digiplug

POWERING SOLUTIONS FOR DIGITAL MUSIC DISTRIBUTION

# Digiplug Technical Presentation

16/07/2008

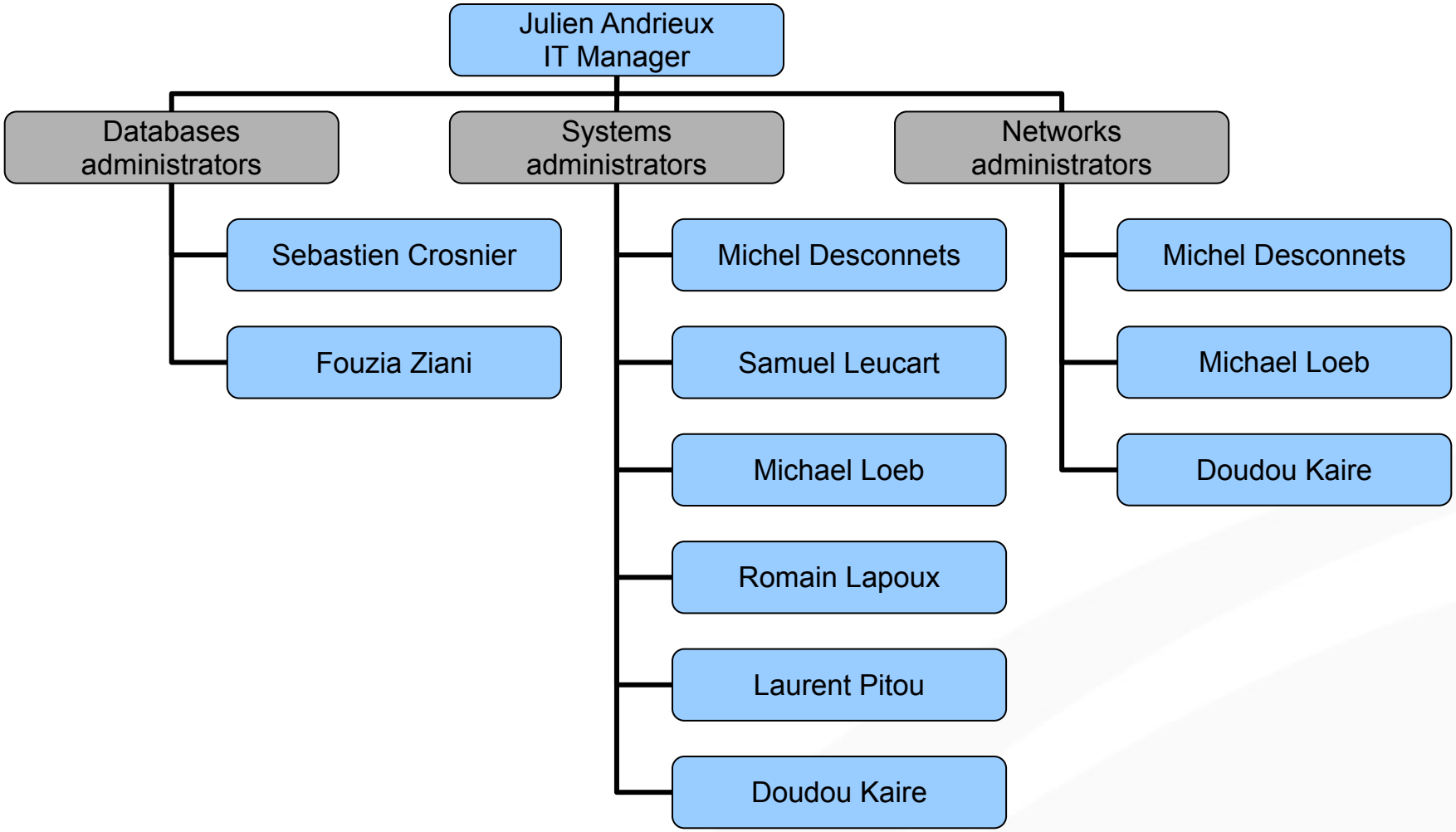
# Agenda

- ~~Team Organisation~~
- ~~General Overview~~
- Hosting Centers, Carriers
- Network
- Support organisation
- Tools
- Development, preproduction & production environments
- Questions & Answers

# IT team missions

- Build Digiplug generic hosting platform & assists architect / development teams
- Build & deliver internal tools in order to manage the platform & enhance knowledge of customer behavior
- Maintain Digiplug platform into operational state in conformance with SLA's
- Identify & choose state of the art technologies and solutions to build innovative solutions

# IT Team organization chart




9 FTE in Paris (trained and experienced engineers) + 1 CW (network operator)

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# General overview

## Environment

– Operating systems
- RedHat Entreprise Linux 5.0
- Windows Server 2003 (Standard/Entreprise)
- Same version accross all servers
- Automated deployment system (10 minutes to install a new server)
- 64 bits systems

– System component packages
- Apache 2.2.8
- Squid 2.6
- JBoss 4.3
- Oracle 10g

– Dedicated development, integration & preproduction environment
- Xen 3.0.3 driven virtual environment
- Production environment can be reproduced

# General overview

## Environment

- Network
  - Redundant network infrastructure
    - Routers / firewalls / load-balancers / switchs
    - Main site + disaster recovery site
    -
  - Secure network design
    - Security layers
    - Control points at each level

- Servers
  - Redundant servers (physical & logical): no SPOF
    - Dell servers with 2x power supplies, 2x network interfaces, …
    - All servers are duplicated
    - All components (apache, jboss, oracle...) are duplicated accross different servers

- Storage
  - Clustered storage solution (Isilon) on each site
  - Sun storage solutions for internal use

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# Hosting Centers

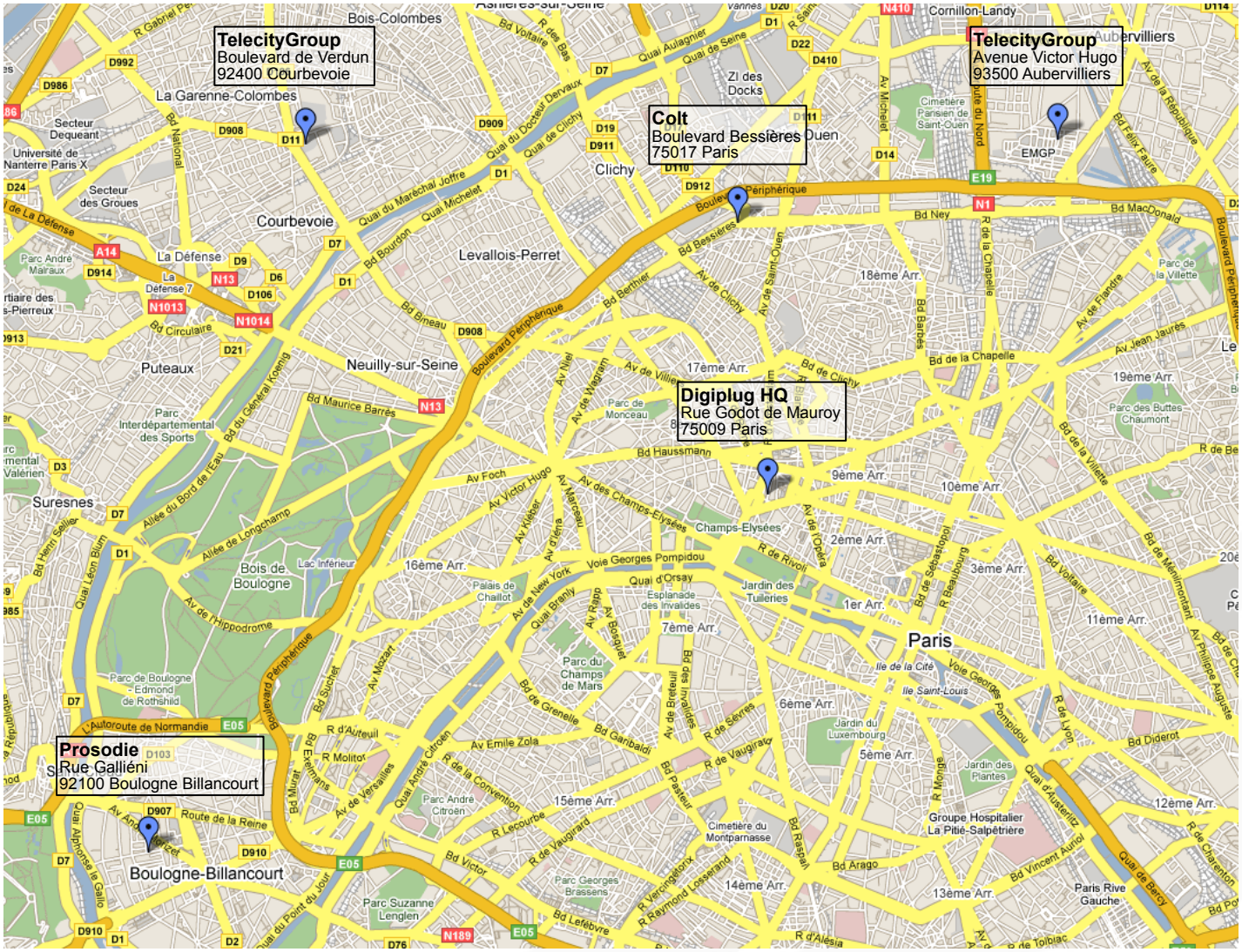
## Hosting Centers

– Main site: Telecity Group (Aubervilliers, France)
– Backup site: Telecity Group (Courbevoie, France)
– Legacy site: Colt (Paris, France)
– « ex-UMM » site: Prosodie (Boulogne Billancourt, France)
–
Digiplug is managing several hosting sites in order to meet higher requirements & availability

## Carriers

– Digiplug is managing its own AS (AS47265)
– Telecity Group sites are connected with multi-operators bandwidth, highly scalable
– Digiplug has its own MAN, connecting the HQ to both Telecity Group sites with a private dark fiber

# Hosting Centers locations



# Hosting Centers

## Infrastructure & Servers

- **Full redundant network equipments**
  - Edge routers:
    - Foundry Networks NetIron MLX-4 (redundant power supplies)
  - 
  - Firewalls / VPN:
    - Juniper Networks ISG2000 (redundant power supplies)
    - 
  - Internal routers / switches:
    - Foundry Networks FastIron (redundant power supplies)
    - 
- **Full redundant servers**
  - Dell servers (redundant power supplies, network interfaces, hard drives)
    - PowerEdge 1950, R900 (with 24x7 Gold support)
    - 
- **Full redundant storage system**
  - Isilon cluster
    - based on IQ12000x and EX12000 (redundant power supplies, network interfaces) with 24x7 automatic support

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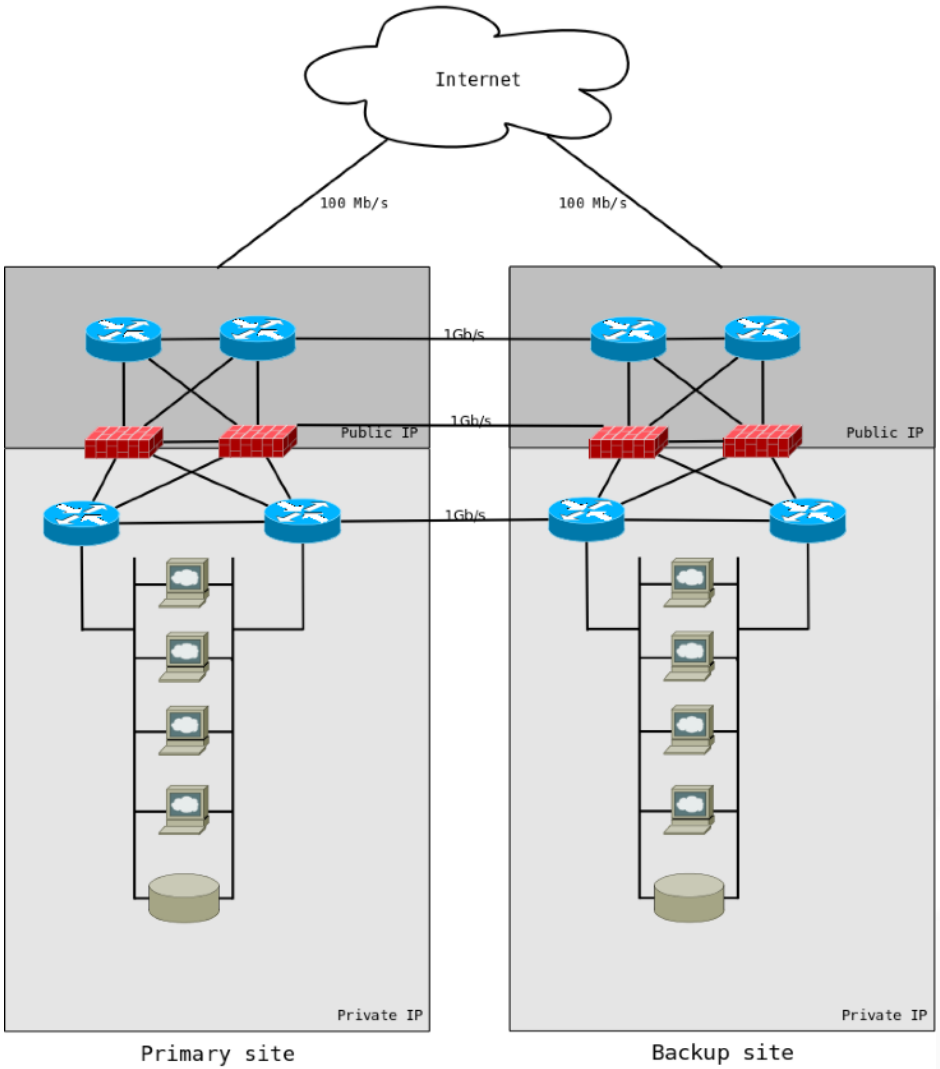
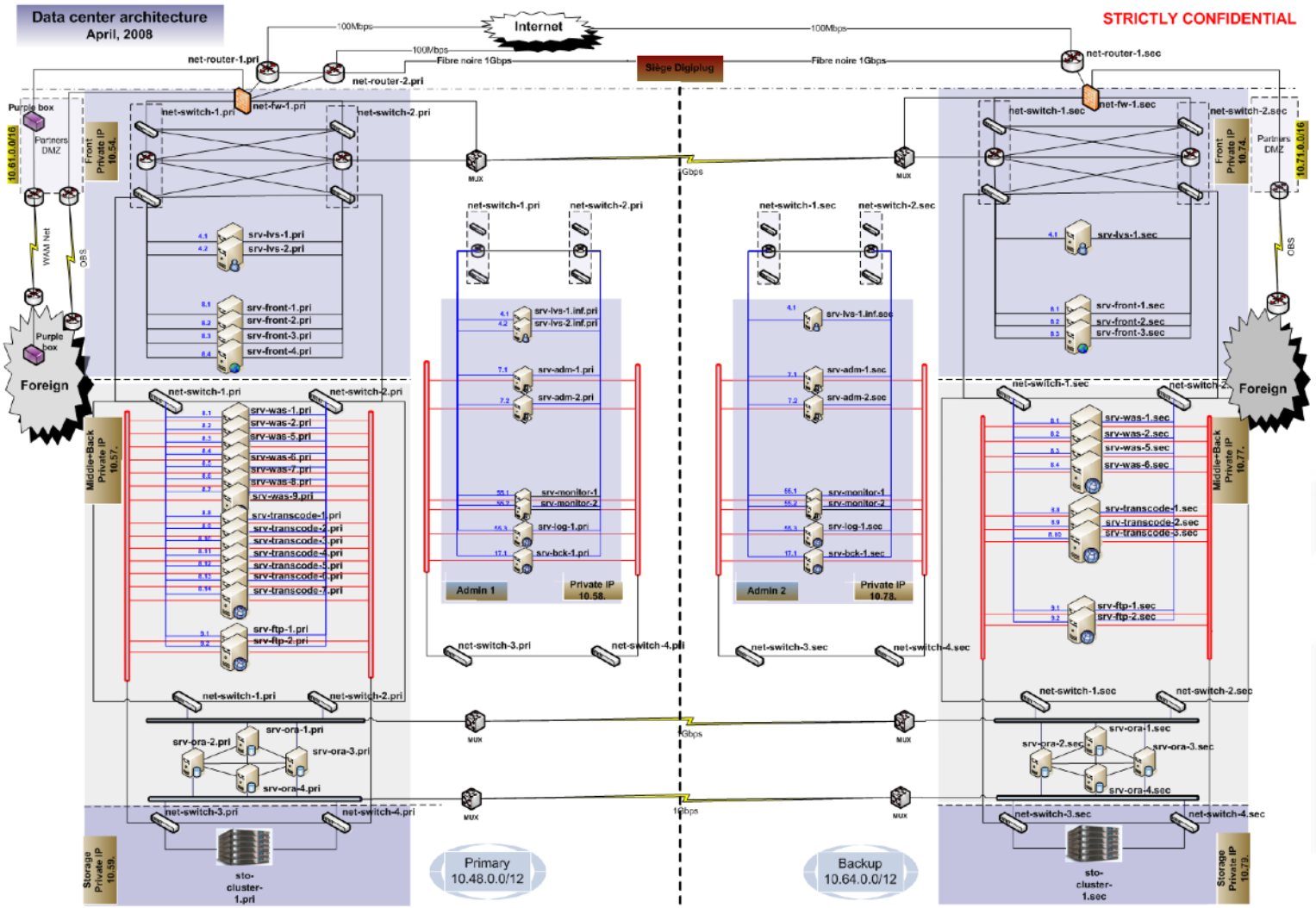
# Network general overview



# Architecture in-depth overview



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# Supervision

## Monitoring

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– 24x7 Level 1 supervision & hotline

Business hours: internal team + automatic tools

Non business hours: automatic tools

## Escalation

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– 24x7 Level 2 supervision

Business & non business hours: administrators on duty (one primary, one backup)

## Escalation

–

– 24x7 Level 3 supervision

Technical managers (Development, Architecture, IT, …)

# Administrators on duty

## Equipment

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– All administrators have laptop, broadband Internet connections, 3G card, mobile telephone & pagers, to be fully autonomous

–

– Administrator on duty comes always by two: one primary, one backup.

## Accesses

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– Remote accesses are done thru VPN connections or SSH connections

–

– Physical accesses to the datacenters are allowed for all on duty administrators, on 24x7 basis

## Escalation

–

– Administrators on duty are trained engineers, and can get in touch with any Digiplug ressource at all time

# Monitoring concepts

**Monitoring is done in 2 ways (alerting and graphing), on 3 layers:**

| Layer | Description | Examples |
|---|---|---|
| Application | All the « functionnal » metrics about the application hosted on the machine. | Amount of content ingested, amount of transcode, amount of SMS sent… |
| Servers | All the metrics about the services handled by the machine. | Apache connections, JBoss memory usage, temporary tables size on Oracle… |
| Hardware / OS | All metrics for the health of the machine itself. | CPU usage, memory usage, network port traffic… |

# Call priorities, definitions and times

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# Environment

## Tools

- Tests and monitoring
  - Network components (bandwidth, errors, etc…)
  - System components (CPU load, RAM / disk usage, etc…)
  - Application components (apache, JBoss, Oracle, etc…)
  - Services components (web services, etc…)
  -
- Source control / build
  - Subversion for source control
  - Maven / Artifactory for build
  -
- Release and Change Management
  - Internal processes based on SOX best practices
  -
- Internal communication
  - Use of collaboration functionnalities of Microsoft Exchange Server
  - Wiki internal sites
  - Teams Microsoft SharePoint portals

# Supervision tools

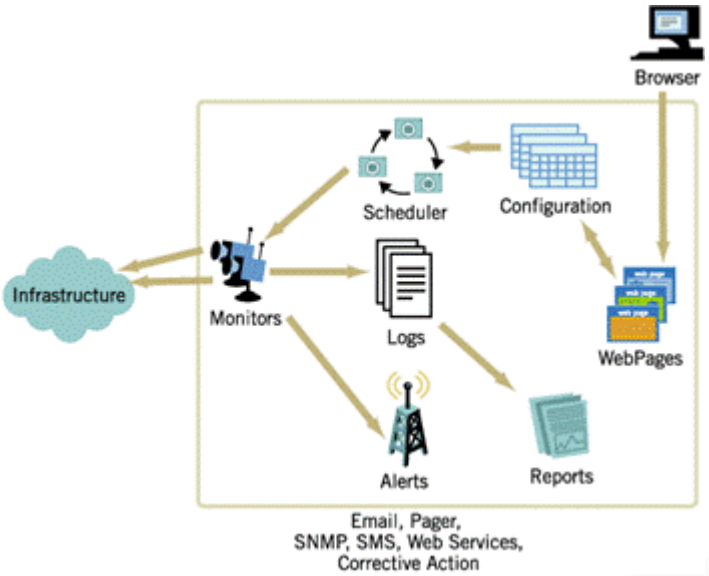
## Nagios

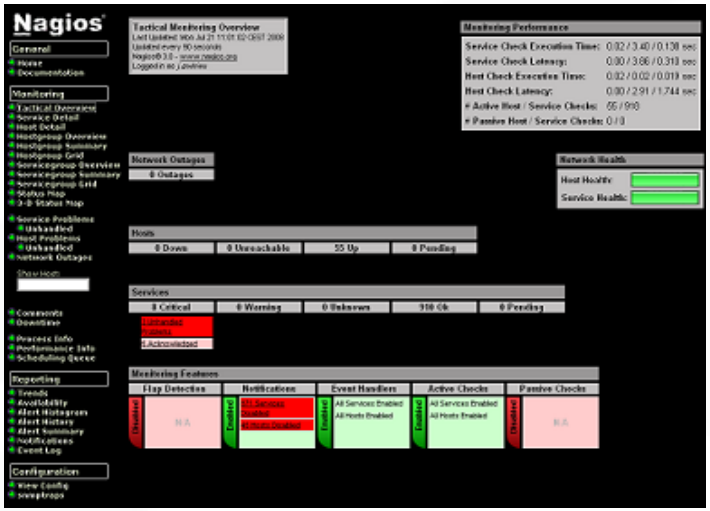
Nagios is an agentless monitoring solution designed to ensure the availability and performance of distributed IT infrastructures — e.g., servers, operating systems, network devices, network services, applications, and application components.

This proactive, Web-based infrastructure monitoring solution is lightweight, highly customizable, and doesn't require high overhead agents on production systems.

Digiplug's platform monitoring is based on an automatic monitoring system. The monitored components are :

**Network :**
This level monitors all network parameters and performances (ie: time reponse between DGP platform and operator gateways, load on routers, etc..)
**Servers :**
This level focuses on the servers components. This allows to track, the availability of Disks, CPU, Memory, Network adapters, according to thresholds.
**Server Services:**
This level focuses on software components such as Apache, Oracle, Jboss, Shared partitions (NFS), mounted points. It is based on handshakes with the services.
**Service/Transactions:**
This level monitors services by gathering the pages acting like a normal user. It is to be noticed that Digiplug monitors his own services and cusotmer services.
**End To End monitoring:**
Services are checked manually.

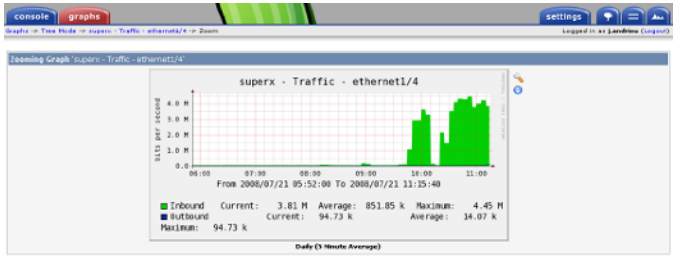


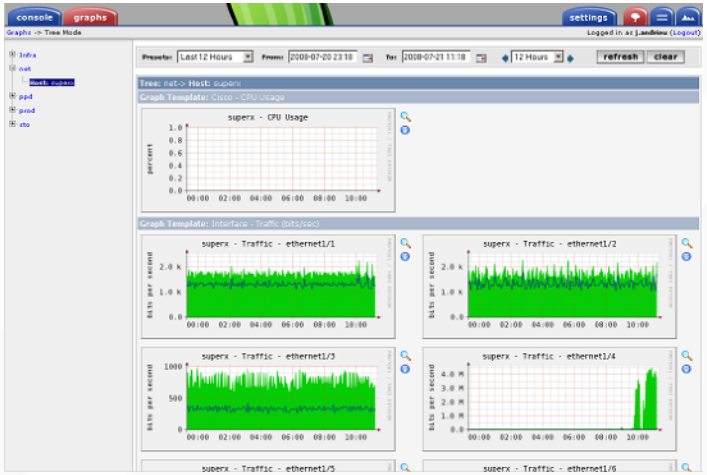
# Supervision tools

## Cacti

Cacti is a complete network graphing solution designed to harness the power of RRDTool's data storage and graphing functionality. Cacti provides a fast poller, advanced graph templating, multiple data acquisition methods, and user management features out of the box. All of this is wrapped in an intuitive, easy to use interface that makes sense for LAN-sized installations up to complex networks with hundreds of devices.



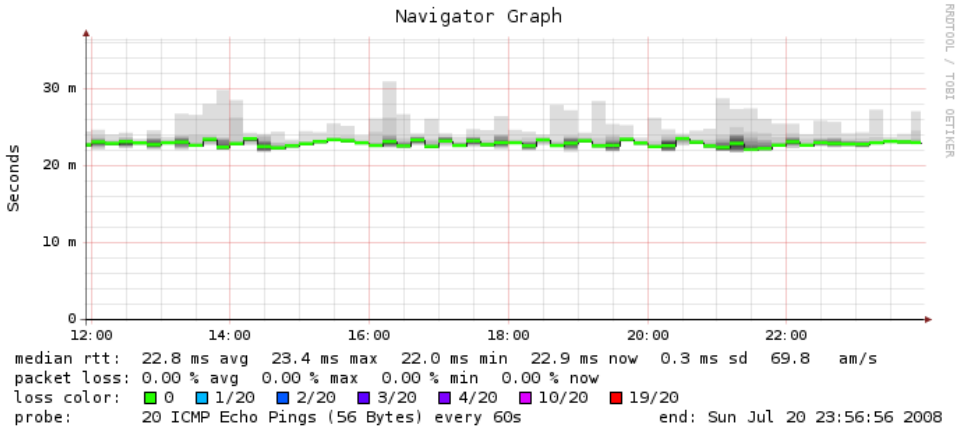

Cacti is used to gather trends of all checks configured in Nagios, plus many others that shouldn't alert at a configured threshold, but worth graphing for scalability information.

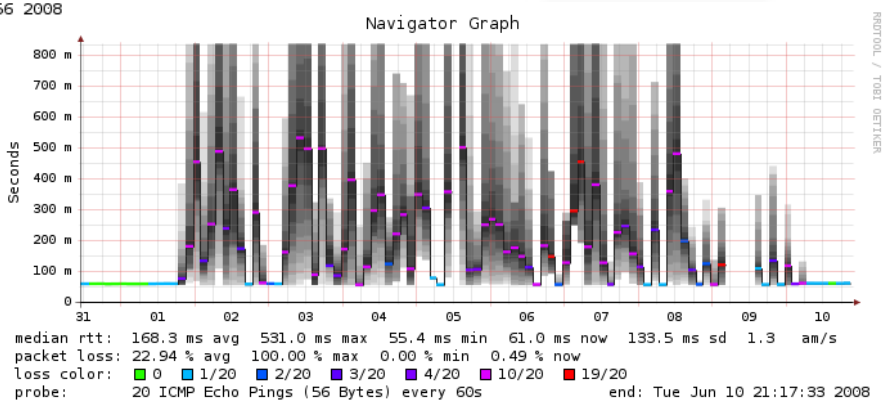


# Supervision tools

## Smokeping

SmokePing measures network latency to a configurable set of destinations on the network, and displays its findings in Web pages. It consists of a daemon process responsible for data collection and a CGI script presenting the data on the web.



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# Environments

- **Use of Xen to have 4 different environments for the different phases of the project**
  - Development (use of Xen)
  - Integration (use of Xen)
  - Preproduction (use of Xen)
  - Production
- **Easy creation of new environments: a virtual machine is up & running in 3 minutes.**
- **Each environment is identical to the others in term of configurations. Only the real power and the numbers differ** (for instance, production will have 5 servers for one task, and preproduction only have 1 server)
- **There are processes to switch from one environment to the next one (code review, documentation, …)**
- **The switch into preproduction and production environments is only done by the IT team**

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