Technical Review

Lyve Mobile from Seagate: Edge Storage and Data-transfer-as-a-service

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Abstract

This ESG Technical Review documents Lyve Mobile from Seagate's ability to reduce operational complexity and risk, increase business agility, and save time and money for customers.
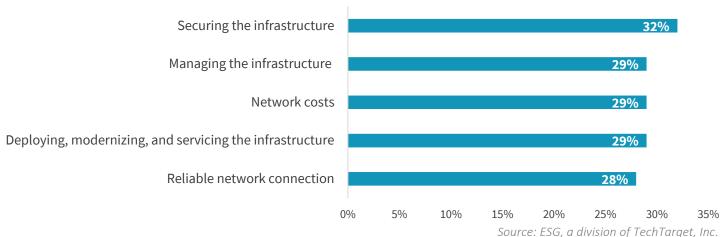
The Challenges

It's no secret that data is growing at exponential rates, and organizations are tasked with storing, protecting, and managing these large volumes. But this data doesn't always stay in one environment. Between on-premises, edge, and cloud locations, it is constantly on the move. Moving data between distributed environments helps organizations to maximize the value of its data. Real-time insights and analytics can be gathered at the edge, and then the data can be sent to a public cloud for long-term trends analysis and storage, or to an on-premises storage unit if the data is highly sensitive or geographically tied. And while this mobility provides opportunities for organizations, such as the ability to gather real-time analytics at the edge and store longer-term trends in the cloud, it also poses new obstacles for them.

Mobilizing data across distributed environments can complicate access-level requirements, increase time to insights, cause delays, incur expensive ingress and egress fees when moving across networks, and add security challenges. In fact, respondents to an ESG research study reported that securing the infrastructure (32%) and managing the infrastructure (29%) were top challenges in managing data at the edge.[1] For the 79% of organizations that reported supporting a substantial edge infrastructure environment,[2] there is a need for a solution that can securely store and move data across edge and distributed environments, quickly and efficiently, while minimizing costs.

Figure 1. Top Five Challenges Managing Data at the Edge

What are your organization's biggest challenges managing its data and supporting infrastructure at the edge? (Percent of respondents, N=275, multiple responses accepted)

Challenge	Percent
Securing the infrastructure	32%
Managing the infrastructure	29%
Network costs	29%
Deploying, modernizing, and servicing the infrastructure	29%
Reliable network connection	28%

Source: ESG, a division of TechTarget, Inc.

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[1] Source ESG Survey Results: *Hyperconverged Infrastructure 2.0,* October 2021.
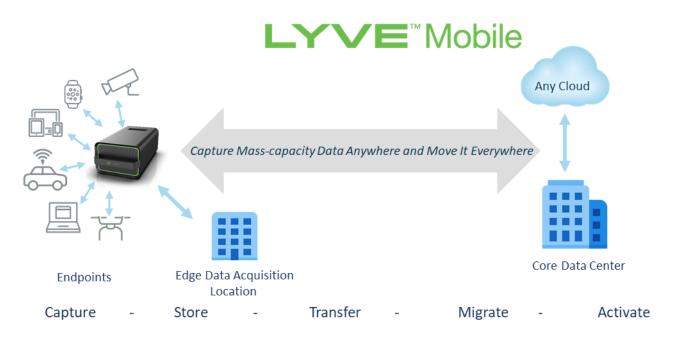
[2] Ibid.

There are numerous use cases across industries that rely on the ability to securely store and quickly move data, including media and entertainment, commercial transportation, autonomous vehicle development, seismic analysis, and healthcare.

The Solution: Lyve Mobile from Seagate

Lyve Mobile from Seagate is an edge storage and data transfer solution, consumed as-a-service, that enables organizations to physically move and activate large data sets from the edge to the cloud in a simple, secure, and efficient way. Enterprises can capture data in widely dispersed environments, store it at the edge, and move it to where it is needed without network dependencies. By network dependency, we mean that network availability is not needed to use a direct-attached mobile storage device to quickly move data and data transfer speed is not limited by an internet connection. The Lyve Mobile solution allows for on-demand consumption delivered as-a-service, so customers order and pay only for the devices they need, when they need them.

Figure 2. Lyve Mobile from Seagate Data-transfer-as-a-service

Source: ESG, a division of TechTarget, Inc.

Other key features include:

- **Data Capture**: Ruggedized, with high environmental standards for robust edge applications so customers can confidently deploy storage in the field and capture data at the source.
- **Secure Physical Transport**: Simple, secure transfers with in motion and at rest AES 256 bit encryption and robust physical security with tamper-proof screws and tamper-evident safety seals that allow organizations to safely move data between different environments and start putting it to work. Lyve Mobile devices both connects directly to an endpoint device via USB or Thunderbolt and connects to an enterprise Data Center environment leveraging SAS/ iSCSI/ Fibre channel compatibility using the rackmount receiver.
- **Flexible Right-sized Subscriptions**: When jobs/projects' storage requirements are unpredictable, or projects scale up or down over the course of the year, a Lyve Mobile subscription can grow or contract as the needs change, on demand.
- **Moving from CapEx to OpEx**: organizations get a low cost of entry benefitting cash flow, no asset disposition, rapid refresh of IT equipment, and enjoy simplifed device management.

ESG Technical Review

In a hands-on review of the solution, ESG looked at ease of operation and how Lyve Mobile can increase business agility and reduce risk.

Reduced Operational Complexity

First, ESG examined Lyve Mobile with the goal of determining how it could reduce operational complexity in data management. ESG walked through the process of creating a Lyve Management Portal account, creating a project, selecting a service plan, and ordering devices. The entire process was intuitive and easy to follow, taking just a few minutes to complete. The Lyve Management Portal is also used to order data transfer devices in right-sized capacities and configurations; manage billing; and manage, copy, move, and return devices.
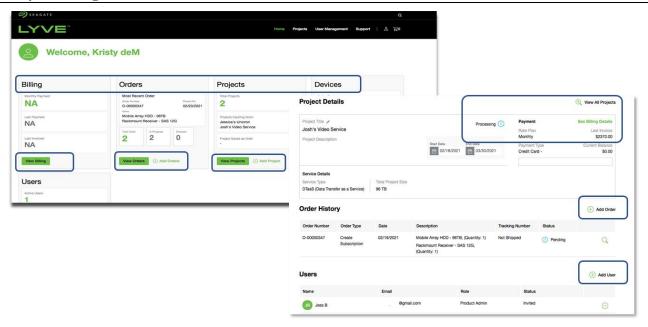
Figure 3. How Lyve Mobile Works

Source: ESG, a division of TechTarget, Inc.

Customers can easily create additional accounts, manage subscriptions, add/remove users as needed, and assign user permissions as seen in Figure 4.

Figure 4. Lyve Management Portal

Source: ESG, a division of TechTarget, Inc.

Scalable, modular, and flexible data transfer devices:

ESG also validated that Lyve Mobile is simple to use and is designed to reduce transfer time with no network dependencies. The solution includes features such as:

- Mobile Shuttle: Ingest, transfer, and transport data securely within a ruggedized, compute form factor. Mobile Shuttle has three different modes of operation: Direct Attach mode for file transfer, Network Attach mode for file share and transfer, and Ingest Mode to pull in content from external devices.
- Mobile Array: Rugged, portable, and rack-able secure storage designed to integrate within edge and enterprise data management workflows.
- Mobile Rackmount Receiver: Rapidly and seamlessly ingest massive data sets, stored on Lyve Mobile Arrays, into target devices or systems to reduce cost and management complexity.
- PCIe Adapter and Mount: The PCIe adapter is a copper PCIe connection that directly connects to a PCIe port in a server for faster transfer speeds, the Mount is an industrial-grade housing for the Mobile Array.

Figure 5. Lyve Mobile Storage Solutions

Shuttle
16TB HDD
8TB SSD
USB-C (x2), 10GigE (x1)
3-in-one device
e-Ink screen
SED AES 256-bit encryption
TCG Opal encryption
Hard shell case included

Mobile Array
60TB, 96TB (HDD)
46TB, 92TB (SSD)
Fully enclosed 6-bay array
Lyve USM High Performance PCIe gen 3.0
Thunderbolt 3, USB-C
Up to 6 GB/s throughput
TCG Enterprise encryption
SED AES 256-bit encryption
Hard shell case included

Rackmount Receiver
2 x independent slots for LDMA
SAS, Fibre channel, iSCSI
2 x management network port
Redundant power
Roller systems for easy slot-ability
Soft close locking mechanisms
4U, 19-inch Rack Standard Depth

PCIe Adapter and Mount
Custom designed industrial mount directly attaches to vehicle (or other), dongle locks into mount securely connecting Mobile Array
PCIe Ports for SFF-8644 SAS3 1M cables
8 x PCIe Gen3 lanes for WIN10 and Linux servers

Managed with Lyve Client Software and the Lyve Management Portal.

Source: ESG, a division of TechTarget, Inc.

Lyve Client software is used to manage the Lyve Mobile Array and helps to configure, set preferences, and manage storage workflows. Most importantly it is the link between the Lyve Management Portal user account and the device, used to securely unlock the array for use.

> ℹ️ **Why This Matters**
>
> Almost half (46%) of surveyed organizations believe IT environments to be more complex than they were two years ago, according to ESG research. The same study revealed that this increased complexity can be attributed to an increase in remote workers (49%), an increase in the number and type of endpoint devices (39%), higher data volumes (35%), and other catalysts.[3] The adoption of a multi-cloud approach also contributes to this increased complexity and leads to a need for greater movement of more data between different cloud locations as the data is needed to perform different functions.
>
> Data is increasingly distributed across environments and organizations need a solution that can reduce complexity and increase manageability. ESG validated that Lyve Mobile from Seagate addresses these challenges by providing organizations with a simplified experience in storage management and data transfer.

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[3] Source: ESG Complete Survey Results, *2022 Technology Spending Intentions Survey*, November 2021.
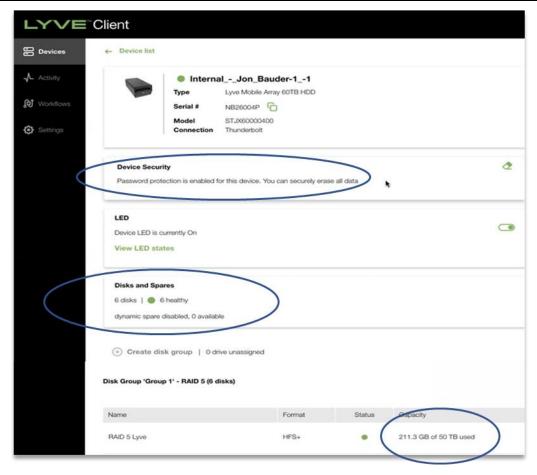
Increased Business Agility and Reduced Risk

With increased remote operations, edge and IoT devices, and the adoption of multicloud strategies, data is only going to become more distributed. Organizations will need a way to maintain operations and keep this data secure.

Faster Storage Availability:

ESG validated that, with Lyve Mobile, customers can have their data when they want it, where they want it. The combination of the ability to consume data transfer as-a-service with fast data transfers compared to traditional methods and technologies allowed customers to begin using data in a matter of minutes with no need to forecast storage capacity and no tiering. ESG noted how customers can move masses of data quickly and securely with Lyve Mobile.

Figure 6. Lyve Mobile Storage Availability

Source: ESG, a division of TechTarget, Inc.

Faster time to business value/insights:

With Lyve Mobile, customers can experience faster time to value, as a result of faster movement of large amounts of data than usually possible over the internet to locations in which they can be best analyzed and leveraged. Lyve Mobile also offers its customers up-to-date status and information on all devices, activities, and configurations, and makes them available for analysis and faster insights.
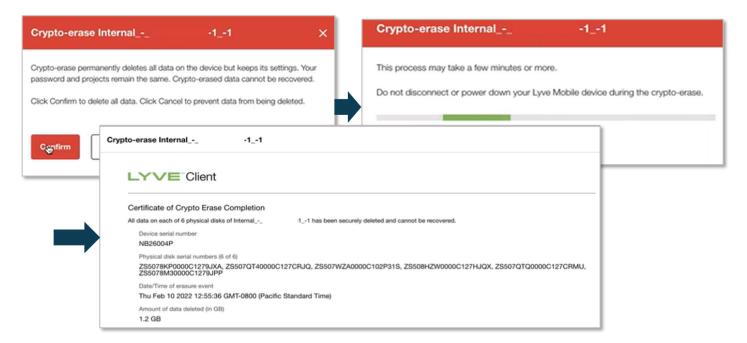
Secure:

With data security concerns of CIO's and Data Compliance officers alike concerning moving data across multiple locations, ESG noted how Lyve Mobile takes data security seriously, offering its customers peace of mind that their data is protected at every level:

- SED (self-encrypting drives) with off-appliance encryption keys plus a government-grade crypto-erase for when projects are complete.
- Online-offline user management with IT admin permissions, field user permissions, and remote field permissions.
- For physical transfer, Seagate uses a pelican case with lock, tamper-resistant screws, and tamper-evident safety seals to enable easy confirmation of unauthorized access attempts.
- High availability with drive data erasure redundancy.

Figure 7. Lyve Mobile Security

Source: ESG, a division of TechTarget, Inc.

ⓘ Why This Matters

According to ESG research, one third (33%) of organizations are expecting their active data storage environments located at the edge to grow by more than 50% annually and nearly a third (32%) reported that securing infrastructure was their greatest challenge managing data and supporting infrastructure at edge locations.[4] With this explosive growth comes a need for solutions that can help organizations to manage the increased levels of distributed data and increase business agility. Security concerns necessitate a solution designed with multiple layers of physical and digital safeguards.

ESG validated that with Lyve Mobile, organizations can take advantage of fast and secure mass data movement across distributed environments, including the edge. This agile movement helps organizations to gain faster insights in real time and use them to help make better business decisions. Lyve Mobile offers multiple layers of protections, from ruggedized tamper-resistant and tamper-evident cases to self-encrypting drives with government-grade crypto-erase and granular user/admin permissions.

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[4] Source ESG Survey Results: *Hyperconverged Infrastructure 2.0*, October 2021.

Time and Cost Savings

ESG analyzed a number of use cases to evaluate the potential time and cost savings provided by Lyve Mobile services using a data transport modeling tool developed by Seagate. The tool considers the capacity to move, source and destination locations, available transport options, local storage connectivity, and bandwidth or time constraints applicable to the use case.

Predictable Recurring Costs:

ESG examined the simplicity, flexibility, and efficiency of the Lyve Mobile subscription model. Customers pay only for the devices they need and when they need them. ESG found the solution to be easy to use and scale. The number of devices and in turn, capacity, can scale up or down with predictable costs and flexible as-a-service consumption.

One way that Lyve Mobile reduces customers' TCO is by helping them avoid upfront purchase of large, expensive storage infrastructure to serve needed capacity at edge locations, technology upgrades, maintenance fees, overhead, time, and skilled resources to manage the storage environment. Organizations can pay as they go, only paying for what they actually consume in the moment or by leveraging an annual subscription. This as-a-service solution provides long-term savings to organizations that need to capture and move data across diverse edge, data center, and cloud workflows by allowing them to move from a CapEx to an OpEx model.

ESG examined multiple use cases across industries to evaluate the time and cost benefits provided by Lyve Mobile services compared to network data transfer. Here are the global assumptions we made for each use case:

- Each customer must move the data within a specific time constraint.
- Customers would need to use their network connectivity for activity other than large data set transfers.
- Customers would add additional network bandwidth as needed to meet their time requirements.
- Not all locations have high-speed network availability and many are reliant on satellite or cell service.

In addition, for each use case, the criteria considered included the distance between source and destination, the size of the data set per transfer, how quickly the transfer must complete, the frequency of transfers, and available connectivity.

Media and Entertainment

In this example, a production company is shooting a film in New York City with editing and production facilities in Los Angeles, California. At the end of shooting, they want to move 250TB of data from New York City to Los Angeles in 48 hours or less. Multiple 10Gbps internet connections can be acquired for connectivity. According to ESG's analysis, Lyve Mobile could make the transfer within the time constraints at a cost savings of 68% compared to network transfer over multiple 10Gbps connections.

Seismic Analysis

In this example, a natural gas provider needs to move 123TB of data collected each day from sensors distributed along a transcontinental series of pipelines from an aggregation point in rural Texas to Washington state at a distance of 1,818 miles. This is a sustained operation that would move up to 6.3 petabytes per year. According to ESG's analysis, Lyve Mobile could make the transfer within the time constraints, at a cost savings of more than 20% compared to multiple 1Gbps connections.

Autonomous Vehicle Analytics

In this example, an auto manufacturer is collecting 1PB of data per day from a fleet of experimental autonomous vehicles. In order to be able to complete the transfer each day, they are filtering the raw data heavily before transferring a smaller subset—300TB, in our example—to their data center. They would prefer to move as much of that raw data to their data centers as possible. According to ESG's analysis, Lyve Mobile could transfer more data within the time constraints— calculated at 500TB daily—at a cost savings of 54% compared to multiple 10Gbps connections.

Commercial Transportation

In this example, an international airline performs maintenance on aircraft that generates 1TB of data for each engine during each flight. They need to transfer more than 200TB of data per day over 1,085 miles, from their hub in Colorado to their data center in Ohio. According to ESG's analysis, Lyve Mobile could make the transfer within the time constraints, at a cost savings of 78% compared to multiple 10Gbps connections.

In every use case ESG examined, two factors had the greatest impact on cost savings, The more data an organization needed to move, and the tighter the time constraints, the larger the advantage provided by Lyve Mobile.

Why This Matters

Many organizations are moving from CapEx infrastructure purchasing to OpEx in an effort to scale more easily and to benefit financially from paying only for what they use. In fact, 82% of organizations currently procure on-premises data infrastructure via a consumption-based model, or plan to in the next 12 months.[5]

ESG validated that Lyve Mobile from Seagate provides a cost-effective option for large data transfer requirements. For time-sensitive transfers, ESG saw savings when moving as little as 100TB compared to 10Gbps fiber. In fact, the more data that organizations need to move, the more money they will save.

Instead of one large upfront cost that may drain their budget all at once, they can plan for monthly costs that match up with their storage use. This way, they don't waste money on too much infrastructure each month or get caught short with too little to meet their requirements.

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[5] Source: ESG Research Report, *Data Infrastructure Trends*, November 2021.

The Bigger Truth

The volume of data that organizations must manage is growing, while also becoming more distributed, thanks largely to the growth of connected devices—from sensors to autonomous collection end points— that are creating much larger files and much larger data sets. Much of this data is collected at edge locations and In addition to simply needing storage that can keep up with the velocity of data being collected, these edge locations are often in remote or rural locations without the benefit of high-speed connectivity. When organizations need to move extremely large quantities of data, whether across town, across the country, or across the world, it has to happen easily and efficiently, without affecting business operations or agility.

Organizations also want to be able to not only optimize but predict costs. For this reason, many are turning to consumption-based models, which allow them to pay for IT services more predictably. ESG validated that Lyve Mobile from Seagate helps organizations to simplify the data management process for large data sets in distributed environments, securely and efficiently, while keeping costs predictable. It can help customers to:

- Reduce operational complexity: With the help of the Lyve Mobile Management Platform, organizations can easily update and manage their subscriptions and order devices for data transfer quickly, on-demand to simplify fleet management, upgrades, user management, and security , while reducing downtime and limiting upfront budget investments.
- Increase business agility and reduce risk: Lyve Mobile helps organizations to capture data at the edge, store it there, and move it to where it is needed without dependencies on network availability or bandwidth to quickly move data.
- Save time and money: By adopting a consumption-based model, organizations can pay only for what they use and experience more predictable costs.
- ESG's analysis of data transfer costs across industries for multiple use cases found that organizations can transfer huge volumes of data, in less time, with calculated savings of up to 78%.
- In analyzing the use cases in detail, ESG confirmed that the more data an organization needs to move, and the tighter the time constraints, the larger the savings they can expect.

Seagate has developed a data transfer time savings calculator that is publicly available for organizations to use to calculate their own potential returns. Click here to learn more.

If your organization is looking to streamline the movement of large quantities of data across distributed environments, efficiently, securely, and with predictable costs, then a serious look at Lyve Mobile from Seagate would be a smart move.