



# **geoXMF Enterprise GIS Technology Brief**

**Enterprise GIS: Advancing the State of Performance Management**



## Key Facts:

- **Enterprise Environment:** Enterprise Geographic Information Systems (GIS) is a key part of overall enterprise IT where high performance requirements are demanded and governed by service level agreements or other types of performance contracts.
- **Capabilities:** Comprehensive, real-time enterprise GIS performance monitoring and alerting software is available to CIO's and GIS managers today.
- **Results:** CIO's and GIS managers can monitor, understand and document enterprise GIS performance for improved IT performance and management.

## Introduction

The purpose of this brief is to describe the current and developing IT performance environment, identify how that impacts enterprise GIS performance and describe how, in our opinion, enterprise GIS managers should respond to performance challenges.

In the last ten years, information technology (IT) has continued to become more closely aligned and integrated with the business processes and needs. Advances in mainstream IT technology (RDBMS, CRM, ERP and SCM) and deployment methods (SaaS, Cloud Computing) have driven the development of sophisticated performance standards.

Ever-changing approaches to IT outsourcing have also advanced the development of performance and service measurements to manage the client and service provider relationship. In addition, expansion of service oriented architectures; applications and the immediacy of user access to IT systems via multiple clients – thick, thin, mobile have made IT performance of critical importance 24/7.

These IT marketplace changes are complemented by the trend toward integration of applications at increasingly higher and higher levels where application interdependency is stronger. All of these industry changes raise the need for understanding performance throughout the enterprise – including enterprise GIS.

Enterprise GIS is now a mainstream, mission-critical IT component with the same reliability, responsiveness and performance expectations as the rest of enterprise IT technology.

## Service Level Agreements and the Status of the GIS Industry

There are multiple approaches for setting performance standards for enterprise IT. One of the most common is a Service Level Agreement. A *service-level agreement* (SLA) is a formal contract between a service provider and a client guaranteeing quantifiable network performance at defined levels. A service provider may be an internal IT organization, an application service provider (ASP), a network service provider (NSP), an Internet service provider (ISP), a managed service provider (MSP), or any other type of service provider, such as a GIS department.

SLAs can be either very general or extremely detailed, and generally include the steps that should be taken by the service provider and the client in the event of failure. Other conditions are specific to the service provider and customers needs. A Data Center may set standards for network availability of successfully forwarding IT packets 99.999% of the time and for latency of average round trip packet time of 65 milliseconds or less. Online SaaS applications like Microsoft's Sharepoint Online offer a guaranteed service uptime of better than 99.9% or there will be a service credit.

SLA's have been implemented for GIS – between government agencies sharing data, between GIS service providers and customers and between internal GIS departments and their in-company or in-agency peers. In many cases existing GIS-related service level agreements do not address the performance of the GIS systems itself. A survey of government and business service level agreements shows that performance criteria are more focused on human and organizational performance including:

- Hours of operation
- Data layer availability per client
- Response times to service outage in hours or days
- That a “web-presence” will be created and maintained
- That an application production environment will be monitored daily to ensure availability
- That daily backups will be made
- That initial diagnostic support for application errors shall be completed within two (2) business days.

Other business focused GIS managed service providers have more quantifiable performance measures for supporting infrastructure but also do not directly address the enterprise GIS performance as shown below:

- 99.99% Power Up-time SLA
- 99.99% Network Up-time SLA
- 24/7 Advanced Server Monitoring
- Bandwidth burstable to 100Mbps
- Managed Cisco Network and Firewall
- Intrusion Prevention System

Within this context, many GIS managers are faced with the existing and expanding requirement to provide performance reporting in the absence of any real capabilities to objectively measure enterprise GIS performance.

In some cases enterprise GIS performance reporting is required on a daily/weekly and/or monthly basis without the ability to provide objective performance numbers. This has caused GIS managers to estimate performance based on recollection of interruptions and downtime and from discussions with GIS staff.

In other cases, the external public and internal users end up being “first responders” to performance lags and interruptions where the GIS group is notified by these end users. At this point, productivity and confidence in the enterprise GIS has already been degraded. Until an active performance monitoring capability is deployed to enterprise GIS this may be the status quo for many organizations that respond to end-user calls and complaints as they occur.

Finally, some enterprise GIS organizations employ staff that is partially dedicated to physically checking online map service availability at intervals throughout the day.

All the examples above describe a performance environment that has to change to meet the enterprise IT challenges of today.

## **Solutions**

Enterprise GIS is a key part of the business and government information technology productivity chain. It is integrated with a host of enterprise IT systems including relational database management, business intelligence, transportation management, emergency response and work-order management systems. Performance lags or interruptions in GIS service affect the productivity of the entire enterprise.

geoXMF software puts the power of performance management in the hands of the CIO and GIS manager with the best enterprise GIS monitoring and alerting tools on the market. XMF Alerter provides comprehensive enterprise GIS monitoring, management and alerting solution. Benefits include the following:

- ◆ **Ability to test GIS application performance**

XMF Alerter allows IT/GIS managers to easily monitor ArcIMS, ArcGIS Server, ArcSDE services and general system performance.

- ◆ **Ability to track individual GIS service performance**

XMF Alerter tests of individual enterprise GIS services can be configured by type, maximum response time, black-out periods and tolerance. XMF Alerter even finds the existing service information and presents it to you in an easy to configure GUI.

- ◆ **Ability to measure application response times**

XMF Alerter allows individual services to be tested for response time.

- ◆ **Ability to report service performance history**

XMF Alerter gives you the ability to generate tables, graphs and charts showing individual application performance over time.

- ◆ **Ability to receive immediate exception notification**

If a GIS services fails or exceeds the tolerances you've set you are immediately notified via cell phone text message, email and/or on the display monitor. Multiple contacts can be configured so that particular alerts go to particular individuals on the contact list.

- ◆ **Ability to make GIS performance visible in the overall IT dashboard**

XMF Alerter includes an application programming interface (API) to allow an enterprise GIS performance summary status to be embedded within an IT management dashboard display.