



Resilio Connect

High-performance data synchronization, replication and automation

Resilio Connect is a scalable and flexible data synchronization and replication layer built for high performance workflows. Designed to connect large numbers of locations, file servers and data centers, the solution leverages proprietary mesh technologies to maximize available capacity, even under less than ideal conditions, while providing complete control over the bandwidth utilization at each location. Scalable to the largest file systems and natively cloud capable, it is an ideal solution for hybrid environments involving large amounts of data.

Full-Mesh Scalability

Resilio's distributed mesh technology delivers proven scalability and increased capacity using the infrastructure you already have, maximizing performance for large datasets and massive demand. Powered by protocols with proven global scalability, there is no technology more accommodating of large data and massive demand. Resilio's fully distributed solution utilizes capacity that would otherwise remain idle, delivering unprecedented speeds for time sensitive workflows at scale.

Zero Gravity Transport (ZGT) Delivers Large Data Faster

Resilio Connect ZGT combines powerful WAN Optimization technologies and a full-mesh architecture to overcome limitations of long distance, high latency and packet loss allowing maximum utilization on intervening connectivity. ZGT's scalability overcomes limitations imposed by large data and millions of files, synchronizing data faster over global distances and 1,000s of endpoints.

Flexible and Automated, Suitable for any Job

Resilio Connect ships with a wide range of job types and capabilities out of the box including powerful automation and configuration management capabilities to help scale operations. Available job types include full synchronization on file changes (n-way, one-way, read-only, read-write), distribution and consolidation (schedule based or automated) with full synchronization of permissions and extended attributes. The solution can be API driven for workflows involving massive scale. Powerful scripting jobs help automate common and complex workflows. Jobs can be trigger based, allowing for programmatic operations based on certain events and conditions.

Edge Capable

Resilio is built for the edge, scalable to 1,000s of endpoints, remotely managed and fully cross-platform. Resilio operates easily in demanding environments. Resilio's core protocols combined with ZGT technology are built to handle intermittent connectivity at the edge, making Connect the ideal solution for large scale deployments including remote workers, fleet management, vehicles, retail locations, remote sensors and field installations as well as operations in other demanding environments.

Key Benefits



Exceedingly fast at scale, full-mesh architecture delivers data faster than point-to-point solutions.



Overcomes edge connectivity limitations for remote work, large data and demanding environments.



Flexible jobs and automation capabilities fit any workflow, saving time and improving productivity.



Works with the storage, infrastructure and public/private clouds you already have, no data migration required.

Private and Secure

- 100% on prem solution (no SaaS or 3rd party component required)
- End-to-end encryption without VPN
- Mutual authentication and authorization of clients and Management Console
- One-time session encryption keys ensure Forward Secrecy
- Cryptographic data integrity validation
- Out of band endpoint authentication capabilities

Key Features

- One-to-many, many-to-one and many-to-many full mesh synchronization jobs
- Powerful automation and event driven workflow configuration
- Scalable to 10's of millions of files and ExaByte (EB) level workloads
- Multi-gigabit speeds, combinable in scale out configurations well beyond 10Gbps
- Full-mesh scalability utilizes hidden capacity across your infrastructure
- Edge capable for large scale, intermittent connectivity
- Bandwidth scheduler allocates available capacity per task over time
- Object storage capable for edge-to-cloud and hybrid storage configurations
- Works with major storage vendors and cloud providers on day one (no migration)
- Software based solution operates 100% in your environment on commodity hardware

Cross-Platform Support

- Windows 7 or newer, 2008 R2 or newer
- Mac OS
- Linux
- NAS devices: Synology, QNAP, WD, Drobo
- Object storage: AWS S3, Azure Blob, GCP, S3-compatible services (e.g., Wasabi, IBM, Oracle, Cloudian)
- FreeBSD and FreeNAS
- Android

Typical Applications

File system replication

Replicate large file systems involving 10's of millions of files seamlessly and reliably across multiple offices. Resilio's scalability, speed and reliability ensures complete data continuity across thousands of locations. Central management and event level reporting provide detailed visibility into all replication tasks.

Hybrid cloud and storage management

Continuously and automatically offload cold data from primary storage to secondary storage according to tiered storage profiles. Replicate key data in local, high-speed primary storage on demand. Works across all major storage vendors and cloud providers.

Software development and build distribution

Distribute large software builds and support geographically distributed development teams including large numbers of remote workers. Resilio's edge protocols support build distribution over unreliable consumer grade networks, accommodating software builds in the multi-TB range while scaling to 100's of remote locations and thousands of remote works. Automatically synchronize the latest builds to remote offices at multi-gigabit speeds while selective sync allows on-demand access to builds for remote work while conserving remote bandwidth utilization.

Content distribution and asset synchronization

Synchronize large libraries of digital assets across distributed creative teams and remote workers. Ensure fast, continuous local access to large files while selective sync powers on-demand access to large files for remote workers.

Backup and disaster recovery

Continuous archive of all file changes to the cloud. Fast, ZGT powered replication speeds between primary and secondary sites ensure rapid and flawless failover and no missing data. Data replication is fast and scalable enough to run DR sites in an active-active configuration for more robust business continuity.

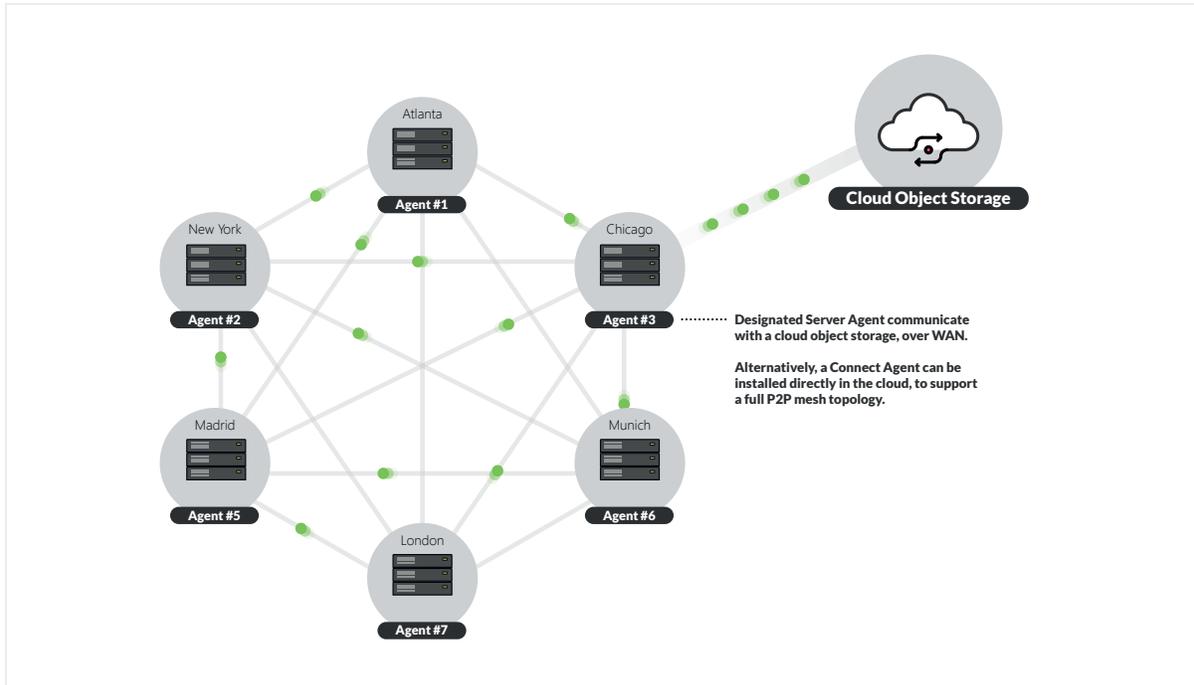
VM and server replication, backup, recovery and provisioning

Automate high speed replication for rapid deployment of large VMs and server images in support of new site provisioning, data and server migration, DR failover, or re-installation of clean configurations across production, QA or lab environments.

Product Deployment Scenarios

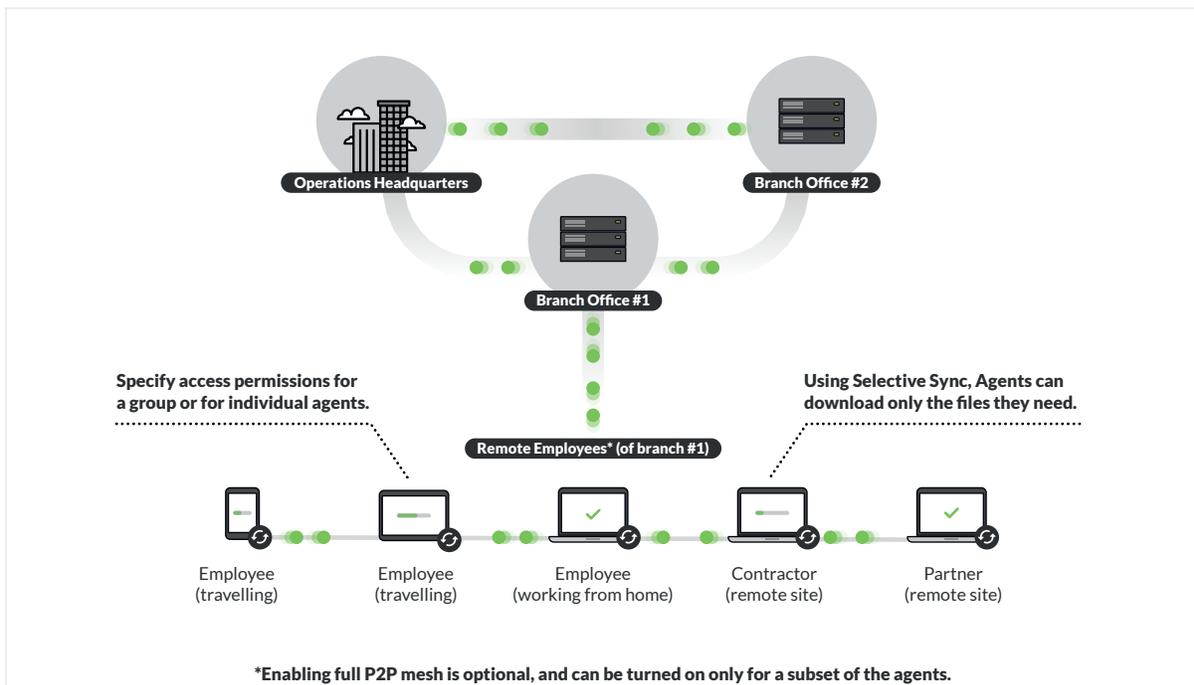
Server Synchronization

Resilio Connect is often used to sync file servers over the WAN. Such a deployment supports multi-master configuration and takes advantage of the product's P2P technology and WAN optimization.



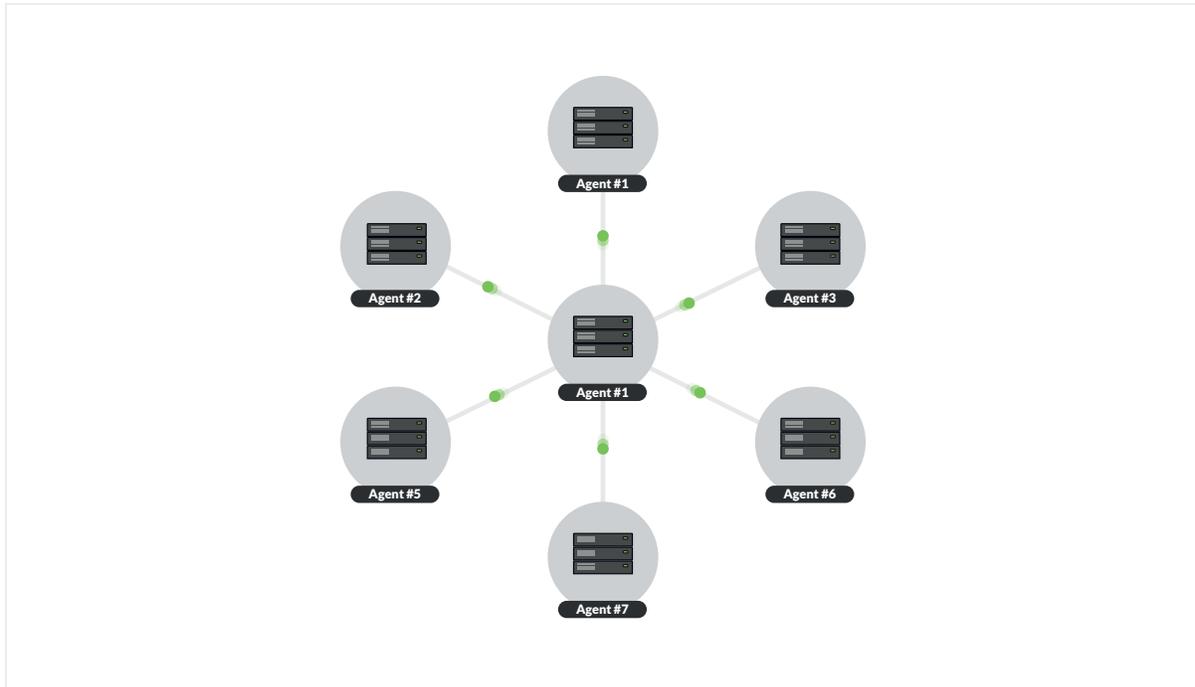
Remote Employees Data Access

Resilio Connect supports on-demand sync (AKA selective sync) by remote and field employees. The communication is encrypted in-transit and enables secure file exchange without a VPN.



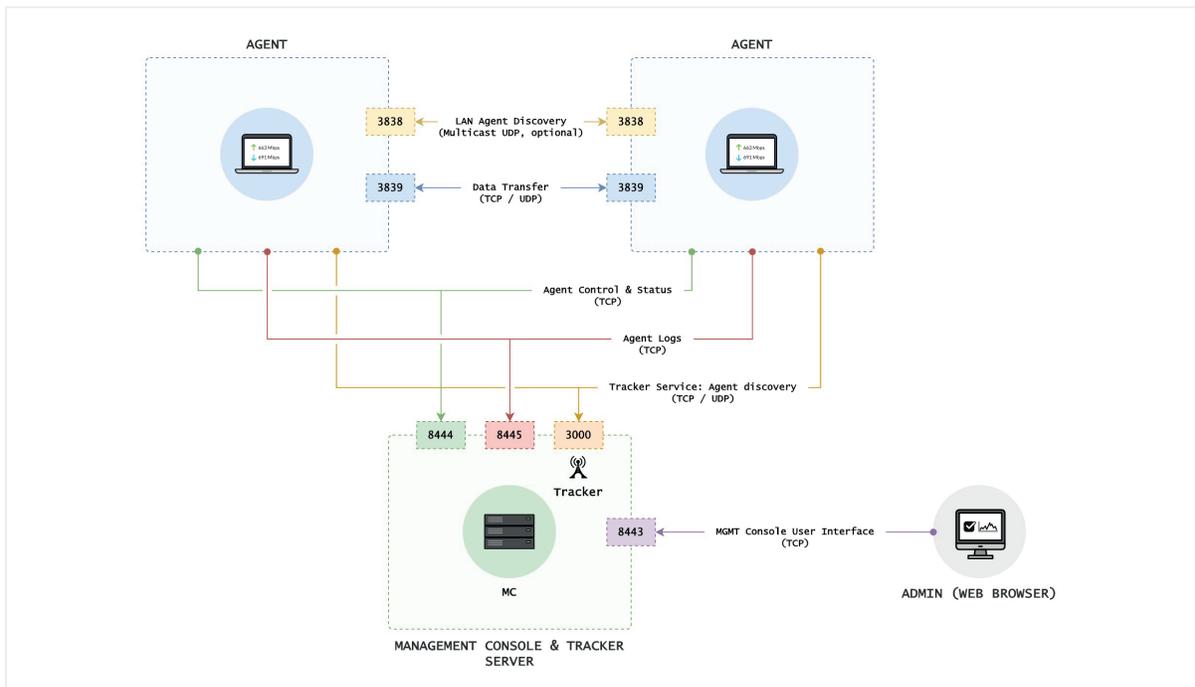
Hub and Spoke Data Distribution and Consolidation

Resilio Connect is also used in a hub and spoke configuration to transfer data from a central location to many remote locations. In many cases, such deployments also use the product's remote scripting capabilities to integrate with device management functionality.

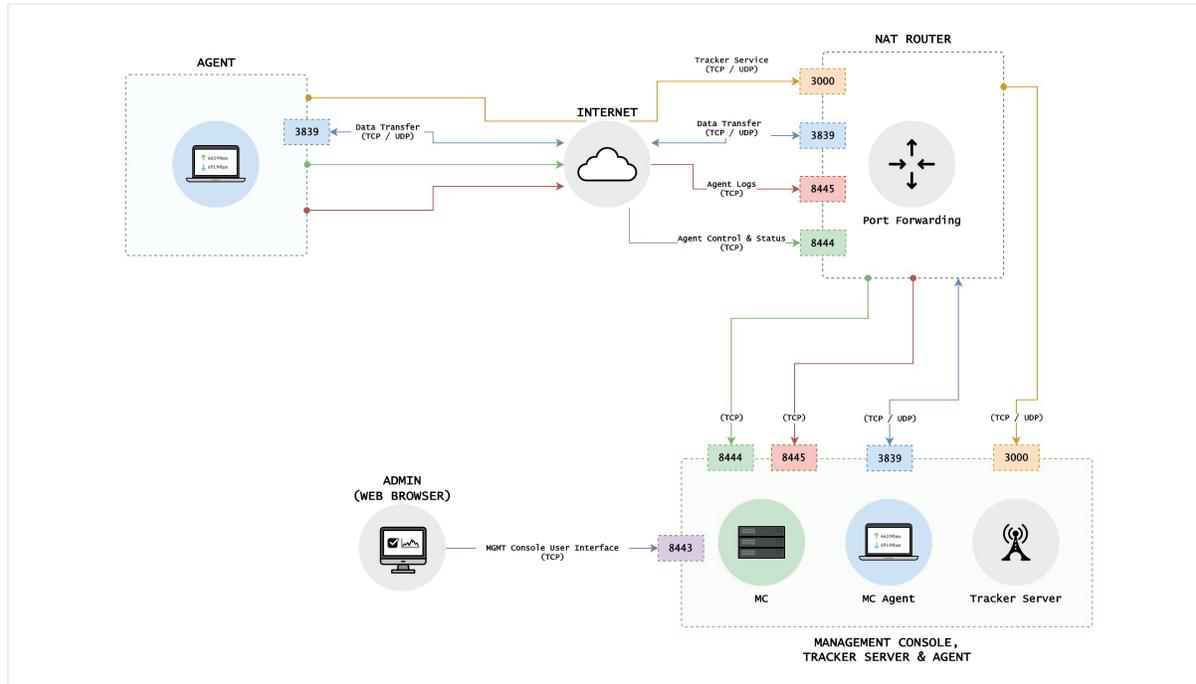


System Diagram

Ports & Protocols



NAT Port Forwarding



Notable Capabilities

Flexible and Automated

- Event driven integration hooks and scheduled script-only jobs automate common tasks
- Restful API for 3rd party integration with common systems
- Central management with configurable event level logs
- Role-based access to management system supports different levels of users
- Highly configurable network stack to optimize performance for any workflow or network.

Extreme Scalability

- Distributed full-mesh architecture collectively utilizes capacity of all endpoints
- Systemically gets faster with increased demand through better resource utilization
- High speed, OS-based notification of files changes.
- Scale-out architecture combines agents to attain high speeds between locations.
- LAN distribution between local peers reduces demand on local servers and storage

Ruggedized and Reliable Over Edge Networks

- Piece based file-chunking allows quick and efficient recovery from network interruptions minimizes data retransmissions
- Persistent retries until transfers complete accommodates intermittent networks
- Exceedingly reliable over 3G, LTE, Satellite, poor-wifi and other low capacity, high latency networks
- Distributed full-mesh routes around problems and finds additional paths between endpoints even under partial outage scenarios.
- Data compression for metered connections
- Block level delta detection and data reduction reduces network utilization and improves speed.

Performance Comparison

Operating System:

- Windows Server 2019
 - Processor - Intel Core i7 @ 3.20GHz
 - Memory - RAM 16.0GB
 - Storage - Samsung SSD 850 EVO 250GB

Networks:

- LAN - 1 Gbps ethernet
- WAN - 1Gbps with RTT 150 ms, 0.1% packet loss

Sync of 30 files 10GB in size		
Solution	LAN Time	WAN Time
DFSR	4 hrs, 10 min	~300 hrs
rsync	52 min, 9 sec	~100 hrs
Resilio Connect	47 min, 18 sec	47 min, 47 sec

Update 1GB in a file from the previous test		
Solution	LAN Time	WAN Time
DFSR	18 min, 10 sec	3 hrs, 52 min
rsync	3 min, 21 sec	19 min, 2 sec
Resilio Connect	1 min, 48 sec	1 min, 54 sec

Sync of 1M files 100KB in size		
Solution	LAN Time	WAN Time
DFSR	7 hrs, 15 min	32 hrs, 45 min
rsync	6 hrs, 42 min	28 hrs, 58 min
Resilio Connect	3 hrs, 53 min	4 hrs, 27 min



For More Information

For more information about Resilio Connect, please visit <https://www.resilio.com> or contact sales@resilio.com

About Resilio

Resilio's proprietary core technology has moved more data than any other file distribution protocol in existence. Having demonstrated global scalability over billions of endpoints while routinely moving Exabytes of data, Resilio leveraged this technology to build a unique enterprise-grade solution that is both easy to use and secure. Trusted by 1,000s of customers across 6 continents, Resilio's proven technology and world class support are ready to deliver on your enterprise data needs.