

IBM z Systems

Enterprise Hybrid Cloud Computing

System z and SoftLayer – Use Case Study

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Agenda

Hybrid Clouds – Gaining Traction

Hybrid Clouds – Use Cases

On Premise and Off Premise – System z and SoftLayer

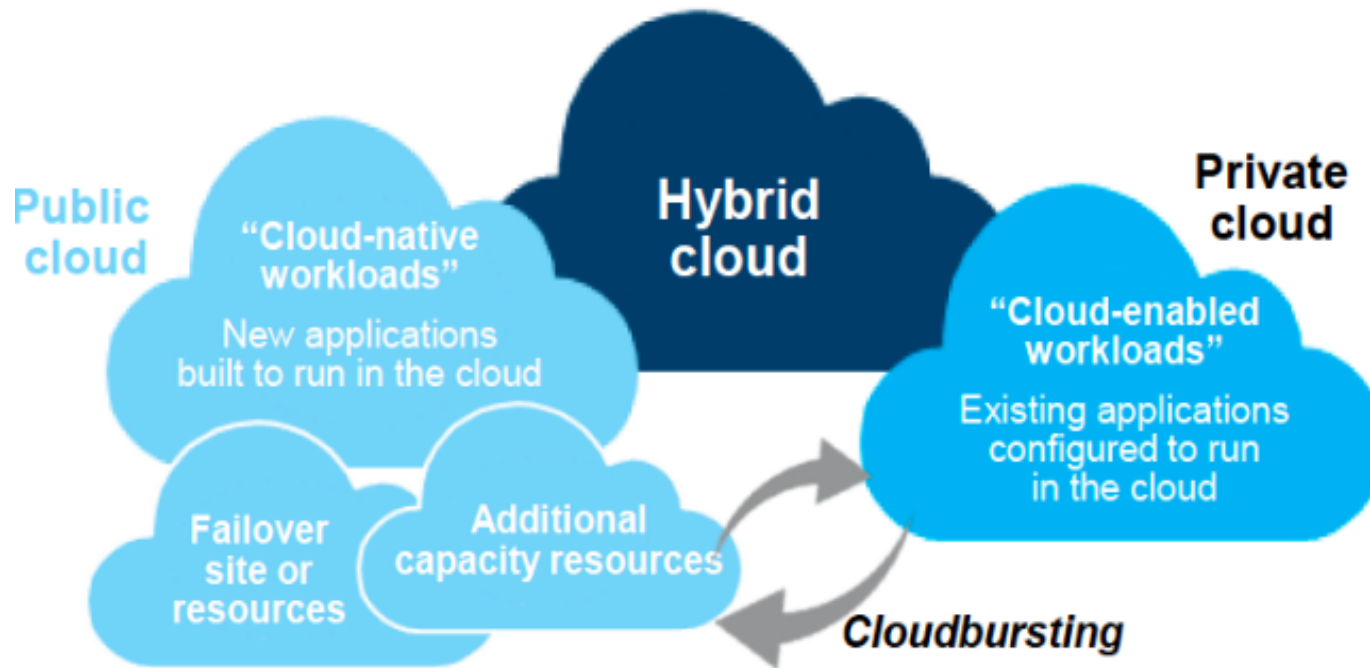
Security is Paramount

Cloud Services – Use Case

z Systems Hybrid Cloud – Service Offering

z13 – Powering Digital Enterprise

Hybrid Clouds – Leveraging new and legacy workloads



Retain control of the IT environment and protect proprietary systems and data

Address rapidly escalating **scalability and processing demands** required by analytics and innovation

Maintain regulatory compliance and desired service levels

Industry Buzz

“50% of companies will run on Hybrid Cloud by 2017. “ **Virginia Rometty, IBM Chairman and CEO, Pulse 2014**

“Customer have outgrown the Public Cloud. “ **John Engates, Rackspace, CTO**

“70% of the enterprises plan to complement their in-house server and storage resources with IaaS resources from public cloud providers for primary or peak workloads. “ **Forrester**

“In 2014, \$7 B hybrid cloud opportunity enabling customers to consume public and private clouds, with more workload and greater scale.” **TBR Cloud Program, “Hybrid Cloud Consumer Report**

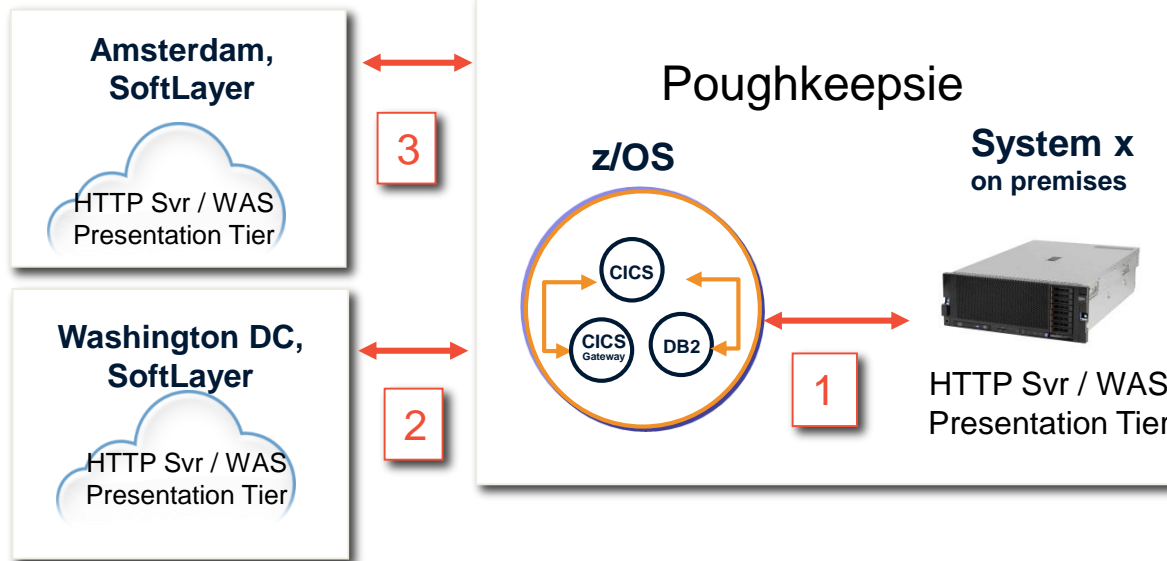
“Amazon becomes Retail Bank Role Model. “ **American Banker**

“Five platforms mattering to future of payments – Apple, Amazon, Facebook, Google, Alibaba. “ **Kenneth Chenault, American Express, CEO**

Hybrid Cloud – Use Cases for System z

- Tiered **Application** – Leveraging **Economics** of Cloud.
- Cloud **Services** – Leveraging **Innovation** in Cloud.
- Cloud **Bursting** – Leveraging **Flexibility** of Cloud.
- **SOE-SOR** Integration – Leveraging **Rapid Deployment** in Cloud.

Hybrid Cloud – Use Cases for System z



Results

No surprises or issues in implementing the Hybrid architecture

No major performance impacts from added security

Relatively small performance impact accessing z/OS from SoftLayer

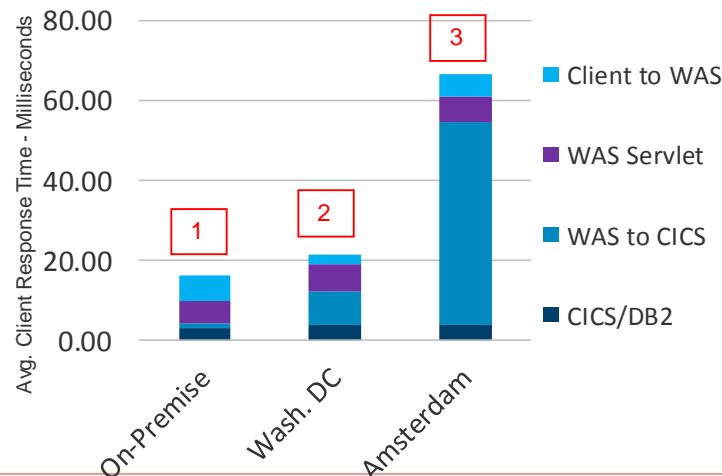
14/99 ms increase in latency for each CICS call

Washington DC, a 5 ms increase in average client response

Amsterdam a 50 ms increase in average client response

No significant change in transaction rate or z/OS load

Latency – On-premises vs. SoftLayer



Initial SoftLayer Results – Deeper Dive

Comparable environments

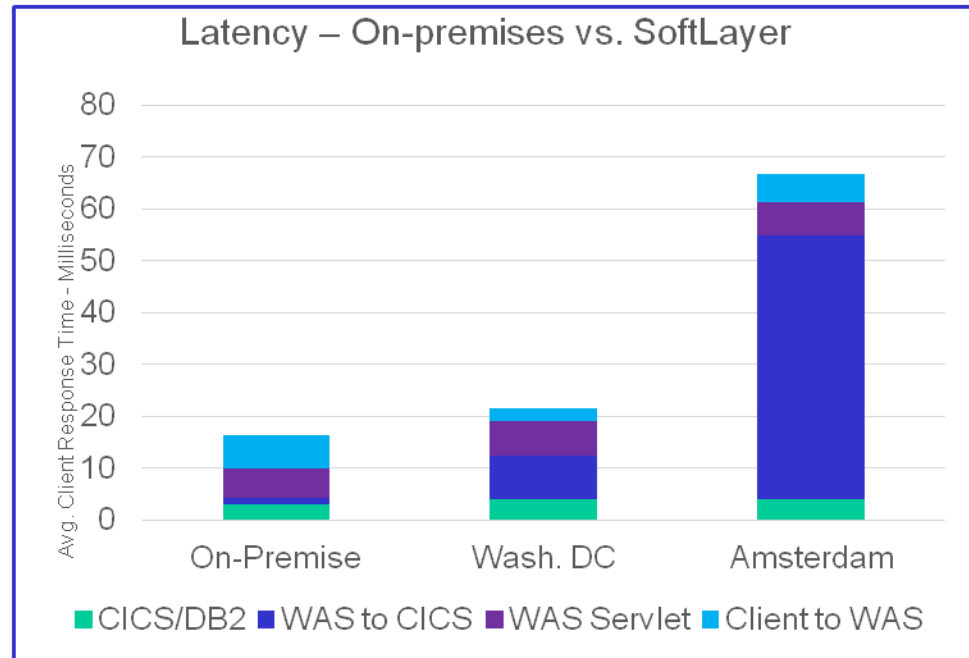
- 5000 concurrent simulated users
- 1 second think time
- Every 2nd end user transaction goes to z/OS
- Same z/OS configuration in Poughkeepsie, NY
- Similar System x model machines
- Network security added with SoftLayer

Minimal impact from increased latency

- Network latency increase (about 14/99 ms) applies only to requests that go to CICS/DB2 (every 2nd request in our tests)
- Small decline in throughput caused by slower response to client simulator (simulator artifact)
- Some additional WAS thread tuning was needed to account for network latency
- HTTP Server front-end to WAS reduces the impact of network latency on overall performance

Conclusions

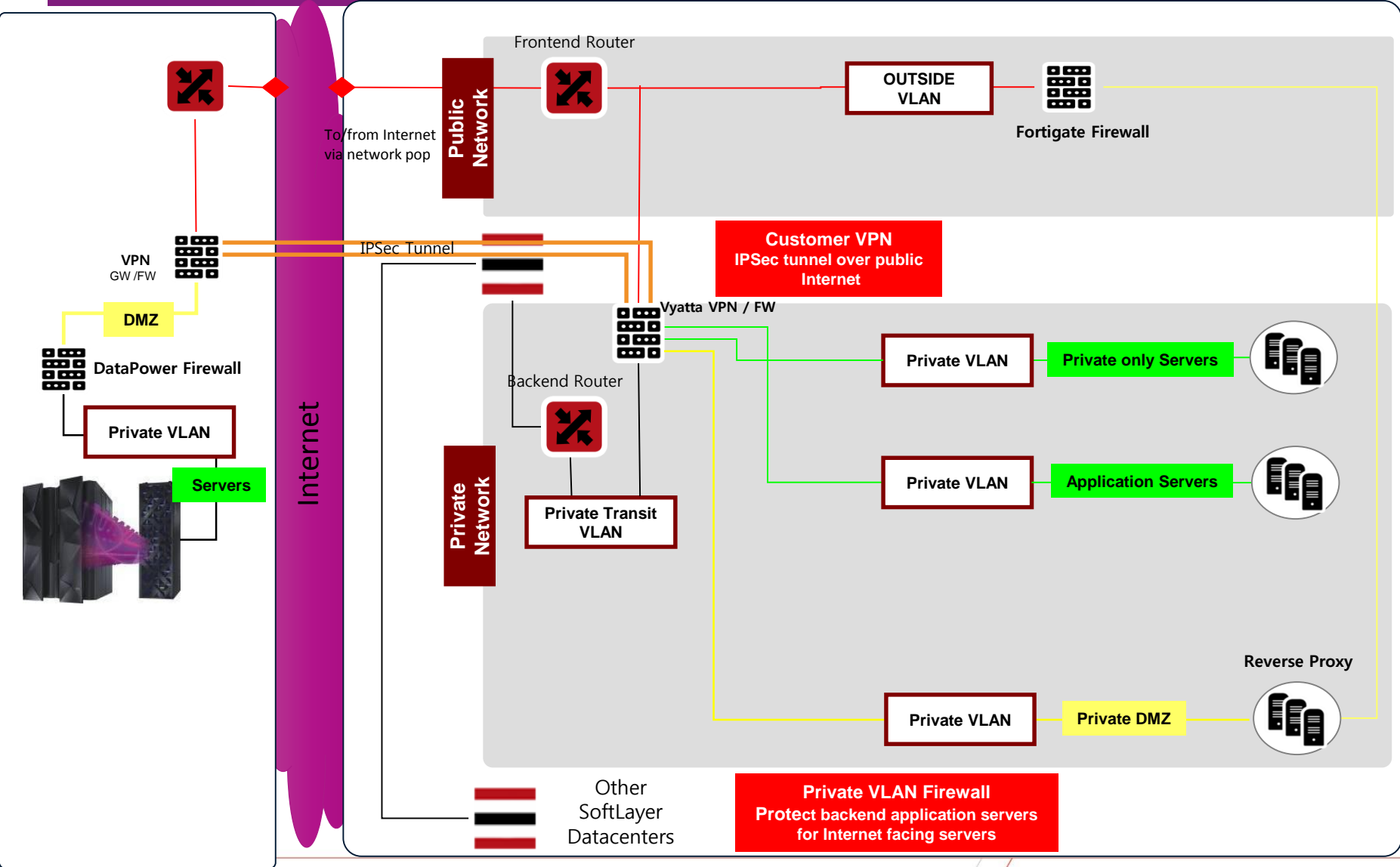
- Relatively small performance impact accessing z/OS from SoftLayer (within most response time goals for OLTP)
- 14/99 ms increase in network latency for each CICS call
- Wash DC, only 5 ms increase in average client response time
- Amsterdam, 50 ms increase in average client response time
- Some WAS and CICS Gateway tuning was needed
 - HTTP server on SL reduced latency impact
- Small decline in transaction rate because of slower response to client simulator (simulator artifact)
- No surprises and no issues in implementation
- Performance impact of added security is small (<2%)



	On-Premises	Wash DC	Amsterdam
z/OS CPU utilization	60.68	61.77	59.66
CICS Tx/Sec	2376	2393	2307
CICS Tx/ CPU Sec	3916	3874	3867
End User Tx/ Sec	4690	4750	4579



Hybrid Cloud – Security is Paramount



Cloud Services– Smart Payment System



> Help identify new sources of revenue for banks via the merchant loyalty program running on Softlayer using bank's retail payment data

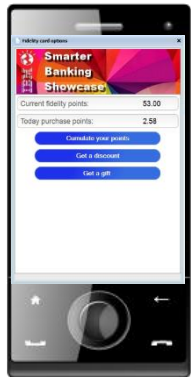


Consumer initiates payment



Bank screens the data and finds a virtual fidelity card for this consumer

Service request via Cloud



options to redeem or accumulate points



Application @ SoftLayer sends the Couponing choice to merchant & consumer

Consumer chooses to utilize a discount

Application @ SoftLayer updates the Loyalty program status and sends the result to bank



Bank Accepts Payment



Cloud Services– Data is Key

MobileFirst
On prem

Financial &
personal
information –
highly secured

Non Financial & non
personal information –
secured

CICS

WebSphere

DB2

Analytics

MQTT

MobileFirst

Was Liberty

MobileFirst
Platform
(cloud)

z System and SoftLayer Integration – Hybrid Use Case Examples

CICS OLTP System on-premises Data Center

- Provides best-of-breed OLTP system
- Exploiting security and scalability of GDPS

Application Server on SoftLayer Cloud Server

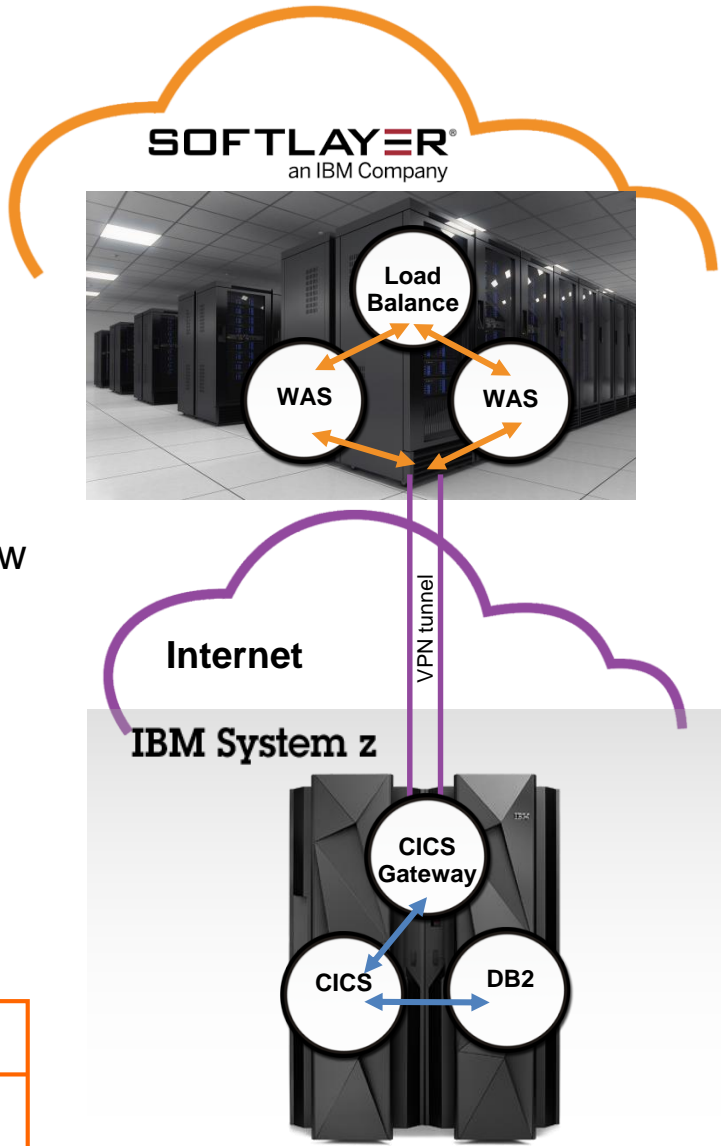
- Hosts application / presentation tier on dedicated or virtual server
- Elastically scales compute capacity with pay as you grow

Secure VPN Tunnel (Vyatta: virt. router, FW, VPN)

- Provides secure means to cross public network
- Presents private network of SoftLayer as extension of on-premises private network
- Network Gateways provides IPsec protocol stack as a way to build the VPN tunnel (using NAT traversal)

Hybrid Architecture provides best of both worlds

Secure Transactions combined with the dynamic of Cloud



z Systems Hybrid Cloud Connect Test Drive Architecture



SoftLayer

Use SoftLayer Portal to acquire server, storage and establish VLANs

Gateway as a Service

Use GaaS Portal to establish IPSec to SoftLayer VLANs

On-Premise

z Systems of Record is used to maintain secure and operational control of data



z Systems Hybrid Cloud – Service Offering

1-2 Day services engagement at no cost to the customer!

Customer Requirements:

- ✓ IPsec capable network equipment at customer datacenter
- ✓ Willingness to configure a connection in their firewall to SoftLayer
- ✓ 1 customer network expert dedicated to the effort during implementation
- ✓ 1 distributed and z Systems sysadmin on call during implementation
- ✓ A SoftLayer account, or a willingness to open a SoftLayer account
- ✓ 1 instance of virtualized machine (of any type) on client site that can be used to test connectivity

IBM Provides:

- ✓ An expert resource to setup the secure network gateway that will bridge your datacenter network with infrastructure in SoftLayer.
- ✓ 3 Months of SoftLayer GaaS capability offered at no cost to the customer.
- ✓ 3 Months of 1 SoftLayer Virtual Server offered at no cost to the customer.
- ✓ No cost Test Drive for early adoptors.

If interested, contact:

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- Roy Moebus – moebus@us.ibm.com
- Kershaw Mehta – kershaw@us.ibm.com

z13 – Powering Digital Enterprises

Up to 10 TB Memory on z13
Improves consolidation ratios

GDPS for Linux on z System
Disaster Recovery solution for mission-critical workloads

Increase in # of LPARs on z13
Improves TCO

SMT technology on z13
Improves performance and throughput of workloads

KVM
New industry-standard hypervisor (SOD)

Cloud Manager w/ OpenStack V4.2
Heterogeneous platform management from z System

Elastic Storage for Linux on z System
Enables new class of workloads



Private Cloud



Hybrid Cloud



Public Cloud



Links – Whitepaper, Blogs

[Enterprise Hybrid Computing with z System and SoftLayer](#)

[Enterprise Hybrid Computing with z System and SoftLayer – Whitepaper](#)

[Benefits and challenges of Hybrid Cloud – Use cases for z System](#)

[z System and SoftLayer – Security architecture blueprint](#)