Enhance IBM Replication with F5 Acceleration Technology

IBM provides reliable, high-performance databases to businesses of all sizes. The IBM Universal Database (UDB) system is flexible, fast, and scalable—but this scalability creates a dilemma for IT. As database sizes grow, what's the best solution for moving a database replica off-site for high availability (HA) or disaster recovery (DR)? IBM offers a range of replication technologies, but due to the high volume of changes that are made in most modern databases, bandwidth quickly becomes a bottleneck. To solve this problem, F5® Application Delivery Optimization (ADO) solutions speed delivery of IBM replication data from source to backup locations by employing a blend of optimization and offloading capabilities in the F5 BIG-IP® system.

Speeding and Securing High-Volume Replication

For most organizations, the real problem with high-volume replication is not having too little bandwidth, but that the available bandwidth is not optimally utilized. Structured data, like that sent across a database replication architecture, is often repetitive in both small and large chunks. For instance, there are patterns to data column values that can be very repetitive, and some of those columns can be quite large—particularly for the binary large object (BLOB) data type.

That data, if passed over the public Internet, must also be encrypted. It is a rare dataset in an even rarer organization that is allowed to be sent unencrypted over the wire. Encryption and compression share one attribute: massive CPU usage. The act of manipulating each byte in a data stream rapidly spikes CPU utilization, and there is no resource available on a server that can alleviate that pressure. Furthermore, the database is often just one of multiple virtual machines running on the server, which requires a great deal of encryption and compression. But because CPU resources are shared with other virtual machines, performance degradation is practically guaranteed.

F5 ADO solutions enable you to speed delivery of IBM replication data to backup locations over the Internet. You can create a secure tunnel from a BIG-IP device in your primary data center to a BIG-IP device in a secondary data center or in the cloud. With the BIG-IP system, you can offload encryption and compression from your servers while deduplicating data across connections to reduce the amount of bandwidth required. F5 adaptive compression technology uses the best compression scheme for the data, improving compression ratios and reducing the amount of data transferred. In addition, TCP optimizations reduce the overhead of the TCP protocol, and rate shaping guarantees bandwidth to IBM replication tools—all with little or no change to IBM replication configurations.

Key features

- **SSL Offload**—Reduce server processing by allowing specialized hardware to handle encryption
- **Adaptive Compression**—Improve performance with bidirectional compression in hardware
- **TCP Optimizations**—Reduce TCP overhead by optimizing TCP connections
- **Data Deduplication**—Decrease bandwidth usage with advanced bidirectional deduplication before compression
- **Quality of Service (QoS) and Rate Shaping**—Ensure needed bandwidth for replication operations

Key benefits

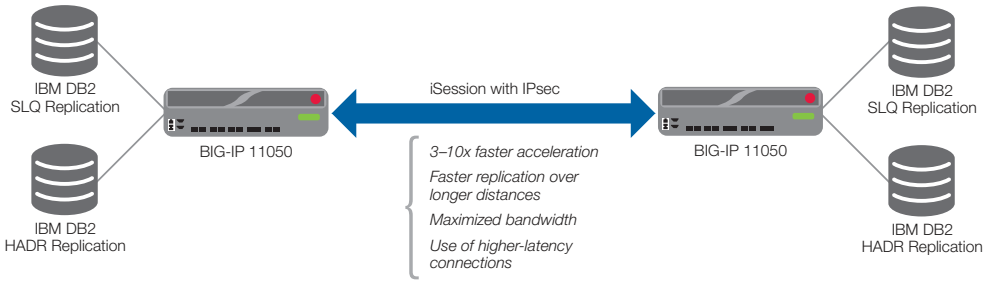
- **Ease Implementation**—Only minimal changes are required to put the F5 solution between source and client
- **Improve RPO/RTO**—Faster replication means more data at the replica and faster restoration if downtime occurs
- **Reduce Costs**—The offloading of encryption and SSL extends server processing power, while bandwidth reductions forestall connection upgrades
- **Guarantee Bandwidth**—QoS and rate shaping ensure that replication has enough bandwidth to keep your databases updated

Solution

F5 ADO solutions offer much more than a platform for WAN optimization. Based on the F5 TMOS® architecture, the BIG-IP system enables an expandable, high-performance Application Delivery Network that can support many other applications. While the benefits apply specifically to IBM UDB replication tools—HADR and SQL replication with or without IBM WebSphere MQ—they can also apply more generally to all data passing between the two data centers. Simultaneously improving throughput and reducing bandwidth usage over the connection also improves performance in nearly saturated connections.

Acceleration technologies in the BIG-IP platform provide:

- **Performance gains**—Symmetric deployment, advanced TCP optimizations, data compression, and data deduplication improve network and server performance.
- **Better manageability and security**—Ease of setup to assist IBM replication technology, built-in GUI performance dashboard, and automated features make it easy for you to add F5 technology to replication.
- **Cost benefits**—Offload of CPU-intensive processing reduces the number of servers required in your data center, and bandwidth optimization minimizes your need to upgrade Internet connections.
- **Flexible deployment**—Whether with or without IPv6 support; inline or side-arm; virtual edition, standalone appliance, or installed module on a BIG-IP Application Delivery Controller—F5 ADO solutions can be deployed to suit any need.



BIG-IP acceleration technology significantly improves throughput of IBM replication and any other cross–data center traffic.

Learn more

For more information about F5 ADO solutions, please see the following resources or use the search function on f5.com.

Product pages

BIG-IP Local Traffic Manager

BIG-IP Application Acceleration Manager

White papers

Symmetric Optimization in the Cloud with BIG-IP AAM VE

Application Delivery Optimization

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