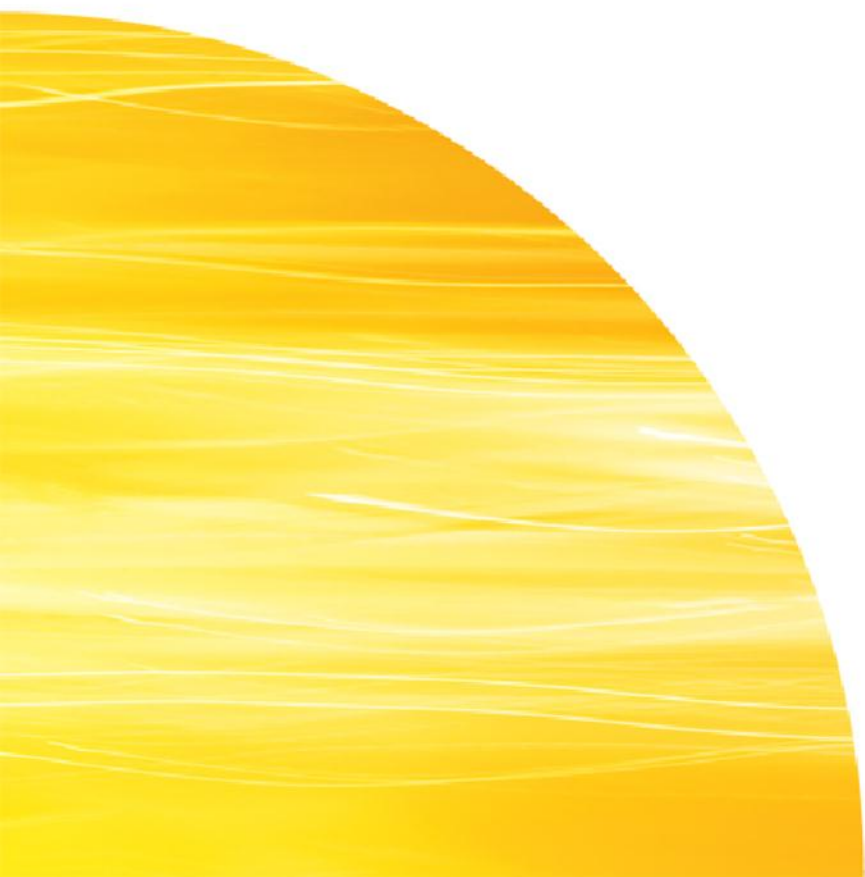


✦ Technical Services Briefing Document

Frankfurt Data Centre Overview

Version 2.1



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Introduction

Lumesse provides its e-Recruitment and Talent Management solutions using a Software as a Service (SaaS) delivery model, hosting from a number of data centres around the world.

Sensitive data requires an especially secure operating environment in order to protect against manipulation or loss and prevent undesired dissemination.

To this end Lumesse has selected TelecityGroup, a leading provider of network independent data centres in Europe, as a partner for data centre services in Frankfurt, Germany. Lumesse has contracted with TelecityGroup to provide a secure, highly available co-location hosting solution with additional engineering and communication services.

This data centre provides:

- ◆ Certification to ISO27001:2005 standard for information security management
- ◆ Certification to ISO9001:2008 standard for service provider quality management
- ◆ Direct, redundant connection to multi carrier Internet services allowing high performance, rapid scalability and high availability
- ◆ Dedicated, secure caged area with high levels of logical and physical security
- ◆ High availability and disaster recovery services to support continuity of service
- ◆ High level of firewall perimeter security and Intrusion Prevention Services
- ◆ Physical and virtual server and storage capacity
- ◆ Hardware load balancing options to meet demands for high utilisation and availability
- ◆ Access to skilled engineering staff 24x7x365

The purpose of this document is to describe this data centre.

TelecityGroup Data Centre in Frankfurt

General Site Information

Located in Frankfurt, the premises are surrounded by fences with an electronically remote controlled car gate. Over 70 CCTV-cameras are distributed across the site equipped with motion detection functionality dependent upon location. Exterior cameras benefit from oversight by secondary cameras keeping each other in view at all times.

Inside the facility door triggers and motion sensors are installed while 24x365 Security personnel execute regular site checks and area patrols. Electronic access control system (Card Readers) and CCTV cameras secure all data floor areas comprising 4,000 sqm.

Condition of Facilities

The building was totally refitted inside and outside and opened as a hosting centre in March, 2001, since when the data centre has been in production without any interruption. Regular maintenance and functionality tests have been provided by in-house staff and external experts:

- ◆ Security and Fire system: Tyco
- ◆ Air conditioning: Minnerg-Appelsa-SA
- ◆ UPS Rotary system: Pillers

The Data centre is fully operational and is under regular maintenance and upgrades. No major change is necessary at this point. The whole group in Europe relies on this data centre as the Engineering, support and monitoring for our clients across Europe is centralized at Frankfurt Data Centre. Therefore a particular attention is given to this data centre in terms of high availability, quality and business continuity.

Data Centre Characteristics

Access security of the building

A perimeter fence encloses the site. An access-controlled, remotely operated electric gate under CCTV surveillance with an intercom connection to the reception provides entry. A "separation triangle" area, also under CCTV surveillance, separates the fence and the building access.

Security team controlled remote access doors protect the reception area. A 24/7 security presence is maintained at the reception which is under CCTV surveillance.

All visitors, including Lumesse engineering staff members separately registered on an access control list, must have access requests logged in advance with the TelecityGroup service team. Once registered, each visitor is issued with an access card and PIN to allow access to authorised areas

Unless explicitly approved, all visitors must be attended by registered Lumesse team members or TelecityGroup personnel.

The Lumesse hosting area is completely surrounded by a "cage walled" structure with card and PIN equipped lock on access. All access to the area is recorded.

All Lumesse compute, storage and networking infrastructure is further secured inside the hosting area cage through the use of locked cabinets.

Electrical System

The Lumesse Frankfurt data centre has access to 14.4 MVA electricity feed from diverse sources. Five diesel generators are installed on site to protect against extended power failure and 11 UPS modules are installed at the data centre location. This configuration makes it possible to carry out continuous maintenance on the power supply and constitutes a 2n configuration.

Full service outage testing cycles are conducted each 6 weeks to ensure full operational readiness of the continuously available power service.

Cooling and Air Conditioning systems

Chilled water cooling systems in n+1 configuration are designed to keep the temperature on the data floors at constantly 22 degrees Celsius. All switching status, temperatures, pressures, power draw and IP Ports are monitored by a Building Management System overseen by a formal Network Operations Centre (NOC).

A total cooling capacity of 9.8MW exists for the data centre with 100% free cooling to exploit external ambient temperature and reduce environmental impact.

Temperatures within the hosting centre will remain between 19 and 25°C metered at neutral measurement points on the data floor.

Fire detection system

Sophisticated Very Early Smoke Detection Apparatus (VESDA) detection technology is installed at the Lumesse Frankfurt data centre. This technology comprises highly sensitive two-stage smoke detectors that are linked to the Building Management System and monitored continually from the TelecityGroup NOC.

Fire extinction systems

In case of fire, Inergen gas is expelled into the hosting areas to quickly extinguish the fire. Systems are designed to provide a localised response and minimise disruption to unaffected areas.

Security systems

In the Frankfurt Data Centre the following facilities and procedures are present:

- ◆ 24x7 security enforcement;
- ◆ Closed Circuit camera systems;
- ◆ automated electronic lock systems;
- ◆ restricted access for customer personnel driven by previously agreed access control list;
- ◆ attended access for approved visitors not on the agreed access control list;

Racks for Servers

The racks in which systems are hosted are individually locked and are redundantly grounded. A dual electric power supply system guarantees the power availability to 100%

Technologies in Use by Lumesse Solutions

Internet Access

A Multi-homed IP service presented using Hot Standby Router Protocol (HSRP) is provided by TelecityGroup to provide a fault-tolerant default gateway between the Internet and Lumesse networking infrastructure. Current total capacity provided to Lumesse is 200mpbs though this can be scaled up to substantially more if required.

Firewall Perimeter and Intrusion Prevention Service

Dual Checkpoint IP Security Appliances are installed to protect customer services from Internet threat as well as to provide secure access for legitimate traffic. Each firewall appliance is equipped with Checkpoint's Intrusion Prevention Service blades to provide complete threat coverage for clients, servers, OS and other vulnerabilities by filtering incoming traffic and providing pre-determined automated responses.

This configuration is operated under a 24x7x365 managed service for Lumesse through a specialist security service certified to ISO27001 controls.

Networking Infrastructure

F5 BigIP hardware load balancers are implemented in a high availability configuration to provide scalability for high volume demands as well as fault tolerance to protect against server or appliance failure.

Cisco Catalyst switches provide gigabit connectivity to all production network components to ensure high performance across the data centre network.

Server Hardware

HP has been selected as the server standard for Lumesse and all servers are derived from the HP DL360, DL380 or DL580 product range. Server configurations are constructed to remove single points of failure in networking, storage and power subsystems and the HP iLO Advanced solution is used to provide out of band management to support unattended operations by the Lumesse Technical Services team. Internal storage is always configured to RAID configurations to support

Storage Area Network

Compellent has been selected as the SAN standard for Lumesse; investment has been made in Compellent SAN for each of the Lumesse primary data centre locations (which includes Frankfurt). This solution provides for high availability of mass storage to meet application needs. Connectivity to the SAN is via Fibre Channel and iSCSI with Fibre Channel and SATA storage available to application as appropriate. All connectivity to the SAN from servers is via a dual path, each server being configured with redundant HBA or iSCSI interfaces as appropriate. Fibre Channel switching is controlled through multiple Cisco FC switches.

24x7x364 oversight is provided by Compellent through their support organisation with immediate response to exceptions that might be automatically generated by the SAN installation.

Server Virtualisation

Lumesse uses VMware vSphere as the standard for server virtualisation though both physical and virtual platforms are deployed at the data centre. vSphere allows a flexible and rapid approach to provisioning new server environments as well as adjusting assigned capacity, minimising downtime to customer services where maintenance is required.