



Accelerating Oracle GoldenGate Performance Across the WAN

Oracle GoldenGate is a software solution for copying database transactions from a source database to a target database. Transactional based and offering heterogeneous support for all major database products, Oracle GoldenGate is pretty close to the ultimate database continuous data protection (CDP) application. Because only the data required for a given transaction is sent to the replica, Oracle GoldenGate is a relatively lean near real-time replication engine. But when the target database is remote, the quality of the WAN link between the two databases—both latency and packet loss—affects the performance of GoldenGate.

F5® BIG-IP® WAN Optimization Module™ accelerates the WAN portion without interfering with Oracle GoldenGate's communications, giving you a more stable replication process and a more up-to-date target database.

Degraded Performance in WAN Environments

Oracle GoldenGate is Oracle's heterogeneous database replication offering, sending copies of every transaction from the primary database to the replica with minimal impact on the database management system. When a transaction is run on the source database, a binary version of that transaction is created by the GoldenGate product. That binary version is then sent through a data pump to an instance of the GoldenGate software (called the collector) at the target database. The transaction is reconstituted and then applied to the target database.

On a LAN, this is a near-perfect solution, only suffering problems if the machine running either the sender or receiver software is overburdened, which affects the speed at which conversion to and from binary can occur. In a WAN environment though, the WAN link becomes another potential bottleneck, where the amount of data being passed—particularly on busy source databases—surpasses the ability of the network to keep up. The greater the latency and packet loss rate on the WAN link, the easier it is to bog down any communications passing over it, and busy transactional data can quickly outstrip a slow or lossy connection.

Solution

F5 BIG-IP WAN Optimization Module (WOM) offers Oracle GoldenGate users a top-notch solution to WAN issues that will help GoldenGate achieve LAN-like performance over the WAN by a multistep process of optimizing TCP, compressing content, and encrypting content.

By offloading encryption and compression from the server, valuable CPU resources are freed up for database processing. By optimizing TCP, the effects of latency are mitigated. Testing using real-world data has shown throughput improvements of as much as 20 times, simply by using BIG-IP WOM between the data pump and the collector.

Key features

- **Compression**—Sends less data in the bandwidth available; offloads compression from your server
- **Bandwidth Allocation**—Ensures that Oracle GoldenGate transactions get the bandwidth they require
- **Encryption**—Encrypts off the server to save resources
- **TCP Optimizations**—Mitigates the effects of latency

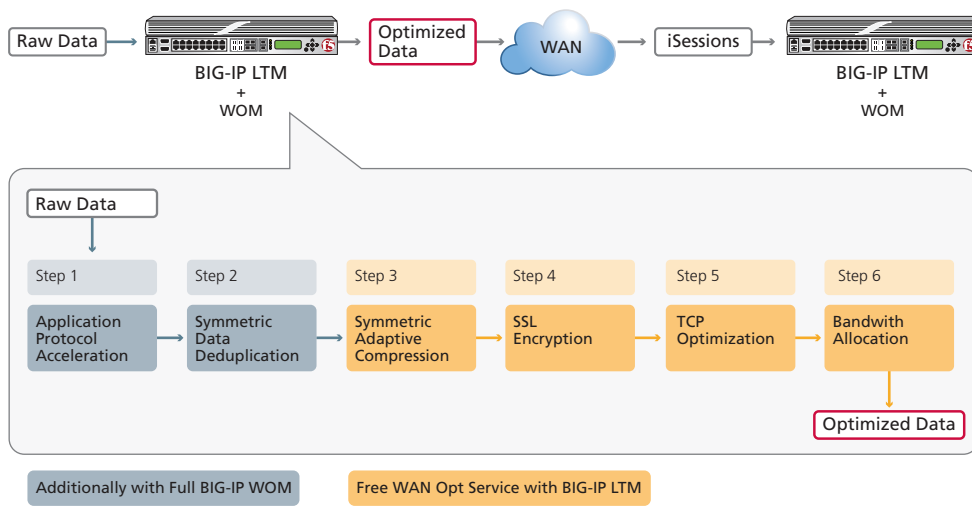
Key benefits

- **Increase Performance**—Improves RPO and RTO by reducing data replication time
- **Enhance Efficiency**—Maximizes bandwidth utilization
- **Cost Savings**—Reduces WAN costs; offloads CPU-intensive processes from servers
- **Improve Security**—Encrypts transaction replication over the WAN while offloading encryption from servers

BIG-IP WAN Optimization Module (WOM) enables you to:

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

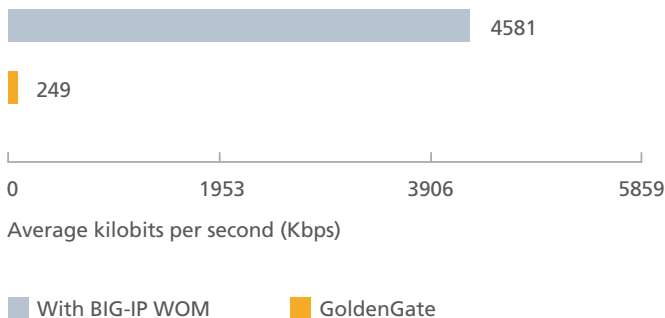
It does this by layering optimization techniques onto the TMOS® operating system, as illustrated in the following graphic.



Layered services allow for maximum security and performance over the WAN.

Example

18x improvement in performance on a T3 with 100 ms latency and 0.25 percent packet loss.



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Learn more

For more information about BIG-IP WOM solutions, use the search function on f5.com to find these resources.

Product overview

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

Datasheet

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

White paper

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

Podcast

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

Deployment guide

[Configuring BIG-IP WOM with Oracle Database Data Guard, GoldenGate, Streams, and Recovery Manager](#)