June 1, 2005

Technical Bulletin

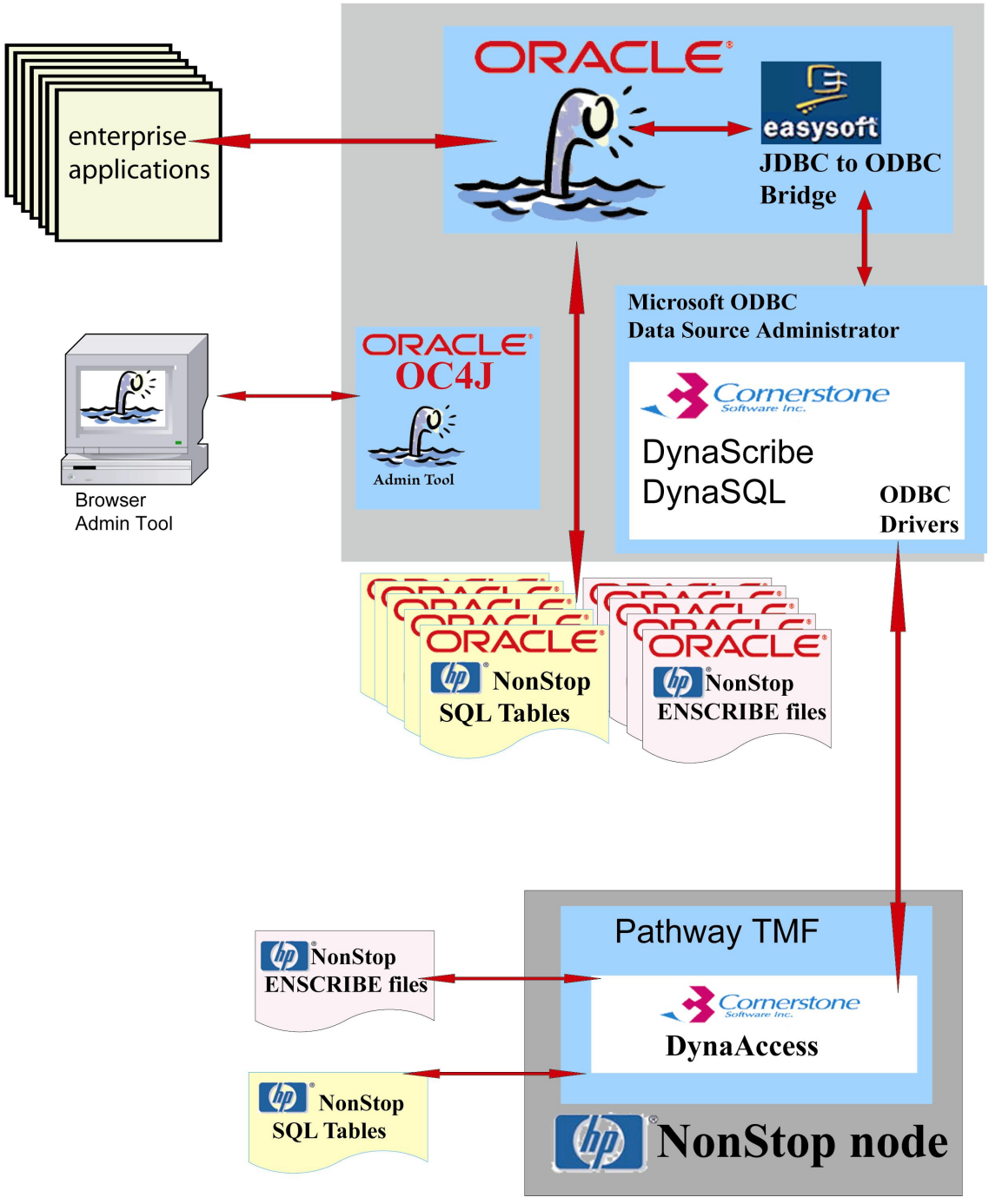
Real-time Integration of the HP NonStop SQL/MP & ENSCRIBE file systems Into an Oracle Database Using Periscope

Goal

Real-time seamless access of the HP NonStop SQL/MP database and HP NonStop ENSCRIBE file system from an Oracle database

Benefits

- NonStop SQL/MP database and ENSCRIBE files become another real-time database source within Oracle and can now be accessed by any application that can connect to the Oracle database
- Oracle access is full function, supporting SELECT, INSERT, UPDATE, and DELETE
- Legacy Applications can continue to create and maintain mission critical data in the NonStop fault tolerant environment, while being shared across the enterprise from an Oracle database
- NonStop SQL/MP database and ENSCRIBE data can be "joined" with other business data, and made available thru Oracle tables
- NonStop SQL/MP and ENSCRIBE data does not have to be replicated to Oracle, but can be accessed real-time out of the Oracle database.
- Data is transformed into an Oracle view, so that Oracle applications can work with consistent data types.
- Reports can be generated out of Oracle that contain a real-time snapshot of all data across the enterprise


enterprise applications
ORACLE
easysoft
JDBC to ODBC Bridge
Microsoft ODBC Data Source Administrator
Cornerstone Software Inc.
DynaScribe
DynaSQL
ODBC Drivers
Browser Admin Tool
ORACLE OC4J
Admin Tool
ORACLE NonStop SQL Tables
ORACLE NonStop ENSCRIBE files
NonStop ENSCRIBE files
NonStop SQL Tables
Pathway TMF
Cornerstone Software Inc.
DynaAccess
NonStop node

There are six major components to the HP NonStop SQL/MP and ENSCRIBE Periscope connection:

1. **Cornerstone Software DynaScribe ODBC driver**
2. **Cornerstone Software DynaSQL ODBC driver**
3. **Cornerstone Software DynaAccess Pathway server**
4. **Easysoft JDBC to ODBC Bridge**
5. **Periscope Administration**
6. **Periscope Universal Database Access**

Cornerstone Software DynaScribe ODBC driver

Periscope uses the Cornerstone Software DynaScribe ODBC driver to implement ODBC access to the HP NonStop ENSCRIBE file system. The DynaScribe ODBC driver converts ODBC SQL statements to ENFORM queries that are then sent to the HP NonStop node for evaluation. DynaScribe ODBC uses a custom TCP/IP protocol to communicate directly with the DynaAccess server running under Pathway on the HP NonStop node. DynaAccess implements the most complete portion of the ODBC specification that the ENSCRIBE file system will permit. Thru DynaAccess, Periscope can read, write, update, and delete ENSCRIBE files and records.

The DynaScribe ODBC driver runs as a service under the Microsoft ODBC Data Source Administrator. The ODBC driver is loaded within the administrator, which then makes it available for Periscope access.

Cornerstone Software DynaSQL ODBC driver

Periscope uses the Cornerstone Software DynaSQL ODBC driver to implement ODBC access to the HP NonStop SQL/MP database. The DynaSQL ODBC driver converts ODBC SQL statements to NonStop SQL/MP queries that are then sent to the HP NonStop node for evaluation. DynaSQL ODBC uses a custom TCP/IP protocol to communicate directly with the DynaAccess server running under Pathway on the HP NonStop node. DynaAccess implements the most complete portion of the ODBC specification that the SQL/MP database will permit. Thru DynaAccess, Periscope can read, write, update, and delete SQL/MP tables.

The DynaSQL ODBC driver runs as a service under the Microsoft ODBC Data Source Administrator. The ODBC driver is loaded within the administrator, which then makes it available for Periscope access.

Cornerstone Software DynaAccess Pathway server

Periscope uses the Cornerstone Software DynaAccess Pathway server to execute ODBC statements against the HP NonStop SQL/MP and ENSCRIBE databases. DynaAccess works with existing SQL/MP databases and ENSCRIBE files; therefore, no file conversions are required. DynaAccess supports a rich set of stored procedures that can be executed against SQL/MP tables and ENSCRIBE files.

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Easysoft JDBC to ODBC Bridge

Periscope uses the Easysoft JDBC to ODBC Bridge to map real-time JDBC requests to ODBC requests. Easysoft communicates directly with the ODBC driver. The Easysoft driver is loaded directly into the Oracle database and is managed by the Periscope product.

Periscope Administration

The Periscope Administration package runs within the Oracle OC4J container as a web service. Periscope Admin is responsible for the definition of all database connection gateways, and for all Oracle code generation necessary to implement virtual database access to a remote database.

Periscope Admin is active only for system configuration. Once a remote database has been “virtualized”, the Periscope Admin tool is not required to be active and can be terminated.

Configuration of virtual database access requires no programming and typically takes less than a couple of minutes for a table.

Periscope Universal Database Access

Periscope implements Universal Database Access to any disparate data source that a driver has been configured for. Periscope is installed into the Oracle database. Drivers for the disparate data source can be ODBC, JDBC, or of a custom type. JDBC drivers can be loaded directly into Oracle if the JDBC driver JAVA version matches the JVM version within the Oracle database. JDBC drivers can also be loaded into OC4J and accessed from Oracle as a web service. We use this method if the JDBC driver JAVA version does not match the Oracle JVM version.

Once Periscope has been installed into Oracle, we use the Periscope Admin tool to "virtualize" a disparate database into virtual Oracle tables. These Periscope driven tables appear as local Oracle tables, but are actually virtual connections into the disparate database source.

Once a disparate database has been virtualized within Oracle, it can be accessed thru normal Oracle functions with few restrictions.

When an application selects data from the Periscope/Oracle table, Oracle invokes Periscope. Periscope maps the IO request thru the appropriate driver back to the disparate data source to be executed. The result of the IO is returned to Periscope, which then transforms the data back into a normal Oracle view. All Periscope driven data accessed thru Oracle will appear as normal Oracle tables and will be completely transparent to the application.

While Periscope is complex, the actual overhead of Periscope against a virtualized table ranges anywhere from 10ms to 150ms for the actual SQL request. Since database access is typically performed against larger subsets of the database, actual overhead per record retrieved is typically insignificant.

Technical Limitations

Due to the limitations of the ENSCRIBE file system, not all ODBC functions will be supported. DynaAccess supports the broadest selection of ODBC functionality possible with ENSCRIBE.

All ENSCRIBE data types can be mapped into Oracle. There may be Oracle data types that are not supported by ENSCRIBE, so some Oracle data types may not be stored remotely and will have to be mapped to a supported data type.

All database functions (Select, Insert, Update, Delete) are supported thru the Periscope interface. As a general case, the interface will be completely transparent to Enterprise Applications.

For additional information contact:

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