

# Waterfall for Microsoft SQL Server

Secure Application Integration through SQL Server Database Replication



- Server database replication from an industrial control network to an external network
- Automated, transparent, simple and comprehensive real-time database replication
- Absolute protection from network attacks originating on external networks
- Available high-availability architecture and 1 Gbps connectivity
- Simplifies NERC-CIP, NRC, NIST, CFATS and other regulatory compliance
- Common Criteria EAL4+ certified
- Assessed for security by Idaho National Labs

## Overview

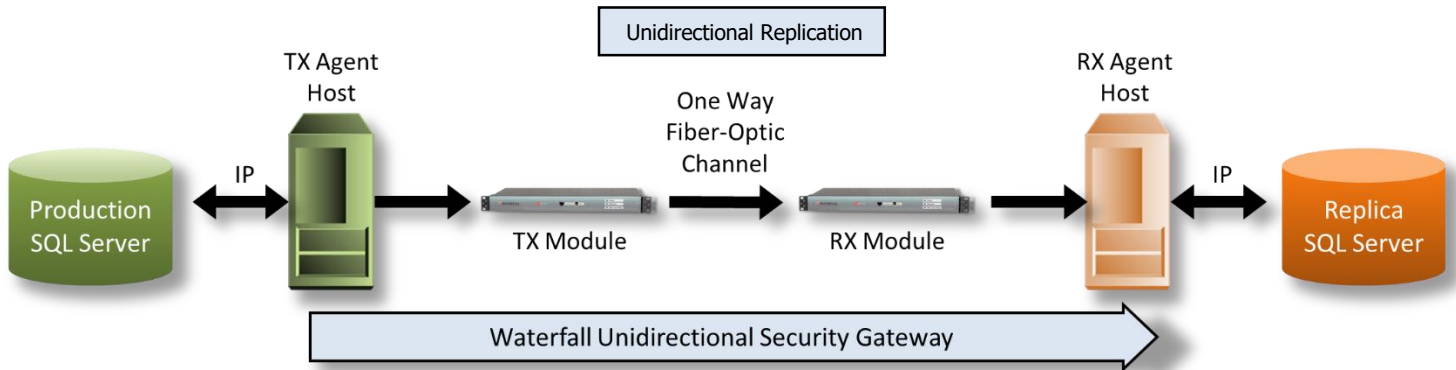
Waterfall for Microsoft SQL Server integrates industrial networks with business networks and business applications without putting the safety and reliability of the industrial networks at risk.

Modern businesses rely on real-time access to industrial data for functions ranging from predictive maintenance planning and crew scheduling, to just-in-time inventory management and production visibility for corporate users. Waterfall for Microsoft SQL Server provides access to real-time data, without introducing the threats to safe and reliable operations which always accompany firewalls.

## Stronger than Firewalls: MS SQL Server Replication

Waterfall for Microsoft SQL Server is part of the Waterfall Unidirectional Security Gateway family of products. The gateways are a combination of hardware and software. The transmit (TX) Module contains a laser, and the receive (RX) Module contains a photocell. A fiber-optic cable links the two modules. As a result, the TX Module can send data to the RX Module, but the RX Module cannot send anything back. There is no laser in the RX Module that could send any signal, and there is no optical receiver in the TX Module that could receive any signal. No online attack originating on an external network can pass back into a protected network through the gateway hardware.

The Waterfall for Microsoft SQL Server software queries a SQL Server database on an industrial network for data, sends that data across the Unidirectional Gateway hardware to a business network, and uses the data to populate a replica SQL Server database there. Corporate users and applications requiring access to the real-time data, can access the replica database.



The replica database is maintained as a faithful, updated replica of the original SQL Server database on the industrial network. Business users are able to issue complex or costly queries against the replica database without fear of slowing down or impairing the operation of critical systems on the industrial control network.

### Highlighted Unique Features

Waterfall for Microsoft SQL Server supports a wide variety of features:

- Real-time replication of SQL Server databases
- Unlimited numbers of databases, rows, and tables
- Complete replication or selective replication
- Filters can replicate only selected rows and tables
- High availability option
- 1Gbps or multiple 1Gbps options
- Support for all SQL Server data types and attributes
- Optional aggregation of many industrial SQL Server databases into a single enterprise database
- Real-time replication of schema and attribute changes

Replication of schema and attribute changes means that only the industrial database must be managed and changed. All changes made to the industrial database are automatically propagated to the replica.

Server replication provides access to industrial data, without providing access to industrial applications.

### Regulatory Compliance and Certifications

No misconfiguration of Waterfall for Microsoft SQL Server software can impair the security provided by the gateway hardware. This results in dramatically reduced perimeter operating costs and costs of compliance with NERC-CIP, NRC, CFATS, NIST, ISA-SP99 and other standards, guidance, and regulations.

The gateway solution is certified Common Criteria EAL4+, resistant to high attack potential. Waterfall's Unidirectional Gateway is the only unidirectional solution to pass a cyber-security assessment by Idaho National Labs.

### Specifications

**Network Interfaces:**  
10/100 Base-T or 1000BaseT  
**Weight:** 3.86 lbs./ 1.75 Kg

**Dimensions:**  
19"/ 482 mm (W), 1U/ 43.5mm (H),  
10"/ 253 mm (D)

**Temperature:**  
Operating: 32°-122° F / 0°-50° C  
Storage: 14°-158° F / -10°-70° C

**Humidity Range:**  
0-95% at 113° F / 45° C,  
non-condensing

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