In-Memory Computing SUMMIT VIRTUAL EVENT 2020

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

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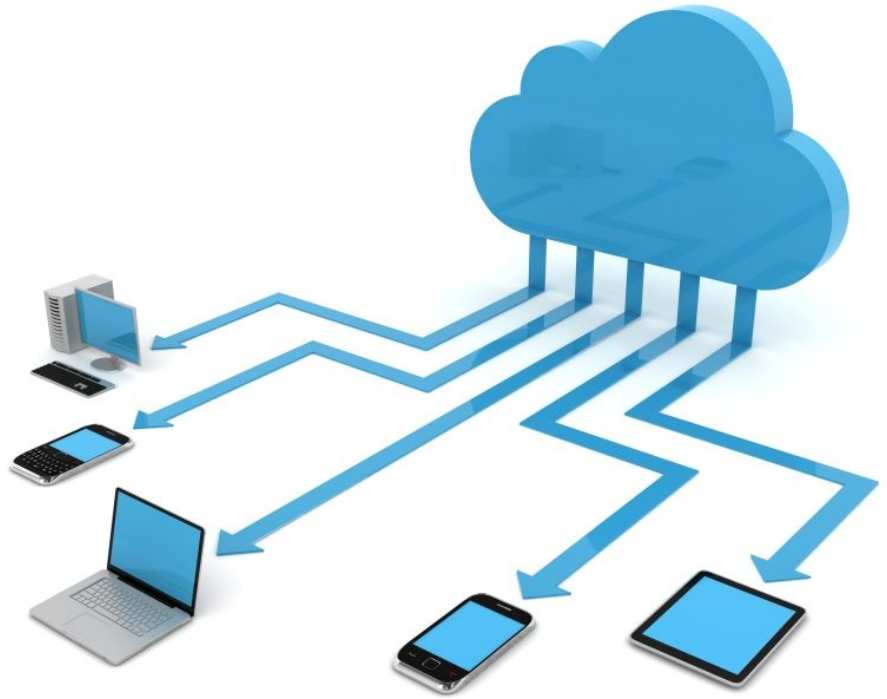
Data Drives the Digital Economy

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

- Cost Savings
- Easier Scalability
- Greater Agility



BUT…

Fully moving to the cloud poses challenges:

- Technological
- Operational
- Financial
- Security

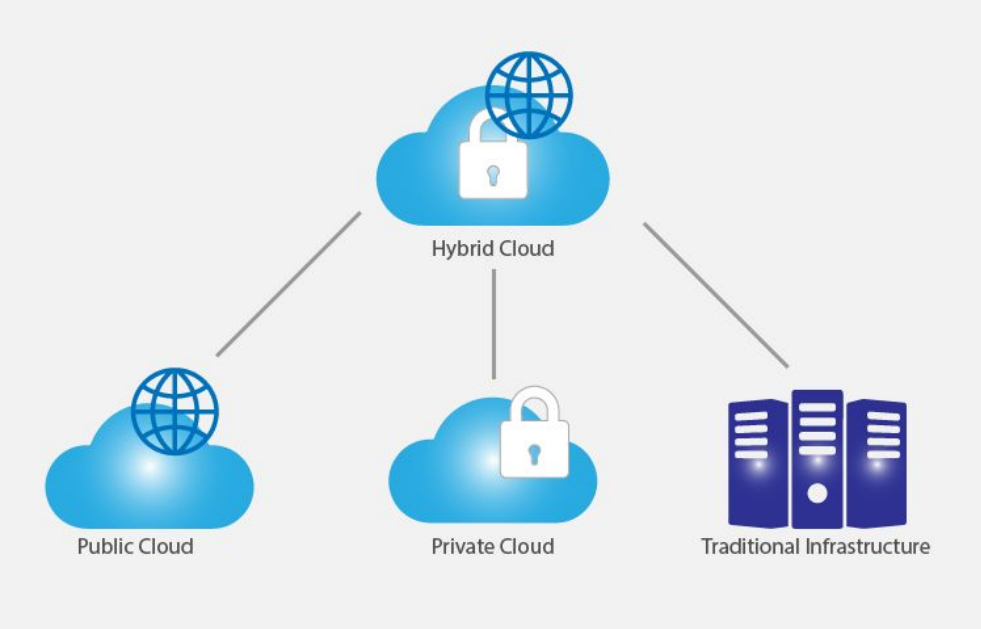
90% of credit card payments processed via on-premise mainframes.

Regulations prevent storage of bank sensitive data in the cloud

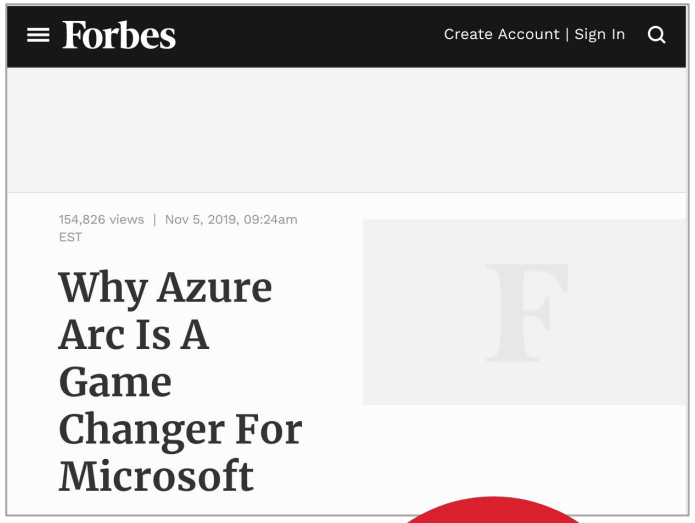
A Hybrid Approach

“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

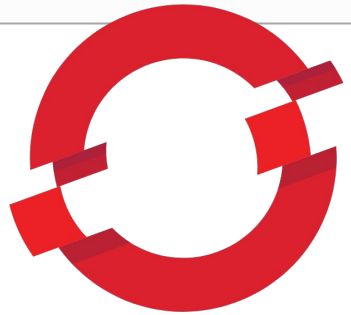


Embracing Hybrid & Multi Cloud



Google Cloud

Anthos



OPENSHIFT

aws

Outposts

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

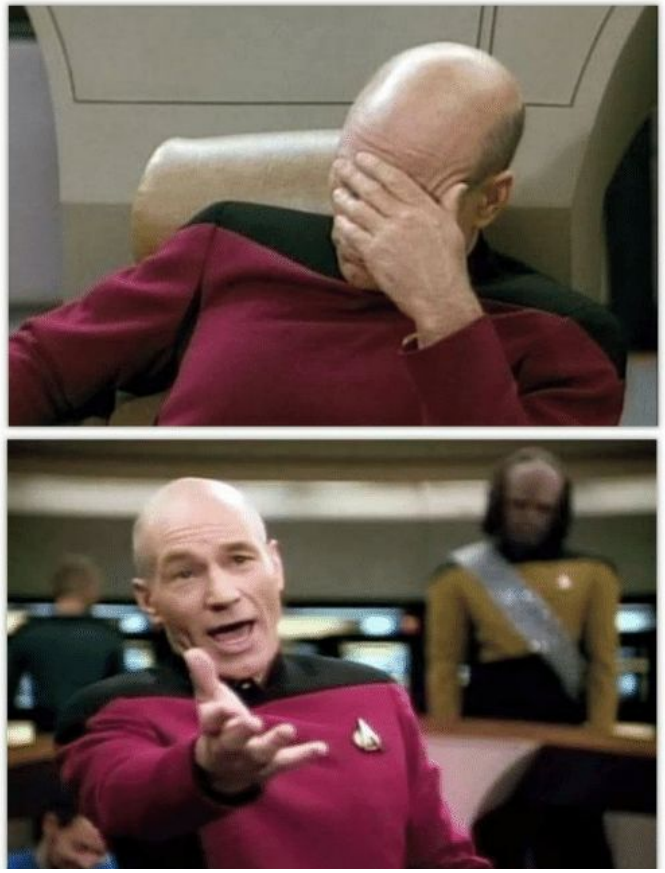
BUT more *COMPLEXITY*…

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...



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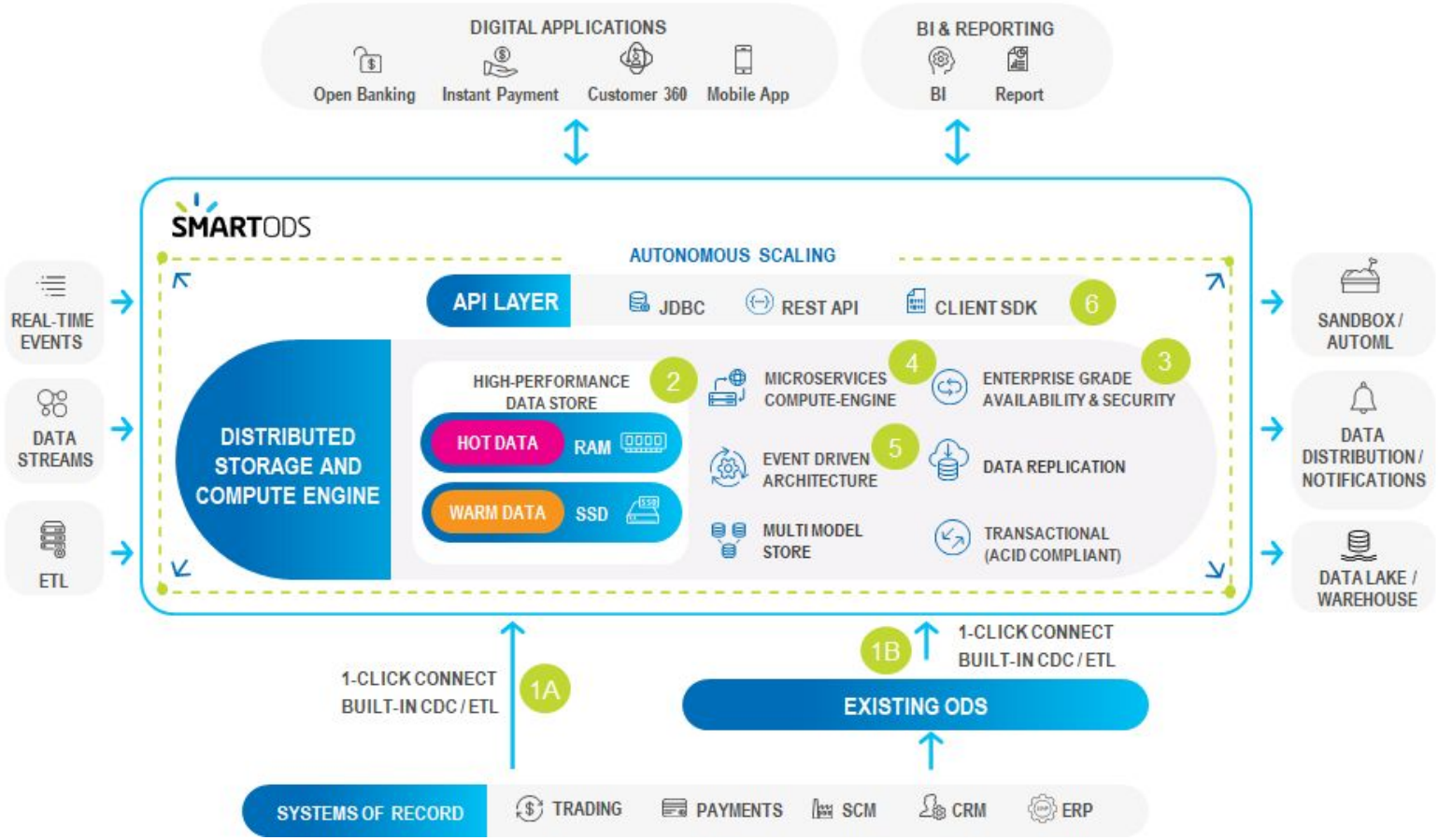
ODS/DIH Deployment



1A 1-click connect to multiple systems of record with real-time and batch integrations

1B Connect to Existing ODS, using CDC or standard connectors/ETL

2 Business policy-driven data & index tiering - hot, warm, and cold storage.

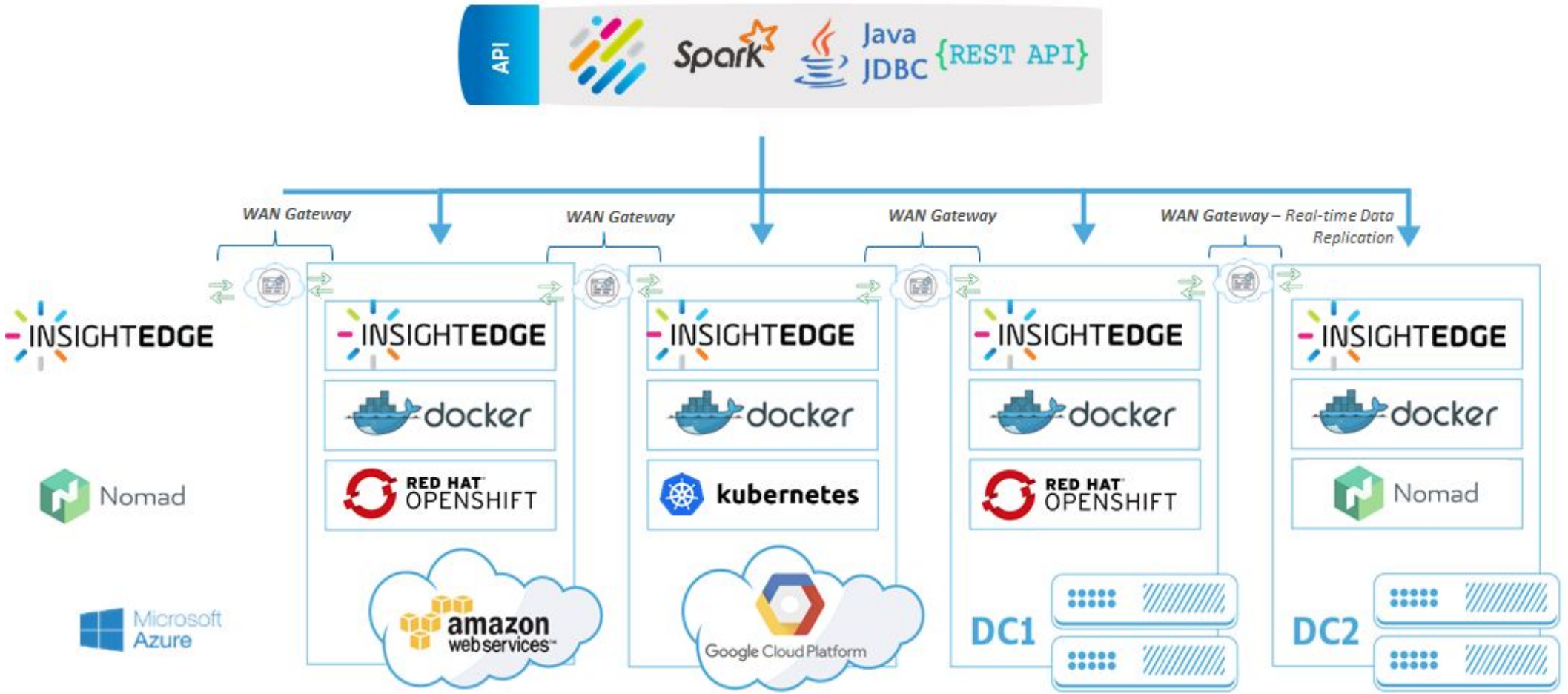
3 Enterprise ready designed for 99.999% availability & DR, and enterprise security

4 High performance compute engine with millisecond response time for your digital applications

5 Event driven architecture allows applications to subscribe to different event templates

6 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

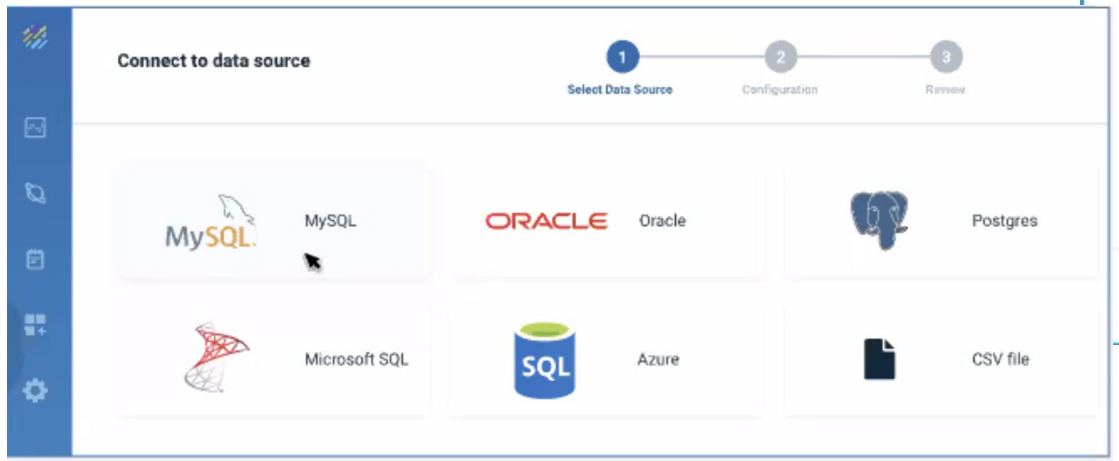


Fig 1: One Click DB

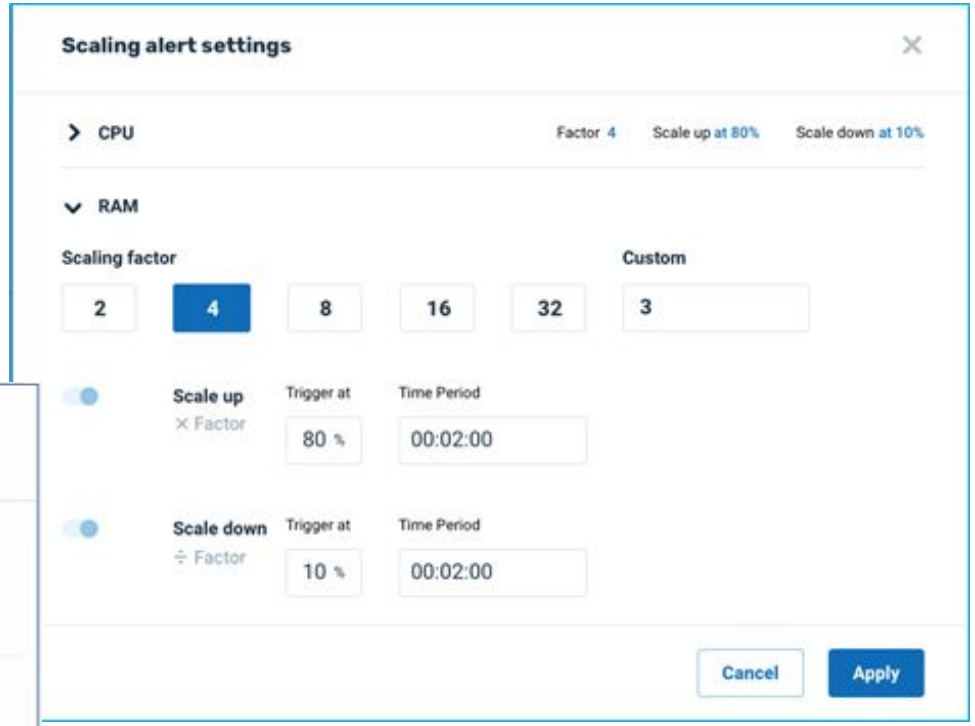


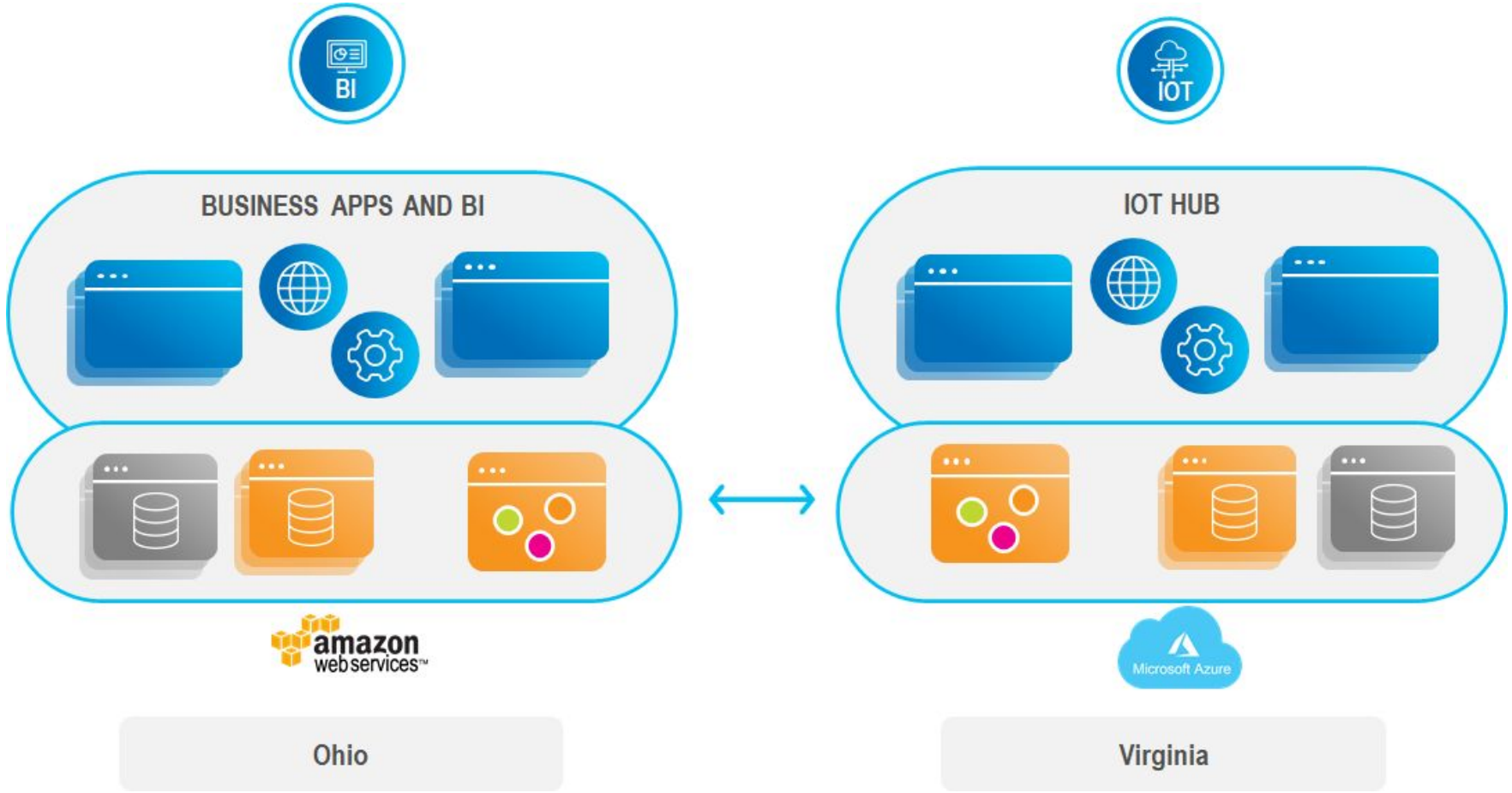
Fig 1: Automatically detect spikes based on CPU & RAM utilization.Scale resources down during off-peak hours.

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):

```
<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:sources>
                <os-gateway:source name="AWS-us-east-2"/>
        </os-gateway:sources>
</os-gateway:sink>
.....
</beans>
```

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

```
<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>
```

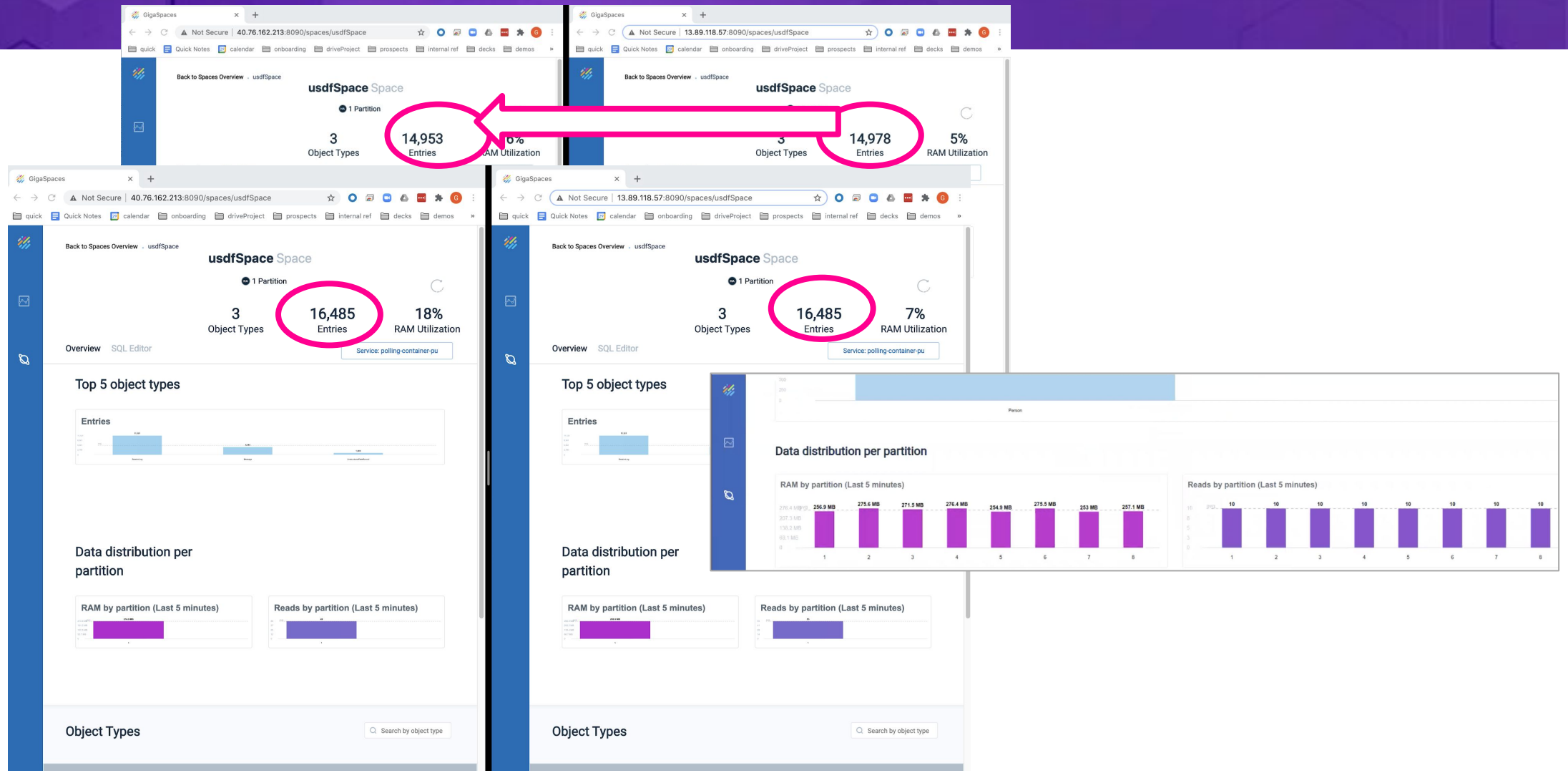
Based on the LRMI communication channels, we can now transfer the requested data according to its priority:

```
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...");

IoTAsyncGetRequest iotNotifyRequest = new IoTAsyncGetRequest(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:

```
@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();
```

Brief UI Walk Through



The Future is Both Cloudy & Bright

Thank you!

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

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