



# Optimizing Oracle Data Guard with BIG-IP WOM

F5® BIG-IP® WAN Optimization Module™ (WOM) compresses, deduplicates, and encrypts data between two data centers. When used in conjunction with Oracle Data Guard, BIG-IP WOM improves the performance of replication while enabling the secure transfer of data within your database management system (DBMS). The more latency, congestion, and packet loss your connection suffers from, the more BIG-IP WOM improves your replication environment.

## Oracle Data Guard

Oracle Data Guard enables you to configure master databases and replication target databases. When a transaction flows into the master database, Data Guard automatically replicates it to the target as a complete transaction, guaranteeing the integrity of your copy throughout the transaction. Data Guard is designed to perform constant updates whether the database is a local copy—to ensure rapid recovery from a lost database server—or a remote copy—to help with backup or disaster recovery.

When the replication target is a remote system, the complexity and volume of data being replicated can fill up the WAN connection, slow the completion of replication transactions, and create a situation where sudden downtime could potentially leave your target database out of synch with the original because of network congestion. The higher the latency and packet loss between data centers, the more performance degrades.

BIG-IP WOM can help you improve the security, reliability, and effectiveness of your replication by reducing the amount of data that is transferred over the WAN; encrypting that data without having to add the burden of encryption to your database server; and optimizing the connection between the two databases. Since BIG-IP WOM is a stand-alone appliance, placing one device at each end of your connection will improve security and performance of all Data Guard activity passing over that connection—even across multiple hosts and databases. And with rate shaping built into the BIG-IP product, performance on the WAN link is guaranteed, and it ensures that Data Guard receives the necessary bandwidth. Combined, all of the powerful features of BIG-IP WOM increase the performance and reliability of your Data Guard replication over the WAN.

Whether you are looking to use Data Guard over long distances, to defer the cost of upgrading your WAN connection, to secure your Data Guard transactions, or to recover space on your WAN connection for use by other applications, BIG-IP WOM can help.

## Key features

- **TCP Optimization**—Cut down on the overhead inherent in TCP to speed replication
- **Rate Shaping**—Set limits for how much and how little bandwidth Data Guard should receive
- **Compression**—Send compressed versions of data over the WAN to reduce bandwidth
- **Deduplication**—Send each distinct bit of data only once with advanced deduplication technology

## Key benefits

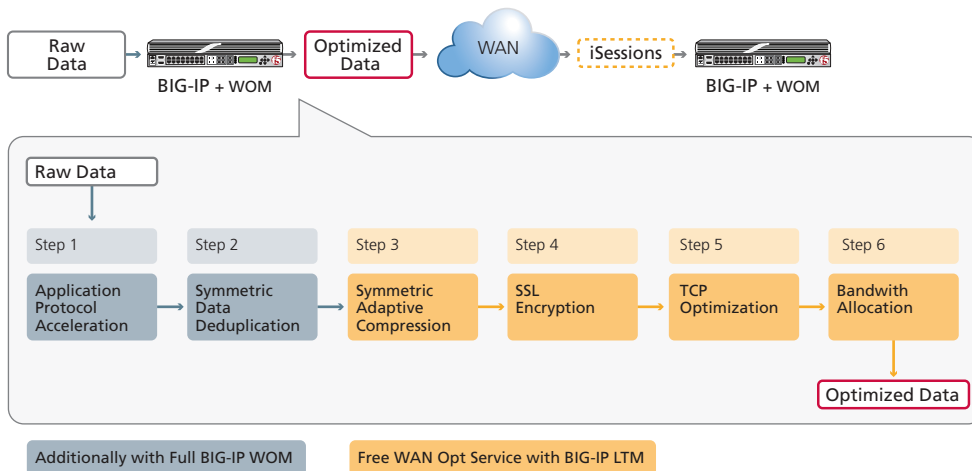
- **Increase Performance**—Improve RPOs and RTOs by reducing data replication lag
- **Increase Efficiency**—Maximize bandwidth utilization
- **Cost Savings**—Reduce WAN costs and offload CPU-intensive processes from servers
- **Improve Security**—Encrypt SQL transactions over the WAN

## Solution

BIG-IP WOM enables customers to:

- Accelerate data replication/backup across the WAN
- Mitigate the effects of latency, packet loss, and congested networks
- Optimize existing bandwidth to replicate repetitive data, thus controlling costs and eliminating the need for costly bandwidth upgrades
- Guarantee bandwidth and prioritize replication traffic
- Meet standards for data backups and recovery times

BIG-IP WOM does this by layering optimization techniques onto the F5 TMOS® product architecture. See below:

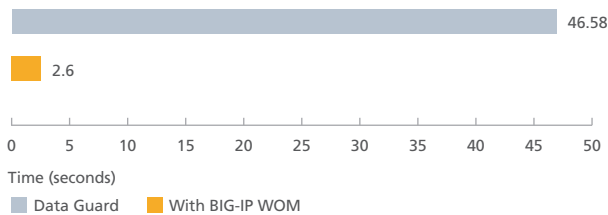


Data Guard traffic over the BIG-IP WOM connection gets optimized, deduplicated, compressed, and secured—all while reducing the effects of latency.

## Example

Testing on a 155 Mbps WAN link with 40 millisecond latency and 0.5 percent packet loss. Time is the total time required to synch the same set of data over this link. BIG-IP WOM utilizes compression and TCP optimizations.

### 18x improvement in transfer times using Oracle Data Guard Asynchronous mode



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## Learn more

For more information about BIG-IP WOM solutions, use the search function on [F5.com](http://F5.com) to find these resources.

### Product overview

[BIG-IP WAN Optimization Module](#)

### Datasheet

[BIG-IP WAN Optimization Module](#)

### White papers

[BIG-IP WAN Optimization Module Performance](#)

[Optimize and Accelerate Applications Over the WAN](#)

### Podcast

[Byte Caching, Compression, and WAN Opt](#)