



IRIS Big Data DB Cluster

Distributed DBMS optimized for processing your business data including time series log data collected in real time.

- ▶ Effective data analysis through intelligent automatic analysis
- ▶ Guaranteeing the minimization of ROI (Return of Investment) of big data by reasonable price
- ▶ Easy access to DB through SQL

What is IRIS DB?

IRIS DB is a distributed database to process large-scale machine data collected in time series. IRIS DB is used for large-scale log data analysis required for large-scale communications network quality management, fault management, and security management.

As IRIS DB supports both (1) high-speed performance for short period and (2) analysis and search for long period, by harnessing memory and storage distributed on multiple nodes in hybrid manner, it is used for IoT system that collects large-scale machine data or financial log processing system that requires abnormality detection and history search function.

Competitive edge of IRIS DB over open source big data platform is best described in terms of cost and performance thanks to hybrid memory/storage among distributed nodes, distribution of loads, tolerance to error and support for data compression.

With the support for industry standard SQL, various kinds of SQL aware tools can be used. In addition, overall management cost and maintenance cost are significantly lowered compared to open source platform, because of improved productivity of developers for implementation and maintenance.



Smart storage that supports SQL

IRIS Bigdata DB supports standard SQL -- the large-scale big data DB is easily accessible through SQL.



Optimized processing for real-time log data

It is not easy to collect time series log data in real time as the data is extremely flooded into the system. Hybrid (In-memory/On-disk) architecture of IRIS DB makes the real-time processing possible.



Intelligent automatic analysis and composite chart visualization

Effective data analysis and management becomes possible as automatic clustering, automatic classification, automatic analysis and scenario-based composite visualization are available through intelligent machine learning over the stored data.



Optimizing TCO of big data

Maintaining big data causes various forms of costs. IRIS can lower the total cost of ownership significantly, considering not only basic storage and processing, but also long-term utilization and maintenance.

Response to data volume increase

Once big data platform is established and value starts to be extracted out of the data, the need for collecting even more data grows rapidly. Therefore, generally, the data growth rate is faster than initial estimation.

To meet the customer demand for expanding big data platform capacity every year within limited budget scope, IRIS DB capacity should be expanded even faster.

Every time a new generation IRIS DB is launched, hardware capacity has grown two to three times and performance from software perspective has been improved in response to growing customer demand.



Large-scale distributed DB occupies lots of space and power so the development should be green IT system that minimizes the requirement for space and power of data center. To this end, we are making continuous efforts to package the solution using servers with higher density per unit volume and lower power consumption.

Physical Configuration

IRIS DB is installed in the form of physical rack. 2 units of master nodes are installed in duplicate active/stand-by mode and a number of data nodes are installed depending on data size to be stored. The rack to be installed supports duplicate power supply.

There are internal switches that connect internal networking nodes -- 1Gbps switch is used for internal communication. For connection to outside of the IRIS DB cluster, uplink of 10Gbps is supported. If necessary, 4Gbps bonding is used to increase the internal bandwidth.

The typical unit node is equipped with 12 Cores of 2.4Ghz CPU, 64 to 256GB of RAM, 12TB ~ 48TB of disk, 1Gbps and 2~4 network interfaces -- the specification of each node is finally confirmed and produced before the installation at customer's center. The average volume of each node is 1U or 2U that can be accommodated in 42 inch standard rack.

At least 5 nodes (Single Master Node + 4 Data Nodes) are required if full performance is to be achieved by IRIS.

The requirement for space and power can be reduced significantly by utilizing high density server node, which has 1/2 or 1/12 in physical size. These types of IRIS DB can be utilized in places where the limitation of space and power is demanding.

Optimized Packaging

IRIS DB hardware and network architecture are designed to cope with the telecommunications environment that requires demanding level of reliability.

By utilizing servers in compliance of NEBS (Network Equipment-Building System), which is the design guideline from safety, space and environment perspective for telecommunications devices, IRIS DB can be applied to any types of data centers.

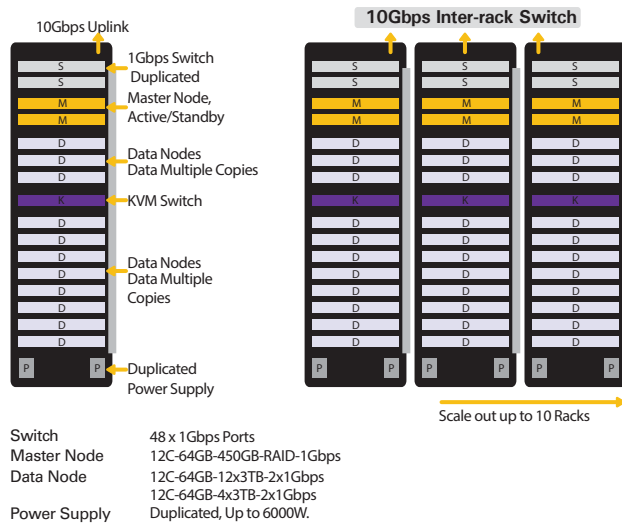
Based on OEM production that guarantees global service, maintenance is available in any location in the world.

Support for compression and encryption

Based on high performance compression, the cost of ownership of big data is significantly reduced by increasing storage capacity up to more than 3 times. Data can be physically protected through encryption.

Application of know-how accumulated for many years in telecommunications industry.

Traditionally, the demand for big data has been the highest in telecommunications industry. IRIS DB is the product of technology accumulation in the telecommunication management sector for many years.



IRIS is a big data DB appliance with S/W & H/W integrated.

Experience the extreme performance of real-time distributed parallel DB

HW+SW assembled appliance

Big data can be analyzed best when hardware and software are combined. The assembled packaging satisfies both the requirements of performance and management cost.

Reliable OEM packaging production

With reliable OEM production (HP), the best service is available across the globe. The stability of verified server based on NEBS (Network Equipment-Building System) certification is ready in anywhere in the world.



IRIS DB automated data expert

IRIS DB plays the role of data expert, in highly complicated big data environment.

Support for Advanced Analytics

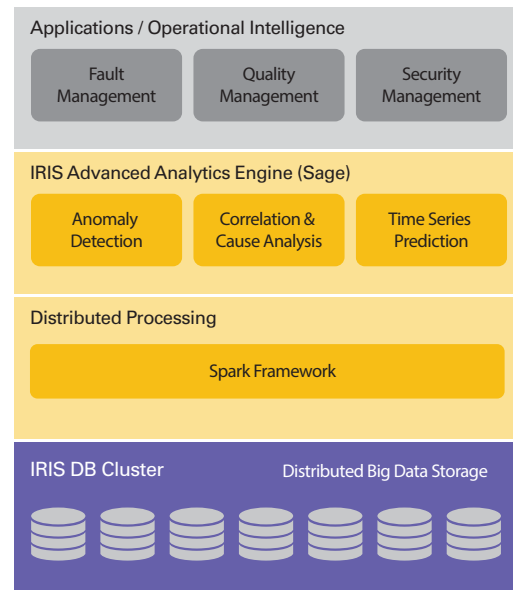
The data collected and processed in a big data system can be understood and utilized only through appropriate analysis. Even well-known machine learning and analytics were not applied easily, due to distributed nature of storage location and massive data size.

Advanced analytics engine which solves the need for advanced analysis can be added on top of IRIS DB.

The advanced analytics engine provides

- 1) anomaly detection,
- 2) time series prediction and
- 3) correlation and cause analysis for machine data, collected in real time

Advanced analytics algorithms are used as the basis of applications like (1) fault management system, (2) quality management system and (3) security management system.



IRIS DB support for graphic interface

IRIS DB supports graphical user interface (GUI) necessary for big data utilization.

IRIS DB GUI (Graphical user interface)

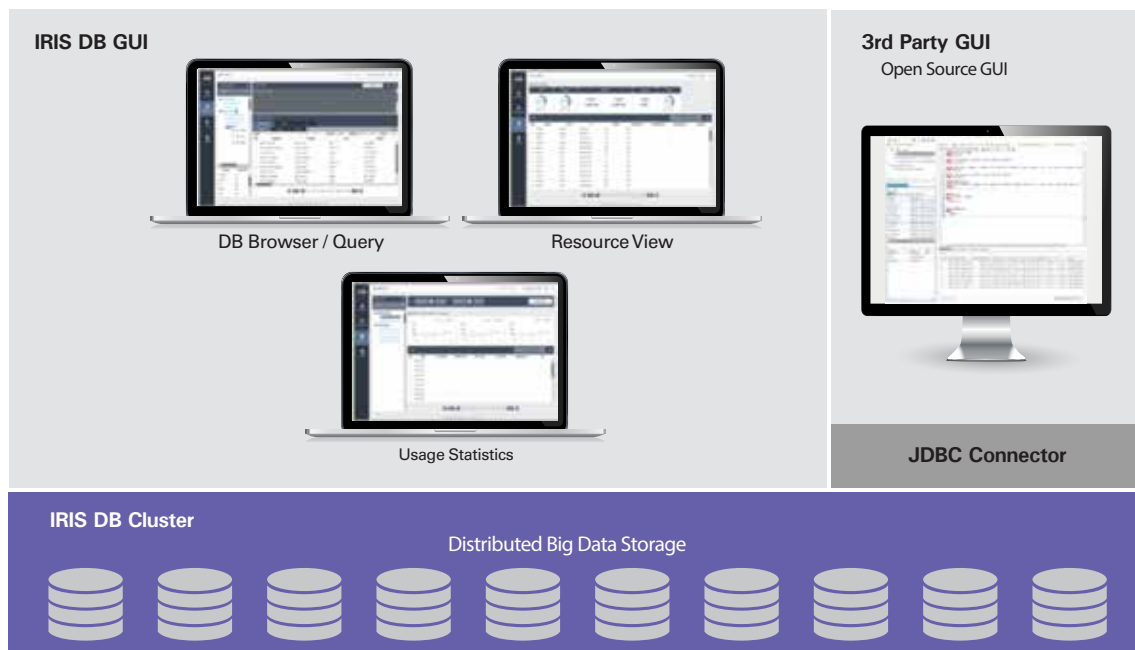
Big data systems are known as complex and hard for developers or users, so they need significant amount of education and training to be able to utilize the data.

IRIS DB is designed to provide interface, similar to traditional DBMS. Although it is a large-scale distributed clustering system, the simple DB-like interface lowers the learning curves for the developers. By using provided GUI, developers can search and retrieve the data, transparently across the cluster.

The cluster management functions are provided for fault and performance management of IRIS distributed system.

IRIS DB provides JDBC connector, enabling the access by the third party open sources and commercial GUI solutions.

Support for various analysis interfaces



IRIS DB ultimate integration of various SQL plug-ins.

IRIS not only provides its own SQL language, but also provides other types of SQL interface including SQL on Hadoop.

Support for different types SQLs

SQL is an industrial standard language. Depending on the purpose of systems, different types of SQLs exist and each type has its own grammar, functions with different profiles of performance.

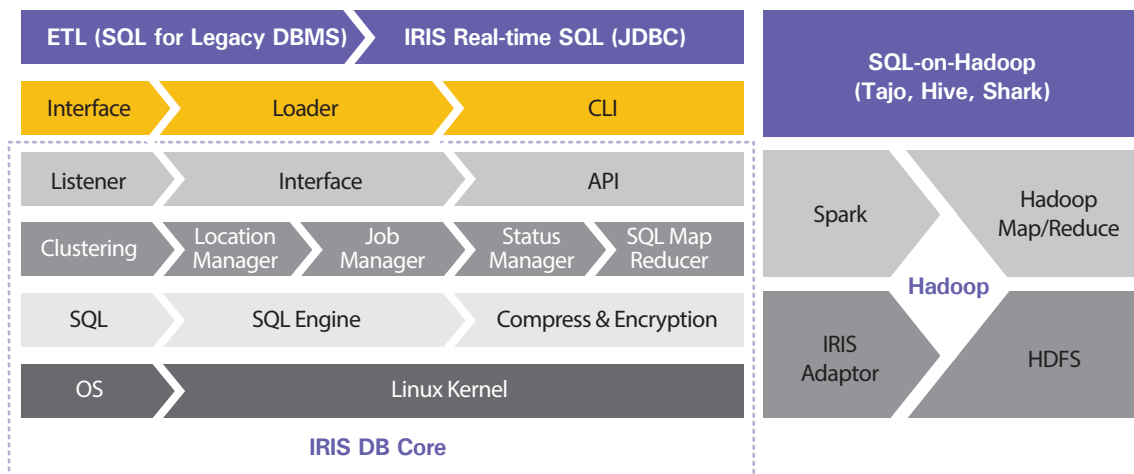
IRIS DB has its own breed of SQL and provides interfaces to other types of SQLs, provided by various open sources, offering wide range of options for users.

Depending on the types of analysis, system utilization can be optimized by selecting different types of SQL.

For instance, (1) real time analysis may use IRIS DB SQL, (2) batch or long-term analysis may use Hadoop Hive that includes map/reduce processing and (3) interactive ad-hoc analysis may be done by using SQL-on-Hadoop (Spark, Tajo) that provides the faster responses.

Support for different types of SQL interfaces

- Different types of SQL analysis are supported to meet various demands of big data platform (legacy DBMS linked SQL, IRIS real-time SQL).



Traditional Clustering

- 10G Switch, 1G Switch
- 2 Master Nodes
- 23 Data Nodes
- Total 828 TB Storage
- Total 2.9 TB Memory
- Daily 65 Billion Records

The best performance and capacity

It is well proven that IRIS DB is applied to a number of systems that process more than 10 billion records a day and real-time analysis is conducted successfully.

BEST PRACTICES

IRIS big data DB - partner for success

IRIS plays a pivotal role in successful completion of the biggest big data project in Korea.

Communications network quality management

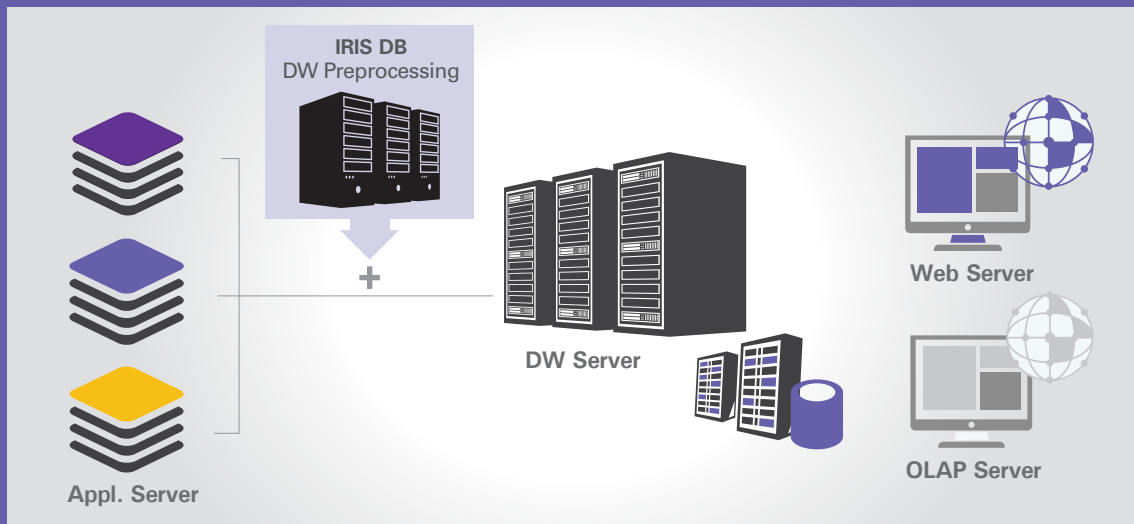
- LTE (4G) service quality management
- LTE packet probing, tens of billions of record per day
- LTE service quality analysis, market analysis
- Big data platform
- Architecture with high availability
- Real-time monitoring system
- Specific service monitoring
- VoLTE monitoring

Financial company's corporate log management system

Data governance, IT investment efficiency improvement, security audit

Support for expansion of large-scale DW capacity

Adoption of big data DB as an alternative of existing DW expansion



IRIS Bigdata DB wisest choice

IRIS is the wisest choice for your company's big data handling.

- It is an easy big data platform that can be used by any developers.
- It is the most stable solution regarding big data.
- It is the solution with the lowest cost of big data ownership.

About Mobigen

Mobigen provides telecom service carriers and enterprises proven big data solutions and service assurance solutions for wired, wireless and IP service networks.

For more information, please visit www.mobigen.com or contact global@mobigen.com