

TRAVERSE: HIGH-AVAILABILITY CONFIGURATIONS

SUMMARY

Zyrion's Traverse is a breakthrough service monitoring and network performance management software solution that provides real-time visibility into the health of IT services. Traverse has a distributed database and processing architecture, which supports high levels of fault tolerance and scalability. Traverse can be deployed in a variety of high-availability configurations, each tailored to address varying degrees of downtime tolerance and recovery needs.

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Zyrion for Virtualization and Private-Cloud Monitoring
Zyrion's Distributed, Scalable and High-Availability Architecture Overview

The Evolution of Data Center Management with Business Service Management (BSM) & ITIL

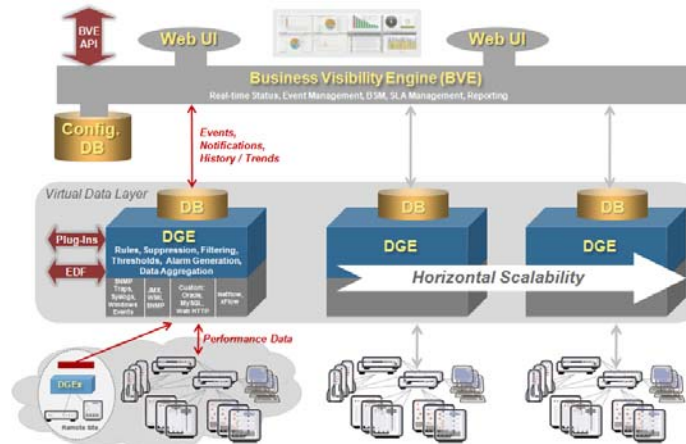
Zyrion Support for Key Processes in the ITIL Framework

FULLY DISTRIBUTED, REAL-TIME ARCHITECTURE

Traverse is built on a powerful, fully-distributed architecture featuring two primary components, Data Gathering Engines (DGE) and the Business Visibility Engine (BVE). What is unique about Traverse is that there is no centralized data warehouse, unlike other solutions that have to centralize their data to generate reports. Traverse has distributed collection capability AND a distributed database architecture, which allows the system to scale to very large environments with standard hardware. All of the components in the various tiers are horizontally scalable which is essential for expansion and generation of real-time performance reports.

Traverse's Data Gathering Engines are independent data gathering elements that collect, analyze, and store performance data locally from networks, devices, servers and applications. DGE's collect the alarms, events, and polls from the various infrastructure elements such as servers, routers, and applications. Each DGE has its own distributed relational database. Unlike other architectures, there is no central database into which all DGEs have to feed data into for analysis and reporting purposes.

The BVE is an intelligent configuration object store/repository that keeps track of users, permissions, devices, connections, and the correlation between services and underlying infrastructure. The object store allows IT personnel to set up business services and containers, and maintains the configuration data for all thresholds, traps and syslogs. It also maintains application user permissions, definitions of what infrastructure elements are in which business container views, which data gathering elements monitor which infrastructure components, and at what frequency and with which specific queries/tests.



SUPPORTED HIGH AVAILABILITY CONFIGURATIONS

The table below summarizes different options and the recovery times for various high-availability configurations that can be implemented to protect against failure of the physical servers housing the various Traverse components or connectivity with monitored devices. Each of the configurations described is targeted towards addressing a particular type of failure. The core architecture is inherently fault tolerant in that the DGEs are able to continue to process performance data and generate notifications independently, and are able to do so even if connectivity to the BVE is lost.

Level-1 HA Configuration:

Type of Failure	HA Configuration	Description	Monitoring Downtime / Functionality Loss
Server Failure at Primary Site	<p>Level-1</p> <ul style="list-style-type: none"> BVE and DGE on separate servers at primary site No dedicated stand-by server for Traverse components <p>Cost</p> <p>No additional cost to customer</p>	<ul style="list-style-type: none"> BVE and DGE should be periodically backed-up using Cron job (every 6 hours), and back-up files should be saved to separate filesystem If either server goes down, Traverse BVE or DGE software needs to be installed on a replacement server, and the last saved-off back-up should be restored 	<ul style="list-style-type: none"> If BVE server goes down: <ul style="list-style-type: none"> DGE continues to function, collecting data, processing data and generating alarms The Web UI will be unavailable until the BVE is installed and back-up is restored If any configuration changes were made in the BVE between when the BVE was last backed-up and the BVE failure, these would be lost and would need to be redone upon BVE recovery Zero monitoring downtime; BVE downtime dependent on time to set-up server and install SW (~1 hour) If DGE goes down: <ul style="list-style-type: none"> Performance data would not be collected nor processed for the outage time period Once the DGE is up again, and the last back-up is restored, all prior historical data will be available All configuration changes made in the BVE for devices/test/users/etc. during the downtime are automatically propagated to the DGE once it is restored Downtime is dependent on time to set-up server and install SW (~1 hour)

Level-2 HA Configuration:

Type of Failure	HA Configuration	Description	Monitoring Downtime / Functionality Loss
Server Failure at Primary Site	<p>Level-2 (Warm Standby)</p> <ul style="list-style-type: none"> BVE and DGE on separate servers at primary site Separate warm stand-by DGE server AND warm stand-by BVE server <p>Cost Cold-install licensing cost for software (already on pricelist)</p>	<ul style="list-style-type: none"> Spare 'warm' standby servers should be set up in the primary location where the BVE is installed (N+1 redundancy) BVE and DGE should be periodically backed-up using Zyrion provided scripts, and DGE back-up files should be saved to separate filesystem, and the warm stand-by BVE should be updated with the latest back-up (this can be done via scripts) 	<ul style="list-style-type: none"> If BVE server goes down: <ul style="list-style-type: none"> DGE continues to function, collecting data, processing data and generating alarms The Web UI will be unavailable until warm stand-by BVE is enabled with the identity of the failed machined and brought up If any configuration changes were made in the BVE between when the BVE was last backed-up and the BVE failure, these would be lost and would need to be redone upon BVE recovery Zero monitoring downtime; BVE can be restored within 5 minutes after decision made If DGE goes down: <ul style="list-style-type: none"> The name of the DGE can be set in the dge.xml file, after which the backup DGE automatically connects to the BVE, gets all configurations, and picks-up the data collection and alarming When the production DGE is up, it can run in parallel before shutting down the backup DGE If the failed DGE was recording it's data on a local disk, than for access to historical data, the last known backup would need to be restored Performance data for the outage period, i.e between when the DGE goes down and the stand-by picks up, would be lost Monitoring can be restored within 5 minutes after decision made

Level-3 HA Configuration:

Type of Failure	HA Configuration	Description	Monitoring Downtime / Functionality Loss
Server Failure at Primary Site	<p>Level-3 (Data Replication)</p> <ul style="list-style-type: none"> Parallel 1-to-1 DGE servers for EACH running DGE server Data on disk is replicated via a clustered configuration where all communication occurs over a shared/virtual IP address <p>Cost Professional Services SOW and additional license costs estimated after consultation and agreement of design with customer</p>	<ul style="list-style-type: none"> Dual identical DGEs can be set-up, each of them having the data for the same set of devices Requires custom scripts, and Zyrion professional services engagement to configure the set-up to map to each customer's environment 	<ul style="list-style-type: none"> The BVE is configured to connect to one of the two parallel DGEs, in each pair of parallel DGEs (the DGE Identify is associated with the IP address of the primary DGE) If a DGE goes down: <ul style="list-style-type: none"> The BVE configuration is updated (DGE identity is associated with the IP address of the parallel DGE) to point to the second DGE, in each pair of parallel DGEs Zero monitoring downtime and no loss of performance data

PROVEN SCALABILITY AND RELIABILITY

Leading organizations worldwide are leveraging Zyrion’s technology for true IT business service assurance. Zyrion's customers include large and medium enterprises, MSPs, utilities, universities and governmental institutions. Zyrion is delivering substantial benefits to customers in the areas of massive scalability, cost savings, flexibility, rich reporting and virtualization monitoring.



The table below illustrates the types of environments that are successfully being monitored and supported by Traverse.

Customer	Description	Environment Overview
Ancestry.com	Pioneer in online family history research and services, hosting 20 Million family trees containing 2 billion plus profiles	Traverse is monitoring over 10,000 servers and 2,000 networking devices (routers & switches) across 3 datacenters. Approximately 500K metrics are being processed every 5 minutes by the solution.
Sony Computer Entertainment	Leader in online gamesites and entertainment, serving over 48 million users worldwide	Traverse is monitoring a network of over 6,000 devices and applications using 20 Data Gathering Engines (DGEs) spanning 12 datacenters across Asia, Europe and North America. The virtual data layer within the solution is monitoring close to 1 million metrics every 5 minutes. The implementation utilizes 20+ different types of plug-in script tests, with close to 3,000 test instances.

THE BOTTOM LINE

Traverse has a distributed and scalable architecture that has the unique characteristic of not having a centralized data warehouse. Traverse has a distributed collection AND distributed database architecture that allows the system to scale to very large environments with standard hardware. The Data Gathering Engine's (DGE) are data collectors, whereas the BVE layer is responsible for correlation and reporting. Traverse's architecture is inherently fault tolerant, supports a variety of high-availability configurations, and is well suited to monitoring mission critical, complex, distributed infrastructures.

ABOUT ZYRION, INC.

Zyrion is a provider of Business Service Management (BSM) and IT infrastructure monitoring software for enterprises, MSPs and governmental organizations. The company's business service container technology allows organizations to more easily and effectively manage IT-enabled business processes and services. Zyrion's flagship Traverse solution provides correlated, end-to-end network and server monitoring capabilities that link underlying applications and the IT infrastructure to business services. Zyrion has corporate offices in Sunnyvale, Calif. For more information, go to www.zyrion.com or call +1-877-7-ZYRION.