

.NET Service Bus

Clemens Vasters, Principal Technical Lead
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Windows Azure Platform

Web applications



Web and clouds



Third party cloud

Windows® Azure™



Compute



Storage Management

Microsoft®
SQL Azure™



Relational data Management

Microsoft®
.NET Services



Connectivity

Composite applications



On-premises



LOB Applications

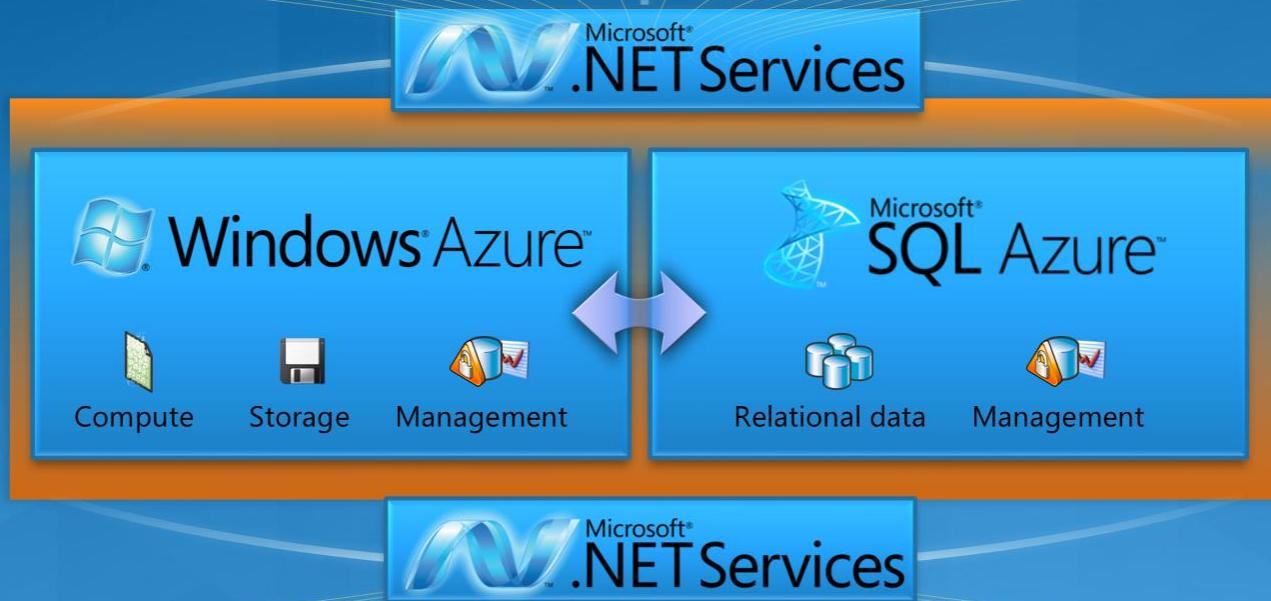
.NET Services bridge cloud assets with on-premises and hosted apps & services

Web applications

Web and clouds



Third party cloud



Composite applications

On-premises



LOB Applications

What does a cloud platform mean to you?

Scale Out

Automated Management

High Availability

Multi-Tenancy

A

Datacenters & runtime environments
Customers **build & buy** apps on it



B

Consumable services
Customer apps **plug & play** with it

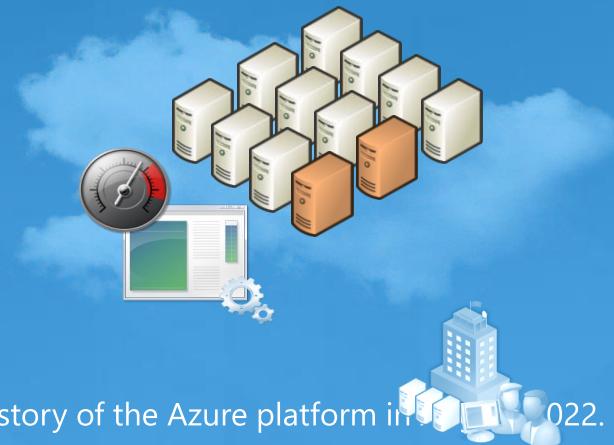
OR



Windows Azure adoption today

Customers are building killer apps and services:

- **CPG beverage** ordering tool for breadth retailers
- **Healthcare services** remote software distribution
- **PLM/CAD ISV** modular SaaS app & plugins
- **Pharma R&D** genomics batch analysis
- **Web ISV** 3rd party payments for Azure apps
- **IT consulting** travel booking service
- Manufacturing
- Financial services
- B2B
- Consumer web
- ...



Cloud connectivity is a growing need

- Tomorrow, those customers and partners may ask, "How do I connect these with all my other apps and services?"



Common patterns and problems

- How can you use cloud services to connect apps and services across deployment locations?
 - Bridge cloud, on-premises, and hosted assets
 - Navigate network and security boundaries, securely and simply
 - Handle identity and access across organizations and ID providers
 - Interoperate across languages, platforms, standards
 - Perform protocol mediation and schema mapping
- Customers need a way to:



Connect endpoints



Control & secure access

Service Bus

Access Control

What Is .NET Services?

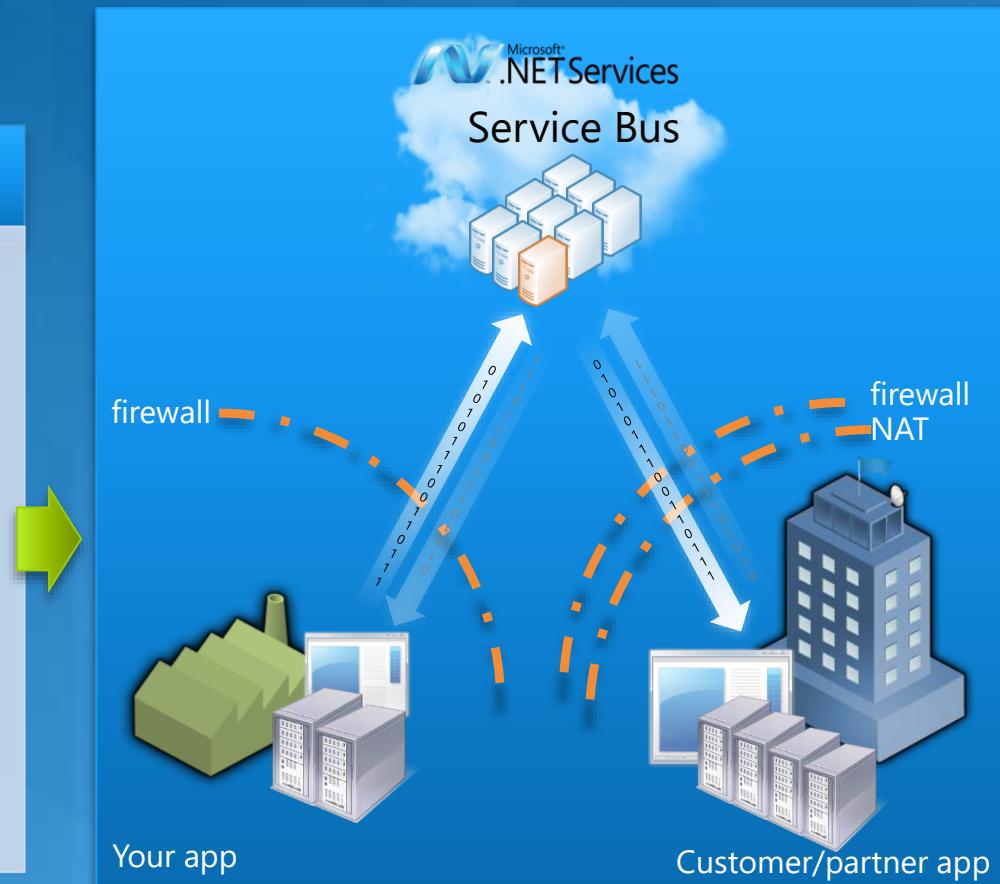
- Service Bus
 - A cloud-assisted network abstraction and virtualization infrastructure
 - Connect applications across any network topology
 - Provide all common shapes of communication in an efficient and interoperable manner
- Access Control
 - A cloud-based Access Control management and federation infrastructure
 - Helps protecting broadly distributed networked resources by providing an Internet-scope clearing-house for federated identity integration.

.NET Services provides solutions for developers facing those problems

 **Connect Endpoints**

Service Bus

- Expose RESTful or SOAP services over the internet through firewall and NAT boundaries
- Communicate bi-directionally between apps and services in an interoperable manner
- Choose relays, queues, routers, and other message patterns and types
- Scale out naturally and reliably as apps and services grow



.NET Services provides solutions for developers facing those problems



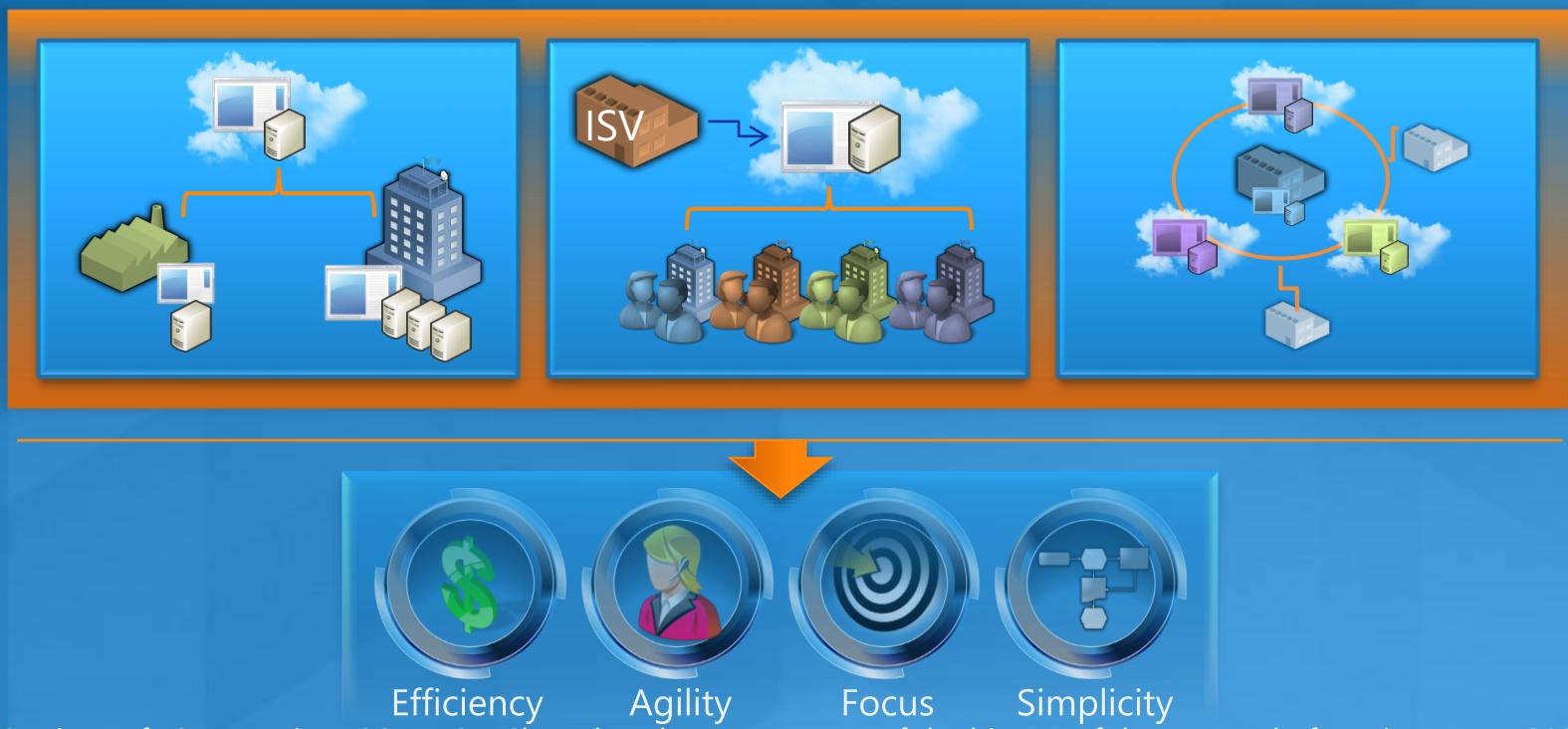
Control Access

Access Control Service

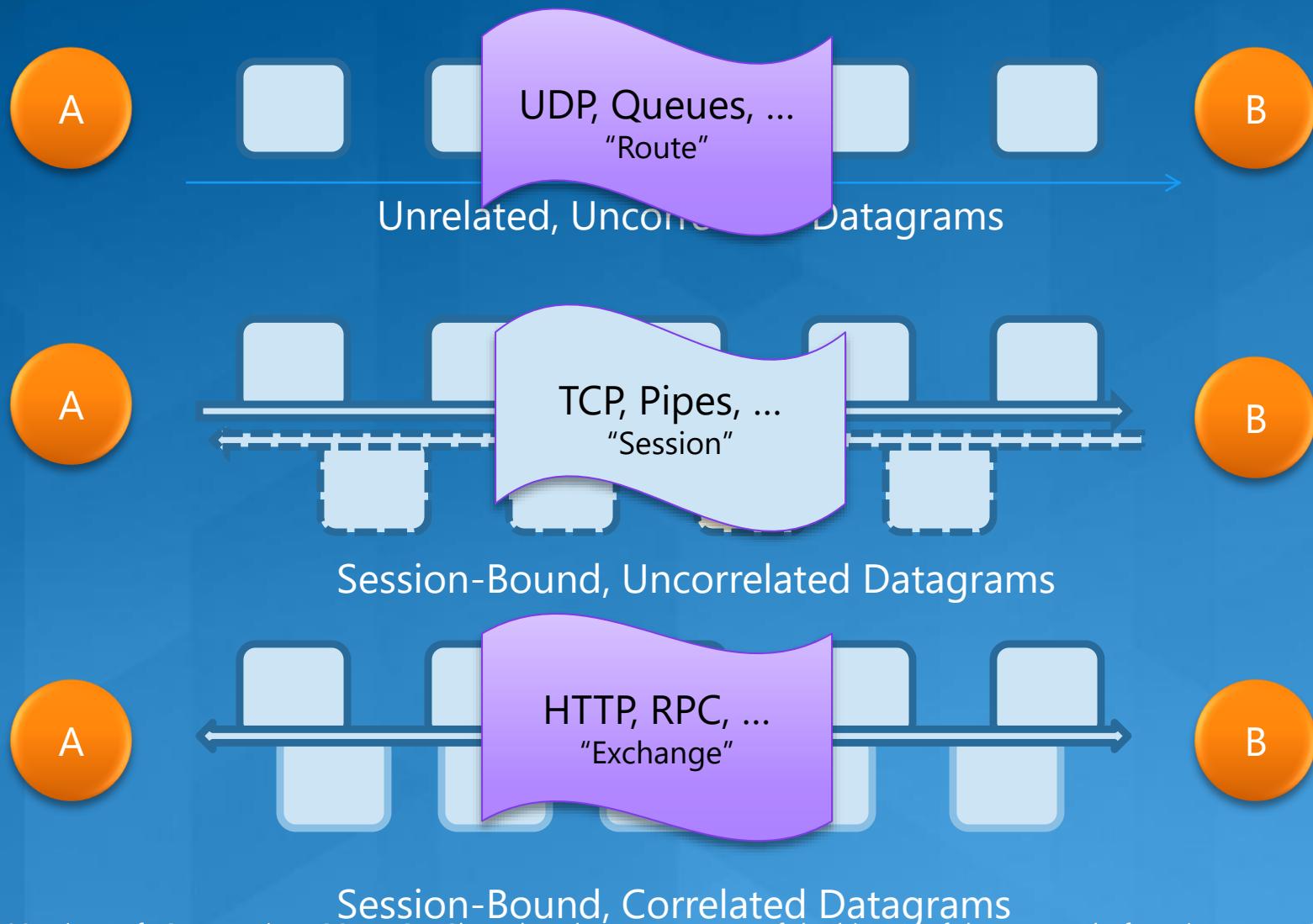
- Integrate authorization into apps to control “what users are allowed to do”
- Federate with multiple identity systems across organizations and ID providers
- Easily apply fine-grained access control rules
- Secure Service Bus communications
- Scale out naturally and reliably as apps and services grow

Target scenarios enabled

- Integrating LOB apps and services with cloud apps
- Federating access control for SaaS apps
- Composing multi-party or multi-cloud apps



Observation 1: (There Are Just) Three Ways To Talk



Observation 2: NetTcp (SOAP!) is Efficient!

```
[OperationContract(IsOneWay = true)]  
void Send(byte[] d);
```

NetTcp w/ Transport Protection in Session Mode:

Payload Array Size: 49152 Bytes (48K)
.NET Binary SOAP Message Frame: 49195 Bytes
Transfer Overhead: 43 Bytes or 0.087%

With RM for Session Recovery: 49228 Bytes
Transfer Overhead: 73 Bytes or 1.54%

Observation 3: byte[] is just another data structure

```
[OperationContract(IsOneWay = true)]  
void Send(byte[] d);
```

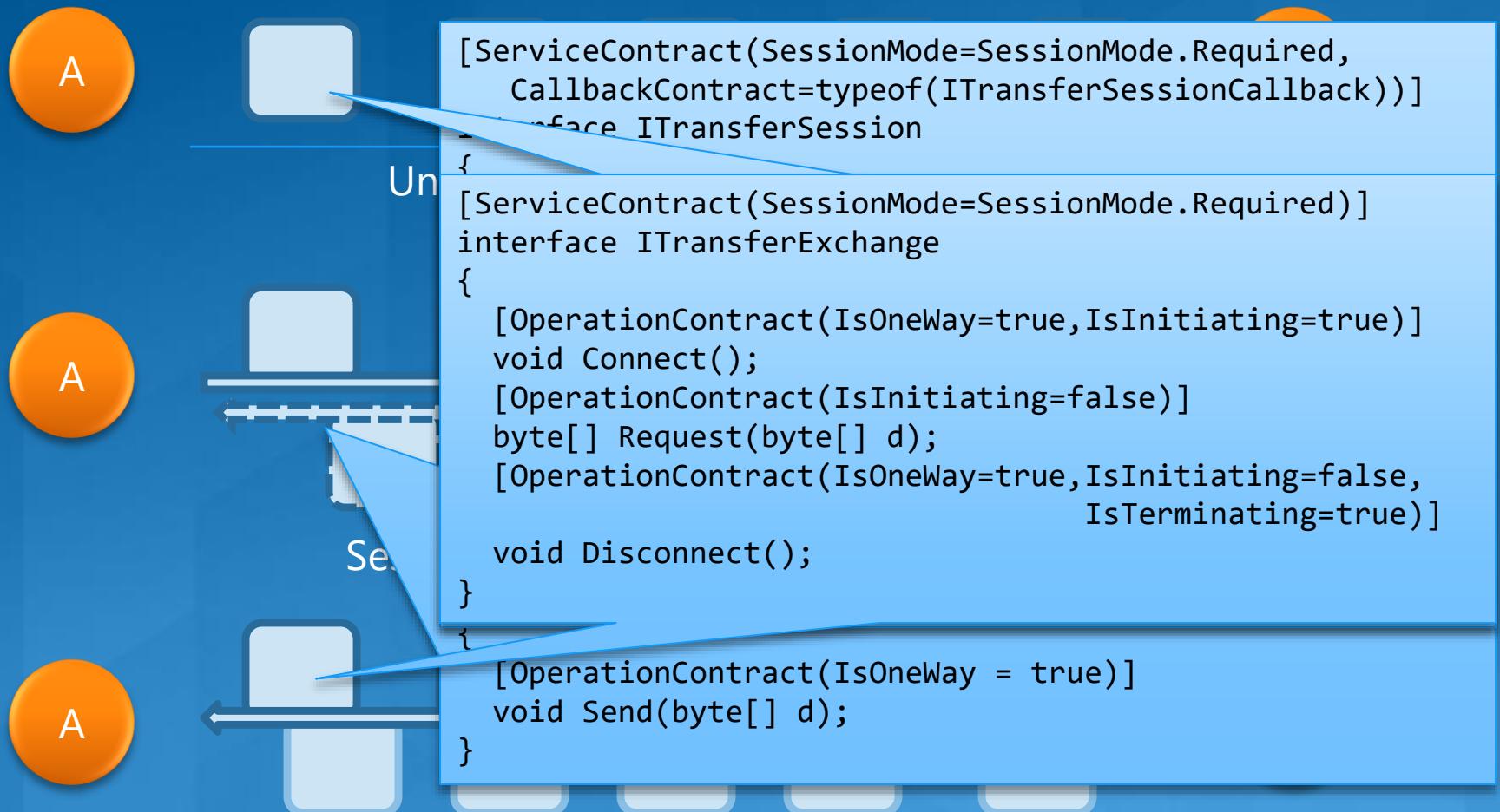
```
[OperationContract(IsOneWay = true)]  
void Send(int[] d);
```

```
[OperationContract(IsOneWay = true)]  
void Send(string[] d);
```

```
[OperationContract(IsOneWay = true)]  
void Send(List<string> d);
```

```
[OperationContract(IsOneWay = true)]  
void Send(PurchaseOrder d);
```

Observation 4: 3 Ways To Talk = 3 Contracts

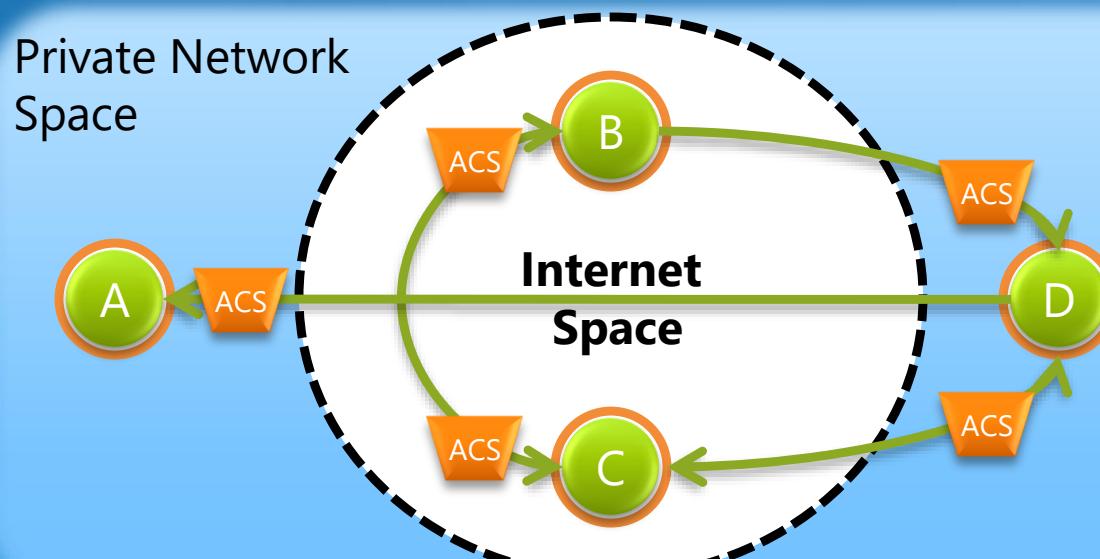


Session-Bound, Correlated Datagrams

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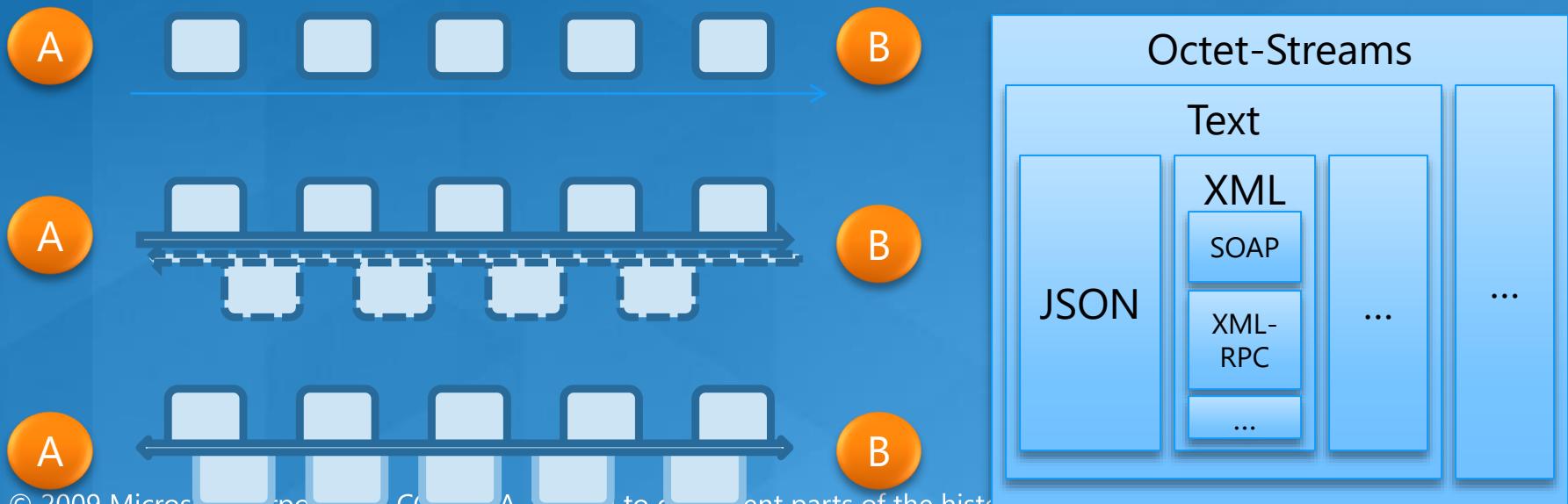
Service Bus: Core Capabilities

- Internet-scoped overlay-network bridging across IP NATs and Firewalls with federated access control
 - Network Listen/Send from any Internet-Connected Device
 - Internet-scoped, per-endpoint Naming and Discovery
 - NAT/FW Traversal via TCP, TCP/Direct, and HTTP Web Streams



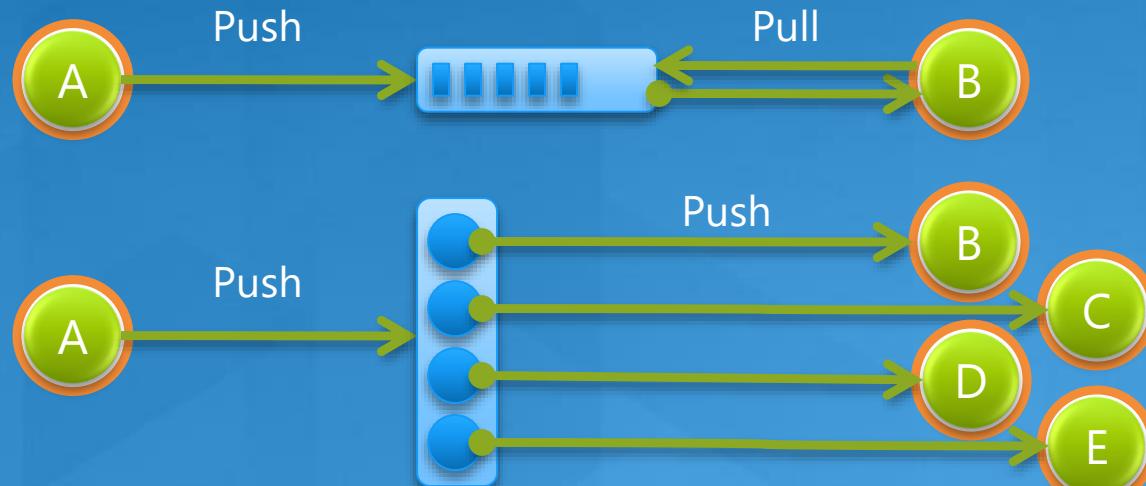
Service Bus: Core Capabilities

- Transfer raw and structured data allowing for any common shape of communication
 - Raw Data, Text, XML, JSON, ...
 - Datagrams, Sessions, Correlated Messages
 - Unicast, Multicast



Service Bus: Core Capabilities

- Built-In messaging primitives for temporally decoupled communication, routing, and message processing
 - Push/Pull translation for occasionally connected receivers
 - Publish/subscribe and message processing (after V1)



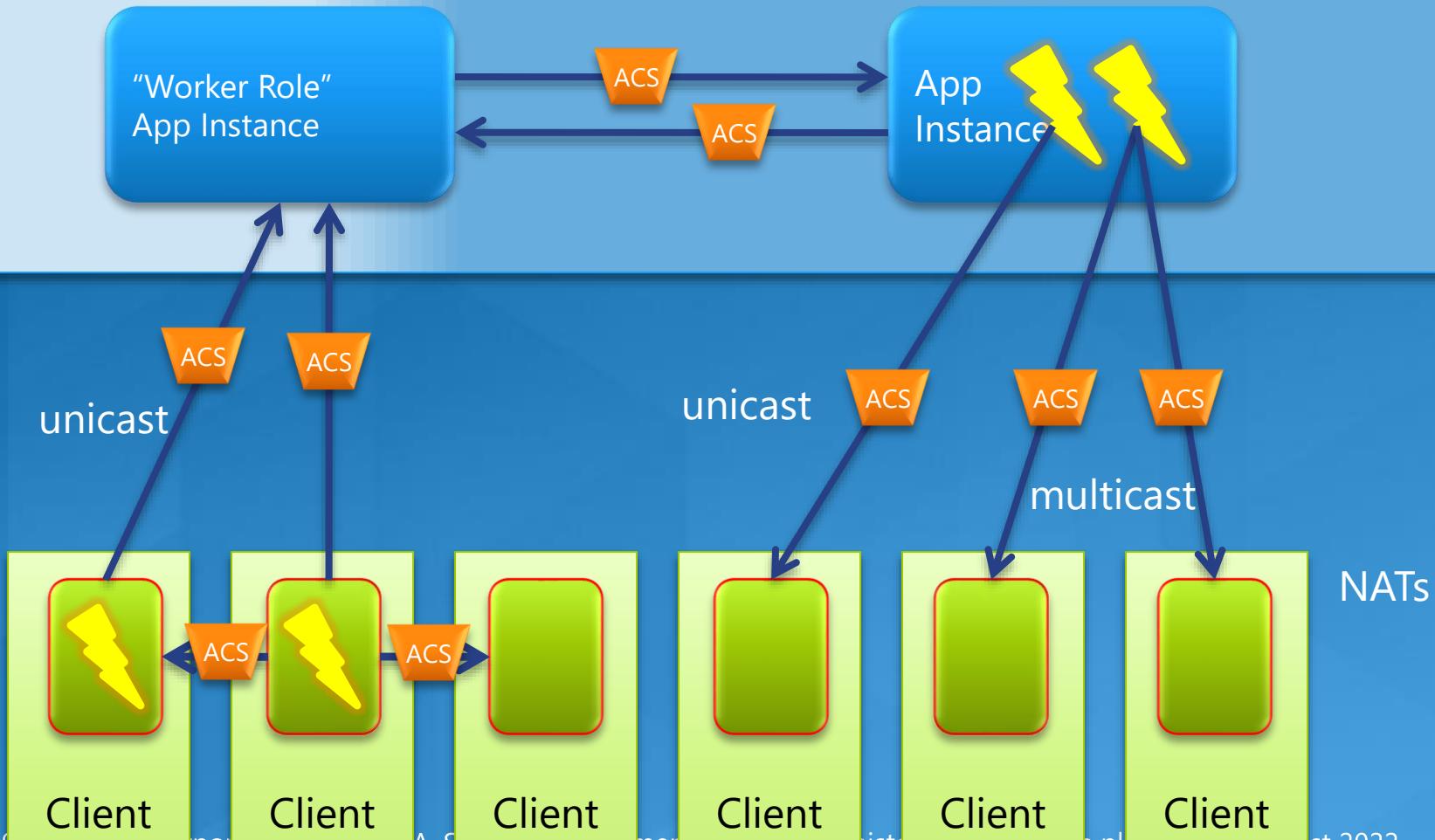
5 Ideas

- Notification Fan-Out
- Distributed, RESTful Resource Management
- SOA/EAI Document Exchange
- External DMZ / Home Automation
- Integrate “Anything”

Pattern 1: Notification Fan-Out

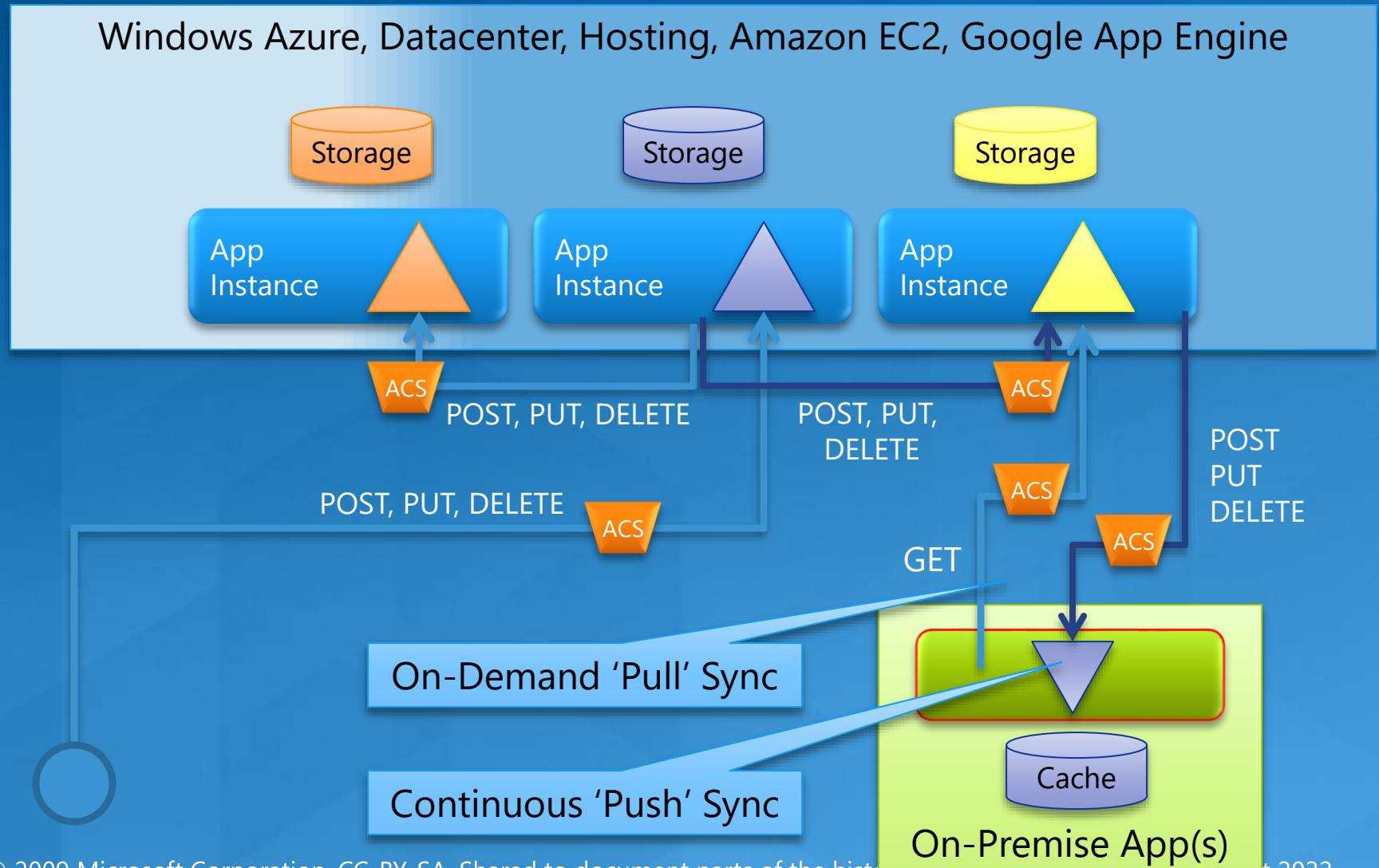
(Sessionless Unicast or Multicast Datagrams)

Windows Azure, Datacenter Hosting, Amazon EC2, Google App Engine



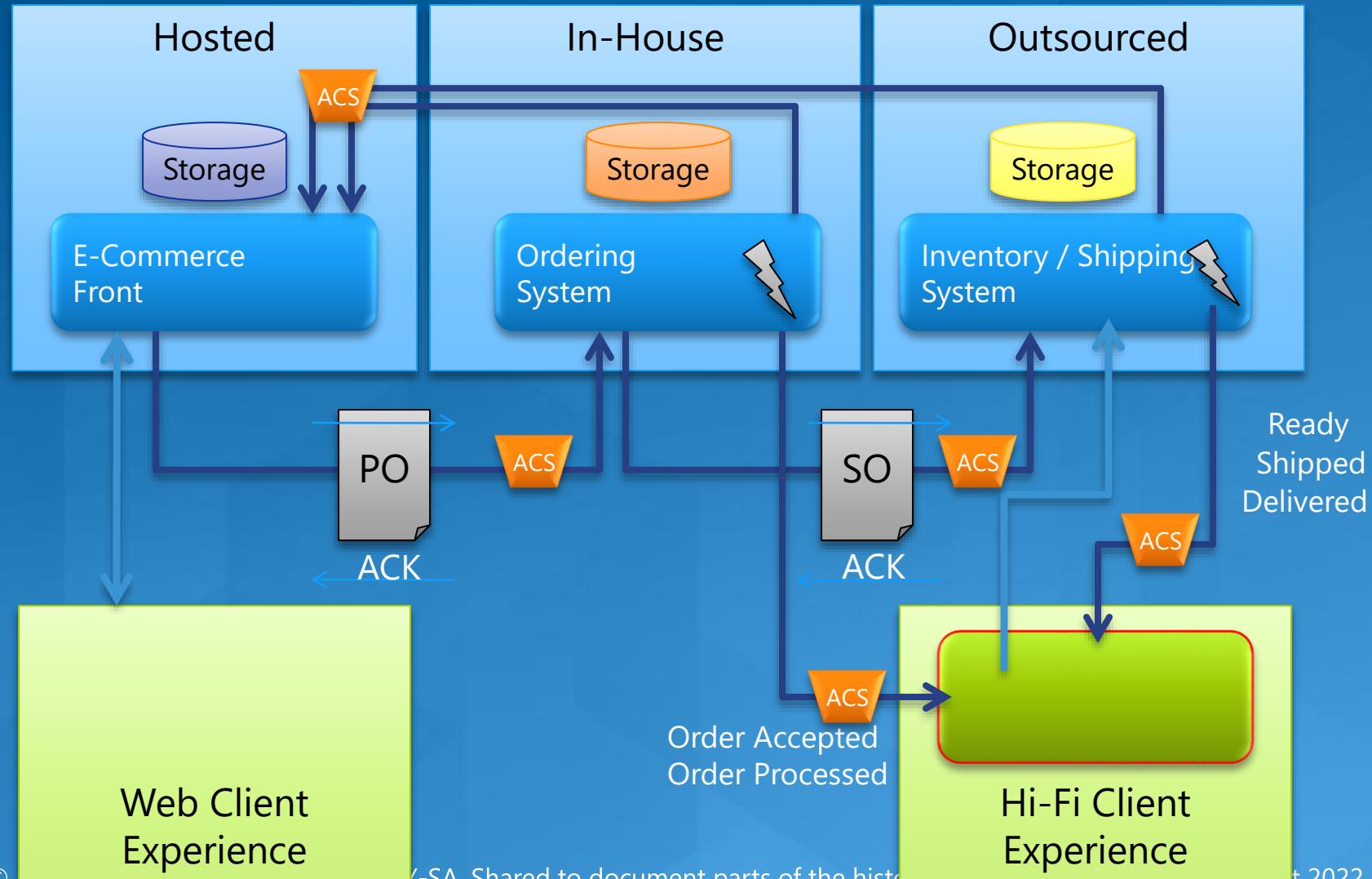
Pattern 2: HTTP 'REST' Resource Management

(Request/Response HTTP/HTTPS w/ arbitrary payloads)



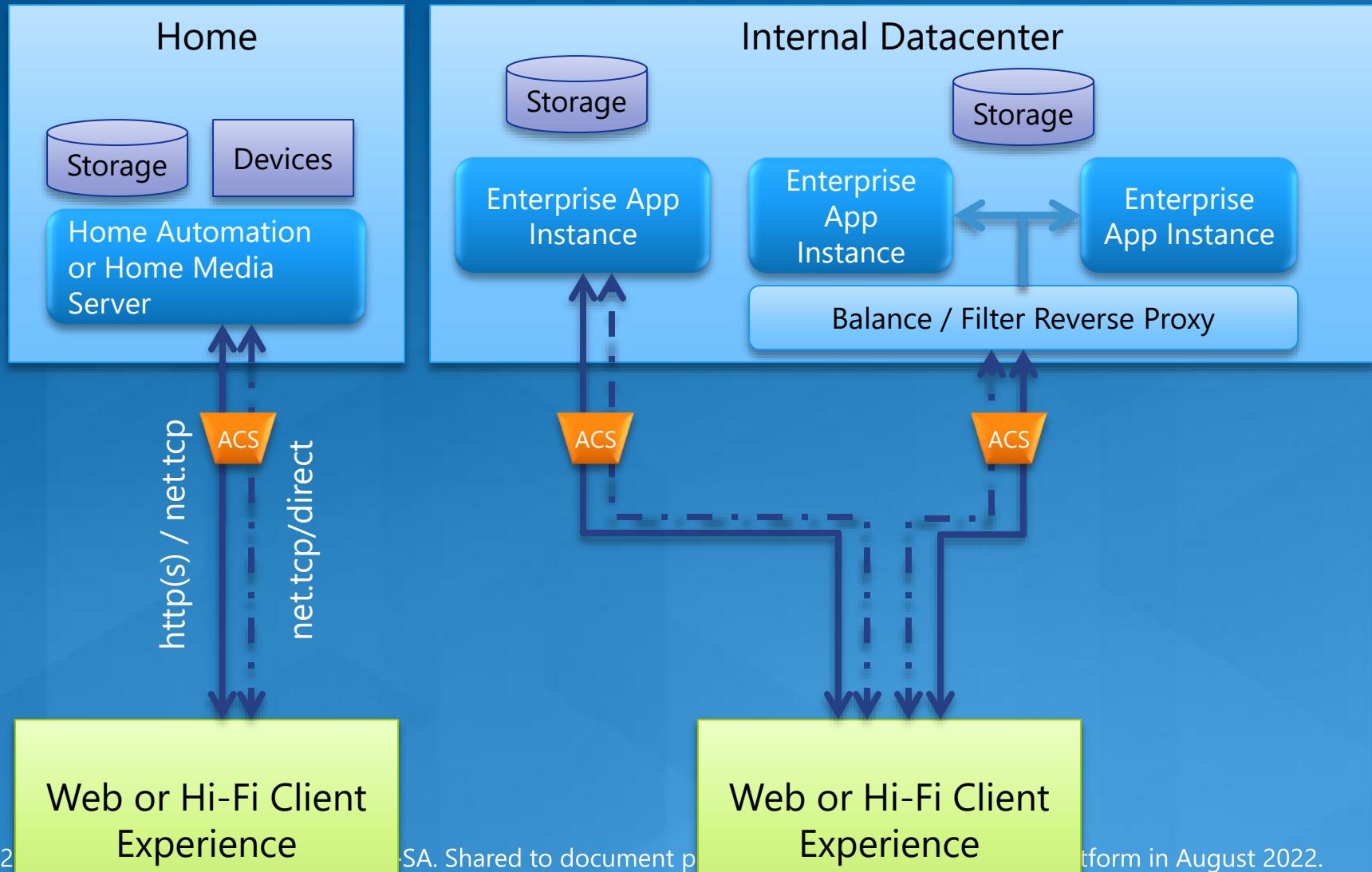
Pattern 3: SOA/EAI Document Exchange

(session-bound, app-level ack'd document transfers + notifications)



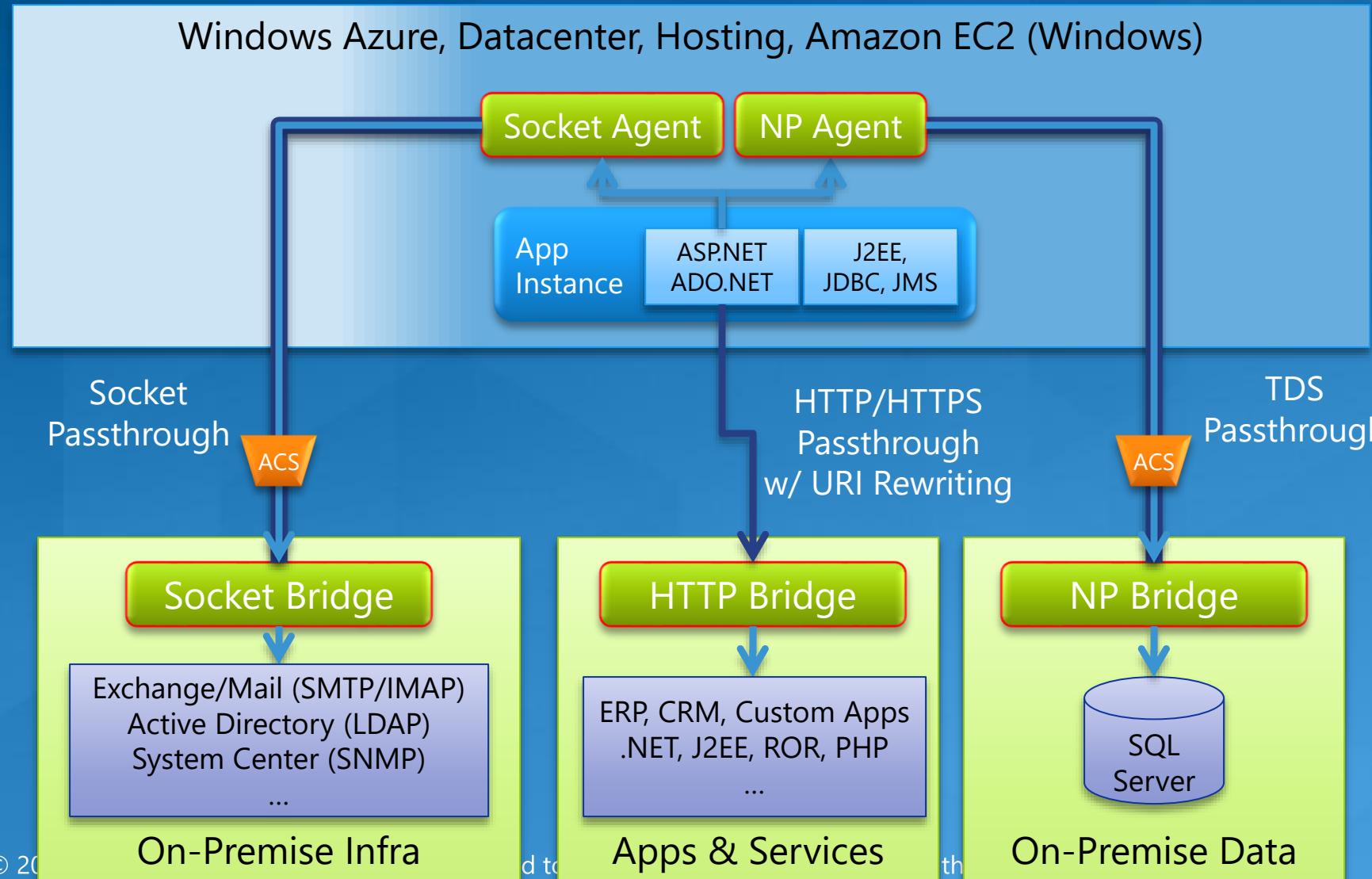
Pattern 4: “External DMZ” & Home Automation

(any communication style, secure NAT traversal for TCP & HTTP/S)



Pattern 5: Integrate “Anything”

(session-bound, raw-binary transport tunneling)



Call to Action

- Try the services
 - Start now at www.azure.com
 - Download the SDKs for Windows Azure and .NET Services
 - Register for a CTP account on both
- Get docs and resources
 - training kit: azure.com/trainingkit
 - dev center: msdn.microsoft.com/azure
 - forum and blogs: azure.com/blog
 - .NET Services Tech Talk DL: netsvstt@
 - Field portals: [//azure](http://azure) and [//windowsazure](http://windowsazure)
 - DPE Metro program: [//metro/services](http://metro/services)

Related Content

- Breakout Sessions/Chalk Talks
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 - July 28 10:15 AM WSCTC 6C
 - SBP221 Windows Azure Platform Pricing and Licensing
 - July 29 2:45 PM (Sheraton) Grand Ballroom D
 - SBP403 Windows Azure Launch Update - Ask The Engineers
 - July 31 10:30 AM WSCTC 204
 - SVR205-R2 Windows Azure - What you are selling and how to sell it?
 - July 30 4:15 PM WSCTC 4C-4
- Competitive Content
 - ARC215-R1 Azure and the Competitive Landscape: A Perspective with David Chappell
 - July 28 12:45 PM WSCTC 6E



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