

Cleo Jetsonic™

AN IN-DEPTH VIEW

Cleo
Move View Act™

ABOUT THIS PAPER

In today's business, as the size of data increases for all communications with customers and suppliers, as well as internal systems, the need for a high-speed communication protocol becomes ever more important. Business are using traditional protocols over high-latency networks or still shipping physical devices to transfer high data volumes.

This paper introduces Cleo Jetsonic™, which is a proprietary high-speed protocol, as well as its capabilities, and discusses how it addresses a critical market need.

Cleo Jetsonic™

Delivering communications at unmatched speeds — with all the governance, security, compliance needed

High-speed data communication is still an unmet need in the technology marketplace with businesses falling back to traditional communication methods that are not designed to handle such large transactions or reverting to traditional archaic methods, such as shipping physical devices. Even most current methods do not provide optimal transmission times for business needs and this problem gets worse with transmission failures and lack of governance.

As enterprises start creating more nimble and agile data architectures, data movement methods that meet the technical guidelines as well as business SLAs are critical to the data supply chain to ensure competitive advantage while maintaining data integrity as well as providing a robust GRC (governance, risk and compliance) framework.

Why do you need high-speed data transmission?

Does your business need to execute faster? Need to be quicker to market, improve customer satisfaction, make data-driven decisions faster, and/or optimizing business processes? With your files getting larger and response cycle time expectations shortening, you need to move your data faster.

- Manage file transfers with data growth projected to expand to 40 zettabytes worldwide (50% growth year-over-year)
- Meet stringent SLAs – even though file velocity, volume, and veracity are increasing exponentially
- Move data between data centers that are geographically distributed
- Maximize network utilization as bandwidth and capital expenditures increase
- Address security and speed and still deliver ease of use

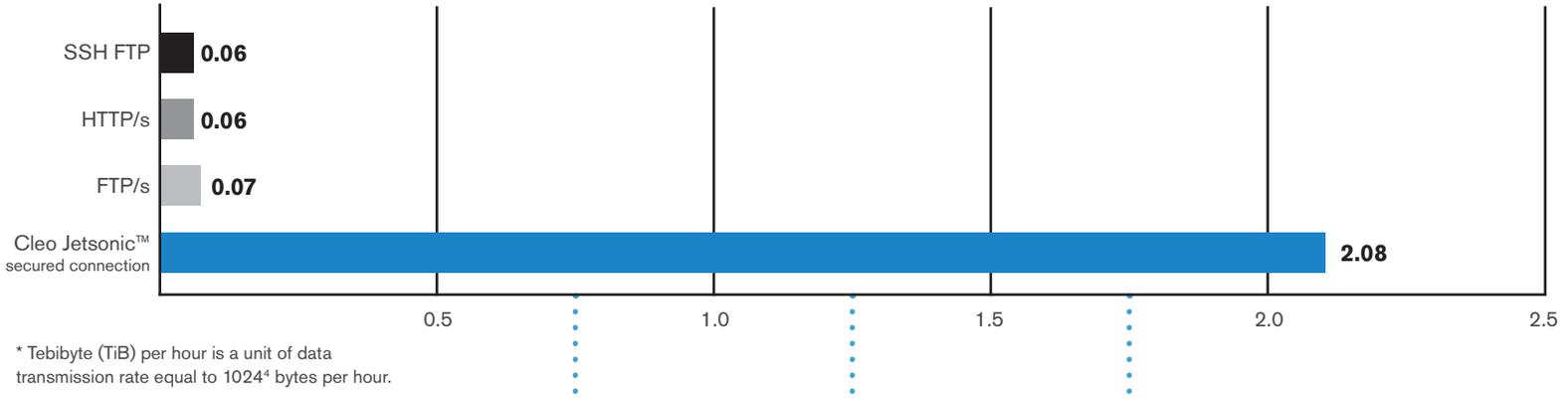
This leads to the need for a high-speed communication protocol that enables you to control point-to-point data acceleration. While the current offerings in the market provide you some capability based on hardware or UDP-based methods, Cleo Jetsonic provides its high-speed transmission protocol using a proprietary TCP-based software approach that incorporates key tenets, such as easy user management, state-of-the-art security capabilities as well as interfacing capabilities.

Parameters that affect the velocity of your data communication include:

- Network speed
- Latency
- Jitter
- Background traffic
- Packet loss
- File size
- Security requirements, such as encryption

Cleo Jetsonic Acceleration

(TiB* per hour)



Cleo acceleration advantages

- No network-imposed speed limitation
- Built-in security and reliability
- Multiple platform support
- More CPU-efficient than the alternatives

Bilateral deployment

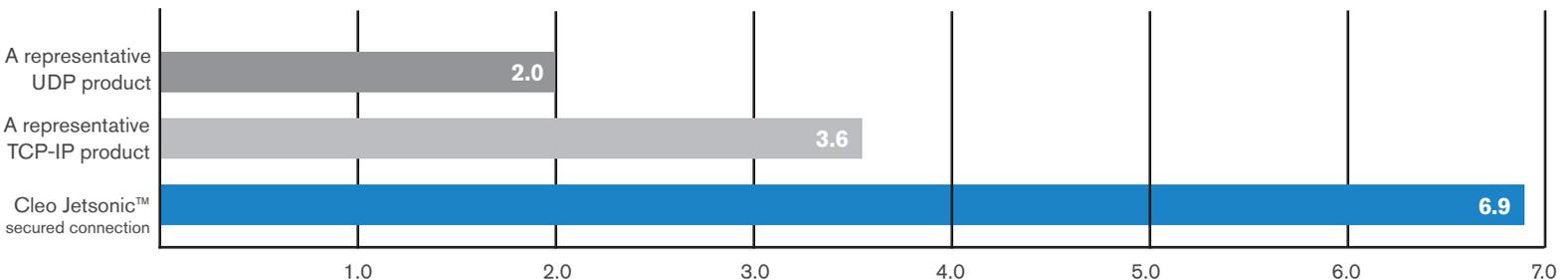
- Cleo-to-Cleo acceleration
- Mutual key-based authentication
- Check point restart
- Data integrity

Control your 'data supply chain' with Cleo Jetsonic

- Reduce transfer times for high volume as well as high-velocity transactions.
- Automate file exchanges between businesses as well as internal systems with complete auditability.
- Ability to extend back-end integration into any system with our powerful automation integration.
- Extend basic workflow orchestration functionality.
- Multi OS support across application platforms.
- Error connection, guaranteed delivery, and robustness, which enables business critical data transmissions.
- Cleo systems are able to support for multi-protocol interfacing.
- Allow data storage on premise or in public or private clouds.
- Offer a full audit trail of all file transfer activity.
- Provide optimum support for business SLAs with automated high-speed transfers.
- Transfer files securely without reconfiguring firewall settings using the security-approved TCP mechanisms.
- Scale to meet enterprise-wide requirements with fail-safe redundant architecture.

Move Data Up to 345% Faster

(GBs of data transferred in 90 seconds)



Move View Act™

MOVE data between points both within and beyond your firewall.

VIEW insights about the data that you are moving.

ACT earlier while confidently making data-driven decisions.

The Power of Move View Act™

Most integration solutions in the marketplace focus exclusively on moving the data. With Cleo solutions, you also get the ability to view and act on the data that runs your business in order to increase efficiency and eliminate downtime. Organizations can monitor and track performance metrics from both an IT and business perspective, as well as act on data via reports and dashboards based on your business needs. Today's "information overload" mode of business requires the ability to quickly filter the right information, detect changing conditions, and predict outcomes. By putting Move View Act power to work in your company, you are enabling faster and more informed decision-making to be a critical success factor.

While most high-speed solutions in the market are either hardware-based or based on lesser-used network technologies, with Cleo Jetsonic you get a software-based solution built on the TCP technology stack, which can be deployed as part of an enterprise shared architecture model. While transfer speed is a key component, Cleo Jetsonic is built on Cleo's secure data integration platform and allows you to monitor and track performance metrics from both an IT and a business perspective, as well as act on data via reports and dashboards based on your business. This delivers the comprehensive power of Move View Act for today's agile enterprise.

Business Benefits, Drivers	Cleo Solutions	Additional Details
Automation	<ul style="list-style-type: none"> ▪ Support for multiple protocols <ul style="list-style-type: none"> - HTTP/HTTPS - FTP/SFTP/FTPS - Ability to extend other protocols, including integration connectors such as HBASE and others ▪ Create automation commands for any directory/file <ul style="list-style-type: none"> - Put or Get Files from any location - Execute local system commands - Set or Clear file properties - Copy/Move/Replace/Delete files - Run SLA checks for files ▪ Execute a custom script 	<p>The Cleo Jetsonic solution is based on Cleo's enterprise-class managed file transfer (MFT) technology. Automation and multi-protocol support have been extended to provide a single platform for both human-to-human and human-to-system interactions.</p>
Monitoring and Alerting	<ul style="list-style-type: none"> ▪ Web-based UI level access control for all users ▪ System health monitoring views for application- and server-level KPIs ▪ SNMP traps for network operations center ticketing and alerting ▪ SNMP versions 1, 2, and 3 supported ▪ Email and text-based alerting for operations teams ▪ Track all system-level schedules and actions from the web UI ▪ Perimeter-level visibility for proxy application ▪ Protocol and network connection level monitoring <ul style="list-style-type: none"> - Ability to view historic data for trend analysis 	<p>The Cleo Jetsonic solution provides the monitoring modules and web-based user access out of the box with pre-built libraries that can be configured to business needs with out-of-the-box controls.</p> <p>Cleo monitoring assists with 99.95% application uptime as well as ensuring optimal application resource utilization for business-critical applications. This enables proactive issue resolution.</p>
Issue Resolution	<ul style="list-style-type: none"> ▪ Configurable monitoring and alerting ▪ Centralized log aggregation and support incident tracking within the product ▪ Centralized patch update process with customer specific patch release management ▪ Enable business-level SLAs for all file transfers, including static files and directories ▪ 92% issue resolution during tier 1 analysis 	<p>The Cleo Jetsonic solution enables enterprise-class issue identification mechanisms and patch update methods from the application UI. The product also enables non-invasive upgrades.</p>
Business Continuity Models	<ul style="list-style-type: none"> ▪ Intelligent proxy model with capabilities to route traffic based on application availability ▪ Application with intelligence to manage high-availability requirements internally with automatic synchronization ▪ Application with intelligence to manage disaster recovery requirements internally ▪ Out-of-the-box active/active configuration synchronization without third-party replications ▪ Application availability model in case database downtime or failure 	<p>Advanced support for high availability and disaster recovery that will enable completely automated synchronization with synchronization monitoring. The core application layer enables data loss prevention with event handling that is distributed across the synchronized application pools.</p> <p>(Continued on Page 5)</p>

Business Benefits, Drivers	Cleo Solutions	Additional Details
	<ul style="list-style-type: none"> ▪ Load balancer integration for the proxy components to enable global load balancing of application ▪ Intelligent routing to enable connection redundancies 	<p>The high-availability model enables redundancy in the proxy layer for network connections. The proxy and the core application are tightly coupled, which enables seamless HA and DR models to enable stringent business continuity SLAs.</p>
<p>Security</p>	<ul style="list-style-type: none"> ▪ Encryption at rest and encryption in motion ▪ Complete audit log of all activity ▪ IP-based tracking ▪ Configurable session time-out ▪ Time-based access controls ▪ Configurable user-level permissions ▪ User-level document tracking ▪ Perimeter layer security model with Cleo VLProxy ▪ Highly varied algorithm support for any platform compatibility ▪ Connection pool-based system with support for forward, reverse, and forward-reverse proxy ▪ Multi-protocol support for proxy integration 	<p>Award-winning support model with best-in-class security model in a single-platform solution.</p> <p>Note: These features are supported for Cleo Jetsonic as part of a comprehensive Cleo data integration solution.</p> <p>Support for Certificate Algorithms and Formats</p> <ul style="list-style-type: none"> ▪ RSA ▪ DSA ▪ X.509 (CER, DER) ▪ PKCS #7 (P7B) ▪ PKCS #8 (PEM, P8) ▪ PKCS #12 (P12) <p>Data Integrity Algorithms</p> <ul style="list-style-type: none"> ▪ MD2 ▪ MD5 ▪ RIPE-MD-160 ▪ SHA-1 ▪ SHA-2 (256, 384, 512) ▪ CRC-32 <p>Security Features</p> <ul style="list-style-type: none"> ▪ Data encryption for all protocol transmissions and files at rest ▪ No open inbound ports from the DMZ ▪ No data stored in the DMZ ▪ TLS and SSL connection security <p>Encryption Algorithms</p> <ul style="list-style-type: none"> ▪ RC2 (40, 60, 128) ▪ Blowfish ▪ CAST5 ▪ DES ▪ TripleDES ▪ AES (128, 192, 256) ▪ Twofish ▪ RC4 (40, 60, 128) <p>Validations</p> <ul style="list-style-type: none"> ▪ Validated to FIPS 140-2

Q. What is Cleo Jetsonic?

A. Cleo Jetsonic is Cleo's high-speed data transmission capability designed to rapidly move large files between endpoints and competing with other available fast data transfer technology solutions. Cleo Jetsonic adds this high-speed data movement capability to Cleo's proven midsize and large business secure data integration products, Cleo VLTrader® and Cleo Harmony™.

Q. Do I need Cleo software at both endpoints?

A. Yes, in order to use Cleo Jetsonic you must have Cleo software (Cleo VLTrader, Cleo Harmony or Cleo LexiCom®) as one of the endpoints. Cleo VLTrader or Cleo Harmony act as the hub, and the connecting “spoke” endpoint can be one of those solutions or also Cleo LexiCom.

Q. How does Cleo Jetsonic work?

A. Cleo Jetsonic is a proprietary file transfer architecture that behaves like a “push protocol,” meaning when a file is ready to transfer, Cleo software pushes it to the receiving server. Push technology provides two key benefits over other methods:

- 1) It is an instant service for transmitting information
- 2) It is more efficient in terms of initiating server connections

Because Cleo uses proprietary push architecture, both the sending and receiving software must be a Cleo product — Cleo LexiCom, Cleo VLTrader or Cleo Harmony. Both endpoints of Cleo software will act as a client/server depending on whether the software is sending the file or receiving it.

Additional features with Cleo Jetsonic include Data Integrity Checking and File Check Point Restart. Data Integrity Checking guarantees the file sent was transmitted in its completed state, and Check Point Restart provides a higher delivery success rate for high-latency transfers or extremely large files. As these features will consume additional bandwidth, we have turned them off by default but they can be enabled by the customer.

In order to maximize file transfer, we break the original file into smaller chunks and transfer the smaller chunks simultaneously across virtual TCP channels. The sending server can be configured to throttle maximum bandwidth and can be set to limit the number of simultaneous transfer channels. Additionally, the receiving server also can be set to limit how much bandwidth is consumed during the transmission; this avoids the challenge of utilizing all of the bandwidth at a remote location.

Q. What is the difference between UDP and TCP (Cleo Jetsonic)?

A. TCP guarantees delivery of transferred packets; however, there is typically more overhead to support this. UDP just sends out the packets — there is no guarantee the packets were received or even if they were received in the correct order. This puts a lot of overhead on the receiving system to organize the data and to trigger resending of any missing data. Because UDP needs the receiving server to trigger resend commands, it often becomes problematic over high-latency networks. Specifically, one leading UDP-based high-speed product is single-threaded and maxes out around a gigabyte per second. Despite additional bandwidth availability, this UDP-based product was not able to transfer any faster. Cleo Jetsonic, which runs over TCP, does not have this limitation and can take advantage of full bandwidth.

Q. Does Cleo Jetsonic work with our Active/Active architecture and Cleo VLProxy™?

A. Yes, all of Cleo's products and architectures are compatible with Cleo Jetsonic. There are no special configurations required to enable Cleo Jetsonic into existing Cleo software, as long as the customer is on version 5.2 or higher.

Cleo

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