MEETING DATA PRIVACY AND SOVEREIGNTY CHALLENGES IN THE CLOUD ERA

EQUINIX WHITE PAPER

Equinix.com
## Introduction .............................................................................................................3

Data privacy and data sovereignty issues faced by organizations...........3

Why data security is not the same as privacy..............................................3

Meeting regulatory requirements in the cloud.........................................4

### Traditional solutions for addressing privacy and sovereignty issues .......5

NetApp Private Storage for Cloud and Platform Equinix: Freedom to connect, with control .................................................................6

Built-in security and privacy compliance .................................................6

Leveraging the data center to address data privacy and data sovereignty.................................................................7

How NPS for Cloud is deployed ................................................................8

Key solution capabilities...........................................................................8

### How Equinix supports NPS for cloud..........................................................9

Using Equinix Cloud Exchange.................................................................9

Security implications of Equinix data centers......................................10

Additional benefits to organizations.....................................................10

### Helping to take the worry out of cloud....................................................11
Data privacy and data sovereignty issues faced by organizations

Businesses today understand the scalability, flexibility and economic benefits of the cloud. Most enterprises are using cloud infrastructure or cloud applications in the form of software as a service (SaaS). Many companies even have mandates to move a percentage of workloads into the cloud. However, cloud customers are still subject to stringent requirements for their data, including privacy and sovereignty.

Why data security is not the same as privacy

Companies can have world-class security that builds a fortress around their data but still not meet privacy requirements. Privacy requirements are not just about cyberattacks, but involve the legal collection, use, sharing, storage and transfer of data—especially personal data. In addition, many countries have data sovereignty regulations that prohibit personal data from moving outside the country where it originated unless companies adhere to their data privacy legal obligations.

The data protection laws can vary by region or country, making it time-consuming and expensive for organizations to keep track of them and remain in compliance. The laws can also change and become even more restrictive, as is the case with the new EU General Data Protection Regulation (GDPR).
“The legal and regulatory aspects of data privacy compliance are changing at a very rapid rate,” noted Sheila Fitzpatrick, chief privacy officer for NetApp and an attorney and data protection expert, in the recent IDG webcast, *Data Privacy: How Compliant is Your Data in the Cloud?* “With the introduction of the new General Data Protection Regulation, we’re seeing greater requirements and certainly greater sanctions and penalties for companies that do not comply.

“One of the most important issues around GDPR is that it is what’s called extraterritorial—meaning it will apply to any organization or any legal entity anywhere in the world, regardless of whether or not they have a presence in Europe,” said Fitzpatrick. “If they have access to the personal data of a European citizen; if they provide goods and services to European citizens; if they host data on behalf of European companies that contain European Union citizens’ data—companies will have to comply with GDPR. So it’s not just an EU law. It’s not just an EU-U.S. law. It is now a global regulation.”

For these reasons, considerations about where data is placed, the flow of the data and who has access to that data can be a barrier to fully leveraging cloud-based resources such as analytics, compute and storage.

**Meeting regulatory requirements in the cloud**

To meet regulatory requirements, cloud customers must be able to audit compliance and show it is within their control, yet cloud providers vary in whether and how well they provide this service for their customers. Organizations may be required to know where their data is located at all times—which can be difficult when cloud providers operate multiple data centers and use them as a pool of compute and storage resources. And in highly regulated industries, organizations may also need to maintain the ability to reproduce lost data under any circumstances—including loss of connection to the cloud provider.
Organizations need ways to address these data privacy and sovereignty challenges. But they must do so without undermining the flexibility, scalability and economy that attracted them to the cloud and without sacrificing the necessary application performance. Options available to organizations include:

• **Keeping data in an on-premises private cloud**: This option maintains the organization’s data stewardship and control but limits the ability to leverage cloud economics and flexibility. Private cloud services do not offer the low-cost commodity compute power and easy scalability of public cloud services. Scaling requires the purchase of additional capital resources, making it cost-prohibitive, and those resources could go unused during normal day-to-day operations.

• **Moving data to the public cloud to support cloud workloads**: This choice fully leverages benefits such as cloud compute while providing great flexibility and scalability. However, public cloud and SaaS require putting data into the hands of external providers. When using these services, it is not always clear where the data is stored and replicated, which can make it difficult to ensure controls are correctly applied and attested.

• **Locating data at the edge of the cloud**: This option can provide the benefits of cloud economics and flexibility combined with control over data location and privacy. Meeting performance requirements in this scenario depends on the latency of connections between the data storage and cloud providers. Locating data at the cloud edge enables organizations to use a pay-as-you-go public cloud model to scale for peak demand while still maintaining certainty and control over where their data resides.
NetApp® Private Storage (NPS) for Cloud and Platform Equinix™ give you the flexibility to simultaneously connect to multiple clouds while maintaining control of your data.

NPS for Cloud is a family of enterprise storage solutions that lets organizations use multiple clouds and maintain complete control of their data on dedicated storage systems from NetApp. Together with Platform Equinix, NPS works by locating data at the edge of the cloud—where cloud service providers (CSPs) locate their edge nodes—and uses innovative technology to enhance flexibility and performance. The foundation of the solution is dedicated private NetApp storage, whether that storage takes the form of NetApp All Flash FAS, FAS, FlexPod®, NetApp FlexArray®, NetApp SolidFire® or NetApp E-Series arrays.

**Built-in security and privacy compliance**

By combining compute in the cloud with NetApp technology for private storage, NPS for Cloud enables enterprise customers to leverage the cloud along with NetApp security and compliance. NetApp storage products include integrated data protection features such as NetApp SnapLock® technology and NetApp disk and/or volume encryption, as well as space-efficient NetApp Snapshot® copies for backup and rapid recovery.

NetApp is also in full compliance with the data protection laws of every country in which it does business. The company has been identified by data protection agencies worldwide as a “model of excellence” for global data privacy compliance.
Leveraging the data center to address data privacy and data sovereignty

Data sovereignty challenges are addressed by NetApp’s strategic alliance with global data center and interconnection provider Equinix. Customers’ NetApp storage is located in Equinix International Business Exchange™ (IBX®) data centers, where CSPs are choosing to locate their edge nodes to take advantage of the network-rich environment Equinix is known for providing (Figure 1).

Establishing secure, dedicated, high-speed connections to one or more clouds is accomplished through a private fiber cross-connect within Equinix. This method makes the connection process quick and easy while also offering the lowest-possible latency (or round-trip delay) for data to access these clouds.

At the same time, customers retain complete control of their data, which remains on their NetApp storage in their cage within an Equinix data center. And with more than 175 data centers worldwide, Equinix enables customers to specify the location of their data to help meet sovereignty requirements.

Figure 1. NPS for Cloud in an Equinix IBX data center
The NetApp storage is deployed at the cloud edge in an Equinix IBX data center cabinet or cage that the customer has purchased from Equinix. Customers can have a private cage, or they can have a secure cabinet in a shared cage with a top-of-rack demarcation panel. If customers need to scale up, they can add more NetApp hardware and supporting environment just as they would inside their own data center.

The solution requires network equipment that supports Border Gateway Protocol (BGP) routing and Gigabit Ethernet (GbE) or 10GbE single-mode fiber (SMF) connectivity. This equipment includes a Layer 3 networking switch—or two for high availability. NetApp software has a graphical interface and management console. All of these components are connected and configured to provide a scalable architecture that supports a variety of application workloads.

To connect this NPS deployment back to their existing IT infrastructure, customers can choose from flexible reference architectures that include a Performance Hub™ and a separate Data Hub™ (Figure 2). The Performance Hub allows enterprises to bring the edge of their network into Equinix and connect it to the Data Hub and NetApp storage. NetApp recommends that the Performance Hub and the Data Hub be located next to each other within the same Equinix facility. The two hubs function underneath one network architecture that Platform Equinix uses to connect customers to cloud providers.

Key solution capabilities

Different NetApp storage products share a common data platform, making it easy for customers to move data between NetApp storage on public cloud, private cloud and multicloud. Customers can connect to hyperscalers such as Amazon Web Services, Microsoft Azure, SoftLayer (an IBM company) or other cloud providers’ compute facilities while maintaining the ability to control and manage their data.

Customers can take advantage of NetApp data replication by connecting their NPS for Cloud storage within Equinix to their existing NetApp storage on their premises. This becomes quick and easy with the Equinix Performance Hub and NetApp SnapMirror® data replication software. Customers can use this capability to implement new disaster recovery (DR) strategies with NPS as a secondary data location and connected clouds providing the secondary IT infrastructure capabilities. In this way, customers pay only for DR cloud usage if it is needed.

Why NPS is the best solution option

NPS for Cloud is an agile, multicloud solution that lets customers balance a public cloud and private resources to optimize business outcomes.

The solution allows organizations to:

- Adjust cloud resources on demand and dynamically optimize both operational and capital expenses
- Easily provide access to data in private resources and the public cloud
- Improve cost efficiencies for a variety of performance workloads
- Maintain complete data control, compliance and mobility
- Implement a DR strategy that achieves substantial cost savings by paying for cloud computing power only when it is needed

Used together with Platform Equinix, NetApp makes locating data at the edge of the cloud the most advantageous and efficient choice for fulfilling data privacy and sovereignty requirements.
Equinix supports NPS by providing the critical connections between NPS and cloud providers. Customers who deploy NPS for Cloud at Equinix data centers can provision a private fiber cross-connect to the Equinix Cloud Exchange and build virtual private connections to as many clouds as they would like. A portal allows customers to make changes to these connections within minutes, enabling IT departments to provide the most flexible multicloud options possible for their company. Automated provisioning and advanced service orchestration greatly simplify the process of interconnecting storage to cloud services.

Using Equinix Cloud Exchange

Cloud Exchange is an application programming interface (API)-driven platform, with Equinix performing the “meet me” function between the customer and the cloud provider. This platform allows customers to rapidly spin up connectivity to provider clouds, just as they would to any native cloud resource. The Cloud Exchange platform is well-suited to customers who want to take a hybrid, multicloud approach, simultaneously connecting to multiple clouds and programmatically adding or removing new cloud services.

Making the comparison: Equinix or a customer data center

Using an Equinix data center is more advantageous for customers compared to using their own data centers, for several reasons. They include:

- The ability to switch or add clouds in minutes to support different workloads
- Proximity to cloud provider edge nodes, helping reduce latency to as little as 1 millisecond round-trip time
- 24x7x365 on-site technical support and >99.9999 percent average uptime at Equinix
- Ability to maintain sovereignty with local data placement around the world (Figure 3)
- Private cloud connections and physical security measures at Equinix facilities

No other enterprise data centers can deliver this powerful set of capabilities.
Security implications of Equinix data centers

Since private connection to the cloud bypasses the internet, data is not directly vulnerable to the cybercriminals, malware and other constantly evolving threats that permeate the internet today. These private connections also avoid the congestion on the internet, helping to provide predictable, low-latency performance.

In addition, Equinix facilities feature strong physical security measures, ranging from perimeter fencing and surveillance to automatic authentication, entrance mantraps, security kiosks and interior physical barriers.

Additional benefits to organizations

The integration of NetApp technology with the Equinix Cloud Exchange not only enables dedicated private connectivity to multiple clouds almost instantly, but also provides the following expanded set of benefits for enterprise users:

• **Offers the ability to switch or add clouds in minutes**: The Equinix Cloud Exchange allows users to quickly connect to new clouds or switch clouds at any time to support different workloads. After an organization has strategically located its data next to the Equinix Cloud Exchange, it can rapidly establish a dedicated network connection to more clouds by using the exchange.

• **Eliminates lock-in and costly data migrations**: Major cloud service vendors continually innovate, changing prices and feature sets. Organizations that want to switch cloud vendors for any reason can do so without having to deal with the time-consuming, costly obstacles of traditional data migration. They can quickly disconnect from the first cloud and spin up connectivity to the second cloud, without moving data.

• **Helps organizations diversify risk**: Customers can now easily run applications in more than one cloud to diversify risk. For example, if the first cloud does not respond or is slow because of a performance problem, an application can instead be hosted and securely accessed through the alternate second cloud.

• **Facilitates data center consolidation**: The NPS for Cloud architecture offers a cost-effective way to consolidate or divest data centers. Data located in old or acquired data centers can be replicated to the NPS for Cloud solution in an Equinix data center. As soon as the new data center is available, transient workloads can be replicated to it, while permanent workloads can stay on the NPS for Cloud solution.

• ** Enables an organization to expand its cloud choices**: By keeping its data close to multiple clouds, an organization is free to connect to an expanding portfolio of clouds. The organization can act nimbly as cloud providers compete by offering new features and innovative services.
The impact of new and enhanced data privacy laws, sovereignty laws and other regulations is causing concern for companies as they try to embrace the cloud. The NPS for Cloud solution in an Equinix data center is designed to take the worry out of the equation. By keeping customers’ data next to—rather than in—the cloud, the NetApp and Equinix approach helps mitigate data privacy and sovereignty issues.

With this solution in place, organizations can move forward with confidence, knowing they have a strategy and architecture for fully leveraging cloud services while maintaining integrity, control and availability of their data on a global scale. And they can realize new opportunities and accelerate their business even as laws and regulations continue to change and expand in the future.
About Equinix

Equinix, Inc. (Nasdaq: EQIX) connects the world’s leading businesses to their customers, employees and partners inside the most interconnected data centers. In 44 markets across five continents, Equinix is where companies come together to realize new opportunities and accelerate their business, IT and cloud strategies.

Learn more at Equinix.com

About NetApp

Leading organizations worldwide count on NetApp for software, systems and services to manage and store their data. Customers value the company’s teamwork, expertise and passion for helping them succeed now and into the future.

To learn more, visit www.netapp.com

For more information

To learn more about NPS for Cloud and Equinix Cloud Exchange, visit: https://forum.equinix.com/providers/category/cloud-it-services/netapp or http://www.equinix.com/partners/net-app/