



TAS GROUP

DATACENTER

SOPHIA ANTIPOLIS

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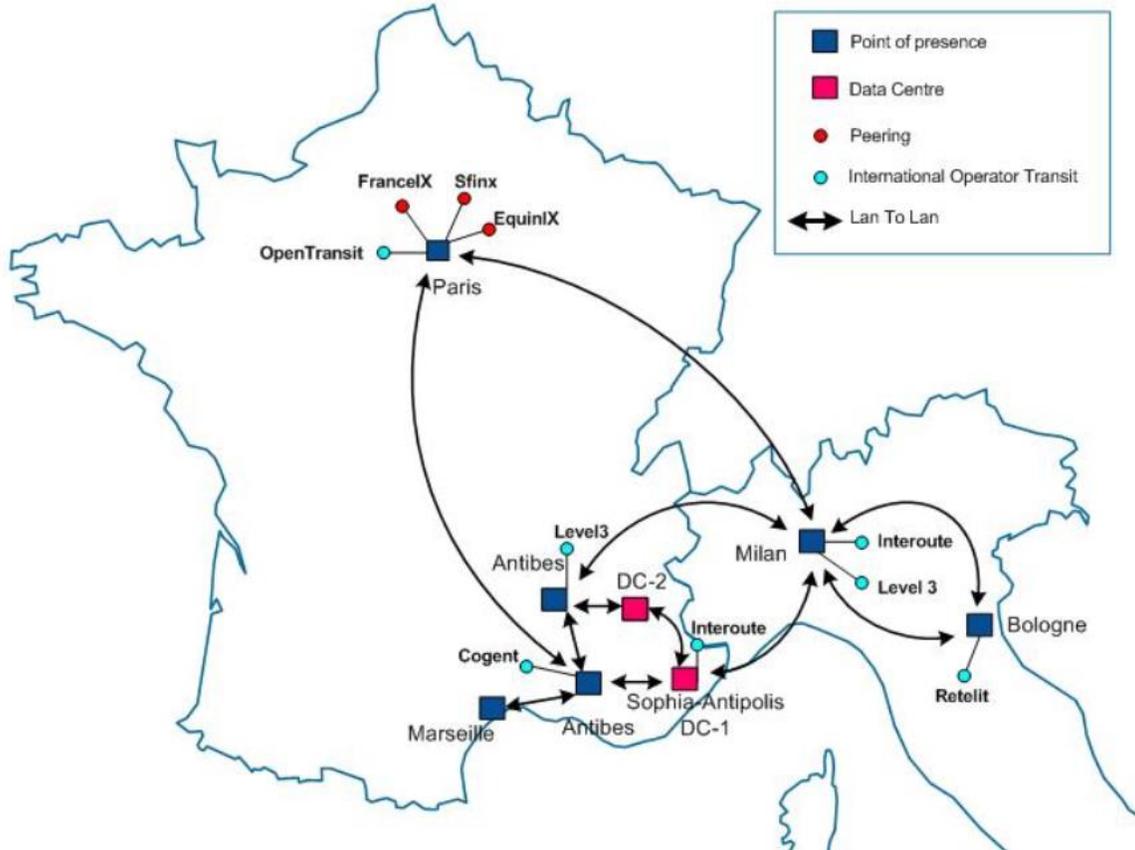
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NETWORK DIAGRAM



SOPHIA ANTIPOLIS DATACENTER

Adress: 15, traverse des Brucs - 06560 Valbonne Sophia Antipolis - France

1 - Main features

- Tier4 level, built in late 2016 - early 2017 and operational since June 2017
- Designed to house 225 racks and 10000 servers
- Latest and best technologies by the market leaders: Schneider, Siemens, Cisco, Fortinet, SDMO, Commscope
- 470 m2 at the ground floor and 330 m2 on the first floor of a new building resistant to earthquakes, built in an area without flooding risk
- Very high speed network infrastructure, n * 1 Gbps capacity
- Redundancy of Internet operators, fibre optic connections

2. - Power

2-1 Power supply

- Triple high voltage power supply dedicated to the building
- 2 private and dedicated transformers of 1000 KW each, with source commutator

2-1 Generators

- 2 power generators of 850 kVA each
- Double ignition circuit
- Automatic start, full power achieved in 10 seconds

2-2 Low voltage circuit

- 2 electrical distribution panels powered directly by transformers or generators.
- Each panel is dedicated to a separate power supply path of the racks
- Equipment maintenance done without interrupting electricity production

2-3 Racks power supply

- 2 autonomous and separate UPS, 2 power supply paths for the racks
- Racks electrically powered in 2 x 32 amps
- Supply paths in active/active configuration
- Battery autonomy of 5 minutes at full charge, generators taking over in 10 seconds

3 - Air conditioning

- Thermal and hygrometric regulation

- 2 cold water production units, pre-equipment for a third unit
- Constant values +/- 10% 24/7
- Installation as to separate hot air and fresh air
- Hot and cold aisles separated, to facilitate and optimise air distribution
- Hot aisles

Hot air is confined to hot aisles in enclosed spaces with a roof, bulkheads, and access doors that prevent the mixing of cool and hot air. This configuration significantly reduces the electricity needed for cooling equipment.

The hot aisle principle reduces energy consumption by around 30% and is recognized as the most efficient solution for optimising flows.

- Resulting PUE (energy efficiency coefficient) ≤ 1.3

4 - Protection

4-1 Physical intrusion protection

- TAS France personnel on site, offices at the first floor above the datacenter
- Access control by badge reader and fingerprint with 1 year registration
- 24/7 "standalone" access for customers with dedicated rack(s) in the datacenter
- Access to technical areas (inverters, power supply, etc...) strictly reserved to TAS personnel
- Motion detection video cameras throughout the datacenter with 30-day recording
- Private building in a site protected by:

Electric gate closed by default, and radio controlled

Grid fence 2 metres high, surveillance of the site by cameras

"Meet Me Room" monitored 24/7, dedicated to network operators and independent from the datacenter

Network cabling compliant with ISO24764 and TIA/EIA-568 cabling standards

4-2 Fire protection

- System of early multi-point smoke detection by ASD (Automatic Smoke Detection) system, compliant with the (APCAD) regulations
- Automatic extinguishing system by nitrogen diffusion
- Maintains a percentage of oxygen in the room sufficient to allow operators to complete their work

- Regular system operation tests

4-3 Data protection and cyber attacks

- Pressure relief valves and silent nozzles to prevent alteration of the magnetic disks in the event of fire-extinguishing nitrogen release
- Cisco ASA and Fortigate firewall protection with IPS modules
- Analysis and possible blocking of requests from a database of regularly updated signatures
- International surveillance for new virus attacks
- Automatic vulnerability scanning of servers and remediation
- Daily backups
- Remote data outsourcing solutions, recovery tests
- Dual DDOS protection

4-4 Monitoring servers and network equipment

- 24/7 monitoring of all equipment and network by supervising software
- Monitoring agents deployed on equipment
- Setting of monitored resources and alert thresholds
- Audible and visual alarms, display on wall monitors, SMS alerts, email alerts
- Hardware monitoring: servers, switch, firewall etc.
- Monitoring resources: processor, memory, disks, RAID etc.
- OS and databases monitoring
- Services and applications monitoring
- Reporting and dashboards

4-5 Incident management

- Call centre without queue for immediate taking into consideration of your request
- Direct and personalised telephone service during business hours
- On-call available 24/7
- Notification of incidents by phone, email or sms
- Specific on-call and support procedures outside business hours
- Immediate start of corrective actions according to their degree of severity

5 - Environment

- Architecture of the datacenter leading to energy efficiency optimization: no raised floor, no false ceiling, less volume to chill
- Architecture of the data center facilitating the maintenance operations and the well-being of the operators: temperature, hygrometry, noise, workspaces
- Cooling system confining hot air and improving the ecological footprint
- Reduced floor space by reducing the number of devices through virtualisation technologies for servers, storage units, and network equipment
- Generators with their external oil tank, without burying

6 - Remote network

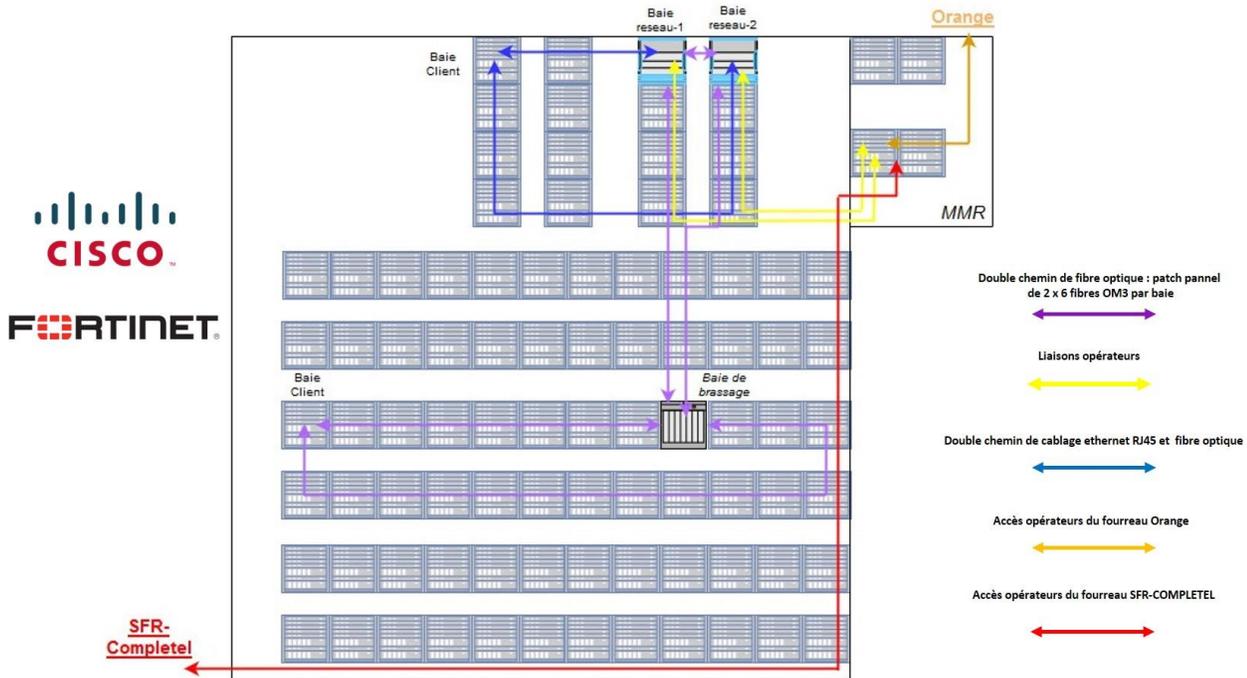
6-1 Network

- 15 points of presence and/or peering in France and Italy interconnected by distinct fibre optic links transparent to Vlans:
- Sophia Antipolis - Antibes - Paris: 16 msec round trip
- Sophia Antipolis - Milan: 8 msec round trip
- Milan - Paris: 20 msec round trip
- The entire network is totally redundant thanks to the connection of each POP in double adduction.
- It is protected by DDOS solutions that neutralise attacks intended to make servers unavailable.

6-2 Backbone

- The backbone of each hosting centre (Sophia Antipolis, Paris, Lyon and Milan) is made of multimode fibre optics and has $n * 1$ Gbps capacity.
- The backbone is redundant at all levels:
 - Level 1: network equipment and doubled fibre interconnections
 - Level 2: Spanning-tree and Etherchannel protocols
 - Level 3: OSPF and BGP4 dynamic routing protocols

Backbone Datacenter



6-3 Connectivity

- Several operators with their own international network directly connected in fiber to our network: Orange, Level3, Cogent, Open Transit, Interoute, SFR, Completel-Numericable, Monaco Telecom
- Lan-to-lan links between different POPs in fibre optics.
- Connection to Sfinx, FranceIX and EquinIX peering points.

6-4 Service offerings

- Connectivity: Lan-to-Lan, MPLS, IP Transit etc.
- Security: VPN, Firewall, IPS, DDOS protection.

6-5 SLAs

- Service Availability: 99.99%
- Guaranteed Repair Time: 4 hours
- Latency: Intra-Europe: 50 ms, USA and Canada: 80 ms
- Packets Delivery: 99.9%

6-5 IP Transit

- TAS France has its own Autonomous System public (AS8554) registered with the RIPE and fully manages its own international IP traffic via the BGP4 routing protocol.
- Bandwidth from 1 Mbps to n * 1 Gbps, dedicated, guaranteed, symmetric and multi-operator.
- TAS France is LIR (Local Internet Registry) registered with RIPE. This allows us to assign you as many IP addresses as you want.
- Assignment of IP address blocks is from 16 IPs. IPv6 is fully deployed on our core network in dual-stack mode.

7 - Local area network

- Cabling architecture (Fibre and RJ45) defined during the design of the building
- Standardisation according to the latest market standards defining datacenters best cabling architecture practices: ISO24764, TIA/EIA-568
- Visible and standardised cabling paths above the racks, according to the "Top of Rack" model, without raised floor or false ceiling
- Shortening and simplification of cable paths to facilitate racks configuration operations
- The "Top of Rack" model brings the switches closer to the servers and connects the switches to each other by "horizontal" fibre optics, thus separating the cable paths that are often modified from those that are less modified.
- This cabling infrastructure increases the flexibility of the datacenter in the context of the transition of ethernet networks from 10 to 40 and 100 Gigabits in the future.

8 - Certifications and compliance with regulations

- TAS France and TAS Italy are certified ISO 9001: 2015 for "Designing and providing Data Centre, Hosting and Hosting services"
- Sophia Antipolis datacenter is PCI-DSS certified for the protection of payment card data.
- The starting of the ISO 27001 certification process of our Sophia Antipolis datacenter is scheduled for the second half of 2018 for certification in 2019.
- The GDPR regulation positions us in a role of data "processor", a subcontractor for our customers who have the role of data "processor controller". Our infrastructures and processes respect the requirements assigned to the data "processor". The limits of our responsibilities are specified in the contracts that bind us to our customers according to the type of hosting service entrusted to us.