



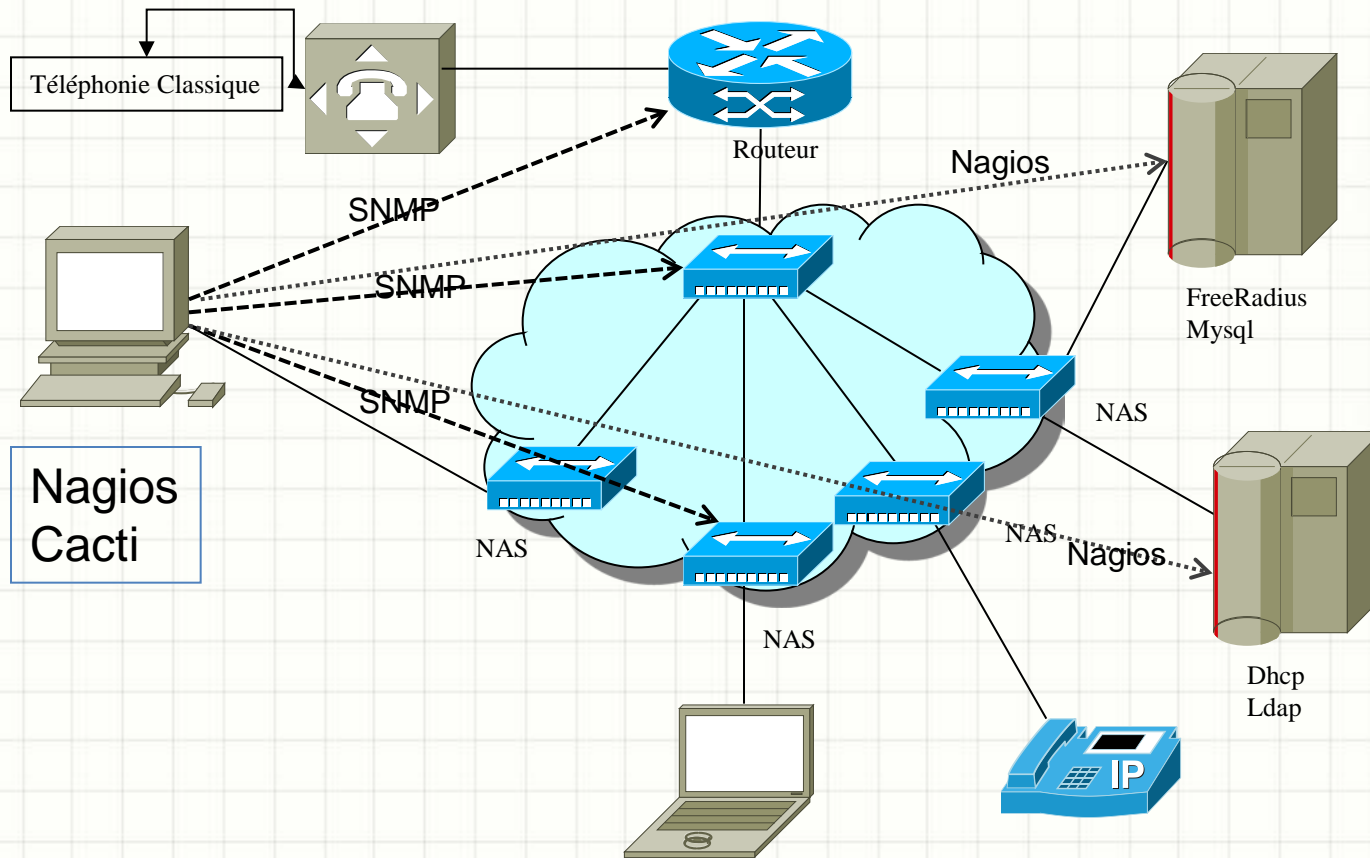
MONITORING ET SUPERVISION

Emmanuel.Reuter@ifsttar.fr

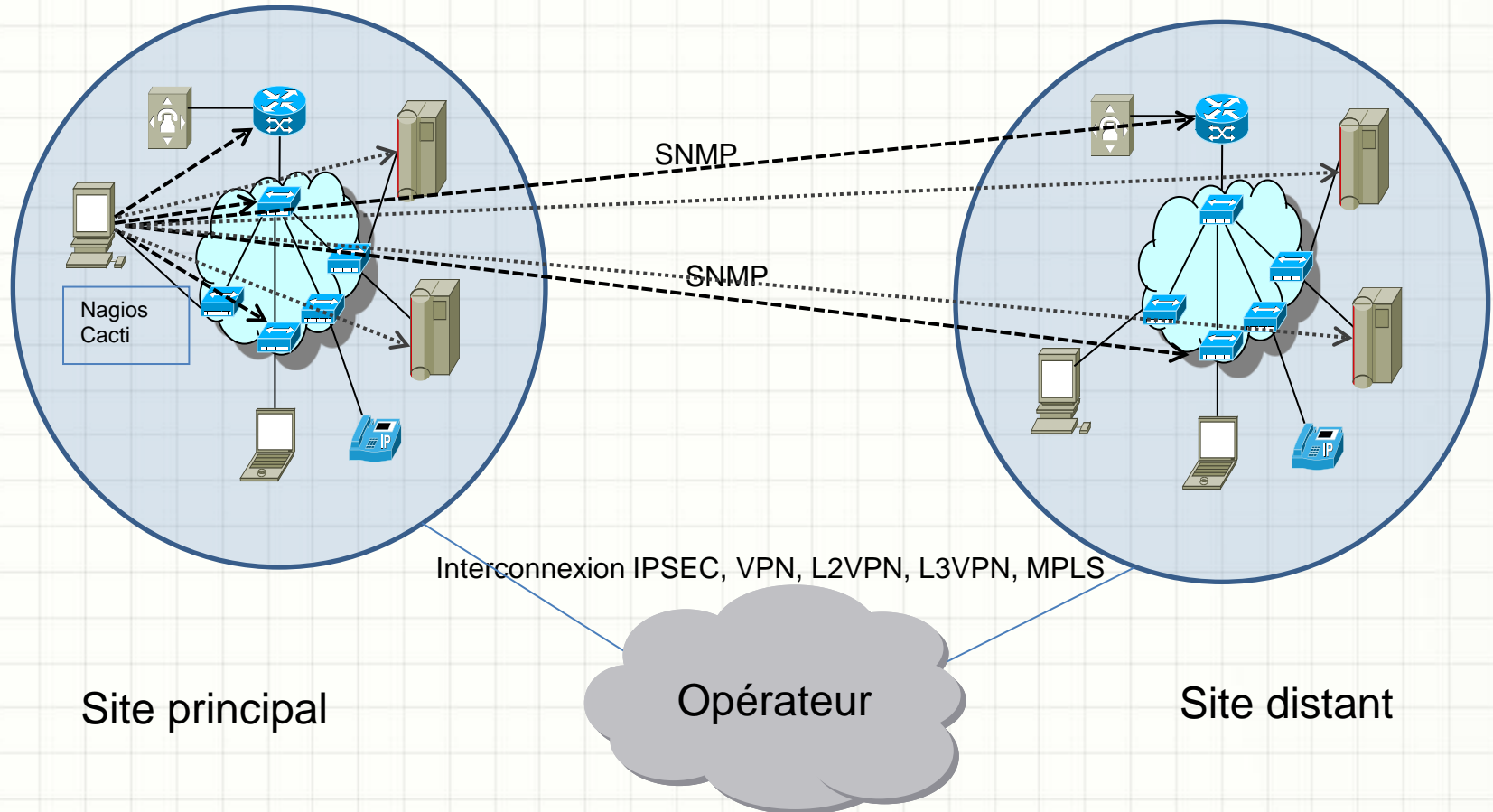
Modes de supervision

- SNMP : pour 200 switches environ
 - $200 * 48 * 2$ requêtes = 19200 toutes les 5 mns
 - Soit + de 5 millions par jours
- Nagios : pour superviser les serveurs
 - Dépend du nombre de services par serveurs
 - Minimum 1 requête A/R par serveur/service

Supervision mode local

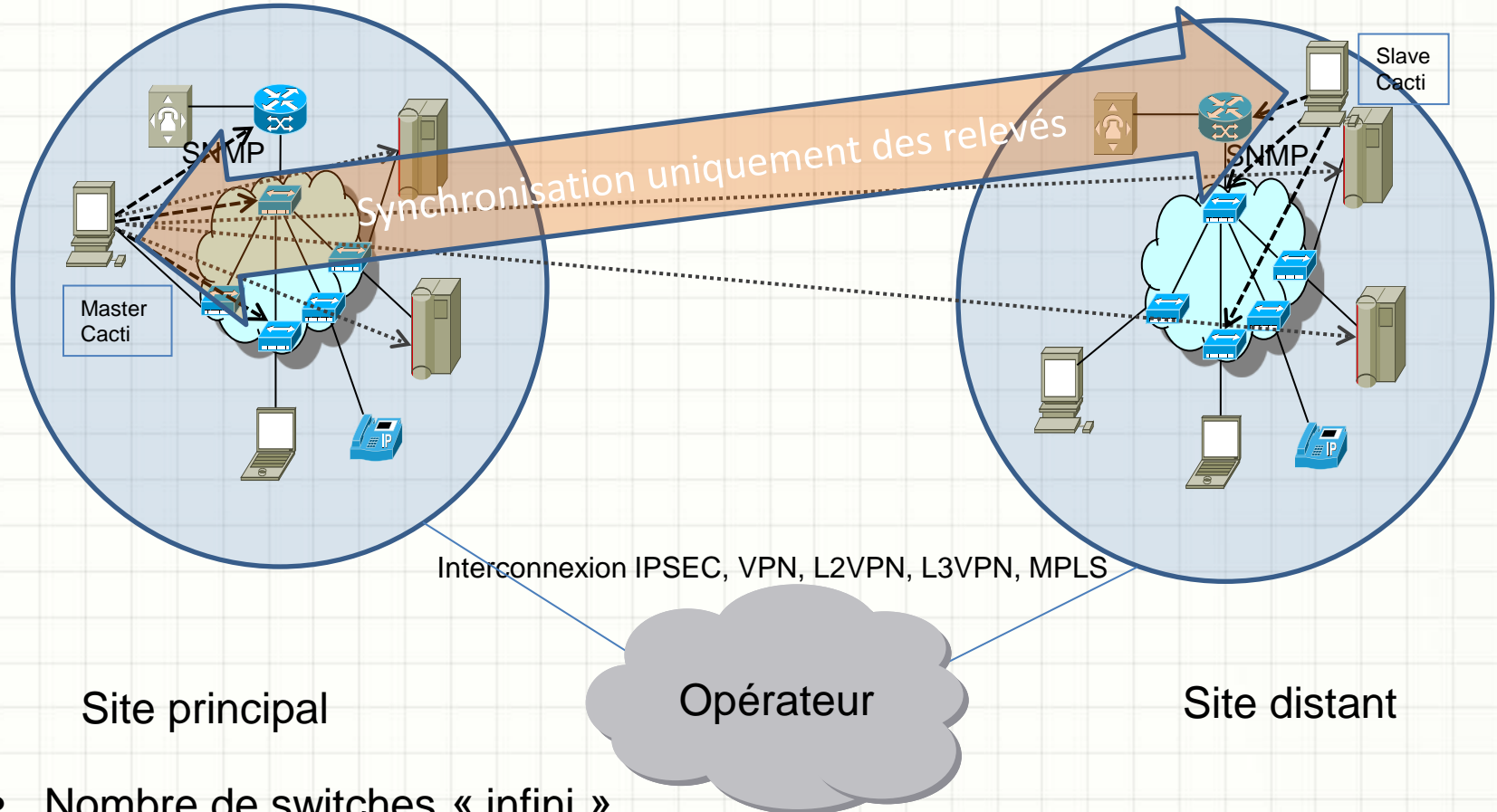


Supervision mode direct



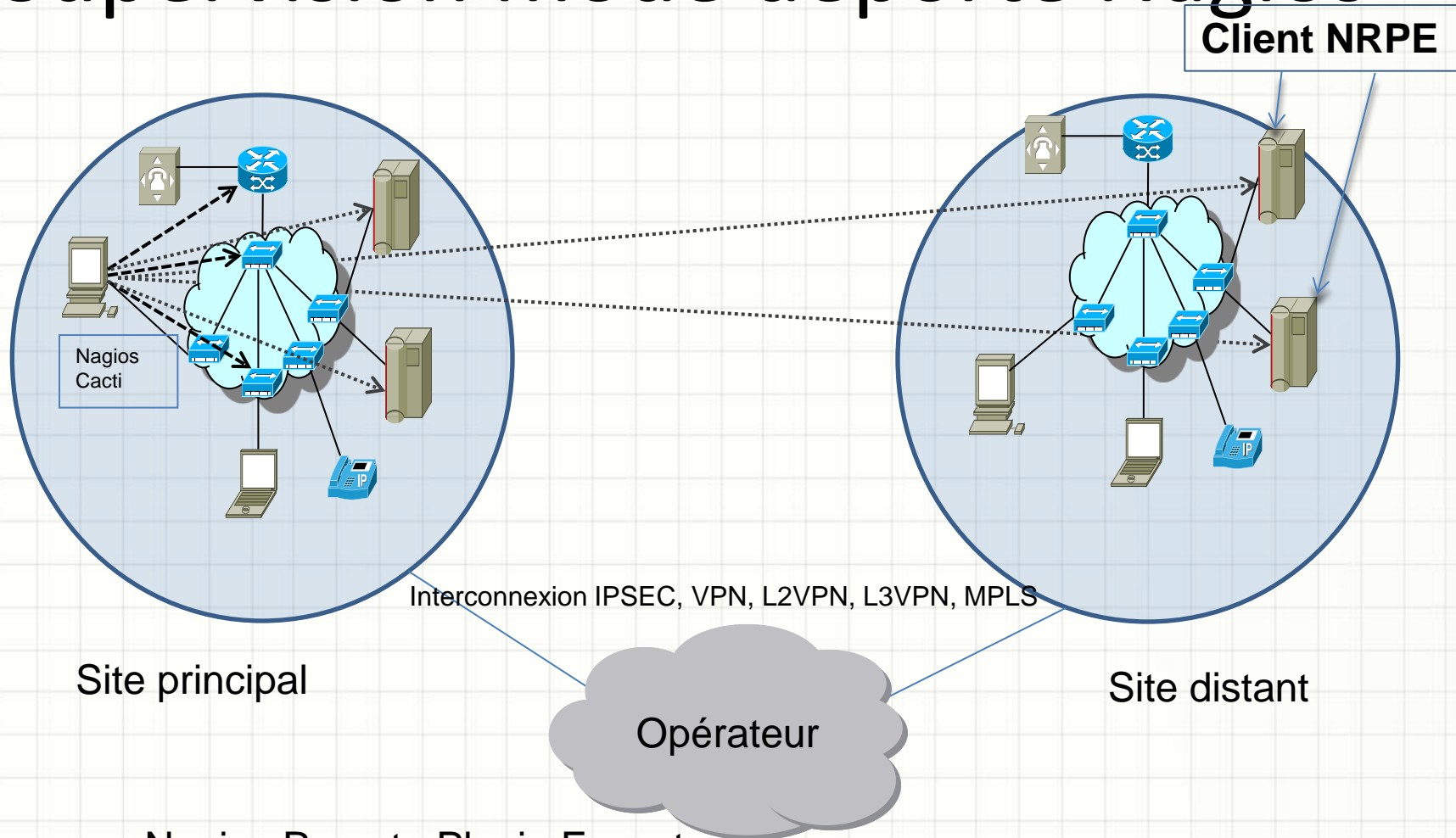
- Nombre de switches < 100
- Polling des serveurs depuis le site principal vers le site distant
- Problématique du temps d'exécution du polling (cacti+nagios)

Supervision mode déportée SNMP



- Nombre de switches « infini »
- Polling de chaque serveur localement, l'agrégation vers le serveur maître (pas tous les relevés)
- Pas de pb de tps d'exécution du polling car local

Supervision mode déporté Nagios



- Nagios Remote Plugin Executor
- Déporte à distance plusieurs requêtes de monitoring

Supervision

- Client NRPE
 - Proxy distant qui exécute les requêtes localement sur le serveur
- Agent SNMP
 - Pas de possibilité de proxy
 - Pas ou peu d'outils capables de collecter localement avec un transfert vers une seule station de monitoring
 - Nécessité d'utiliser le bulk (SNMPv2c) pour les requêtes
 - Niveau de visibilité du monitoring si plusieurs instances de Cacti, par exemple (Version de Cacti distribuée)

Nagios : Accueil IHM



Nagios[®]
Copyright (c) 1999-2008 Ethan Galstad

Version 3.0.6
December 01, 2008
[Read what's new in Nagios 3](#)



Need help with Nagios?

A variety of worldwide support options are available to help you get Nagios up and running quickly. Visit www.nagios.org/support/ for information on:

- Installation
- Configuration
- Performance Tuning
- Integration
- Customization


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Nagios : Fonctionnement des serveurs



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

Current Network Status

Last Updated: Wed Oct 7 19:35:34 CEST 2009
 Updated every 90 seconds
 Nagios® 3.0.6 - www.nagios.org
 Logged in as reuter

[View Service Status Detail 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
17	0	0	0

All Problems	All Types
0	17

Service Status Totals

Ok	Warning	Unknown	Critical	Pending
109	0	0	0	0

All Problems	All Types
0	109

Host Status Details For All Host Groups

Host	Status	Last Check	Duration	Status Information
bigi	UP	07-10-2009 19:31:19	20d 6h 56m 36s	PING OK - Packet loss = 0%, RTA = 0.43 ms
cassis	UP	07-10-2009 19:32:49	20d 6h 55m 56s	HTTP OK HTTP/1.1 200 OK - 17150 bytes in 0,157 seconds
chidori	UP	07-10-2009 19:30:39	15d 6h 13m 38s	PING OK - Packet loss = 0%, RTA = 3.05 ms
data	UP	07-10-2009 19:34:49	13d 0h 19m 15s	PING OK - Packet loss = 0%, RTA = 0.35 ms
ftp	UP	07-10-2009 19:34:59	15d 3h 41m 22s	SSH OK - Sun_SSH_1.1.2 (protocol 2.0)
hermes	UP	07-10-2009 19:31:39	8d 0h 46m 45s	SSH OK - Sun_SSH_1.1 (protocol 2.0)
ibuprofen	UP	07-10-2009 19:32:39	15d 3h 37m 55s+	PING OK - Packet loss = 0%, RTA = 0.31 ms
intranet	UP	07-10-2009 19:32:49	190d 8h 10m 25s	PING OK - Packet loss = 0%, RTA = 0.24 ms
joinfo21	UP	07-10-2009 19:31:19	20d 6h 56m 56s	SSH OK - OpenSSH_3.9p1 (protocol 2.0)
marne-route	UP	07-10-2009 19:33:29	20d 6h 54m 6s	PING OK - Packet loss = 0%, RTA = 0.50 ms
phoenix	UP	07-10-2009 19:31:49	20d 6h 56m 16s	PING OK - Packet loss = 0%, RTA = 0.39 ms
picsoy	UP	07-10-2009 19:31:59	20d 6h 56m 56s	PING OK - Packet loss = 0%, RTA = 0.47 ms
remus	UP	07-10-2009 19:35:09	208d 1h 40m 42s	PING OK - Packet loss = 0%, RTA = 0.38 ms
romulus	UP	07-10-2009 19:33:29	23d 0h 21m 16s	PING OK - Packet loss = 0%, RTA = 0.57 ms
terre	UP	07-10-2009 19:34:29	13d 9h 30m 15s	PING OK - Packet loss = 0%, RTA = 7.36 ms
uranus	UP	07-10-2009 19:33:49	0d 8h 41m 15s	PING OK - Packet loss = 0%, RTA = 8.71 ms
webdmz	UP	07-10-2009 19:31:59	20d 6h 56m 26s	PING OK - Packet loss = 0%, RTA = 0.76 ms

Nagios : Fonctionnement des groupes de serveurs

Nagios

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- Service Problems
 - Unhandled
 - Host Problems
 - Unhandled
 - Network Outages
- Show Host:
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- Performance Info
- Scheduling Queue
- Reporting
 - Trends
 - Availability
 - Alert Histogram
 - Alert History
 - Alert Summary
 - Notifications

Current Network Status
 Last Updated: Wed Oct 7 19:36:28 CEST 2009
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[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

Up	Down	Unreachable	Pending
17	0	0	0
All Problems		All Types	
0		17	

Service Status Totals

OK	Warning	Unknown	Critical	Pending
109	0	0	0	0
All Problems		All Types		
0		109		

Service Overview For All Host Groups

Serveurs Arcueil (ARCUEIL)

Host	Status	Services	Actions
cassis	UP	1 OK	[Icons]
chidori	UP	8 OK	[Icons]
data	UP	7 OK	[Icons]
fto	UP	4 OK	[Icons]
hermes	UP	11 OK	[Icons]
ibuprofen	UP	No matching services	[Icons]
intranet	UP	10 OK	[Icons]
lpinfo21	UP	1 OK	[Icons]
phoenix	UP	7 OK	[Icons]
picso	UP	11 OK	[Icons]
remus	UP	9 OK	[Icons]
romulus	UP	12 OK	[Icons]

Serveurs Bron (BRON)

Host	Status	Services	Actions
uranus	UP	5 OK	[Icons]


Serveurs Lille (LILLE)

Host	Status	Services	Actions
terre	UP	13 OK	[Icons]

reuter Arcueil (ROUTEURS)

Visualisation de l'application métier :
 Serveur Frontal + Base de données,
 par exemple

Nagios : Fonctionnement des services



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Current Network Status
 Last Updated: Wed Oct 7 19:34:44 CEST 2009
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[View Notifications For All Hosts](#)
[View Host Status Detail For All Hosts](#)

Host Status Totals

Up	Down	Unreachable	Pending
17	0	0	0
All Problems		All Types	
0		17	

Service Status Totals

OK	Warning	Unknown	Critical	Pending
109	0	0	0	0
All Problems		All Types		
0		109		

Service Status Details For All Hosts

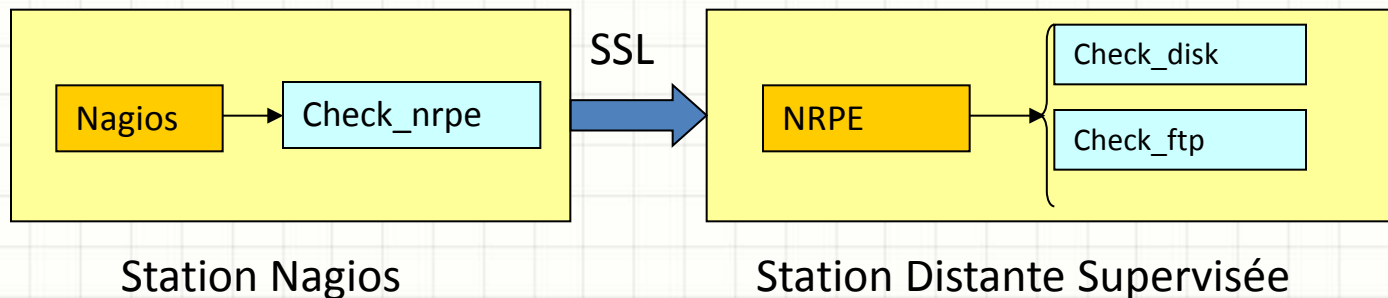
Host	Service	Status	Last Check	Duration	Attempt	Status Information
cassis	HTTP	OK	07-10-2009 19:32:44	20d 6h 5m 20s	1/3	HTTP OK HTTP/1.1 200 OK - 17150 bytes in 0,158 seconds
chidori	DNS 1 INRETS	OK	07-10-2009 19:22:31	16d 7h 42m 13s	1/3	DNS OK: 0.007 seconds response time. www.inrets.fr returns 137.121.250.5
	DNS 1 LCPC	OK	07-10-2009 19:30:38	15d 6h 4m 6s	1/3	DNS OK: 0.007 seconds response time. www.lcpc.fr returns 137.121.254.72
	DNS 2 INRETS	OK	07-10-2009 19:21:45	16d 7h 42m 59s	1/3	DNS OK: 0.057 seconds response time. www.inrets.fr returns 137.121.250.5
	DNS 2 LCPC	OK	07-10-2009 19:32:49	6d 7h 53m 55s	1/3	DNS OK: 0.007 seconds response time. www.lcpc.fr returns 137.121.254.72
	FTP INRETS	OK	07-10-2009 19:26:58	16d 7h 52m 46s	1/3	FTP OK - 0.009 second response time on port 21 [220 (vsFTPd 2.2.0)]
	MX1 INRETS	OK	07-10-2009 19:32:46	0d 0h 47m 58s	1/3	SMTP OK - 0.013 sec. response time
	MX2 INRETS	OK	07-10-2009 19:33:13	0d 0h 56m 31s	1/3	SMTP OK - 0.012 sec. response time
	WWW.INRETS.FR	OK	07-10-2009 19:28:35	1d 1h 51m 9s	1/3	HTTP OK HTTP/1.1 200 OK - 10900 bytes in 0,103 seconds
data	LDAP	OK	07-10-2009 19:32:55	13d 0h 16m 49s	1/3	LDAP OK - 0,005 seconds response time
	LOAD CPU	OK	07-10-2009 19:33:52	13d 0h 15m 52s	1/3	OK - load average: 1.52, 1.54, 1.46
	NFS	OK	07-10-2009 19:32:50	13d 0h 17m 55s	1/3	OK: RPC program nfs version 2 version 3 udp running
	Networker Status	OK	07-10-2009 19:00:37	12d 23h 34m 7s	1/3	OK - All Drives enabled
	PING	OK	07-10-2009 19:34:02	13d 0h 18m 44s	1/3	PING OK - Packet loss = 0%, RTA = 0.39 ms
	SAMBA	OK	07-10-2009 19:33:43	13d 0h 16m 1s	1/3	TCP OK - 0,001 second response time on port 139
	SSH	OK	07-10-2009 19:29:28	13d 0h 15m 16s	1/3	SSH OK - Sun_SSH_1.1 (protocol 2.0)
ftp	FTP	OK	07-10-2009 19:25:02	15d 3h 39m 42s	1/3	DISK OK - free space: /ftp 179903 MB (64% inode=99%):
	Demon FTP	OK	07-10-2009 19:31:39	15d 3h 38m 5s	1/3	FTP OK - 0,005 second response time on port 21 [220 (vsFTPd 2.2.0)]
	LOAD CPU	OK	07-10-2009 19:29:53	15d 3h 39m 51s	1/3	OK - load average: 0.00, 0.00, 0.00
	SSH	OK	07-10-2009 19:27:50	15d 3h 36m 54s	1/3	SSH OK - Sun_SSH_1.1.2 (protocol 2.0)
hermes	VAR	OK	07-10-2009 19:23:00	20d 6h 41m 44s	1/3	DISK OK - free space: /var 2809 MB (28% inode=99%):
	VAR/QUARANTINE	OK	07-10-2009 19:23:07	20d 6h 56m 37s	1/3	DISK OK - free space: /var/quarantine 3713 MB (74% inode=93%):
	HTTP	OK	07-10-2009 19:34:13	0d 21h 36m 31s	1/3	HTTP OK HTTP/1.1 200 OK - 10900 bytes in 0,089 seconds

Nagios : Supervision centralisée

- Définition de
 - Tous les services
 - Tous les hôtes
 - Qui doivent être supervisés.
- Cela se réalise en mode client/serveur, quelque soit la commande de vérification
 - SMTP, IMAP, Ping, etc..

Nagios : Supervision décentralisée

- Définition de
 - Tous les hôtes à superviser
 - Des services que l'agent distant doit superviser
- Cela se réalise en mode client/serveur,
- Le Daemon distant agrège les données afin de les transmettre à la station d'administration



Nagios : Supervision décentralisée

- Nécessite PLUGIN NRPE SERVER côté distant
- Configuration des fichiers de Nagios
 - Mode SSL
 - Liste des clients autorisés
- Nécessite le PLUGIN NRPE Client côté station de supervision

Nagios : NRPE Côté Station Nagios

- Fichier checkcommand.cfg

```
define command {
    command_name check_nrpe_disk
    command_line $USER1$/check_nrpe -H $HOSTADDRESS$ -p 5666 -c $ARG1$
}
```
- Fichier services.cfg

```
define service {
    use generic-service
    host_name cordelia
    hostgroup_name servers_stockage
    service_description Disks Space /var
    contact_groups linux-admins
    check_command check_nrpe_disk!check_disk_var
}
```

Nagios : NRPE Côté Station Distante

- Fichier nrpe.cfg

```
command[check_users]=/usr/lib/nagios/plugins/check_users -w 5 -c 10
```

```
command[check_load]=/usr/lib/nagios/plugins/check_load -w 15,10,5 -c  
30,25,20
```

```
command[check_disk_var]=/usr/lib/nagios/plugins/check_disk -w 20 -c 10 -p  
/dev/md4
```

```
command[check_disk_save]=/usr/lib/nagios/plugins/check_disk -w 20 -c 10 -p  
/dev/sdf1
```

```
command[check_disk_save3]=/usr/lib/nagios/plugins/check_disk -w 20 -c 10 -p  
/dev/sdg1
```

```
command[check_zombie_procs]=/usr/lib/nagios/plugins/check_procs -w 5 -c  
10 -s Z
```

```
command[check_total_procs]=/usr/lib/nagios/plugins/check_procs -w 150 -c  
200
```

Nagios : Tableau des services

Current Network Status

Last Updated: Wed Oct 14 12:22:43 CEST 2009
 Updated every 90 seconds
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[View History For all hosts](#)
[View Notifications For All Hosts](#)
[View Host Status Detail For All Hosts](#)

Host Status Totals

Up	Down	Unreachable	Pending
7	0	0	0

All Problems	All Types
0	7

Service Status Totals

Ok	Warning	Unknown	Critical	Pending
10	0	1	1	0

All Problems	All Types
2	12

Service Status Details For All Hosts

Host ↑↓	Service ↑↓	Status ↑↓	Last Check ↑↓	Duration ↑↓	Attempt ↑↓	Status Information
cordelia	Disks Space	OK	10-14-2009 12:22:24	0d 0h 1m 55s	1/3	DISK OK - free space: /var 599 MB (8% inode=89%):
	PING	OK	10-14-2009 12:14:39	0d 1h 38m 15s	1/3	PING OK - Paquets perdus = 0%, RTA = 0.18 ms
foundry-bron	PING	OK	10-14-2009 12:18:51	0d 18h 33m 35s	1/3	PING OK - Paquets perdus = 0%, RTA = 0.48 ms
galatea	PING	OK	10-14-2009 12:15:10	0d 18h 16m 8s	1/3	PING OK - Paquets perdus = 0%, RTA = 7.51 ms
gw	PING	OK	10-14-2009 12:19:22	0d 20h 19m 46s	1/3	PING OK - Paquets perdus = 0%, RTA = 0.32 ms
larissa	Disks Space	CRITICAL	10-14-2009 12:15:40	0d 0h 26m 2s	3/3	Connection refused by host
	PING	OK	10-14-2009 12:19:52	0d 18h 20m 15s	1/3	PING OK - Paquets perdus = 0%, RTA = 1.17 ms
portia	PING	OK	10-14-2009 12:16:11	0d 18h 14m 48s	1/3	PING OK - Paquets perdus = 0%, RTA = 0.17 ms
xanax	Disks Space	UNKNOWN	10-14-2009 12:20:23	0d 0h 2m 12s	3/3	(No output returned from plugin)
	IMAP	OK	10-14-2009 12:16:41	0d 18h 6m 57s	1/3	IMAP OK - 0,014 second response time on port 143 [* OK Dovecot ready.]
	PING	OK	10-14-2009 12:14:09	0d 18h 8m 44s	1/3	PING OK - Paquets perdus = 0%, RTA = 0.08 ms
	SMTP	OK	10-14-2009 12:17:12	0d 18h 6m 21s	1/3	SMTP OK - 0,002 sec. de temps de réponse

Nagios : Tableau des services par Groupes

Service Overview For All Host Groups

[Routers and Gateways \(gateways\)](#)

Host	Status	Services	Actions
foundry-bron	UP	1 OK	
gw	UP	1 OK	

[Servers Bron \(servers\)](#)

Host	Status	Services	Actions
cordelia	UP	4 OK	
larissa	UP	1 OK	
xanax	UP	3 OK	

[Servers Bron \(servers_stockage\)](#)

Host	Status	Services	Actions
cordelia	UP	4 OK	









Nagios : Tableau des services par Groupes

Service State Information

Current Status: **OK**
Status Information: DISK OK - free space: /save3 305442 MB (22% inode=99%):
Current Attempt: 1/3
State Type: HARD
Last Check Type: ACTIVE
Last Check Time: 10-14-2009 14:20:46
Status Data Age: 0d 0h 8m 46s
Next Scheduled Active Check: 10-14-2009 14:30:46
Latency: < 1 second
Check Duration: 1 second
Last State Change: 10-14-2009 12:38:59
Current State Duration: 0d 1h 50m 33s
Last Service Notification: N/A
Current Notification Number: 0
Is This Service Flapping? N/A
Percent State Change: N/A
In Scheduled Downtime? **NO**
Last Update: 10-14-2009 14:29:21

Service Checks: **ENABLED**
Passive Checks: **ENABLED**
Service Notifications: **DISABLED**
Event Handler: **DISABLED**
Flap Detection: **DISABLED**

Service Commands

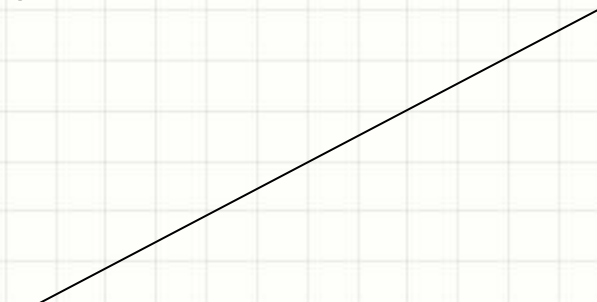
 [Disable checks of this service](#)
 [Re-schedule the next check of this service](#)
 [Submit passive check result for this service](#)
 [Stop accepting passive checks for this service](#)
 [Enable notifications for this service](#)
 [Schedule downtime for this service](#)
 [Enable event handler for this service](#)
 [Enable flap detection for this service](#)

Service Comments

 [Add a new comment](#)
 [Delete all comments](#)

Nagios : En cas d'alerte

- En cas d'alerte sur le fonctionnement d'un service, la couleur de fond passe au ROUGE



Host ↑↓	Service ↑↓	Status ↑↓	Last Check ↑↓	Duration ↑↓	Attempt ↑↓	Status Information
cordelia	Disks Space /save	CRITICAL	10-15-2009 11:23:38	0d 0h 56m 8s	3/3	DISK CRITICAL - free space: /dev 9 MB (98% inode=99%)
	Disks Space /save3	CRITICAL	10-15-2009 11:26:27	0d 0h 53m 28s	3/3	DISK CRITICAL - free space: /dev 9 MB (98% inode=99%)
	Disks Space /var	OK	10-15-2009 11:21:58	0d 0h 45m 58s	1/3	DISK OK - free space: /var 545 MB (7% inode=89%):
	PING	OK	10-15-2009 11:24:44	0d 0h 53m 7s	1/3	PING OK - Paquets perdus = 0%, RTA = 0.13 ms
foundry-bron	PING	OK	10-15-2009 11:27:15	1d 17h 38m 50s	1/3	PING OK - Paquets perdus = 0%, RTA = 0.29 ms
galatea	Mysql	OK	10-15-2009 11:24:49	0d 18h 6m 13s	1/3	Uptime: 693389 Threads: 2 Questions: 7733 Slow queries per second avg: 0.011
	PING	OK	10-15-2009 11:23:34	0d 8h 54m 18s	1/3	PING OK - Paquets perdus = 0%, RTA = 0.20 ms
	cups	OK	10-15-2009 11:25:24	0d 18h 37m 53s	1/3	TCP OK - 0,000 second response time on port 631

Ganglia

- Système d'administration distribué pour superviser des serveurs hautes performances
 - Clusters, Grilles de calcul
 - Basé sur une fédération de clusters
 - Utilise la technologie XML
 - RRDTool pour le stockage des données collectées et pour la représentation graphique
 - Scalable
 - Fonctionne en unicast ou en multicast

Ganglia

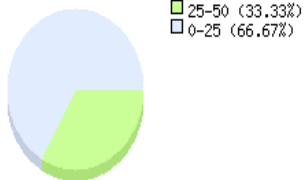
CPU's Total: 12
 Hosts up: 3
 Hosts down: 0

Avg Load (15, 5, 1m):
 23%, 21%, 16%

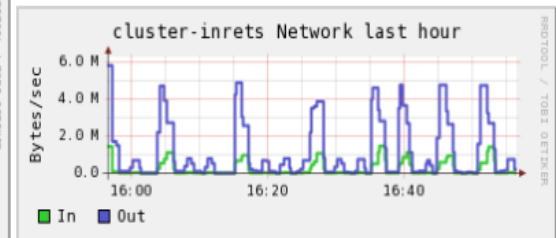
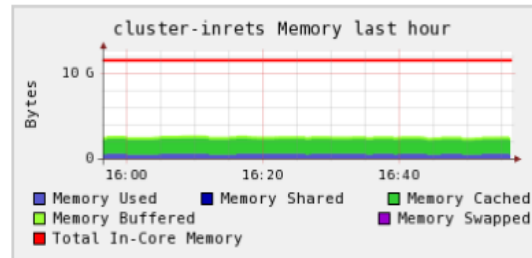
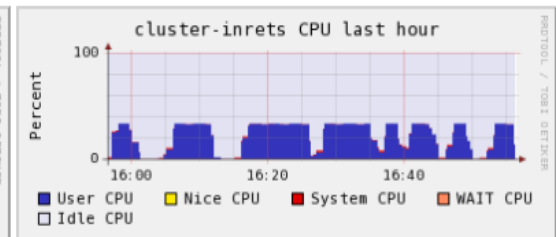
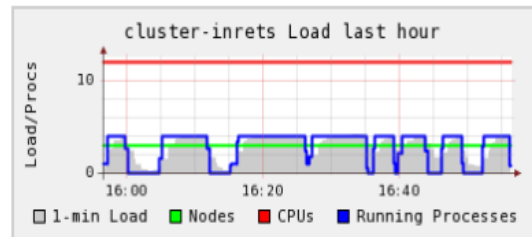
Localtime:
 2009-10-14 16:56

Rocks Tools:
[Job Queue](#) | [Cluster Top](#) | [Gmetrics](#)

Cluster Load Percentages

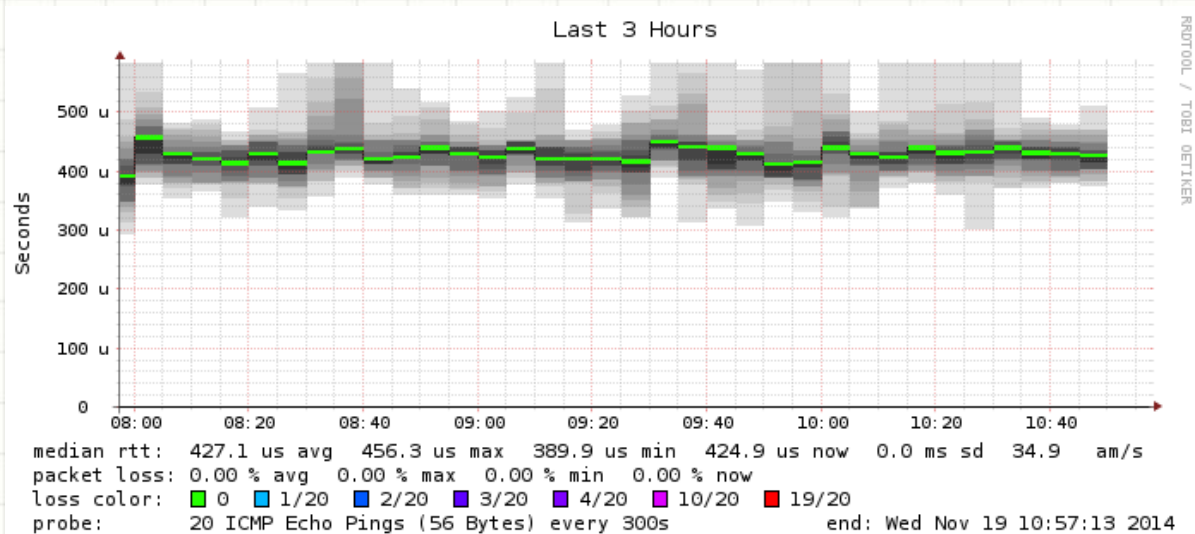


Overview of cluster-inrets

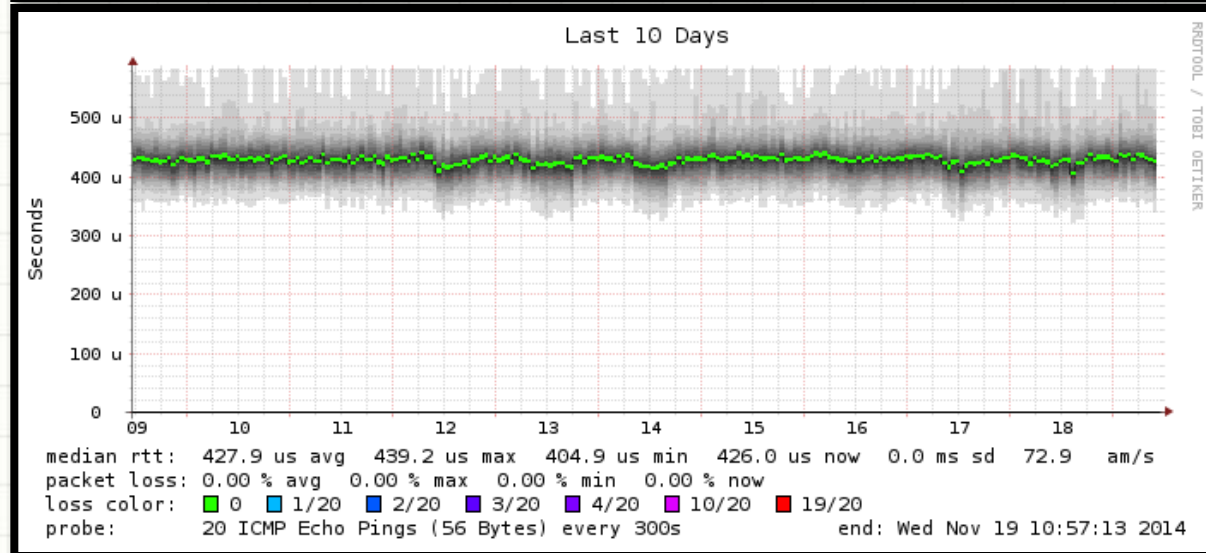
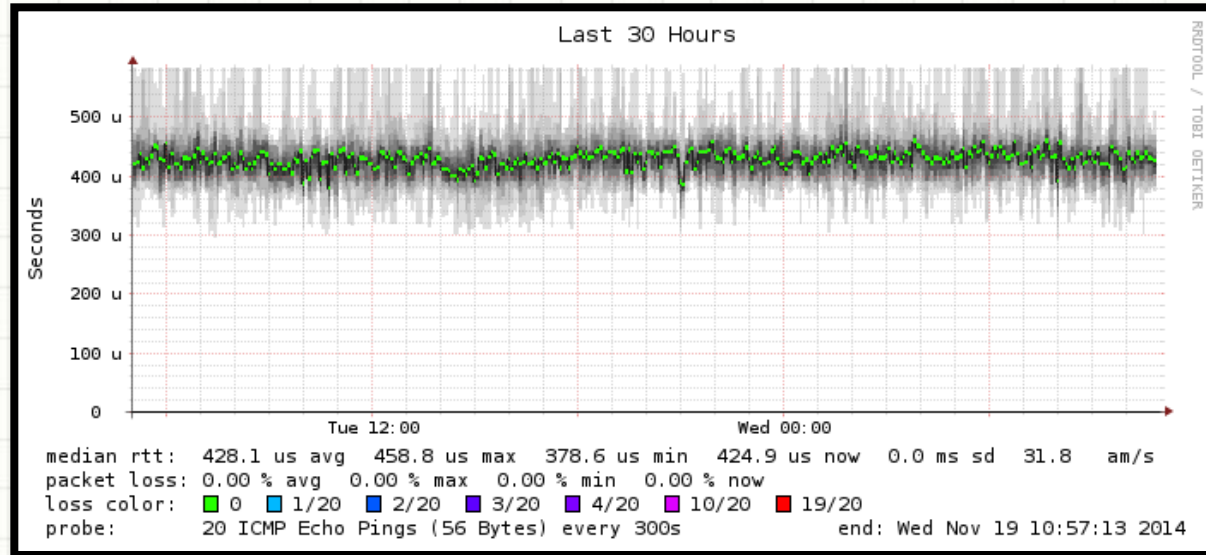


SmokePing

- Utilitaire pour faire des « burst » de ping
- Toutes les 5 mns

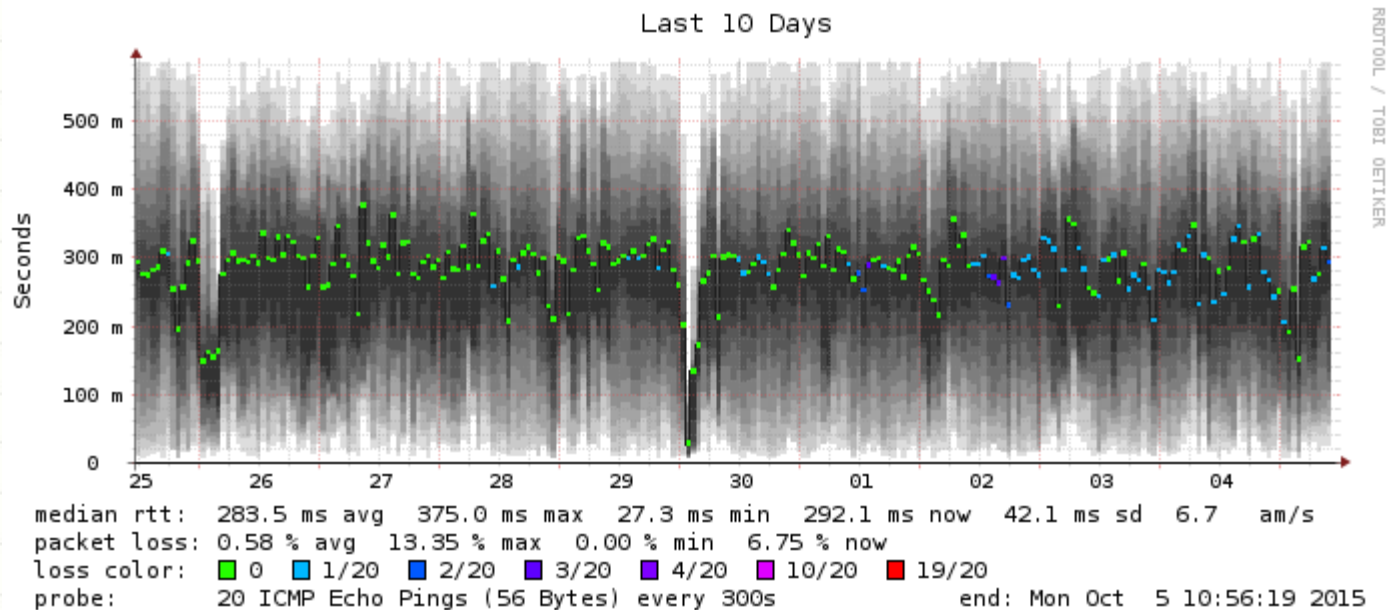


SmokePing



SmokePing

- Perte avant et après migration d'un réseau
 - Le 01/10 vers 12H... Diagnostique ?



SmokePing pour debugger

Paquets perdus

- Reconfiguration pour un relevé toutes les 12 secondes
/etc/smokeping:config
*** Database ***

step = 12
pings = 5

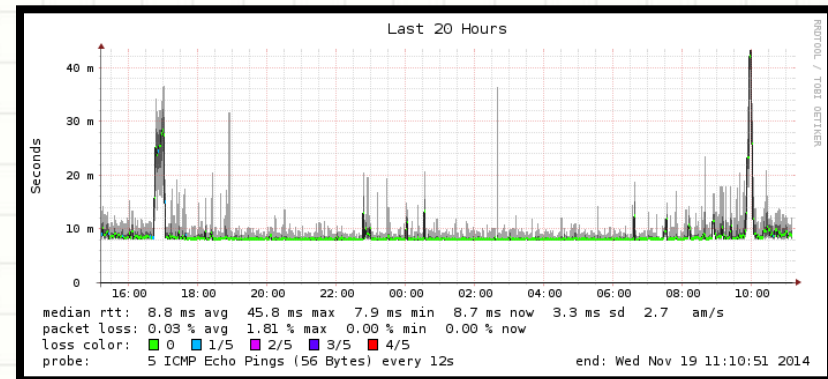
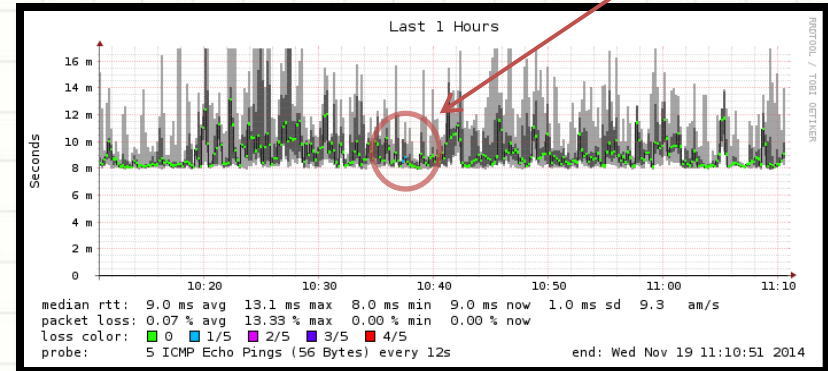
+ overview

width = 600
height = 50
range = 1h

+ detail

width = 600
height = 200
unison_tolerance = 2

"Last 1 Hours" 1h
"Last 20 Hours" 20h
"Last 10 Days" 10d
"Last 400 Days" 400d



IMC (Payant)

View Management

- Network Topology
- Network Topology(Applet)
- Network Topology(Applet)
- Port Group
- Custom View
- IP View
- Device View
- Terminal Access
- Network Assets
- Virtual Resource Management
- Performance Management

Terminal Access

Network Assets

Virtual Resource Management

Performance Management

Priority Device List

Servers[0] Virtual Devices[4] Desktops[1] Others[0]

HP 208-137(137.121.208.137) MLV-H3C-TVDI-C-RDC-C615(137.121.32.83) MLV-H3C-SR-B-RDJ-1(137.121.32.54) HP-PWR-141(137.121.208.141) MLV-H3C-SDC1-C-1-1(137.121.32.142)

MLV-H3C-SR-A-04-5(137.121.32.42) MLV-H3C-SR-C-01-1(137.121.32.61) MLV-H3C-SR-C-01-5(137.121.32.62) MLV-H3C-TVDI-C-RDC-C73(137.121.32.82) php-pwr-132-2610(137.121.208.132)

Performance Monitor

CPU	Memory	Response	Unreachability	Inbound Bandwidth	Outbound Bandwidth
Device	Instance	Utilization-Last 1 Hour			
MLV-H3C-SR-A-04-1(137.121.32.41)	[Stack member1].[Entity:Board]	55.333%			
MLV-H3C-KEPLER-2(137.121.91.252)	[Entity:Board]	45.583%			
MLV-H3C-KEPLER-1(137.121.91.251)	[Entity:Board]	43.000%			
MLV-H3C-SR-A-04-1(137.121.32.41)	[Stack member1].[Entity:Board]	30.750%			

CollectD : The system statistics collection daemon

- collectd :
 - Daemon qui collecte les métriques de performance applicatives et du système,
 - Périodicité (5mns)
 - Fournit des mécanismes pour enregistrer les valeurs de plusieurs manières, dont les fichiers RRD.
- **Que fait CollectD**
- Récupère des métriques de différentes sources
 - OS, application, logfiles, appareils externes
 - Les stockes
 - Permet sur le long terme de trouver des goulots d'étranglement (performance bottlenecks, *performance analysis*)
 - Prédire la charge système future (i.e. *capacity planning*)
 - Etc..

CollectD : The system statistics collection daemon

- Un graphique peut dire beaucoup de chose qu'une longue explication ne donnera pas

