



# NTT Netmagic Mumbai DC7 Datacenter Infrastructure & Capabilities

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## INTRODUCTION

NTT Netmagic is India's first focused Datacenter company with a range of offerings covering Collocation services, managed hosting, Cloud computing, Infrastructure management, Managed Security & Disaster recovery services. NTT Netmagic provides highly reliable, scalable and available infrastructure for server hosting. Currently NTT Netmagic has state-of-the-art facilities at Mumbai (6), Bangalore (2), Noida (1) and Chennai(1).

NTT Netmagic's world-class Datacenters in Mumbai & Bangalore & Chennai have the necessary physical environment to keep your servers up and running 24 hours a day, 7 days a week, 365 days a year. Our Data Centers feature –

- Raised floors
- HVAC temperature control systems
- Air-Sense state-of-the-art Aspirating smoke detection
- Novec1230 based Fire suppression systems
- Video camera surveillance systems, Biometric access & sensors
- Security breach alarms
- On site Power Systems with redundant diesel generators feeding a redundant UPS grid to offer the highest levels of power reliability

This document gives you an overview of the NTT Netmagic infrastructure and capabilities at its brand new state-of-the-art datacenter located at Chandivali, Mumbai.

## INFRASTRUCTURE / FACILITIES

NTT Netmagic's facilities are engineered to offer a superior infrastructure for continuous Internet operations. NTT Netmagic has invested in its facilities and network infrastructure to ensure continuous availability, reliability and scalability. The key features of all our data centers are as follows –

- Each Internet Data Center is designed to eliminate any single point of failure
- Combine high speed Internet backbones with robust peering agreements to ensure effective distribution of data, reducing the time it takes for the end customer to reach the servers

The Chandivali facility is a stand-alone building and the entry and exit of personnel is totally monitored by our trained security guards round the clock.

### Minimum N+2 Engineering

NTT Netmagic uses the minimum, "N+1" redundancy-engineering for all its designs. The total capacity requirement of any specific element of infrastructure (bandwidth, power, air conditioning, etc) is calculated based on the design assumptions. This capacity requirement is then spread across "N+1" (or "N + multiple") infrastructure components (Telecom lines / Routers / Power infrastructure / Air handlers, etc), with "N" components being sufficient to carry the full capacity requirement. This design thus ensures that even if one of the components were to fail, the remaining "N" components would automatically take up the load with absolutely no reduction in the level of performance of the Data center.

The facilities section gives you an overview of the following –

- Power distribution systems
- Heat, ventilation and air conditioning
- Fire protection
- Physical Security
- Rodent control systems

## FACILITY DETAILS

SPECIFICATION	MUMBAI – 7 Lighthall, 'E-Wing', Sakivihar road, Chandivali, Mumbai- 400072
<b>Certifications - ISO20000, ISO27001, ISO9001 certified, PCI DSS, Tier III (TIA 942)</b>	
<b>AREA / HEIGHT/ LOADING</b>	
Total Area ( sq m) – Raised Floor	1,10,000 sq m
Slab to Slab height	5000 mm
Floor to Raised Floor Height	800 mm
Raised Floor Loading capacity	UDL: 1500 Kg/m2
False floor tile Size	600mm x 600mm
<b>AIR CONDITIONING / ENVIRONMENT</b>	
Redundancy	N+2, PAHUs & Chillers
Temperature Nominal Set Point	22 ± 2° C
Humidity Nominal Set Point	50% +/- 10%
<b>ACCESS CONTROL &amp; SURVEILLANCE</b>	
Biometric	Thumb based dual factor authentication
CCTV Cameras	Yes
CCTV video recording	NVR
Video recording storage duration	1 Months
24 x 7 Guards	Yes
<b>POWER</b>	
Power Feed	33KV HT Power feed
Diesel Generator	24 x 2250 KVA (Full configuration), (separate power loads)
UPS	N:N ; 1000 KVA Modules
Battery Backup duration	10 minutes on full load
Fuel Storage	6 x 75,000 litres (underground Tank) , 24 x 990ltrs.day tank
Standard Power per Rack	32 A and 16 A options
STS	Rack Based STS as required
<b>FIRE PROTECTION</b>	
HSSD	Yes
Type of suppression system	Novec
Suppression Mode	Auto/Manual

## POWER DISTRIBUTION

The NTT Netmagic Redundant Power Management System provides the data center with clean, conditioned power. The Power Management System consists of N + N world-class UPS Modules with automatic static bypass / manually operated full-maintenance bypass circuits at each Rack level. This configuration provides redundancy in electrical distribution up to the Rack level, ensuring uninterrupted power supply even in the event of an electrical component failure.

The Data Center receives power at a stable voltage level of 33kV and later step-down through the transformer. This utility power is backed-up by redundant diesel generators and capable of running extended hrs. This ensures uninterrupted power supply even in the unlikely event of a long duration power failure. The DG starts and takes the load automatically within a minute of Mains Power failure feeding the multiple UPS systems.

The UPS systems have DC battery banks with sufficient capacity to sustain the full data center load for periods in excess of 15 minutes without the addition of any power from the utility or generator sources.

The present racks are designed with changeover switch – RPS, accordingly two sources of supply is being fed through dedicated cables. The PDU's are designed such that the power requirement of the particular row accommodating a minimum of 8 to maximum of 16 racks is catered.

## HEAT, VENTILATION, AIR CONDITIONING

NTT Netmagic's datacenters have high-volume, zoned temperature control systems. These raised floors have a loading capacity of 306 lbs/sqft.

NTT Netmagic has invested in multiple Precision air conditioning units, with N+1 redundancy to ensure that optimal temperature is maintained even in the event of a single machine failure. The cooling load is designed so that any unit of cooling capacity could be lost without causing degradation of the Internet Data Center environment.

The HVAC units are powered by normal electrical systems. These units are monitored through the building automation system; the failure of any unit triggers an alarm.

- Temperature maintained at  $22 \pm 2^{\circ} \text{C}$
- Humidity level maintained at  $50 \pm 10\%$  humidity, non-condensing
- High efficiency micro filters to take care of dust levels, with an efficiency of 95%. These can filter out particles of sizes upto 5-microns.

## **FIRE PROTECTION**

NTT Netmagic has invested in state of the art fire detection and suppression systems comprising the Very Early Smoke Detection Apparatus (VESDA), gas based (NOVEC1230) fire suppression systems and cross-zoned analog addressable detector systems. This ensures early detection and auto-suppression of fire, preventing any damage to equipment.

### **Unique Early fire detection design**

NTT Netmagic has a unique VESDA based design, which combines the early detection benefits of VESDA with zoning benefits. This lets us pinpoint the smoke source as early as 30 minutes before any visible smoke is generated. The design also takes care of AC generated airflow to further reduce the time of detection.

### **High Speed fire suppression**

The Novec based fire suppression design ensures that any fire is extinguished in 10 seconds on release of the gas. The complete data center area inclusive of the floor void is protected to ensure effective fire suppression. The suppression agent has been chosen such that no damage is caused to the equipment through a chemical reaction or otherwise in case of a release.

### **Proven Processes**

NTT Netmagic has ensured on fire training of all its employees and has defined processes to ensure effective use of above high quality systems in the unlikely event of a fire. The processes include fire drills, fire training to each employee, escalation of warning signals to appropriate persons and regular system checks to ensure effective functioning in the unfortunate event of a fire.

## PHYSICAL SECURITY

NTT Netmagic has put in place comprehensive measures to ensure physical security at all its locations. The measures include the following –

### Security Personnel

Trained security guards ensure security at the Facility 24 x 7 x 365. They provide onsite incident management. They respond to any alarm generated by any security system and/or fire system.

### Access Control

In addition to the presence of the security guards, the entries and exits of the facility are fitted with access control devices. The main entrance is protected by a biometric access device, which maps & verifies the bone structure of a person's hand. The facility has a Mantrap designed to ensure that no unwarranted entry / exit can be made to / from the facility. All areas are protected with Proximity card readers, ensuring that only the authorized personnel are allowed in.

### CCTV surveillance

The complete facility is monitored using CCTV cameras. Security guards continuously scan images from all the cameras. Records (stored for 1 month) are maintained on NVR-HDD to ensure that all actions are recorded for future requirements.

## RODENT CONTROL SYSTEMS

NTT Netmagic's facilities are protected against rodent attacks. The data centers are equipped with Pest Repelling systems. The pest control systems work on the principle of high frequency sound waves (well above the 20 KHz frequency which is the upper limit of hearing for the human ear).

The repelling system emits an intensive sound with high decibel levels (sound pressure). This sound is audible and painful to rodents, which causes the rodents to leave the data center without being killed. The rodent repellent systems can withstand high temperature fluctuations and do not cause any sparking.

## NETWORK

NTT Netmagic has redundant bandwidth connections to the Internet via multiple fiber optic cable systems to ensure maximum uptime and availability. Further, NTT Netmagic has Comprehensive peering arrangements with other players in the industry to enhance availability and dependability.

NTT Netmagic customers enjoy the benefits of a global backbone, high-performance network architecture and industry-leading peering arrangements which together offer maximum site availability. The scalable NTT Netmagic network can handle the heaviest traffic loads.

## Local Area Network

Within each Internet Data Center, NTT Netmagic has designed the LAN network to scale to meet the increased bandwidth requirements of the customers. NTT Netmagic monitors its network on a continuous basis for packet loss, latency and round trip time intervals. Salient features are

- The LAN is based on state of the art low latency Service Provider grade switches which are 10G ready devices and Panduit 10G ready structured cabling.
- CPU utilization as well as output and Backplane utilization on all core routers and switches is monitored real-time.
- Redundant devices are present at all levels viz. Core, Access & Distribution.

## Internet Bandwidth & Peering

NTT Netmagic has redundant Fast Ethernet WAN links interconnecting BSE, Saki Vihar, Bangalore and Chennai data centers to Vikhroli Campus. We have multi-gigabit last miles to the Internet from each data center, and this includes multiple redundant last miles from multiple providers.

All major providers have their POP's present within the datacenters. Internet burstability can easily scale to Gigabit due to provisioning of sufficient bandwidth.

## International Connectivity Redundancy

NTT Netmagic has premium International Connectivity from Airtel, VSNL (TCL), TTML and Reliance Communications, MTNL, Sify, Vodafone, Reach. Across the providers we cover following cable systems:

- SAFE
- SEAMEWE4
- SEAMEWE3 via Europe (VSNL)
- SEAMEWE3 (REACH)
- FLAG (Reliance)
- TIC & i2i (Airtel)

## Local Loop Connectivity

Multi-gigabit Local Loop connectivity is established through state of the art SDH standards based optical MUXs. This connectivity is available through multiple fiber connects from following service providers

### Local Loops Available across Data centers:

- **MTNL, Mumbai:** Redundant fiber to Saki Vihar and Goregaon (Multiple STM-1 capacity)
- **TCL, Mumbai:** IP connectivity on redundant fiber (10G capacity)
- **TTML, Mumbai :** TDM connectivity on fiber (STM-64 capacity)
- **Tata Teleservices, Bangalore :** TDM connectivity on fiber (STM-64 capacity)
- **Reliance Communications (Mumbai & Bangalore) :** IP connectivity and TDM on fiber (STM-64 capacity)
- **Airtel (Mumbai & Bangalore) :** TDM connectivity on Fiber (STM-64 capacity)
- **Reliance Jio (Mumbai) :** IP connectivity on Fibre



## NETWORK OPERATIONS CENTER (NOC)

NTT Netmagic understands that support is a critical offering needed to ensure success in today's networked environment. The NTT Netmagic NOC, manned 24 hours a day, 7 days a week comprises of support staff, call analysts and senior technical staff. This dedicated group of people monitors all critical parameters related to the performance of the network and the servers being hosted.

The NTT Netmagic NOC is equipped with the Multiple Monitoring tools. NTT Netmagic provides integrated Dashboard which unified view across all the tools. Escalation procedures and call handling processes are clearly defined for quick response times. Each service offering of NTT Netmagic has standard communication mechanisms defined between NTT Netmagic and the customer. A lot of information required by the customer can be obtained at specific URLs that NTT Netmagic will configure for each client. Information generated at the URL could range from bandwidth graphs to server processes. NTT Netmagic can customize reporting procedures in accordance with the requirements of the customer.

## SERVICES IMPLEMENTATION

NTT Netmagic is committed to the successful transition of your operations into the NTT Netmagic data center. NTT Netmagic has a comprehensive implementation manual that details the procedure to be followed for the implementation of the services.

NTT Netmagic will allot a dedicated project manager to every customer with multi-service requirement. The project manager is involved in the commissioning of the backend NTT Netmagic infrastructure required for the service commissioning. Services include –

- Develop the installation plan with the customer
- Rack / Cage / Ethernet setup
- IP addressing
- Hardware setup and Software installation
- Returns to vendors
- Testing of the installation
- Switch / Router configuration
- Bandwidth / Connectivity testing, etc

## SCHEDULED MAINTENANCE

NTT Netmagic performs weekly routine scheduled maintenance of its Internet Data Centers and network. NTT Netmagic will use its best efforts to notify customers in advance whenever it is anticipated that this maintenance will have a material impact on the services provided.