Building A Successful Hybrid & Multi Cloud Strategy

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The Increasing Importance of the Cloud

• By 2022, 75% of all databases cloud based
  ○ Only 5% ever considered for repatriation to on-premise
    
    Source: Gartner

• 90% of companies are on the cloud.
  
  Source: 451

• 2018: 45% of workloads run via hosted cloud services
  ○ 2019 : 60%
  ○ 2021 : 94%
  
  Source: Cisco
The Increasing Importance of the Cloud

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If you're stuck on-prem, and starting to feel like you missed out on the cloud native movement, just start calling it "edge" and consider your digital transformation complete.

7:26 PM · 22 Sep 20 · Twitter Web App
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Data Drives the Digital Economy

No matter the application, the cloud offers some undeniable advantages over on-premise IT solutions:

- Cost Savings
- Easier Scalability
- Greater Agility
Fully moving to the cloud poses challenges:
- Technological
- Operational
- Financial
- Security

90% of credit card payments processed via on-premise mainframes.

Regulations prevent storage of bank sensitive data in the cloud
A Hybrid Approach

“Hybrid Cloud”:
- Use of one or more public cloud providers alongside internal resources
- Either a private cloud system or on-premise IT infrastructure
- Store & secure sensitive data internally
- Leverage the efficiencies of the public cloud
Embracing Hybrid & Multi Cloud

Why Azure Arc Is A Game Changer For Microsoft

Google Cloud

aws Outposts

OPENSHIFT

Anthos

GIGASPACES
Not All Clouds Are the Same

Rarely “one cloud fits all”:
• No single cloud platform offers everything they need
• Location-based regulations
• Getting “locked-in”

Gartner survey:
81 % are working with two or more cloud providers.
Benefits of a Multi Cloud Approach

**Multicloud not necessarily a bad thing:**
- More Features
- More Location Options
- Redundancy
- Cost Efficiency

**BUT more COMPLEXITY…**
Challenges Hybrid & Multi Cloud Deployments Face

Organizations may face some of the following concerns:
• Lack of Data Locality
• Data Privacy & Security Issues
• Data Replication Overhead & Network Costs
• Service Levels & Availability Concerns

But there is a solution to all of this...
GigaSpaces InsightEdge
ODS/DIH Deployment

1. Click connect to multiple systems of record with real-time and batch integrations.
2. Connect to existing ODS using CDC or standard connectors/ETL.
4. Enterprise ready designed for 99.999% availability & DR, and enterprise security.
5. High performance compute engine with millisecond response time for your digital applications.
6. Event-driven architecture allows applications to subscribe to different event templates.
7. Unified API layer for all digital applications and operational analytics.
Out-of-the-Box Data Replication
InsightEdge Advantages

- Network Efficiency
- Data Locality
- Privacy & Compliance
- AI-Driven Autonomous Scaling
- Resiliency & Availability
- Cloud Bursting

Fig 1: Automatically detect spikes based on CPU & RAM utilization. Scale resources down during off-peak hours.
Manufacturing Industry Case Study

Work both synchronously & asynchronously:
• Azure IoT Hub: Virginia
• AWS: Ohio

Achieved Network Latency + 1 msec
Set up 1…n sites globally

**pu.xml WAN Gateway Azure side configuration snippet (Sink):**

```xml
<beans
    ...........
    <os-gateway:sink id="sink" local-gateway-name="Azure-us-east-2" gateway-
    lookups="gatewayLookups" local-space-url="jini:///*/SpaceAzure-us-east-2" start-embedded-
    lus="false">
        <os-gateway:source>
            <os-gateway:source name="AWS-us-east-2"/>
        </os-gateway:source>
    </os-gateway:sources>
</os-gateway:sink>

    ...........
</beans>
```

**pu.xml WAN Gateway AWS-us-east-2 side snippet (Delegator):**

```xml
<beans
    ...........
    <os-gateway:delegator id="delegator" local-gateway-name="AWS-us-east-2" gateway-
    lookups="gatewayLookups" start-embedded-lus="false">
        <os-gateway:delegation target="Azure-us-east-2"/>
    </os-gateway:delegator>

    ...........
</beans>
```
Based on the LRMI communication channels, we can now transfer the requested data according to its priority:

```java
Region[] regions = Azure-us-east-2Space.readMultiple(new Region());

if (regions != null && regions.length > 0) {
    LOGGER.info(regions.length + " region objects have been read from the Azure-us-east-2space. Notifying IoT...");

    IoTA syncGetRequest iotNotifyRequest = new IoTA syncGetRequest(url, headers, user.getId(), Region.class);

    usSpace.write(iotNotifyRequest);

    return ok(Arrays.stream(countries).map(Region :: getProperties).toArray());
} else {
    Response<Region[]> regionsResponse = iotDataRemotingService.load(new Request(url, headers), Region.class);
    LOGGER.warning(String.format("%d region objects have been read from IoT. IoT request: GET %s", regionsResponse.getEntity().length, url));
    return regionsResponse.toRestResponse();
}
```
Based on the LRMI communication channels, we can now transfer the requested data according to its priority:

```java
@EventDriven
@Polling
public class IoTDataAsyncService {

    ..........

    @EventTemplate
    public SQLQuery<IoTAsyncGetRequest> template() {
        SQLQuery<IoTAsyncGetRequest> query = new SQLQuery<>(IoTAsyncGetRequest.class, "");
        query.setRouting(routing);
        return query;
    }

    @SpaceDataEvent
    public void eventProcess(IoTAsyncGetRequest request) {
        ..........
        if (Boolean.TRUE.equals(request.getSaveToSpace())) {
            Response<?> response = IoTDataService.load(url, requestHeaders, request.getEntityType());
            if (request.isSessionData()) {
                PrivateData[] data = (PrivateData[]) response.getEntity();
                sessionDataManager.write(AWS-us-east-2Space, data, request.isReplicable());
            }
            httpStatus = response.getCode();
        }
    }
}
The Future is Both Cloudy & Bright
Thank you!

For any questions, don’t hesitate to contact me:

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