

WHITEPAPER

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WHAT IS ENTERPRISE OPEN SOURCE?

ENSURING YOUR IT INFRASTRUCTURE CAN SUPPORT
YOUR BUSINESS

BY DEB WOODS, INGRES CORPORATION



TABLE OF CONTENTS:

3	Introduction
4	Developing a Plan
4	High Availability
5	High Performance
7	Providing a Secure Environment
7	Keeping Your IT Costs Low
8	Reducing Developer Costs and Risks
10	Providing Enterprise Capable Support

About the Author

Deb Woods is vice president of product management. She provides leadership regarding future product direction and is responsible for the Ingres products in the marketplace. She is also responsible for Ingres Learning Services and the Ingres VIP program. She has been committed to bringing Open Source solutions to the market place for the past eight years and continues this endeavor through Ingres. Deb has held numerous leadership positions in the technology industry, contributing in developing leading strategies for product development. Most recently, Deb was the vice president of product management at Red Hat, where she worked with customers and partners to bring the Red Hat Enterprise Linux products to the marketplace. She was responsible for managing partner relationships and contributions to RHEL at Red Hat.



WHAT IS ENTERPRISE OPEN SOURCE?

INTRODUCTION

There is a lot of discussion in the marketplace today around enterprise-capable solutions. But what does “enterprise” really mean?

Enterprises have a basic set of requirements that span their entire IT infrastructure: software; middleware and hardware. Typically, these revolve around 5 key areas: availability, security, performance, value, and supportability. Within these areas there are basic requirements that must be met in order to satisfy the demands of their stockholders, corporate management, and governance requirements. When implementing a new IT solution for the enterprise, decision makers need to ensure that both the business objectives and these basic requirements are met. In addition, each component of a proposed solution cannot stress the existing IT infrastructure with excessive license, administrative or skills development costs.

Database Management Systems (DBMS) are a keystone of nearly all enterprise solutions and can dramatically impact the overall viability and affordability of a solution. Not all DBMS products are created equal and the best choice to be made is an informed choice. For over 25 years, Ingres has been providing enterprises robust solutions in the transportation, financial, healthcare, government, retail, and manufacturing sectors. Not all users demand the same functionality from their infrastructure, but there are a number of common components that are expected in an enterprise solution.

There are numerous choices for any enterprise solution in the marketplace. Today, open source solutions provide the user with immense flexibility, choice, performance, and value that are not available with proprietary solutions. When making a selection decision regarding an enterprise solution it is imperative to carefully weigh all the options. You no longer have to forgo enterprise functionality to have an open source solution. Listed below are some key requirements that are needed for most enterprise environments. So, what does enterprise open source mean in your environment?



DEVELOPING A PLAN

True enterprise open source fulfills the following requirements:

- High availability for your mission critical needs
- High performance
- Providing a secure environment for your data and applications
- Keeping your IT costs low
- Reducing developer costs and risks
- Providing enterprise capable support and services when you need them

This paper will go through each requirement in detail.

HIGH AVAILABILITY

Enterprise open source means high availability for your mission critical needs. Ingres provides a high availability DBMS that meets the 24x7 demands of an enterprise environment with the following features:

- **Failover clustering**

Enterprise customers with mission critical workloads need high availability solutions. Ingres provides failover capability to ensure customers can access their data in the most critical of times. With Ingres failover solutions, if an error occurs, control is immediately passed to a standby instance of the database where the customer can continue to access their data without disrupting their business.

- **Online Backup with Point in Time Restore**

Ingres provides the capability to do online backups of customer data without requiring a secondary machine or by locking critical information resources. This ensures enterprise customers have access to the information they need 24x7 without excessive expense. DBMS products that don't support online backup require either the added cost of additional equipment to compensate for the lack of online capabilities or the need to suspend business operation during backup. In addition, Ingres understands that failures do occur and when they do, customers need to be able to recovery quickly with a minimal loss of data. Ingres point in time recovery allows data to be restored to just prior to the failure rather than to when the last backup occurred.

- **Online index and table reorganization**

Business needs change constantly in today's environment. Ingres understands this need and provides for customers to modify the structure of the database without affecting the performance. Unlike other open source solutions, the Ingres database can continue to run and does not need to be placed offline to make changes or fixes to index and table structures. This allows new requirements to be implemented as business demands.



- **Seamless upgrade process**

Enterprise customers need to be able to update their DBMS with the latest functionality without having to unload and reload data; they need a seamless upgrade process. Ingres has been delivering this functionality to customers for decades.

- **Replication**

Ingres provides a mature, robust implementation of asynchronous multi-master replication, as well as cascading replication which allows for highly available and geographically dispersed configurations.

- **Dual log support**

Murphy's Law states that if anything can go wrong, it will. Enterprise IT shops understand this. Enterprise-class solutions need to provide the highest levels of protection at the least possible cost. Ingres does this by providing for dual log support. In the event there is a failure in the primary transaction logging system, Ingres has a backup log ready for analysis and recovery.

- **Journaling by table**

Many open source DBMS products provide "all or nothing" or "one-size fits all" protection of dynamic information. Ingres reduces risks to business critical data and helps manage the cost of data protection by allowing you to determine which information is journaled. Journaling can be done for entire databases, individual tables or no tables depending on your business requirements.

- **Parallel Operations**

Ingres provides parallel reorganization and optimization within their DBMS which increases users access to data while providing for 24x7 availability.

HIGH PERFORMANCE

Open source means high performance. Ingres meets the demands of today's enterprise workloads with the following features:

- **Mixed workload support**

Ingres meets an enterprise demand performance not just in reading data but in processing transactions. Enterprises have mixed workloads and expect the database to perform well regardless of the size or type workload. They don't expect to switch out database engines dependant on workload or to purchase key components from third parties to ensure performance needs are met.

- **Support for SMP and multi core processor hardware**

Ingres was designed to scale; it provides the ability to scale up by providing near linear through-put increases as processors are added. This ensures that you can take full advantage of today's high performance SMP servers or new multi-core commodity hardware.



- **Support for large data sets**

- > *Robust optimizer* Ingres utilizes a hardened optimizer that uses histogram statistics collection which provides accurate statistics in the fraction of time seen by other open source solutions.
- > *Partition support* Enterprise customers need access to their information quickly. By providing for partition support Ingres manage large volumes of information yet can quickly supply information to applications, While all the information is always available, Ingres can quickly access just the information necessary to satisfy user requests by eliminating partitions of information that are not relevant.
- > *Support for Parallel queries* Parallel queries allows Ingres to expedite performance by spreading the workload across all available system resources.
- > *Non-relational data* Ingres provides the capability to support external data as relational tables which allows better access to business information.
- > *Hash joins* Enterprise customers are looking for faster responses to their business intelligence requests, Ingres has found that hash joins coupled with the Ingres optimizer can fulfill the needs of today's BI requirements.

- **Support for large user sets**

- > *Connection Pooling* For each user that connects to a database, system resources are required. Ingres dynamically pools user connections minimizing the overhead. This enables Ingres to support more users and improving application response times without requiring developers to build pooling capabilities into their solutions.
- > *Lock Management* Enterprise applications require large numbers of users to access business information simultaneously. Ingres provides a flexible, robust lock management system that supports multiple users with providing 24x7 availability of the data.

- **Multi-threaded architecture**

Ingres's architecture allows the DBMS to support more data and more users with less hardware than other open source solutions.



PROVIDING A SECURE ENVIRONMENT

Open source means providing a secure environment for your data and applications. The ability of organizations to secure and protect sensitive personal information has come under increasing scrutiny in recent years. Ingres has provided robust, secure information management solutions to government, financial, and healthcare organizations for over two decades. To meet increasing security requirements, Ingres provides these features:

- **Sarbanes Oxley / HIPPA Compliancy**

Government regulations today require that access to personal and financial information must be controlled and monitored. Ingres provides support for roles, role separation and Kerberos support to meet these demands.

- **Support for role separation**

Ingres supports role separation as part of the Ingres subscription. Role separation ensures that administrators of the system and developers have all the access needed to fully administer the DBMS or develop solutions without granting them access to the business information.

- > **Support for Roles**

Not all information within an enterprise should be available to everyone. To provide cost-effective securing of information, Ingres supports roles. Using roles, Ingres can allow or restrict access to information based on a class of user or by individual user.

- > **Support for Kerberos**

Ingres provides support for SSL and Kerberos because enterprise customers need mutual authentication to protect against eavesdropping and replay attacks.

- > **Provides audit support**

Enterprise customers need the capability to monitor sensitive data to prevent unauthorized access. Ingres provides this capability with an Enterprise subscription. Audit solutions for other open source DBMS products may only be available through third parties at addition costs and may not provide the full level of auditing required by current regulations. Many current regulations require the ability to audit both updates to information as well as read access to the sensitive data.

KEEPING IT COSTS LOW

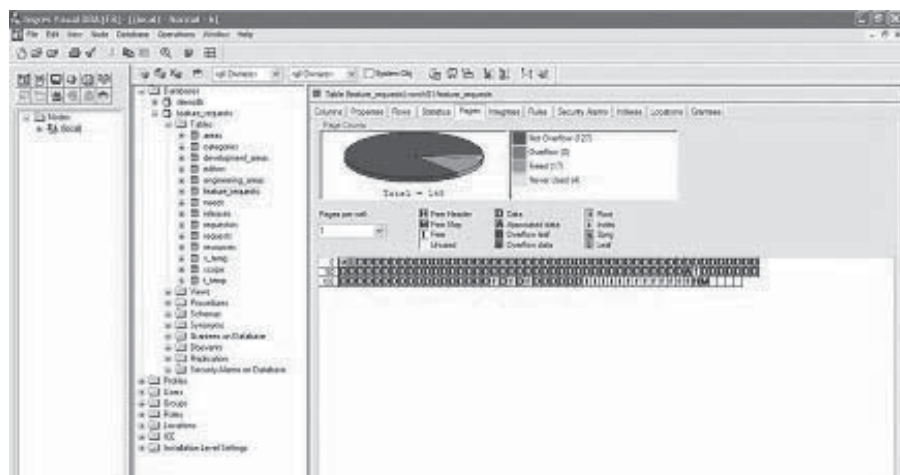
Open source means keeping your IT costs low. Ingres open source solutions can significantly lower your IT cost in the following ways:

- **Open source subscription model**

Ingres provides a subscription model that allows you to only pay for what you need when you need it. There is no longer a need for expensive license costs for your infrastructure products. The open source subscription provides:



- > *Transparency*
Ability to view the source, integrate custom changes, and contribute to future product directions.
- > *Choice*
Prevents vendor lock in.
- > *Control*
Customers have control over number of subscriptions, support options, and how they engage with Ingres.
- > *Value*
Significant cost savings in overall TCO of the solution.
- **Integrated Appliance offerings**
Ingres offers integrated appliances to support your base development, business intelligence and enterprise content management needs. Early adopters of the Icebreaker BI Appliance reduced their overall install, configuration and maintenance costs for their infrastructure by 75%.
- **Backward compatibility**
Ingres understands when you write an application you expect it to be supported for the life of the appliance, not just until the next release of the database. Unlike other open source solutions, Ingres ensures backward compatibility and doesn't deprecate features and functions. Customers can be assured that the features their applications depend on will be supported in the future.
- **Rapid Problem Resolution**
Enterprise developers and support staff need the ability to determine the root cause of problems quickly when failures occur. Ingres provides the ability to trace code to quickly identify and resolve problems when they happen.
- **Support for key database management tools**
Ingres provides support for a wide range of today's popular database management tools such as TOAD, Nagios, Squirrel as well as Ingres Visual DBA.

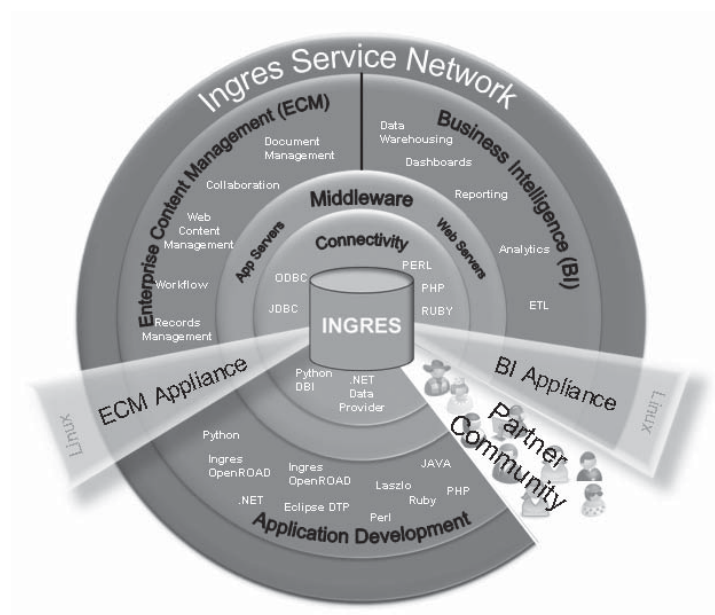




REDUCING DEVELOPER COSTS AND RISKS

Open source means reducing developer costs and risks. Ingres open source solutions can significantly lower your developer cost and reduce your time to market with your application in the following ways:

- **Standards compliant** (SQL 92 compliant, >90% compliant to SQL 03)
Ingres works closely with the community and various standards bodies to ensure standard compliance. Ingres understands that by adhering to industry standards, customers have choice and flexibility with their applications versus being locked into proprietary non-standard solutions. Compliance to standards provides for easier porting of applications.
- **APIs available for C, C++, Perl, Python, PHP, .Net**
Ingres works with the major development communities to ensure that the development platform that customers need are available. Enterprise customers want their database to work with their chosen development platform.
- **Rapid Application Development – OpenROAD**
Ingres provides a robust 4GL development platform for application developers that are looking for a faster alternative to application development.
- **Legacy support for COBOL and Fortran**
Ingres understands that not all your applications have migrated and continues to provides support for those legacy applications with in your environment.
- **Backward compatibility**
Enterprise customers expect functionality that is used by an application today will be supported in the future. Ingres ensures backward compatibility across all platforms and ensures new features are added in a manner to ensure functionality is preserved. Customers can count on features that their applications depend on will be supported in the future.
- **Same database for development and production needs**
Enterprise application developers sometimes choose a set of tools that are easy to get started with but as they move to production they discover mission critical needs for their



environment are not met. Ingres understands what is required for an enterprise production environment and works closely with their customers and the community to provide a robust set of developer tools to ensure that our development environments are easy to use, cost effective and scalable. With Ingres there is no additional cost or risk involved with choosing the wrong DBMS to develop on and then having to switch to an enterprise-class DBMS down the road. Ingres meets your needs from start to finish.

ENTERPRISE CAPABLE SUPPORT SERVICES

It means providing Enterprise capable support and services when you need them. For nearly 3 decades, Ingres has been providing global 24x7 enterprise support to enterprises around the globe in the following ways:

- **Follow the sun support mode**
Ingres provides 24x7 support for their products with enterprise support capable personnel offices around the globe.
- **15 year life cycle support**
Ingres provides an unprecedented 15 years of support for their products.
- **Enterprise caliber support and service staff**
Ingres' service and staff team have an average 10+ year tenure in providing support for global enterprise customers.
- **Providing robust, professional support to enterprise clients**
Ingres has been responding to customer needs for over 25 years with an ongoing and increasing level of customer satisfaction with the last 2 years showing the highest levels at 4.6 out of 5.
- **25+ years experience**
Ingres has thousands of customers that have been deploying Ingres products and services for over 25 years in mission critical environments; i.e. telecom, financial, government, transportation, manufacturing and retail segments.

When planning an enterprise open source project, be sure your database fulfills the following requirements:

- **High availability for your mission critical needs**
- **High performance**
- **Providing a secure environment for your data and applications**
- **Keeping your IT costs low**
- **Reducing developer costs and risks**
- **Providing enterprise capable support and services when you need them**

Ingres understands the demands of an enterprise and has focused their development and support efforts for the last 25 years in supporting enterprise customers. Ingres offers a compelling solution to the marketplace that ensures an enterprise's needs are fully met with no compromises to performance, scalability, security, or availability. Ingres offers enterprises an informed and responsible choice. Customers can take their projects from development to full production, without risks to their network, while enjoying the added value of an open source solution. Shouldn't your next open source solution contain Ingres?



About Ingres Corporation

Ingres Corporation is a leading provider of open source database management software. Built on over 25 years of technology investment, Ingres is a leader in software and service innovation, providing the enterprise with proven reliability combined with the value and flexibility of open source. The company's partnerships with leading open source providers further enhance the Ingres value proposition. Ingres has major development, sales and support centers throughout the world, supporting thousands of customers in the United States and internationally.

INGRES CORPORATION : 500 ARGUELLO STREET : SUITE 200 : REDWOOD CITY, CALIFORNIA 94063
PHONE +1.650.587.5500 : FAX +1.650.587.5550 : www.ingres.com : For more information, contact info@ingres.com

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