proIMS

Products

Base Node and RTDB

proAsset system engineering Gesellschaft

für Kommunikations- und Prozeßtechnologie mbH

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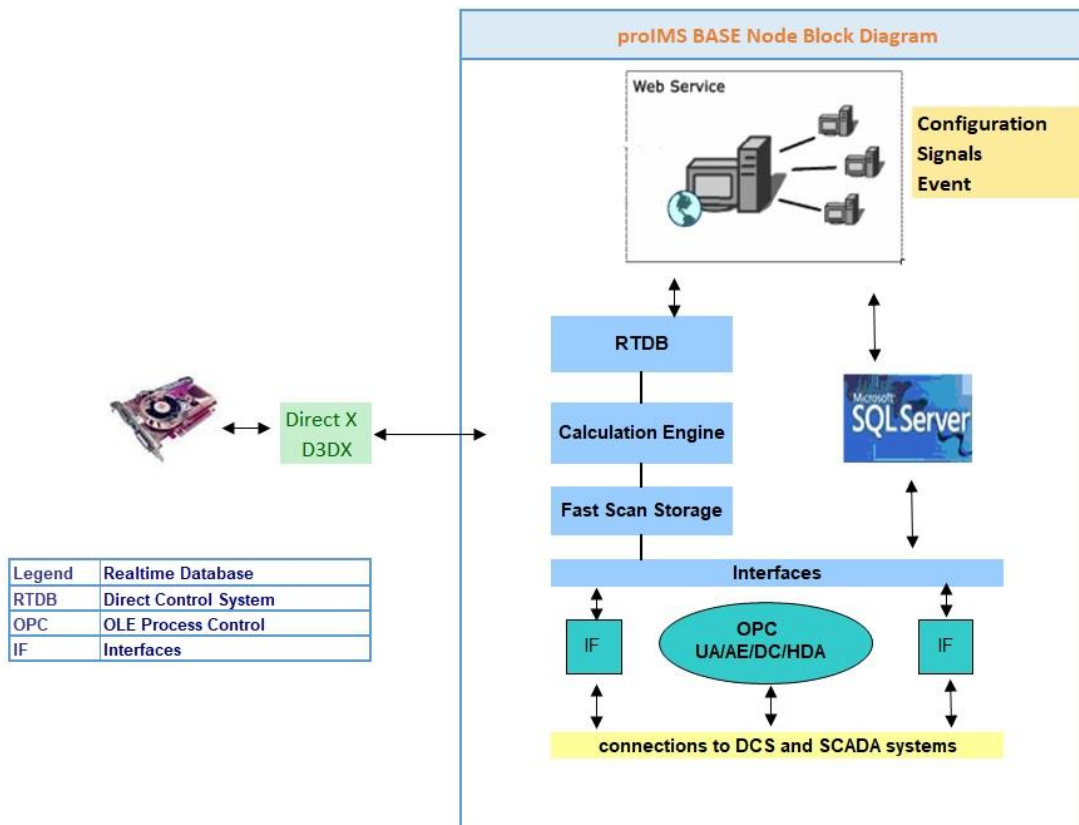
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proIMS Base Node and RTDB

building blocks

The following drawing shows the building blocks of each node.

proIMS Base Node building blocks

Standard interface to the process is either an OPC DA/AE Client or an OPC UA. Other interfaces are available. Please refer to the document **proIMS** Interfaces.

Collected data is stored first in fast scan storage. This is a virtual memory storage with a resolution of 10 nanoseconds. The fast scan storage ensures that even bulk data with more than 2.500.000 values per minute can be stored first in the fast scan storage before updating the RTDB in order to avoid data loss.

Collected data can be pre-processed in real time using an embedded calculation engine. This calculation engine can be used to perform basic calculations like data cleansing, unit transformations or flow compensations.

The configuration data of the node is stored in an embedded license free MS SQL Server express.The node communicates with other nodes or proIMS applications via web services using http or https services.

High Speed Design

proIMS RTDB is consequently designed for high speed storage and calculations:

- ✓ 64-bit data base
- ✓ Virtual memory (Fast Scan Storage) to cover bulk updates
- ✓ Embedded calculation engine with access to virtual memory
- ✓ High speed calculations using graphic processing units
- ✓ Embedded parallelisation for multi core operations

Security

Data storage of the data base can be configured to be encrypted, to avoid unauthorized access or assure that process data cannot be changed after stored in the database.

Save Communications to avoid Data Loss

Due to the distributed architecture, the RTDB transfers and collects data from other proIMS Nodes.

In case of communication loss, the latest communication status is saved and after the communication comes up again all data transfers for the lost communication time will be automatically recovered.

Additionally, there is another gap that needs to be solved. Assume you are using the **proIMS Calculation Server**, which calculates calculated time series data from the raw data on a minutely data basis, for e.g. a mass balancing application. To ensure the consistency of the calculation, each **proIMS** application has inbuilt measures to wait until the data recovery after cluster roll over or communication loss is finished to ensure also the integrity of the calculated data.

Hight Availability

The current **proIMS** installations show that even a non-redundant configuration is one of the most reliable systems in the operations software infrastructure. The following measures are consistently built into the product line:

- ✓ Online Backup and Archive
- ✓ Built-in Real Time Database (Data Buffering)
- ✓ Data replication using server farms
- ✓ Node Redundancy
- ✓ Microsoft Cluster certified

All of the measures can be used flexibly in combination with each other. Depending on how important the data or the budget of the customer nearly is all kind of high availability architectures can be designed.

Refer to the description of the distributed node concept for more details.

Integration of Third Party RTDB's

proIMS has connectors to different common real-time databases:

- ✓ ABB cpmPlus History
- ✓ OSI Soft PI RTDB
- ✓ Uniformance® Process History Database

Moreover, with the **proIMS base node** a heterogeneous RTDB enterprise architecture can be harmonized to one unique overall IMS system, using the same tools to handle tags and date from RTDB databases of different vendors.