



**Column-level Database Encryption Solution
supporting Index Range Scans using Cipertext**

An unmatched Database Encryption solution specialized for
High Transaction, Large scale and No-downtime Database



Premium DBMS Encryption Solution

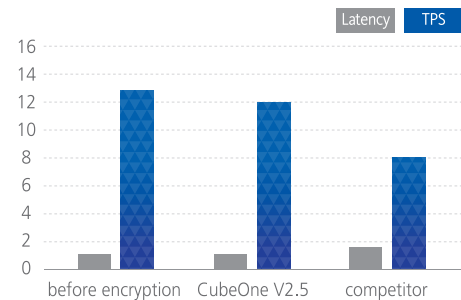
Specialized column level encryption solution for the large-capacity DB

CubeOne has a unique structure that is suitable for application to the large-capacity DB, which stores important personal information. The creativity and technological prowess of the technology was proven as it was awarded NEP (New Excellent Product) and patents at home and abroad. In addition, unparalleled excellence was tested by many large-scale system development projects, and all customers are quite satisfied.

Why CubeOne

Remarkable records in every BMT

CubeOne has been recording strong performance beyond compare in many large-scale BMTs. There are none of the performance degradation issues in CubeOne that appear in many existing products. Furthermore, we can see conspicuous performance enhancement after encryption, if the running DB is encrypted in real time without stopping it. This is an additive effect of the reorganization function provided by CubeOne. And more importantly, performance degradation in OLTP is hardly recognizable.



DBMS security integrity of CubeOne

Perfect key secrecy in which the data and key are not disclosed at the same time

CubeOne has a strong key management system that has no possibility of the data and key disclosure at the same time under any circumstances, as the plaintext key is not saved in the AP server disk. (Supported algorithms: AES, TDES, SHA etc.)

Standard of technical protective measures	Conformance method
- Encrypted saving of important personal information - Saving the access log of important personal information in a separate storage device - The access log of important personal information is saved in such way that forgery, alteration, and damage can be prevented - Performing access control - The password and bio-information are encrypted in one direction before saving.	- Encryption by column - Saving in CubeOne Security Server (saving in a server separated from the DB) - Encrypted saving (encrypted information cannot be forged or altered) - Access control to encrypted columns (satisfying the requirements together with network security devices) - Applying SHA-256/384/512 algorithm

Securing real application independence

As the CubeOne Plug-in is independent from the application, application developers and managers don't have to worry about encryption. That is, users can use the existing SQL statement without alteration. In particular, as CubeOne manages dependency related jobs (e.g., trigger) on behalf of the DB administrator, no additional manual work is required.

supporting the indexed search function using the encrypted index

CubeOne is the only product that completely supports table and index encryption, and allows index search using this encrypted index (patent is registered). Once encrypted by CubeOne, there is no serious performance degradation due to full table scan.

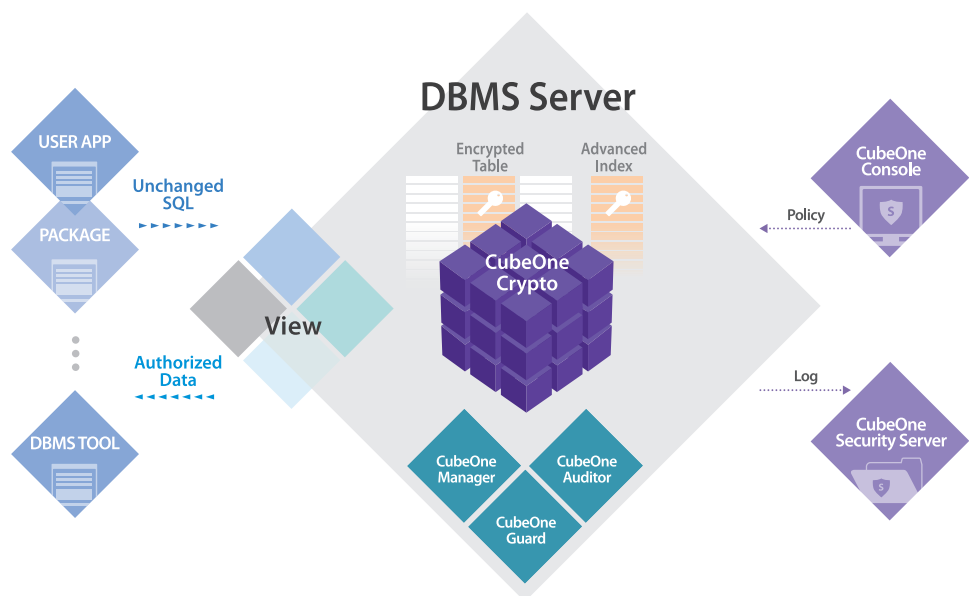
Best operability and fault-tolerance structure

CubeOne API and Plug-in provide architectures that ensure normal operation even if all daemon processes are faulty. In addition, a key distribution server (Security Server) is provided so that the key loaded into the DB and App server can be automatically loaded at the time of re-startup for the purpose of confidentiality. Owing to this architecture, the fault-tolerance feature of CubeOne is the best in the industry.

Other new technologies that are a step ahead

CubeOne is full of other diverse functions that are not available in competitors' products, including the dual mode implemented first in the industry, based on actual development experience; additional encryption without decryption; real-time synchronization that applies encryption to connected sessions immediately; multiple monitoring console; triple-depth password encryption; detection and control of the changed password and application name.

Architecture





Simple structure that is much faster than other APIs

In CubeOne API, the entire process (access control → encryption/decryption processing → log saving) is internally processed by Encryption_API without the intervention of an additional process. This extraordinarily simple structure provides fast performance and excellent fault tolerance. (BMT results show 50% faster performance over other vendors' API.)

Supporting the heterogeneous DBMS environment

CubeOne API supports encryption among the heterogeneous DBMSs not dependent on DBMS. The API also supports the application of encryption to the batch job for which encryption is hard to apply due to the long processing time. In addition, CubeOne API supports encrypted index search if applied with CubeOne Plug-in at the same time.

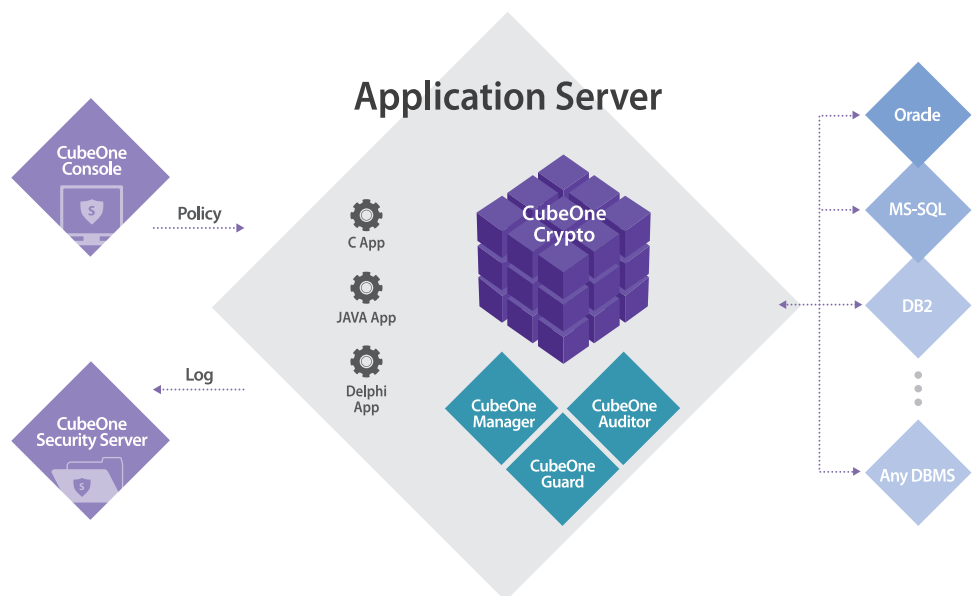
Securing large-capacity batch performance

Service performance degradation is not a problem anymore when DBMS encryption is applied using CubeOne API. For the large-capacity batch job that cannot complete the service within the target processing time after applying DBMS encryption, the service completion time after encryption application can be reduced significantly by carrying out the batch job by applying CubeOne API in the local DBMS server.

Other new technologies that are a step ahead

CubeOne API is full of other diverse functions that are not available in competitors' products, including partial encryption based on the actual development experience; multiple monitoring console; triple-depth password authentication; detection and control of the changed password and application name.

Architecture



What's CubeOne



High performance

- encrypted index search supporting
- Fast encryption/decryption engine performance



Large capacity

- low performance drop for the encryption application
- Simultaneous processing capability



No downtime

- fault-tolerance structure

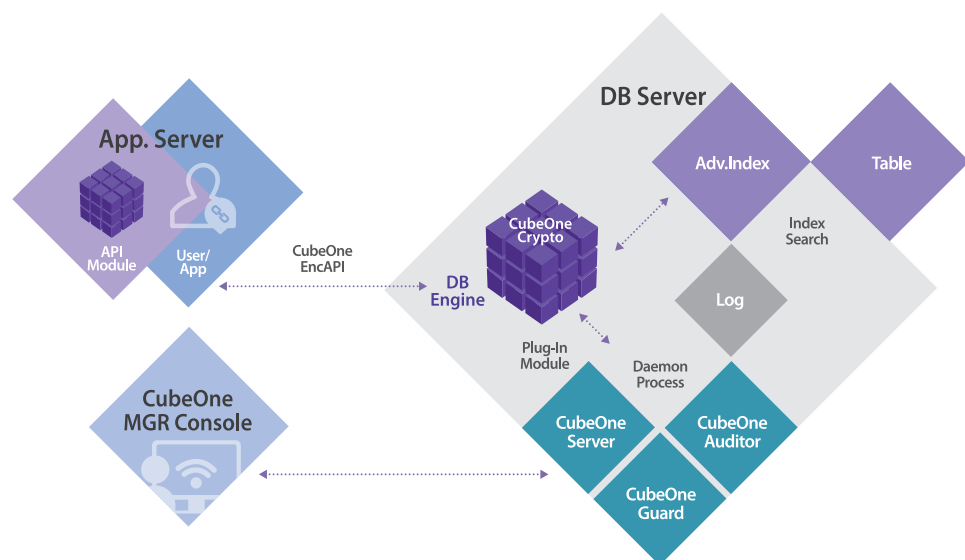
CubeOne Products

- CubeOne Plug-In : Oracle, MS-SQL, DB2, PostgreSQL, Tibero, Informix, MySQL, GreenPlum, TeraData, Sybase IQ, Altibase etc.
- CubeOne API : Any DBMS, SAM/TXT File
- CubeOne for SAP
- CubeOne Options : Security Server, API Handler

Architecture

Hybrid type S/W that supports distributed processing

Several DB servers and AP servers can be managed by one CubeOne Manager Console for the security administrator in an integrated manner. As all jobs are processed automatically using the GUI, even a novice security administrator can manage the database without difficulty (separate on duty). In addition, CubeOne is hybrid-type software that can use the plug-in of the DB server and the API running in the AP server at the same time. As a result, CubeOne satisfies the requirement for the high performance of the API product and convenience of no plug-in product application modification at the same time.





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