max_check_attempts 3
}
```

Repeating 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

```
define service {
    hostgroup_name      http-servers
    service_description  HTTP
    check_command        check_http
    use                  generic-service
}

define service {
    hostgroup_name      ssh-servers
    service_description  SSH
    check_command        check_ssh
    use                  generic-service
}
```

services_nagios2.cfg

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

Alternative View

- “this hostgroup contains these PCs”
- **or:**
- “this PC belongs to these hostgroups”
- No need for “members” line in hostgroups file

Alternative Group Membership

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

pcs.cfg

Hosts and services conveniently defined in the same place

Other Uses for Hostgroups

Choosing icons for the status map

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

pcs.cfg

```
define hostextinfo {  
    hostgroup_name    debian-servers  
    notes            Debian GNU/Linux servers  
    icon_image       base/debian.png  
    statusmap_image  base/debian.gd2  
}
```

extinfo_nagios2.cfg

Optional: Servicegroups

- Services can be grouped into a “servicegroup”
- This is so related or dependent services can be viewed together in the web interface
- The services themselves must already exist

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

servicegroups.cfg

Configuring Topology

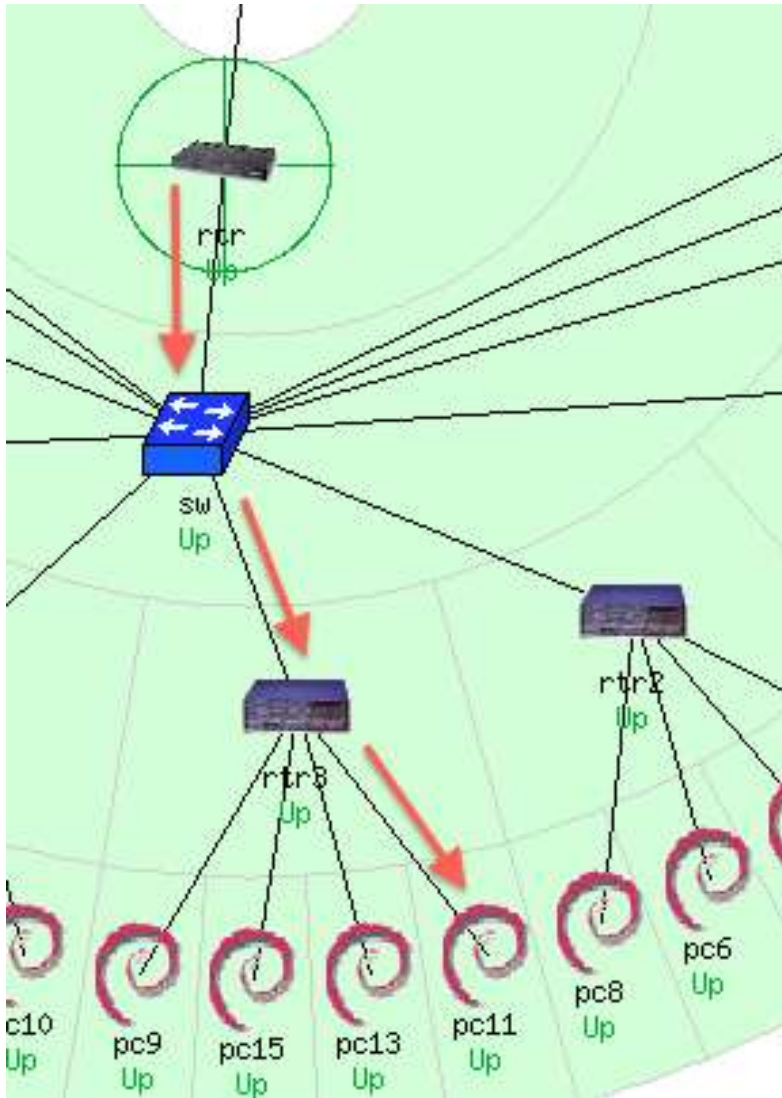
```
define host {  
    host_name    pc1  
    alias        pc1 in group 1  
    address      pc1.ws.nsrc.org  
    use          generic-host  
    parents     rtr1  
}
```

pcs.cfg

parent
host

- This means “pc1 is on the far side of rtr1”
- If rtr1 goes down, pc1 is “unreachable”, not “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 {  
    use generic-host  
    host_name rtr  
    alias Gateway Router  
    address 10.10.0.254 }
```

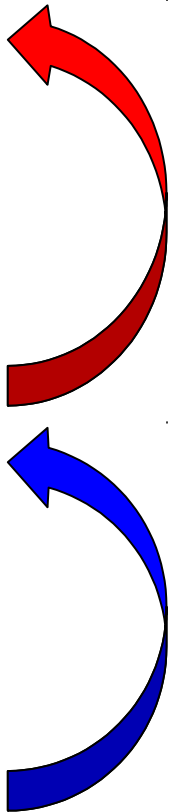
SW

```
define host {  
    use generic-host  
    host_name sw  
    alias Backbone Switch  
    address 10.10.0.253  
    parents rtr }
```

RTR3

```
define host {  
    use generic-host  
    host_name rtr3  
    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/>

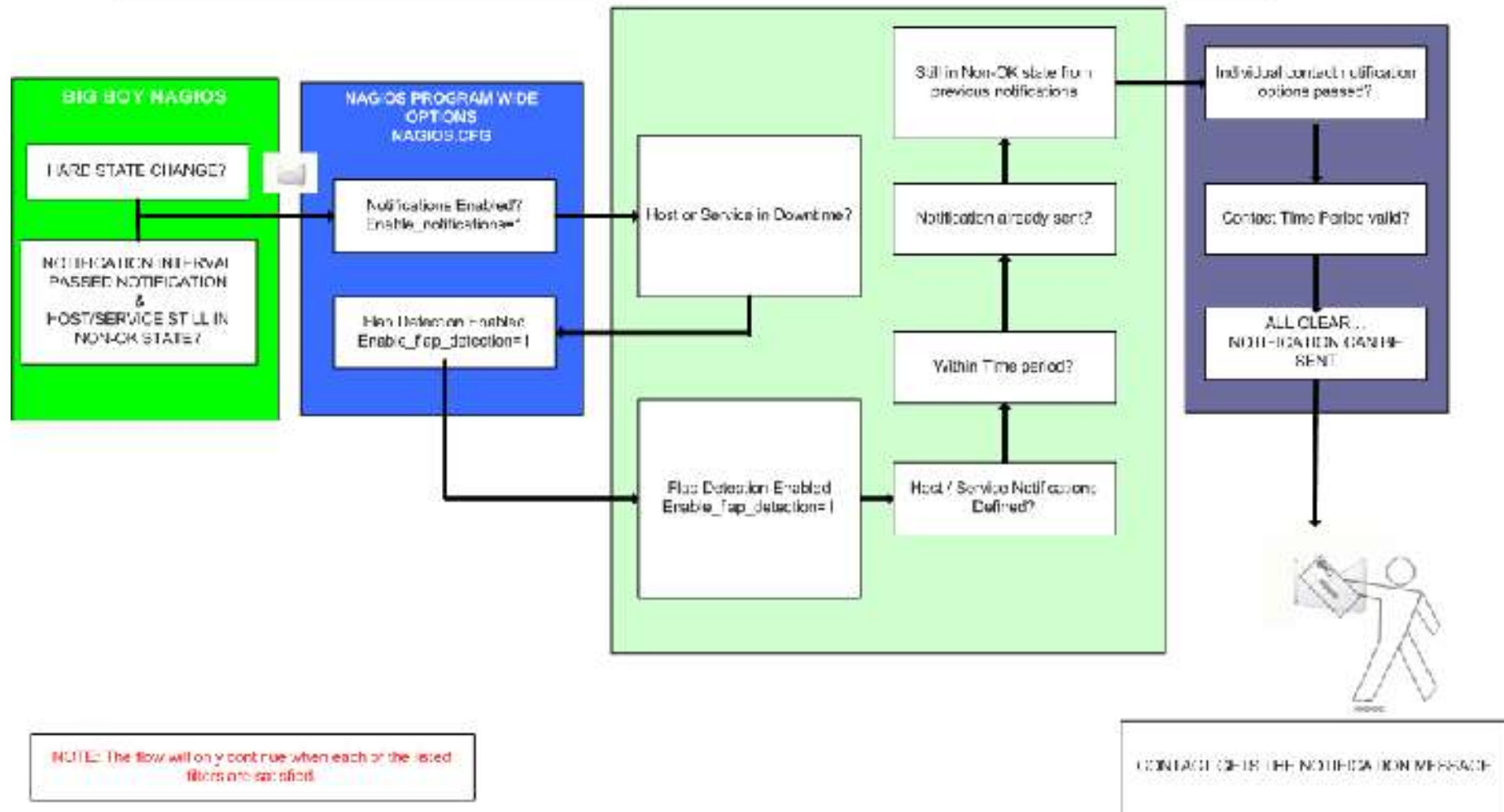
gnokii: <http://www.gnokii.org/>

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

 I use a Raspberry Pi with Kannel:

<http://www.kannel.org/>

NAGIOS - NOTIFICATION FLOW DIAGRAM



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/>

Additional Details

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

More 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

Host Notification Options

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

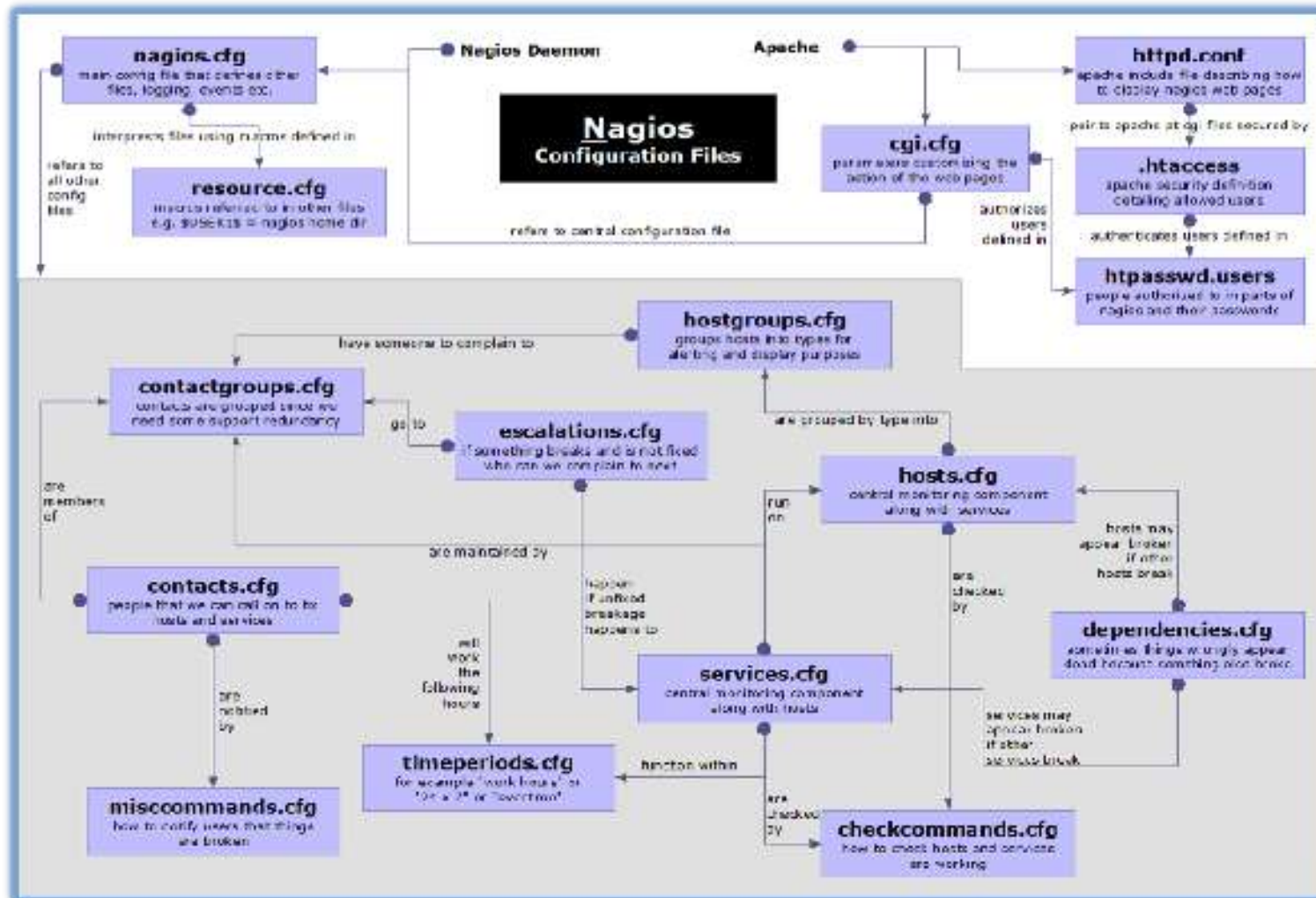
Service Notification Options

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



Debian/Ubuntu Configuration Files

Located in `/etc/nagios3/`

Important files include:

- `nagios.cfg` Main configuration file.
- `cgi.cfg` Controls the web interface and security options.
- `commands.cfg` The commands that Nagios uses for notifications.
- `conf.d/*` All other configuration goes here!

More Configuration Files

Under **conf.d/***

- **contacts_nagios2.cfg** users and groups
- **extinfo_nagios2.cfg** make your UI pretty
- **generic-host_nagios2.cfg** default host template
- **generic-service_nagios2.cfg** default service
template
- **host-gateway_nagios3.cfg** upstream router definition
- **hostgroups_nagios2.cfg** groups of nodes
- **localhost_nagios2.cfg** definition of nagios
host
- **services_nagios2.cfg** what services to
check
- **timeperiods_nagios2.cfg** when to check who to notify

More Configuration Files

Under conf.d some other possible config files:

- [servicegroups.cfg](#) Groups of nodes and services
- [pcs.cfg](#) Sample definition of PCs (hosts)
- [switches.cfg](#) Definitions of switches
(hosts)
- [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
- Adjust as needed, such as work-week only.
- Set up new time period for “outside 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

```
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 '$ARG1$' '$HOSTADDRESS$'
}
```

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

- 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:

```
define service {
    hostgroup_name    ssh-servers-2222
    service_description    SSH-2222
    check_command     check_ssh_port!2222
    use               generic-service
}
```

this is
\$ARG1\$

Notification Commands

Use any command you want!

We could use this to generate tickets in RT.

```
# 'notify-by-email' command definition
define command{
    command_name    notify-by-email
    command_line    /usr/bin/printf "%b" "Service: $SERVICEDESC$\nHost:
$HOSTNAME$\nIn: $HOSTALIAS$\nAddress: $HOSTADDRESS$\nState: $SERVICESTATE$\nInfo:
$SERVICEOUTPUT$\nDate: $SHORTDATETIME$" | /bin/mail -s '$NOTIFICATIONTYPE$:
$HOSTNAME$/$SERVICEDESC$ is $SERVICESTATE$' $CONTACTEMAIL$
}
```

```
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
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

```
# check that ssh services are running
define service {
    hostgroup_name      ssh-servers
    service_description SSH
    check_command       check_ssh
    use                 generic-service
    notification_interval 0
}
```

The “service_description” is important if you plan to create Service Groups. Here is a sample Service Group definition:

```
define servicegroup{
    servicegroup_name  Webmail
    alias              web-mta-storage-auth
    members            srvr1,HTTP,srvr1,SMTP,srvr1,POP, \
                    srvr1,IMAP,srvr1,RAID,srvr1,LDAP, \
                    srvr2,HTTP,srvr2,SMTP,srvr2,POP, \
                    srvr2,IMAP,srvr2,RAID,srvr2,LDAP
}
```

Screen Shots

A few sample screen shots from a Nagios install.

General

- Home
- Documentation

Monitoring

- Tactical Overview
- Service Detail
- Host Detail
- Hostgroup Overview
- Hostgroup Summary
- Hostgroup Grid
- Servicegroup Overview
- Servicegroup Summary
- Servicegroup Grid
- Status Map
- 3-D Status Map
- Service Problems
 - Unhandled
- Host Problems
 - Unhandled
- Network Outages

Show Host:

- Comments
- Downtime
- Process Info
- Performance Info
- Scheduling Queue

Reporting

- Trends
- Availability
- Alert Histogram
- Alert History
- Alert Summary
- Notifications
- Event Log

Configuration

- View Config

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 Chart For All Host Groups](#)

Host Status Totals

Up	Down	Unreachable	Pending
41	0	0	0
All Problems		All Types	
0		41	

Service Status Totals

Ok	Warning	Unknown	Critical	Pending
46	0	0	0	0
All Problems		All Types		
0		46		

Service Overview For All Host Groups

[TRTI.TLD1 Servers, Virtual Machines, Routers](#)

(TLD1)

Host	Status	Services	Actions
NOC-TLD1	UP	1 OK	
NS1-TLD1	UP	1 OK	
TLD1-RTR	UP	1 OK	
TRTI-TLD1	UP	1 OK	

[TRTI.TLD2 Servers, Virtual Machines, Routers](#)

(TLD2)

Host	Status	Services	Actions
NOC-TLD2	UP	1 OK	
NS1-TLD2	UP	1 OK	
TLD2-RTR	UP	1 OK	
TRTI-TLD2	UP	1 OK	

[TRTI.TLD3 Servers, Virtual Machines, Routers](#)

(TLD3)

Host	Status	Services	Actions
NOC-TLD3	UP	1 OK	
NS1-TLD3	UP	1 OK	
TLD3-RTR	UP	1 OK	
TRTI-TLD3	UP	1 OK	

[TRTI.TLD4 Servers, Virtual Machines, Routers](#)

(TLD4)

Host	Status	Services	Actions
NOC-TLD4	UP	1 OK	
NS1-TLD4	UP	1 OK	
TLD4-RTR	UP	1 OK	
TRTI-TLD4	UP	1 OK	

[TRTI.TLD5 Servers, Virtual Machines, Routers](#)

(TLD5)

Host	Status	Services	Actions
NOC-TLD5	UP	1 OK	
NS1-TLD5	UP	1 OK	
TLD5-RTR	UP	1 OK	
TRTI-TLD5	UP	1 OK	

[TRTI.TLD6 Servers, Virtual Machines, Routers](#)

(TLD6)

Host	Status	Services	Actions
NOC-TLD6	UP	1 OK	
NS1-TLD6	UP	1 OK	
TLD6-RTR	UP	1 OK	
TRTI-TLD6	UP	1 OK	

[TRTI.TLD7 Servers, Virtual Machines, Routers](#)

(TLD7)

Host	Status	Services	Actions
NOC-TLD7	UP	1 OK	
NS1-TLD7	UP	1 OK	

[TRTI.TLD8 Servers, Virtual Machines, Routers](#)

(TLD8)

Host	Status	Services	Actions
NOC-TLD8	UP	1 OK	
NS1-TLD8	UP	1 OK	

[TRTI Management Virtual Machines \(VM-mgmt\)](#)

Host	Status	Services	Actions
DNS-ROOT	UP	1 OK	
SP-ONS	UP	1 OK	

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- Scheduling Queue

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- Availability
- Alert Histogram
- Alert History
- Alert Summary
- Notifications
- Event Log

Configuration

- View Config

Current Network Status

Last Updated: Fri Sep 4 13:29:20 CDT 2009
Updated every 60 seconds
Nagios 3.0.2 - www.nagios.org
Logged in as guest

[View Service Status Detail For All Service Groups](#)
[View Status Summary For All Service Groups](#)
[View Service Status Grid For All Service Groups](#)

Host Status Totals

Up	Down	Unreachable	Pending
11	0	0	0

All Problems	All Types
0	41

Service Status Totals

Ok	Warning	Unknown	Critical	Pending
53	0	0	1	0

All Problems	All Types
1	54

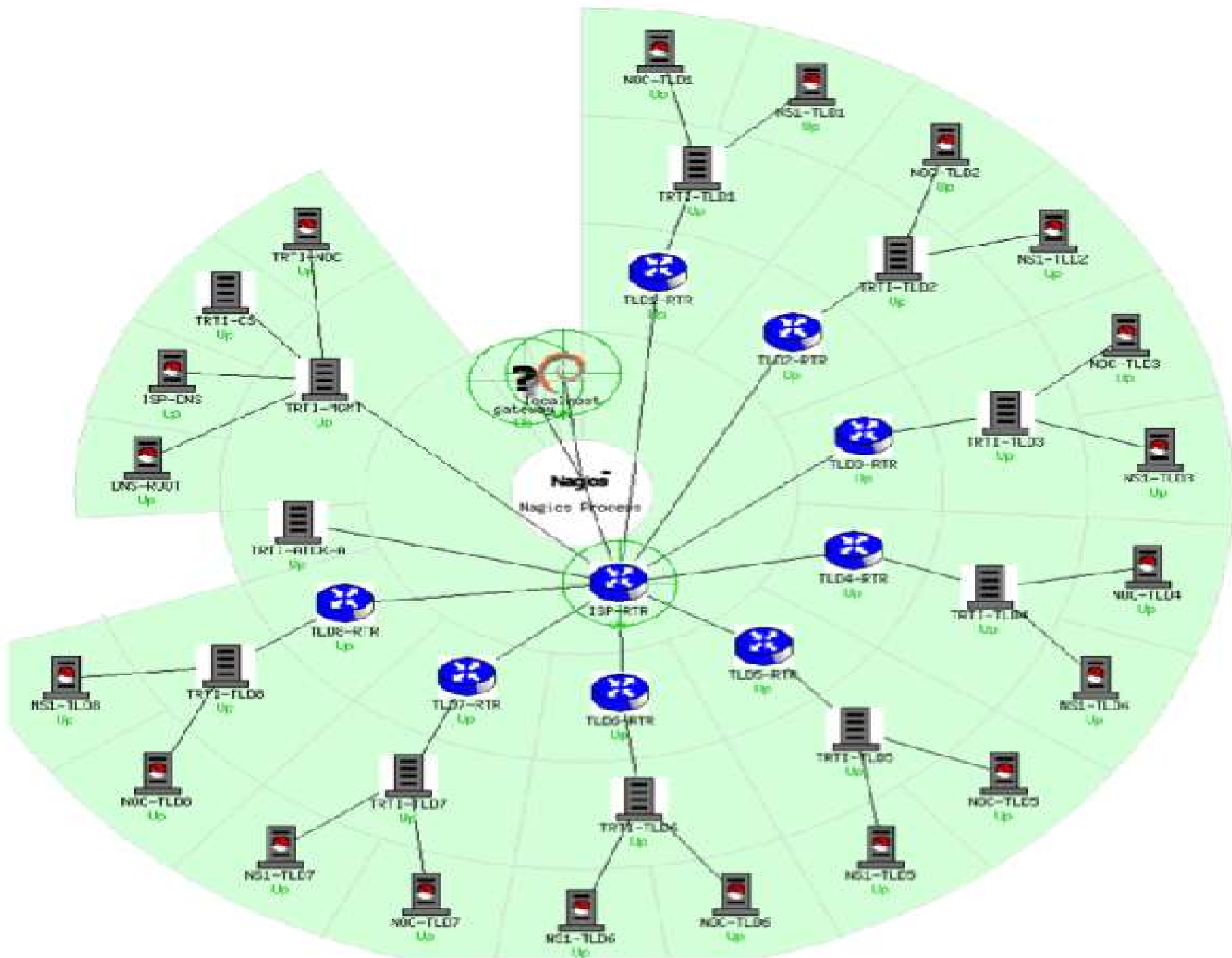
Service Overview For All Service Groups

TLD Servers running Nagios (NAGIOS)

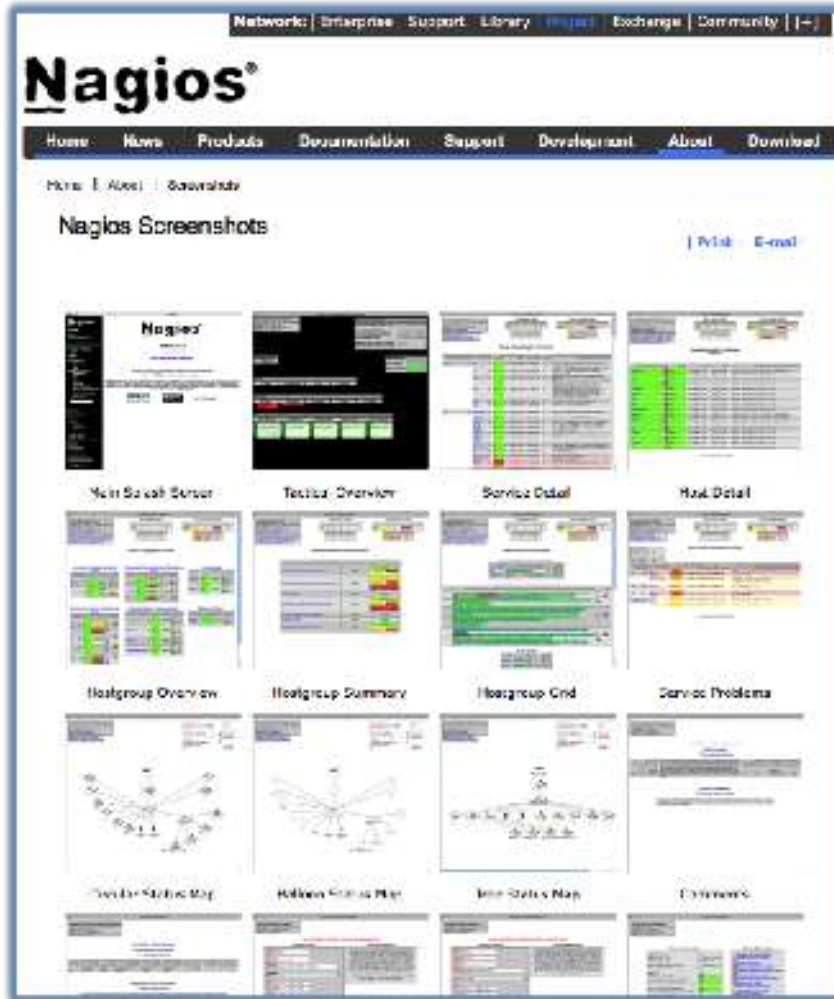
Host	Status	Services	Actions
NS1-TLD1	UP	1 OK	  
NS1-TLD2	UP	1 OK	  
NS1-TLD3	UP	1 OK	  
NS1-TLD4	UP	1 OK	  
NS1-TLD5	UP	1 OK	  
NS1-TLD8	UP	1 OK	  
NS1-TLD7	UP	1 OK	  
NS1-TLD8	UP	1 OK	  

TLD Servers running SSH (SSH)

Host	Status	Services	Actions
NS1-TLD1	UP	1 OK	  
NS1-TLD2	UP	1 CRITICAL	  
NS1-TLD3	UP	1 OK	  
NS1-TLD4	UP	1 OK	  
NS1-TLD5	UP	1 OK	  
NS1-TLD8	UP	1 OK	  
NS1-TLD7	UP	1 OK	  
NS1-TLD8	UP	1 OK	  



More Sample Screenshots



Many more sample Nagios screenshots available here:

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