ITTIA DB SQL

Simple Powerful Embedded

Key Features

- SQL
- Small footprint
- Full ACID compliance
- No DBA
- Embedded or client/server
- Single- or multi-core
- IoT and IIoT
- High performance

- Cross platform support
- No OS support
- Platform independent formats
- In-memory, on-disk, hybrid
- Concurrent read and write
- Multithreading
- Multiple process support
- Full storage encryption

- TCP/IP, TLS remote access
- XML/JSON import/export
- Disk I/O management
- Replication
- Two-phase commit
- High availability and clustering
- Database mirroring

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EMBEDDED DATABASE FOR AUTONOMOUS SYSTEMS

Developers embed ITTIA DB SQL to eliminate the need for a database administrator and ensure high availability, reliability, and security. With support for a variety of real time operating systems and hardware architectures, ITTIA DB SQL is a full featured embedded database ideal for both microprocessor and microcontroller application development.

MAXIMIZE PERFORMANCE

ITTIA DB SQL is designed for high-performance data management by minimizing overhead and effectively utilizing scarce resources. Whether an application needs great overall performance for high-throughput on-disk tables, or low latency access to in-memory tables, ITTIA DB SQL is the best choice.

SCALABILITY

ITTIA DB SQL scales to fully utilize any hardware environment. Robust indexing and logging algorithms guarantee consistent performance for on-disk tables and optimal performance for in-memory tables. ITTIA DB SQL uses main memory intelligently to minimize expensive flash and disk operations.

FLEXIBILITY FOR ANY WORKLOAD

ITTIA DB SQL is specifically designed to bring the robust capabilities of enterprise RDBMS to embedded developers working with C and C++. Each embedded application has a unique balance of memory footprint, latency, storage, and data sharing requirements. ITTIA DB SQL satisfies a wide range of expectations with a common data management framework and APIs. Relational database development techniques tremendously increase developer productivity, with or without prior training, resulting in much shorter time to market.

RELIABILITY

ITTIA DB SQL protects data by grouping related changes into atomic transactions. Transaction logging ensures that important information is never lost and the database is protected from corruption. When an unexpected power failure occurs, tables are automatically repaired to the last completed transaction.

LEARN ONCE, DEVELOP AND DEPLOY ANYWHERE

Simple, elegant database APIs enable developers to build efficient data-driven applications across a variety of embedded platforms. ITTIA DB SQL is used in bare metal firmware, on multitasking real-time operating systems, and within a virtual address space. It is suitable for low-footprint applications and is easily ported to new storage media, processors, C/C++ compilers, and operating systems. Benefit from complete reuse of data models and database design.

Ease of Maintenance

As a relational database, ITTIA DB SQL stores data in a straightforward table format. Relationships follow naturally from the data itself, enabling efficient access from a variety of contexts, accelerating development and eliminating maintenance. SQL and the relational model are widely accepted standards for database storage that industry professionals depend on.

ITTIA
Database Software & Services

SQL Highlights

- Runtime DDL
- Foreign key constraints
  (with drop support)
- Full outer, cross joins
- Union, except, intersect
- Case expressions
- Identity columns (auto increment)
- Sequence generators

- Parse, format, extract date/time

Security

- AES-128, AES-256, custom
  storage encryption algorithms
- SCRAM database authentication
- SSL/TLS plugins for secure remote
  access and replication

Data Types

- integer, tinyint, smallint, bigint
  (signed and unsigned)
- float32, float64, currency
- Unicode: UTF-8, UTF-16, UTF-32
- date, time, datetime, timestamp
- interval day to second
  (microsecond precision)
- interval year to month
- boolean
- BLOB, varbinary

High Availability and Mirroring

- Hot backup
- Asynchronous bidirectional replication
- Synchronous replication on commit
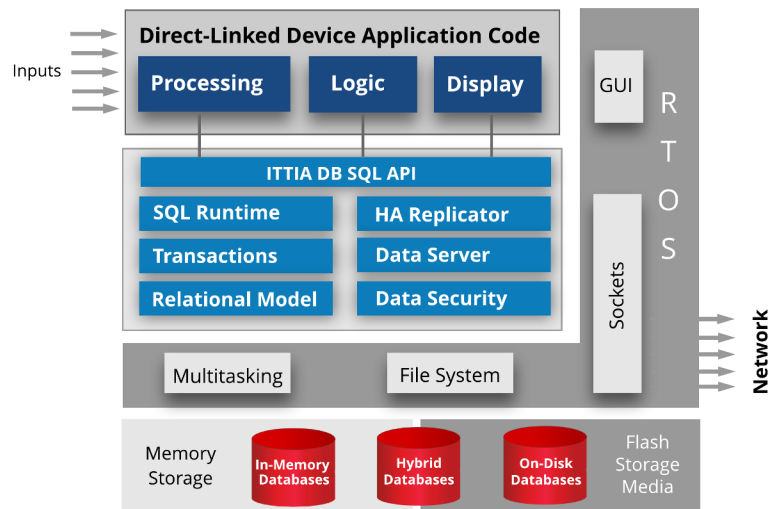- RDBMS synchronization

Data Integrity

- ACID transaction isolation and rollback
- Automatic crash recovery
- Multiple concurrency models
- CRC page/log verification

Benefits of ITTIA DB SQL Software
for Embedded Systems and IoT Devices

- **Simplicity:** Develop Maintainable Data-Driven Applications
- **Values:** Efficiently Protect, Organize, Share Data, and Connect to the Cloud
- **High Availability:** Distribute Data with Device-to-Device Replication
- **Security:** Encrypt, Authenticate, and Authorize Data Access
- **Development Flexibility:** Cross-Platform Data Management

INTELLIGENT ITTIA DB SQL HIGH-LEVEL ARCHITECTURE

ITTIA DB SQL offers superior interoperability and maintainability for medical devices, Internet of Things, industrial automation, automotive, and many other markets.

You Have a Passion for Application Development. We Have a Passion for IoT and Embedded Device Data Management.

Supported Processors

NXP i.MX
Renesas RZ
Texas Instruments
Xilinx
Altera
ARM
Power Architecture
Intel 32- and 64-bit
Custom platform

Supported Operating Systems

Windows
Linux
QNX
VxWorks
ThreadX
INTEGRITY
Nucleus
FreeRTOS
µC/OS Family
Custom OS

Development Flexibility

C, C++, SQL
ODBC, JDBC
Python, PHP, Ruby, Lua

Database Tools

ITTIA SQL Browser
Console Utility
Synchronization Tool
Database Server