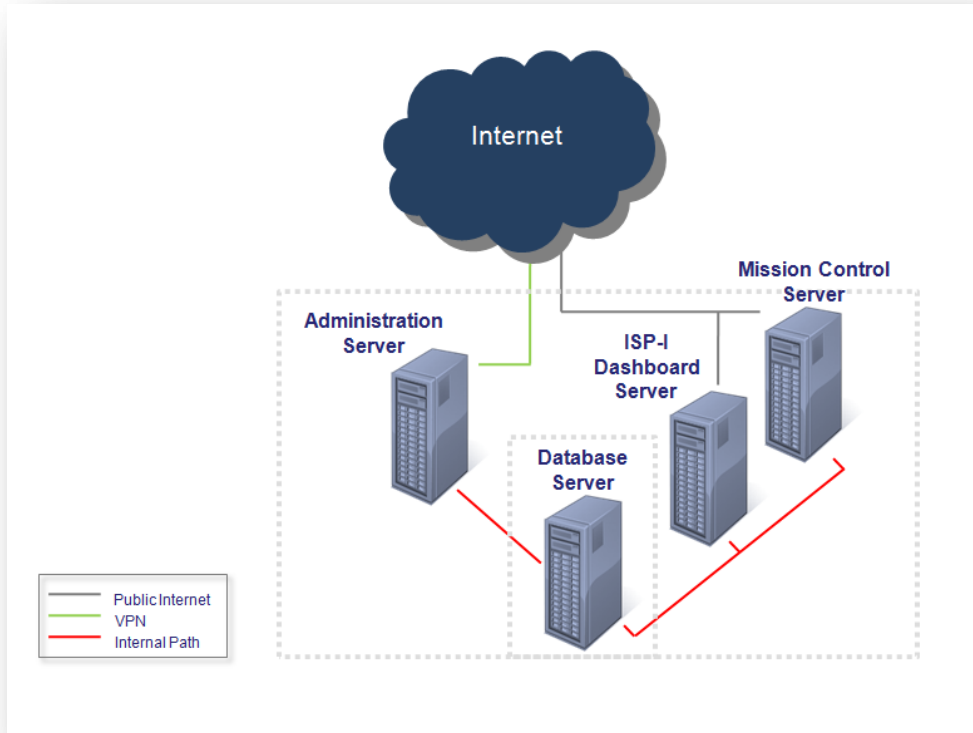


## Epitiro Data Centre Architecture



### Introduction

Epitiro's Data Centre is installed in a resilient, secure, environmentally controlled location in the UK.

The Administration Server enables Epitiro, via remote access, to execute changes to the test routines and test script frequency, update the system and provide routine maintenance, and access the AT400s (and any other hardware devices) installed.

The ISP-I Dashboard Server extracts data from the Database server and prepares it for on-line use from ISP-I users.

The Mission Control Server accepts all incoming data, does fundamental arranging and forwards it to the Database Server.

The Database Server holds all the data gathered. Note for security purposes it does not have any direct external connection and can only be accessed via the other

servers located within the secure data centre.

Epitiro's server architecture is designed with performance, security and redundancy built in. The following technologies and features are employed:

- Dell and HP server hardware, with hot spares on site
- Linux VServer virtualization to ensure rapid failover in the event of hardware failure
- Microsoft SQL Server deployed to multiple servers will real-time mirroring and failover available
- Hourly backups to minimize data loss
- Redundant network infrastructure and firewalls
- Full remote management via VPN, including access using KVM over IP to enable Epitiro engineers to fully manage the server environment as necessary
- 24/7/365 monitoring of all Epitiro servers and

services with Epitiro engineers on call resolve issues if they arise.

The majority of Epitiro's key server infrastructure is hosted by Dedipower in the Thames Valley Hosting Centre near Reading. Dedipower's TVHC data centre offers the following features for hosting Epitiro's services in a secure, resilient environment:

## Security

- 24/7 on site security with dog patrol
- Full CCTV & infrared monitoring of all data centre areas with 24 hour recording
- All access points have high strength steel automatic roller shutters
- Redcare GSM system security monitoring
- Full access control system with individual PAC cards remotely monitored and logged
- Smoke and fire detection and monitoring systems

In addition to the redundancy and resilience already built into to the Dedipower environment, Epitiro also have a Disaster Recovery Plan that enables key infrastructure to be up and running in an alternative data centre within 4 hours of the Dedipower DC becoming inaccessible. The main site and failover site are constantly synchronizing, so no loss of data would be experienced, should disaster recovery have to be implemented.

## Endpoints

Epitiro uses NetConnex for hosting its intelligent endpoints.

NetConnex is an established hosting provider of high performance hosting solutions based in Telehouse London. It operates its own autonomous network directly and diversely connected to both the London Internet Exchange (LINX) and LONAP as well as direct links to multiple global networks and private links to a number of UK service provider networks. NetConnex is independent as it does not provide broadband services, and thus would not be the subject of the proposed testing.

## Power

- 1.5 MVA available site power
- Independent HV substation (dual fed – part of loop)
- N+1 diesel standby generators with 24 hours of on-site fuel. 6 hour response re-fuelling.
- 5 x 500KVA standby power generators in secure compound. Bio-fuel powered with separate feeds to transfer switches

Epitiro has built a close relationship with NetConnex over several years and this has allowed us to understand each others' requirements very closely. This means that Epitiro's metrics solutions are designed with the underlying network in mind, and network design is planned to ensure accuracy and consistency of measurements carried over it. The monitoring systems employed by NetConnex (covering link capacity, discards, errors as well as latency, packet delivery and other measurements to various global destinations), are all designed with this in mind.

## Cooling / Heating Ventilation Air Conditioning

- 12 x 90KW redundant N+1 configuration Stulz Computer Room Air Conditioning (CRAC) down flow units
  - 3 x 360KW high efficiency water chillers and DX units each with dual independent compressor circuits, redundant water pumps and regulators in an N+1 configuration
  - Cooling system in hot isle/cold isle configuration
  - Operation designed for 21 degrees Celsius +/- 3oC
  - Relative humidity controlled at 50% +/- 10%
-

## Network & Network Connectivity

- Multiple gigabit connections to London Telehouse East and Telehouse North (VLANs or Wavelengths available)
- Diverse and multiple fibre entry points at each data centre for increased reliability, redundancy and disaster recovery
- Selected fibre network providers and Tier 1 ISPs operating full BGP4+ for maximum network reach, traffic balancing and automatic rerouting. Fibre network providers have additional wavelengths available.
- Member of London Internet Exchange (LINX)
- Multi-gigabit redundant IP Transit connectivity

EpiTiro is in direct contact with 24x7 network operations staff at NetConnex who are able to investigate any issues or answer any queries. This unique relationship gives both companies full visibility over the testing solution and allows us to guarantee a full gigabit path from the server to the network edge. NetConnex's core network is also IPv6 enabled and able to provide testing if required.

NetConnex generally operates an 'open peering' policy which ensures that all UK service providers have the same fair interconnect access to its network. By being able to interconnect both at LINX and LONAP, service providers can easily agree to exchange traffic with NetConnex directly without relying on any third parties, or being required to invest in any new equipment or cabling. Setting up a traffic interchange agreement is a matter of a small configuration change for each network operator's router which should take no longer than a few minutes to set up. NetConnex already has such agreements with over 150 network operators both UK and international.

All major service providers (or in the case of smaller operators, their bandwidth suppliers) would have a connection at one or both of these exchanges and therefore the ability to exchange traffic with NetConnex directly and efficiently. All providers with such direct connections also have access to NetConnex' 24x7 network operations centre to investigate any issues. This ensures that additional capacity can be added quickly, and provides the best interconnection options.

Please contact us directly to learn more about EpiTiro's test capabilities.

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