

Alcatel-Lucent Rainbow™

Solution Brief – Storing Content on Customer Premises

Alcatel-Lucent Rainbow™ is a cloud-based, enterprise-grade, Unified Communication as a Service hybrid cloud approach. Rainbow offers a global solution for collaboration and communications while addressing the specific needs of ALE's end-customers. Whether it is a small business requiring cost-effective mobility or a multinational organization that wants a single standard for unified communications across their complex IT, broad geography and business process environment - Rainbow can address their UC needs.

Among its various features, Rainbow offers a file sharing mechanism that allows users to share any type of document with other individual Rainbow users or companies and also with other users outside of Rainbow boundaries.

File sharing

The Rainbow file sharing service provides a wide range of capabilities such as:

- Exchanging any type of file between multiple peers, in a one-to-one or grouped manner through Rainbow bubbles.
- Uploading resources to be publicly available through a dedicated web link with URL access duration control to prevent potential leeching attacks.
- Extending conversations by including thumbnail images, Office documents or conference call audio recordings.
- Organizing and sorting documents at user or company level.

Rainbow Cloud file sharing service provides each “Essential” and “Business” service plan user with a 1 GB private storage, which can be upgraded up to 20 GB for Enterprise-level users, all with an unlimited bandwidth.

ALE guarantees users' legal data privacy compliance by enforcing security and access-control mechanisms on each file and ensuring geographic isolation of Cloud storage endpoints. Companies' data are then confined in their regions of belonging, ALE having datacenter premises in Canada, France, Germany and Singapore. ALE ensures data retention and availability through an encrypted triple geographic redundancy, while guaranteeing region data-boundaries.

Standing on the Shoulders of Giants with OpenStack Swift

Rainbow heavily relies on mature enterprise-grade Open Source software and standards API. ALE's file sharing service makes no exception, by leveraging OpenStack Swift as its storage endpoints technology. The OpenStack Object Store project, known as Swift, offers cloud storage software so that one can store and retrieve data with a simple API. It's built for scale and optimized for durability, availability, and concurrency across the entire data set. Swift is ideal for storing unstructured data that can grow without bounds. Swift is a scalable redundant storage system. Objects and files are written to multiple disk drives spread throughout servers in the data center, with the Swift responsible for ensuring data replication and integrity across the cluster. Storage clusters scale horizontally simply by adding new servers. Should a server or hard drive fail, Swift replicates its content from other active nodes to new locations in the cluster.

Rainbow leverages multiple geo-isolated Swift endpoints, on various locations, providing a per-company endpoint selection mechanism. Swift is only a backend to Rainbow exposed services, preventing native Swift clients to connect to Rainbow for security purposes, and allowing us to provide fine-grained access-controlled levels.

For more information about the Rainbow Cloud Services please visit our website:

www.openrainbow.com



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Enterprise

Security by design

Since data is a customer's most valuable asset, ALE has maximized its security standards. Despite OpenStack Swift being secure by nature, Rainbow clients (native and SDK-issued ones) never ever access Swift endpoints directly, neutering the needs for clients to have server-side credentials access.

Rainbow service acts as a seamless proxy between clients and ALE's storage endpoints. Each and every file access is ensured through highly secured HTTPS TLSv1.2 transaction through a dedicated ultra-scalable micro-service.

ALE's server-side service proxy stores and retrieves user data in the right Swift location, based on the user and/or company profile. The ALE server manages Access Control Lists (ACL) to determine file's ownership, the list of Rainbow users that can have access to (either in read-only or read-write modes) and the various quotas and data retention policies that are in place. The ALE proxy also computes unique access URLs, with possible time limitation.

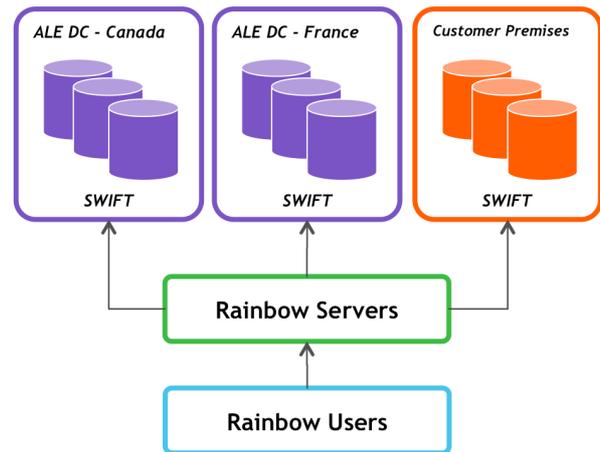
Each and every resource stored over OpenStack Swift endpoints are then only accessible through ALE's Rainbow-exposed set of public REST APIs. ALE's security policy is for your files to remain server-side encrypted towards Rainbow application servers. This ensures that your data will always remain at your disposal, while being secured by ALE's protection mechanisms in place.

Securing your sensitive data

Through Rainbow's CPaaS business model, ALE offers its various customers a way to leverage the Rainbow Cloud services to build various third-party applications on top of the ALE platform, providing capabilities to build your very own services on top of Rainbow. Some business verticals such as the banking industry, healthcare-related environments or governmental institutions may however require an additional level of hardened security when it comes to securing their sensitive data.

To cope with such requirements, Rainbow offers companies the ability to use their privately hosted Swift-compatible endpoint. When configured accordingly, the Rainbow Swift proxy will then use each company's Swift endpoint instead of ALE's to store its data, as illustrated next.

System Administrators may rest at peace knowing that only Rainbow proxy will ever connect to their Swift endpoint, guaranteeing that access credentials will only ever be exchanged through secure server-to-server transactions.



Setting Up Your Private Storage

Customers requiring their data to be stored on their private premises must then set up a public, Internet-accessible, OpenStack Swift endpoint, bound to OpenStack Keystone authentication system, as to allow Rainbow proxy to seamlessly connect to their premises network. OpenStack is free of charge and because Swift uses software logic to ensure data replication and distribution across different devices, inexpensive commodity hard drives and servers can be used on production-systems.

Once available, Rainbow must be configured by company's admin to use the various providers' information (Swift and Keystone access URLs, tenant identifier and name, user credentials and optional region) and ALE proxy will let the magic happen. Source IP filtering can extend additional security measures, as only Rainbow servers will ever connect to Swift customers premises.

Conclusion

Rainbow offers companies a unique way to ensure they keep their sensitive data in their private dedicated premises, by leveraging OpenStack Swift industry-standard APIs. This allows mission-critical environments' administrators to keep a full control of their data, also breaking down any storage quota limitation in place. Data responsibility is however fully offloaded to customers who become fully in charge of the underlying security, storage scalability, data backup and replication management policy and Internet bandwidth costs and capacity.

(October 2018)