

Sify: Enabling AWS Hybrid Cloud Solutions



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Emergence of Hybrid Cloud

The hybrid cloud has become a compelling option for organizations pursuing digital business transformation initiatives to address specific security, compliance, privacy, location and operational requirements even while continuing to benefit from the agile capabilities of hyperscale clouds such as rapid provisioning, self-service orchestration and spend management for a consistent experience. Some of the common use cases for hybrid cloud include legacy applications that continue to run on-premises data centers or hosted private clouds along with new cloud-based applications that would run on the hyperscale cloud environments and sometimes even at the edge locations.

In parallel, the last generation WAN architectures that were optimized for datacenter connectivity are being passed over by cloud interconnect solutions. There are different types of interconnect options such as carrier-based interconnect, interconnect from a cloud adjacent datacenter or software defined interconnect solutions. A cloud adjacent datacenter offers low-cost, high-bandwidth and low-latency network to connect and route traffic to cloud providers. In addition, the SD-WAN solutions are optimizing the management cost of delivering the increasingly dynamic demands imposed by hybrid cloud computing.

While hybrid cloud as a strategy has been pursued for as long as cloud has been around, it is only now that it has become a viable and compelling option with the advances both in the cloud and network technologies.

Sify, with its “Cloud@Core” offerings broadly consisting of Data Center, Cloud, Network and Professional Services, address all the challenges of architecting, deploying, workload migration and management of hybrid cloud workloads.

Sify’s Metro-X-Connect Interconnect between AWS Mumbai Data Center Region Public Cloud and Sify Airoli Private Cloud Data Center enables customers to establish direct connectivity between their private infrastructure and AWS Cloud environments and fully realize the benefits of hybrid cloud.

Hybrid Cloud Architecture

A hybrid cloud integrates private and public cloud services to support parallel, integrated or complementary tasks.

Hybrid clouds are typically deployed in one of the two configurations.

- A redundant hybrid cloud architecture deploys a workload in its entirety on both the public and private clouds.

The redundant hybrid cloud architecture can further deploy the applications in active-active or active-passive modes to accomplish various objectives such as disaster recovery or global load balancing.

- A composite hybrid cloud architecture splits the workload across private and public clouds with different components coming from private or public clouds for functional distribution, lifecycle distribution or workload distribution.

In this model, the use cases will be running enterprise class services from best of breed providers and running with simpler services from a performance and cost wise optimal option.

For complex and connected applications, it is important that data and processing can execute close together to minimize latency, maximize performance and minimize network (egress) cost. Customers can consider the use of a carrier and cloud-neutral colocation provider as a central point to connect to multiple cloud providers with minimal latency and cost.

Benefits of Hybrid Cloud

- Provides flexibility and choice by enabling enterprises to choose the best platform for workloads and even the ability to split workloads where a part runs on-premise and another part runs in the cloud
 - Many businesses use on-premise infrastructure to run core business applications and then leverage the cloud for dev and test, backup and DR, SaaS and the deployment of new applications
- Offers businesses the ability to leverage and modernize existing infrastructure, reduce CAPEX costs for new projects, improve application scalability with virtually unlimited cloud resources
- Compliance requirements that limit where one can deploy certain applications/data

- Data Center Consolidation
- Bridge cloud-native, SaaS and/or packaged apps which run on different platforms
- Improve performance of latency-sensitive applications
- Address different users' requirements for different cloud services
- Increase the velocity of feature releases
- Leverage scalable cloud storage services for backup/recovery of data
- Some applications are only available/supported in a particular cloud environment
- Leverage the power of flexibility to match the best cloud offering to the available and planned storage, compute, applications and database

Challenges of Deploying Hybrid Clouds

- Meeting Network Performance SLA: Mission critical solutions would mandate < 1ms latency end-to-end for Cloud interconnect
- Complying with Regulatory Requirements: Data privacy and security are two of the biggest issues with regulations like HIPAA, GDPR or PCI. This would mandate a Cloud Adjacent Data Center Services with very low latency storage connections and any data transferred from a complaint local database to the cloud is encrypted and secured.
- Security: Need to maintain a common identity using single sign-on functionality across both Enterprises on-premise systems and cloud resources. Data Encryption is required for many types of regulatory compliance.
- Multi-Cloud Implementations: Need to deal with different Services, pricing models, skill sets, management tools, data security and protection strategies to accommodate each different cloud implementations

Role of Managed Services Provider for Hybrid Cloud

Organizations adopting hybrid cloud architectures must decide on how to define service lifecycle management, governance and operations. A managed services provider offers cloud expense management, cloud management platform for cloud resource lifecycle management and IT service management. The MSP optionally offers workload assessment and migration services, professional services for initial implementation to provision, configure and secure the cloud resources. Subsequently, the service provider will provide the key aspects of availability, scalability, security, resilience and cost management as part of the managed services offering.

Sify Offerings for Hybrid Cloud Deployment with AWS

Sify Metro-X-Connect Interconnect

Sify Metro-X-Connect Interconnect between AWS Mumbai Data Center Region Public Cloud and Sify Airoli Private Cloud Data Center enables customers to establish direct connectivity between their private infrastructure and AWS Cloud environments and fully realize the benefits of hybrid cloud—moving application, middleware and database workloads seamlessly between private infrastructure and AWS Cloud—in a reliable, low-latency and secure experience. The result is improved application performance, lower latency, higher throughput, network-level security protection and reduced costs—all in a highly scalable solution. This is also ideal for data privacy, regulatory compliance and data sovereignty scenarios.

Sify Metro-X-Connect integrates Airoli and Rabale Data Centers seamlessly into one virtual campus

Low Latency

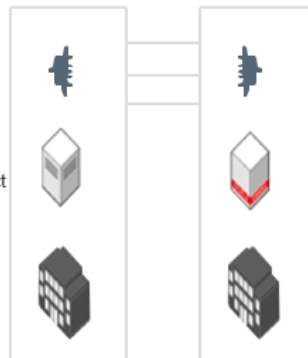
Guaranteed less than 100 microseconds of one-way latency

Access to Network Resources at both Campuses

Cross connect level prices to connect network resources such as Telco's, Internet Exchanges, AWS Direct Connect and Oracle FastConnect across sites

High Reliability

Designed for mission-critical applications at 99.99% availability. Built using 3 fiber paths, including one high resilience OPGW section. Powered by Ciena WaveServer AI technology



Pre-built Metro Cross Connect infrastructure built between the two Sify Data Centers in Navi Mumbai - Airoli and Rabale

10G ethernet connections provided on a highly reliable network at cross connect prices

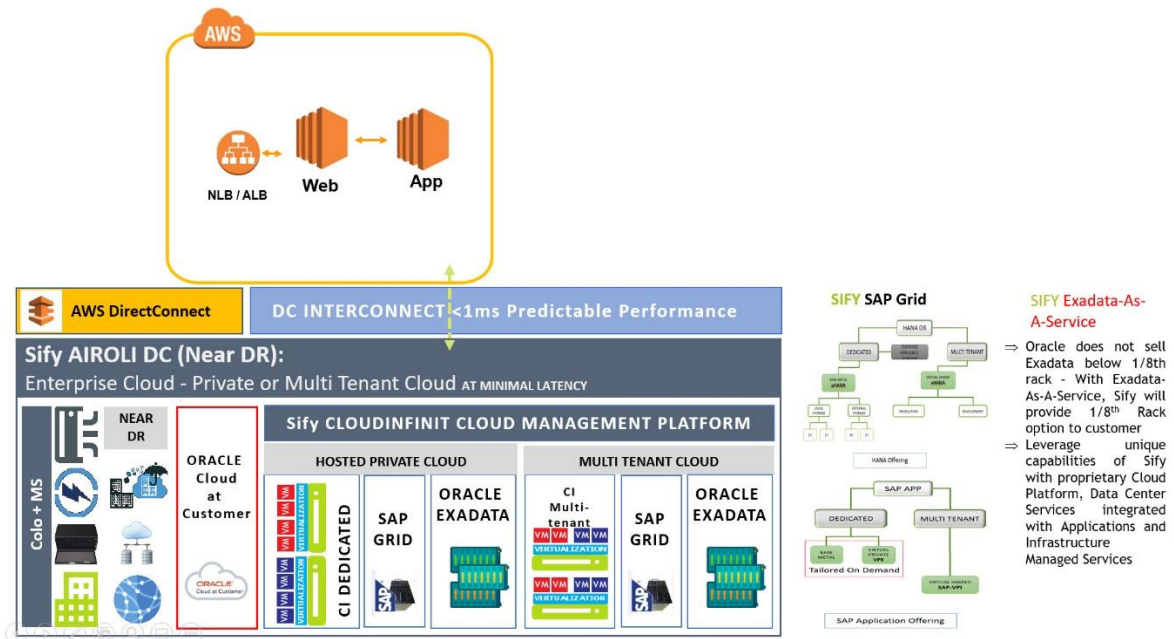
Extend network resources seamlessly across both data centers as access services to AMS-IX, AWS Direct

Oracle FastConnect guaranteed two weeks turn up time for any service

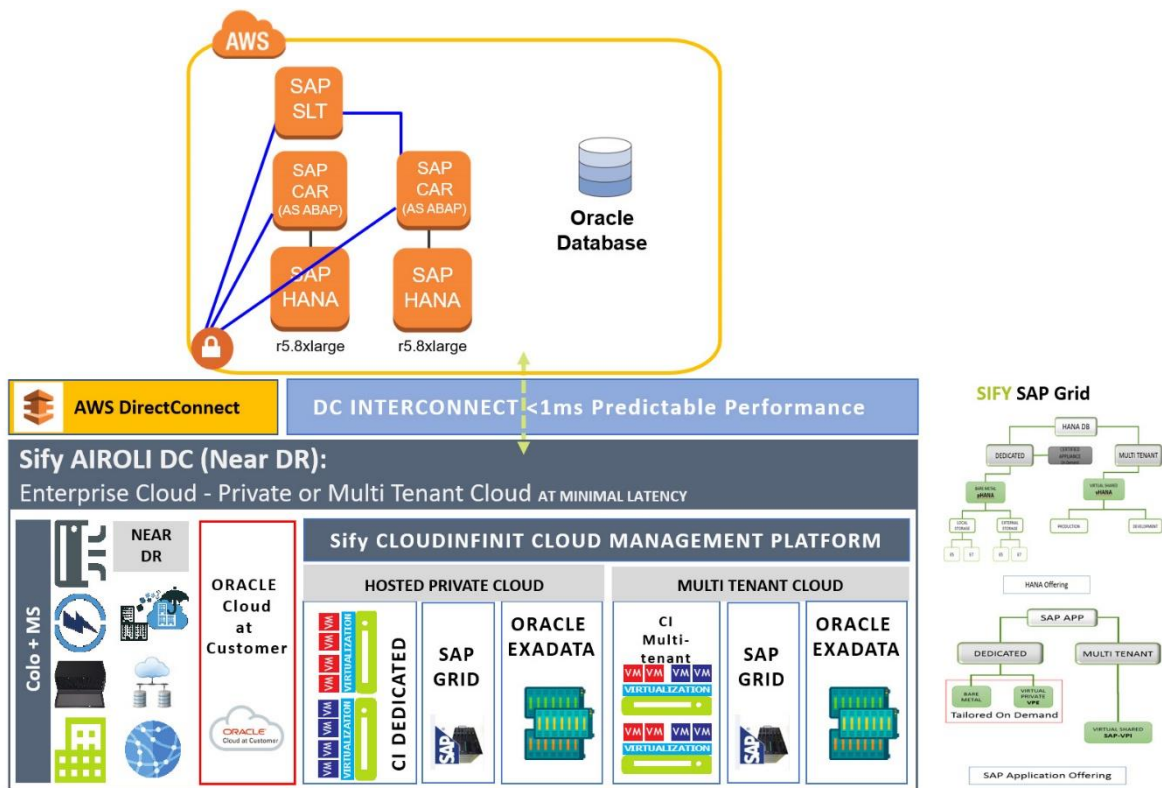
With the Metro-X-Connect the following use cases are supported.

- **Data Center Extension**

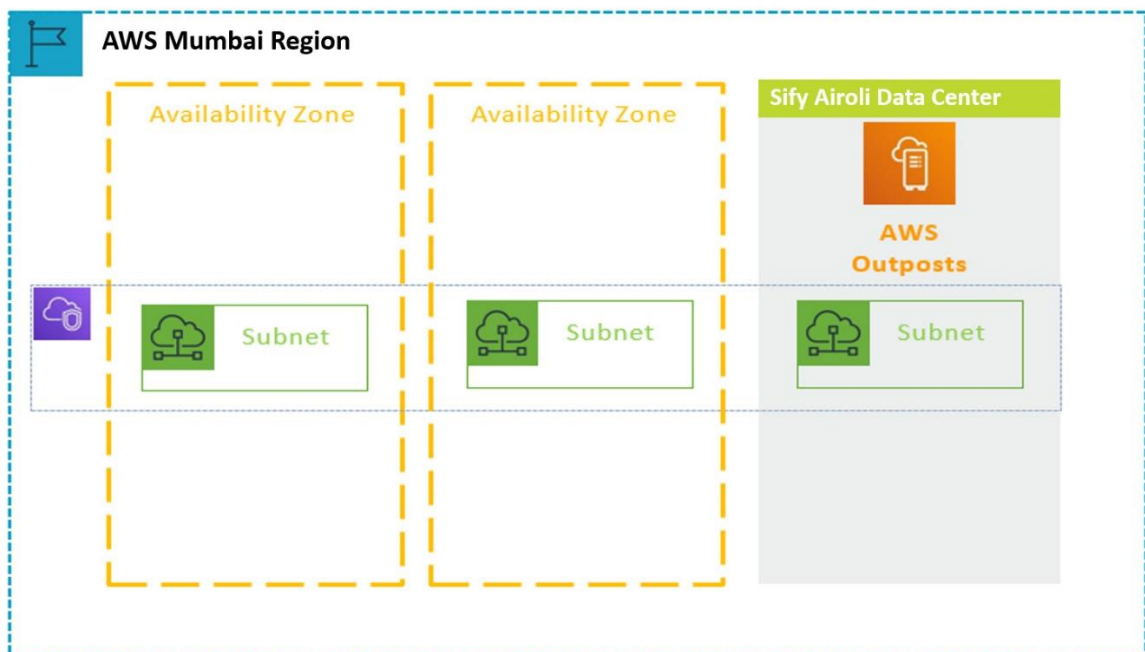
- Application tier on AWS Public Cloud and Database in Private Cloud at Sify Near Cloud/DR Airoli Data Center



- Database tier on AWS Public Cloud and Application tier on Private Cloud at Sify Near Cloud/DR Airoli Data Center



- **AWS Outpost** deployed at **Sify Airoli Near Cloud Data Center**
 - Brings AWS to Customer Data Center
 - Same AWS designed infrastructure as in AWS data centers managed, monitored and operated by them
 - Single pane of management in the cloud providing the same APIs and tools as in AWS Regions
 - Available in 2 variants *Native AWS* supporting AWS APIs, services, and features as in the AWS cloud and *VMware Cloud on AWS* supporting VMware APIs and services to leverage existing skills, automation, and governance policies



- **AWS Snowball/Snowball Edge** deployed at **Sify Airoli Near Cloud Data Center**

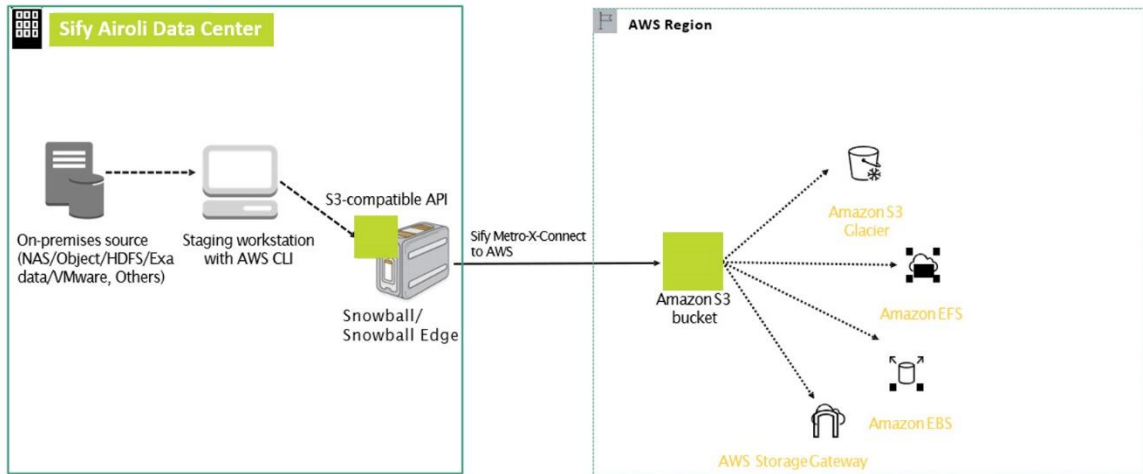
AWS Snowball

- Portable Storage Devices to move large amount of Data into and out of the AWS Cloud
- Import and Export of data from S3
- Fast, Secure and Cost-efficient Peta-byte scale data transport solution

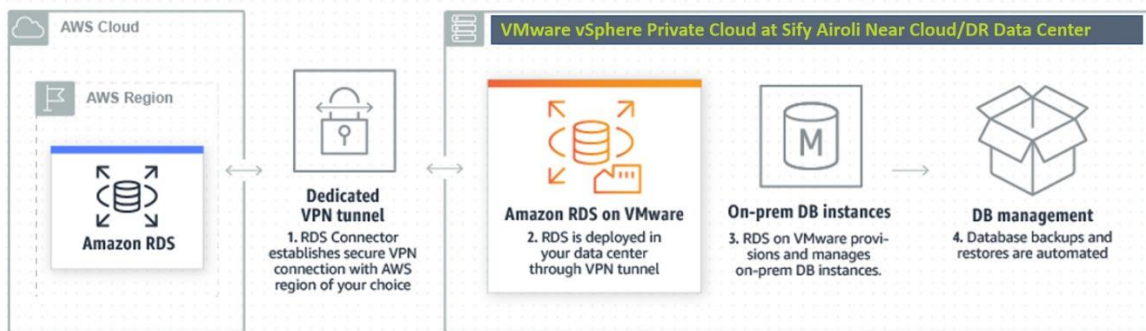
AWS Snowball Edge

- Data transfer device with on-board storage and compute power for select AWS capabilities
- In addition to transferring data to AWS, undertake local processing and edge-computing workloads

- Fast, secure, cost efficient and scalable, storage & compute pool with increase durability
- Can run Lambda functions as data is copied to the device. Data migration is done within a region



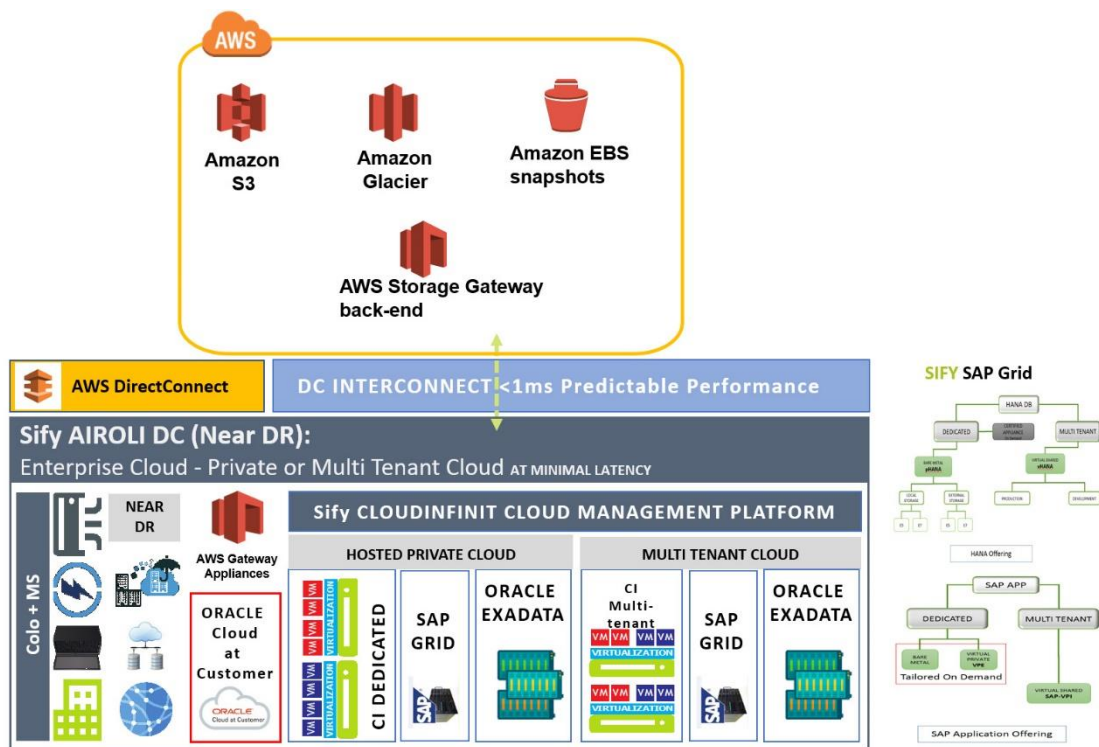
- **Amazon RDS on VMware** deployed at **Sify Airoli Near Cloud Data Center** - Deploy managed databases in on-premises VMware environments using the same Amazon RDS technology used in the cloud



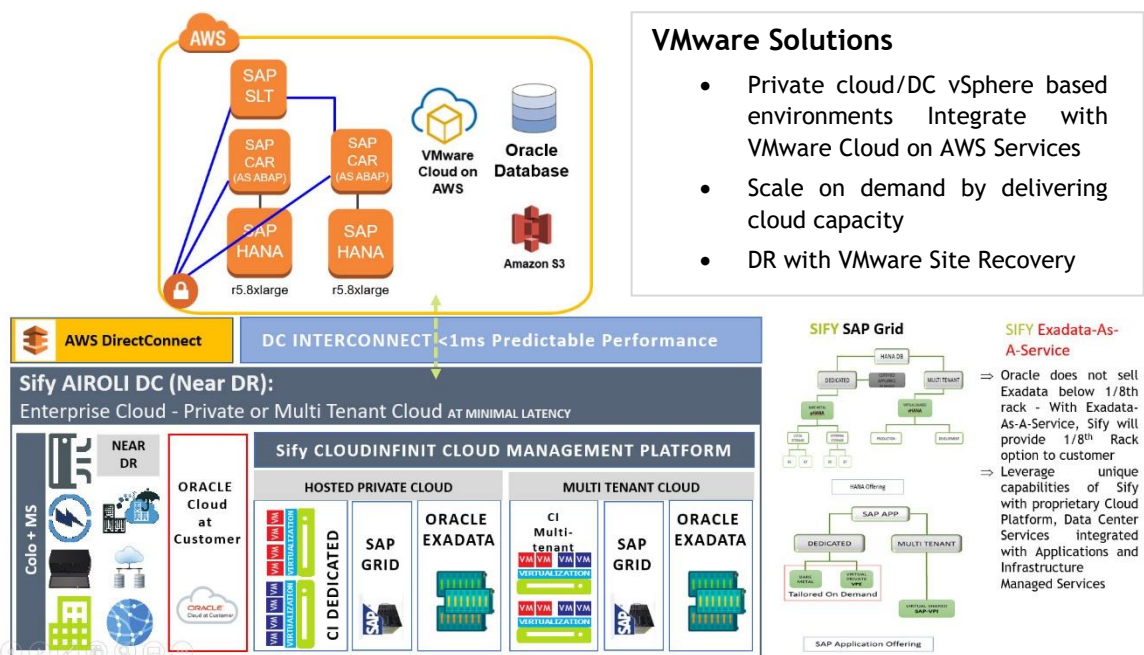
• **High Availability Deployments**

- Data protection and Fast failover for database across hybrid deployment with active-active or active-passive availability between AWS Public Cloud and Sify Airoli Near Cloud/DR Private Cloud
- Moving data for backup and archiving between data centers
 AWS Storage Gateway is a hybrid cloud storage service that gives customer on-premises access to Public cloud storage. Some key hybrid cloud storage use cases like moving tape backups to the cloud, reducing on-premises storage with cloud-backed file shares, providing low latency access to data

in AWS for on-premises applications, as well as various migration, archiving, processing, and disaster recovery use cases.

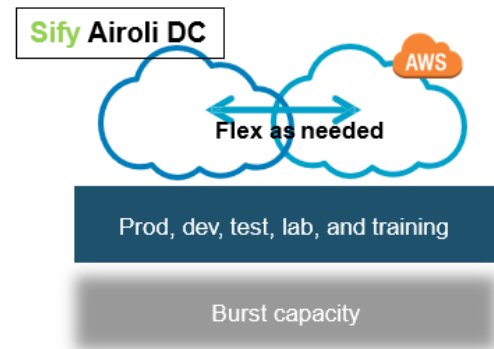


- Disaster Recovery using AWS Public Cloud or Sify Airoli Near Cloud/DR Private Cloud as second physical site and standby infrastructure



- **Workload Flexibility**

- Cloud Bursting leveraging AWS AMI
- Unlimited capacity
- setup time in minutes
- Pay for what you use
- Flexible Machine Specs
- Automated Termination
- Leverage SPOT Instances for Inexpensive Compute usage



Benefits of Sify AWS Hybrid Cloud Solutions

Address all the challenges for enabling hybrid cloud by providing Cloud Adjacent Data Center Services, low latency, high bandwidth and secure connections to AWS Cloud for predictable performance and costs

- **Sify Data Center Services:**

- Workloads can be decoupled and deployed between AWS Mumbai Data Center Region Public Cloud and Near Cloud/DR DC at Airoli
- Customer requirement to have Data residency in Private Cloud or dedicated hosted environment can be deployed Near Cloud DC at Airoli
- High Availability, Data protection and Fast failover for database across hybrid deployment
- Any application using database running from AWS Cloud can be deployed at Near Cloud Data Center at Airoli
- **Hosting Services**
 - Colocation, Hybrid and Multi-Cloud
- **Cloud Adoption Strategy as a Service**
 - **Assessment** of current state for infrastructure, application dependencies, cost
 - Target state architecture with hosted private and hybrid multi-cloud solutions
- **Resiliency Services**
 - Managed Backup and Disaster Recovery Services

- **Sify DC and Cloud Interconnect (Sify Metro-X-Connect):**
 - Predictable, secure, high performance and low latency end-to-end connections < 1ms

- **Sify Professional Services:** Implementation, Migration, Security Services and Managed Services, end-to-end solution across hybrid multi-cloud architecture
 - **Migration and Implementation Services**
 - SAP and Oracle Apps (EBS) green field implementations, migration or upgrade
 - Enterprise applications on Hybrid Cloud
 - Technology Platform Upgrade (DB/SOA)
 - Infrastructure migration to Hybrid Cloud
 - SaaS implementation
 - **Managed Services:** Provide consistent Operations Management to increase efficiency, reduce operational overhead and risk across end-to-end hybrid multi-cloud architectures including
 - Application Managed Services
 - Functional Support
 - Technical Support
 - Apps and DBA Support
 - Infrastructure Managed Services
 - Engineered Systems,
 - Hybrid Cloud Deployments
 - **Security Transformation Services for hybrid multi-cloud Architecture**
 - Identity and Access Management
 - (Zero Trust / Privileged Access Management / Cloud Access Security)
 - Managed Detection and Response Services

CLOUD@CORE

ALIGNED TO OUR CUSTOMERS' CLOUD TRANSFORMATION PURSUIT



CLOUD ENABLING

- Cloud DC
- Hyper reach/Hyper scale transport
Oracle FastConnect | ExpressRoute | DirectConnect | Partner Interconnect
- Software Defined Network services
- Cloud build
Private | Hyperconverged | Enterprise
- Security services for cloud
- Migration and Implementation services



CLOUD INSPIRED

- Sify CloudInfinitt
 - Enterprise Multi-Tenant
 - Dedicated
 - Hosted SAP/S4HANA
 - Azure Stack as a Service
- Edge Connect Services
- SD-WAN
- Collaboration services on Cloud



CLOUD PURE

- AWS
- Azure
- Oracle
- Multi Cloud Management platform & services



CLOUD ENHANCED

- Modern Applications
- Kubernetes-as-a-Service
- AI/ML
- Forum DIGITAL
- HCM Digital(i-Test)
- Learning Management
- Internet-of-Things (IOT)
- Industry Solution-as-a-Service

For more information about Sify AWS Hybrid Cloud Offerings, contact us at marketing@sifycorp.com

sify' keeping you ahead

Sify Technologies Limited

II Floor, TIDEL Park,
No.4, Rajiv Gandhi Salai,
Taramani Chennai - 600 113, India.
Phone: +91 44 2254 0770-77
Fax: +91 44 2254 0771