Advanced Services Option of SAP® Sybase® Replication Server®

Raise the Performance of Data Replication to New Heights

SAP® Sybase® Replication Server® is a great solution for synchronizing data managers. The software allows database administrators to quickly set up redundant disaster recovery sites and to distribute, consolidate, and synchronize data across multiple platforms. Its enterprise-level features and performance have made it an industry standard among the most demanding customers since its introduction over 20 years ago. The advanced services option of SAP Sybase Replication Server further optimizes replication performance by including highly tunable features such as high-volume adaptive replication (HVAR) and multipath replication (MPR).

ENHANCED REPLICATION PERFORMANCE

During replication, data typically moves in a single path between data sources (which publish) and data copies (which subscribe to publications). But sometimes a single path isn't enough. With today's high-volume systems, the demands for continuous synchronization across thousands of transactions per second while maintaining near-real-time synchronization between systems can challenge single-path solutions. Sometimes replication paths can get clogged with large transactions that need to modify hundreds or thousands of records at a time, causing smaller, nimbler transactions to wait before synchronization. Other times the sheer volume of small transactions can become unwieldy in high-volume environments. Transactions that are repetitive on the same data can increase overhead while often not contributing to the net result on the remote system.

Now there's a solution: the advanced services option of SAP Sybase Replication Server.

Built-In Technologies Streamline Data Replication

The advanced services option contains highly tunable features that increase performance and reduce overhead. These include high-volume adaptive replication and multipath replication. Using HVAR, SAP Sybase Replication Server can compile many small changes into just the "net change" that must be applied to the remote replication server and apply other changes in bulk. With MPR, the server can split replication paths between multiple publishing threads, replication servers, and network paths.

HIGH-VOLUME ADAPTIVE REPLICATION

Without HVAR, SAP Sybase Replication Server sends each replication operation to the replicate database directly – row by row and in log order in the continuous replication mode. This can diminish performance, especially when "Big Data" is involved. HVAR enables compilation and bulk apply processes that reduce data and improve performance.

Compilation rearranges replicate data by clustering it by each table, as well as by each insert, update, and delete operation. It then compiles the operations into net-row operations. Compilation lessens and reorders commands, which can significantly reduce the number of transactions that must be applied.

Bulk apply uses the net result of compilation in bulk, utilizing the most efficient bulk interface for the net result. SAP Sybase Replication Server uses an in-memory net-change database to store the net-row changes that it applies to the replicate database.

Instead of sending every logged operation, compilation removes all intermediate operations and sends only the final states of a replicated transaction. This generally means a much smaller amount of data is processed.

As SAP Sybase Replication Server compiles and combines a larger number of transactions into a group, bulk processing improves – as do replication throughput and performance. You control the amount of data grouped together for bulk apply by adjusting group sizes.

HVAR is especially useful for creating online transaction processing (OLTP) archiving and reporting systems where replicate and primary databases have the same schemas. It supports replication into SAP Sybase Adaptive Server® Enterprise 12.5 and later. For optimal performance, use a 64-bit hardware platform.

MULTIPATH REPLICATION

MPR improves performance by enabling parallel paths of data from the source database to the target database. These multiple paths process data independently of each other and are applicable when sets of data can be processed in parallel without transaction consistency requirements between them. Figures 1 through 3 show how to deploy MPR.

Figure 1: Multiple Paths Between a Source Database and a Target Database

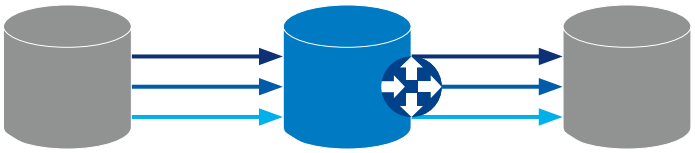


Figure 2: Paths Routed to a Remote Replication Server

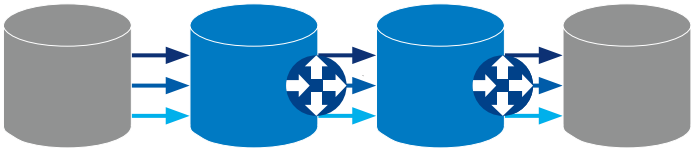
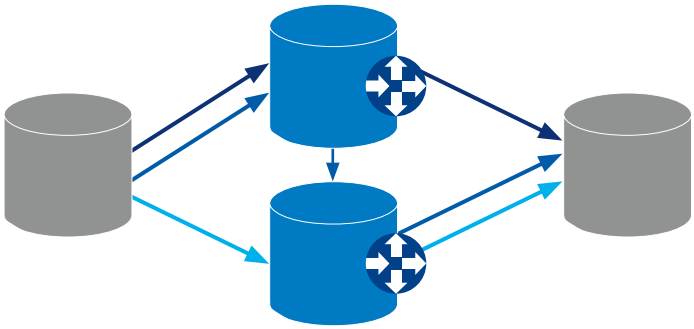


Figure 3: Multiple Paths with Different Routes Through Multiple Replication Servers



Benefits of Multipath Replication

Large batch jobs such as deleting archived data can clog replication systems and block smaller, critical transactions. This can increase latencies between source and destination systems. With MPR, the smaller, critical transactions can flow along an alternate path, so they can be applied simultaneously or before the batch jobs complete.

MPR utilizes multiple data, system, and network paths to carry replication messages from sources to destinations with reliable and consistent delivery. By spreading the overhead of carrying these messages, MPR can increase performance 150% on average based on internal testing.

Using MPR, you can balance replication workloads through parallel paths, routes, and servers – improving quality of service and better utilizing total system resources while keeping hardware and network costs in check.

KEY FEATURES OF THE ADVANCED SERVICES OPTION

The advanced services option supports:

- **Multiple senders from a single source** – Create multiple threads as incoming connections from one source database
- **Multiple routes between replication servers** – Create multiple replication server interface (RSI) connections between SAP Sybase Replication Server and databases, and attach different RSI connections to different replication paths
- **Multiple data server interface (DSI) connections to one target database** – Create multiple DSI connections from a single SAP Sybase Replication Server to one target database
- **Transaction filter** – Specify replication paths by table
- **Quality of service** – Prioritize critical OLTP transactions over a large batch job
- **Compilation** – Reduce overhead by clustering replicate data by each table, as well as by each insert, update, and delete operation; then compile the operations into net-row operations
- **Bulk apply** – Use the net result of the compilation in bulk, maximizing efficiency by utilizing an in-memory net-change database to store the net-row changes that it applies to the replicate database

LEARN MORE

For more information about SAP Sybase Replication Server, please visit www.sap.com/solutions/technology/enterprise-information-management/data-replication-software/index.epx.

With multipath replication, the advanced services option of SAP Sybase Replication Server increases performance, reduces latency, and enhances quality of service.

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