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# Signature<sup>®</sup> International Modernization on IBM Hybrid Cloud

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In line with continuous innovation for our clients, Fiserv is working with IBM to provide a flexible roadmap to include Signature cloud-native workloads on Red Hat® OpenShift®, to run natively on IBM's latest Power10 processor-based servers that host the international version of the Signature core banking platform.

By consolidating existing Fiserv workloads and adding new cloud-native microservices on the IBM Power® platform, clients can accelerate application modernization to deliver agile and ground-breaking Fiserv services to their customers on private or hybrid cloud-service deployments.

By taking advantage of incremental, in-place modernization, customers are able to add new Red Hat OpenShift-based services provisioned as containers on the same IBM Power environment, which also runs traditional applications on IBM i virtual machines.

This provides an accelerated path to cloud modernization by leveraging existing unused or unassigned resources on the IBM Power platform for Microservices for Signature from Fiserv. By running a mix of virtual machines container microservices on the same IBM Power platform, the productive utilization of the servers is maximized.

Clients can also expect superior scaling performance, and can repurpose the integrated hardware and

Microservices for Signature provides a service layer in the Signature core banking platform, which enables the integration to Signature business applications and mobile and web channels, as well as system-to-system integration. With proven scalability, Microservices for Signature delivers information logically and consistently to any channel, at any time, on any device – 24/7/365.

IBM and Fiserv conducted an IBM Garage Laboratory test to evaluate the benefits of running Microservices for Signature and UUI using Red Hat OpenShift Container Platform, all running on the Power10 IBM i platform.

The objectives were:

- Show how all elements worked together seamlessly on the same platform
- Determine the possible throughput on IBM Power
- Explore how to utilize spare resources on the IBM i for running Microservices workloads

The performance achieved was approximately 19,000 transactions per second (TPS), with a mixed set of microservices without audit logs. See the list below of microservices used in the performance test.

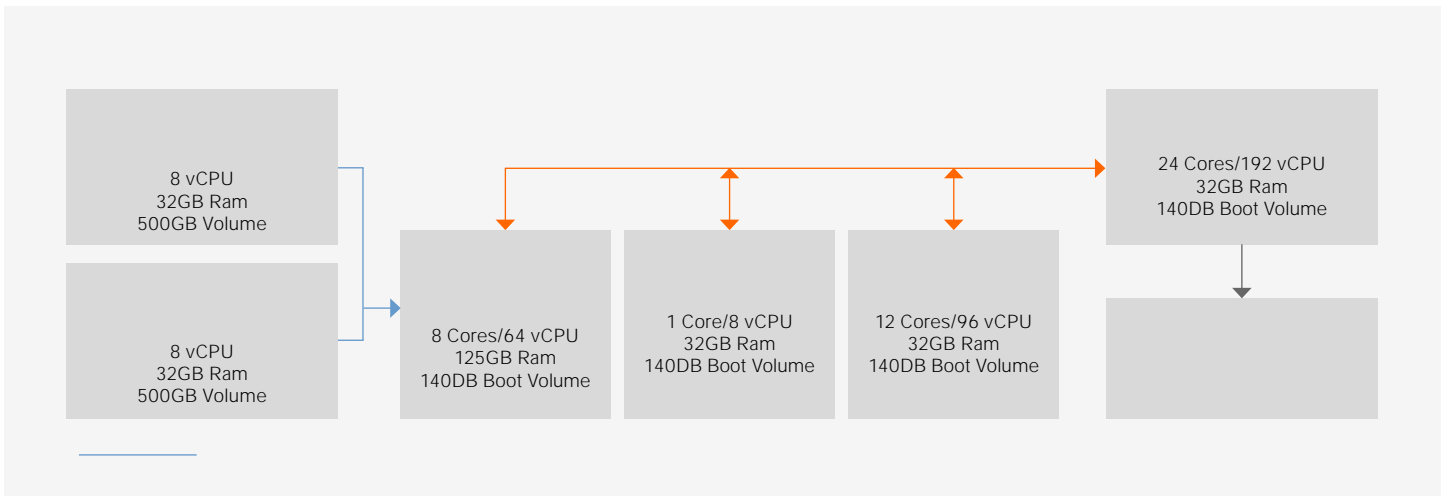
This load was achieved:

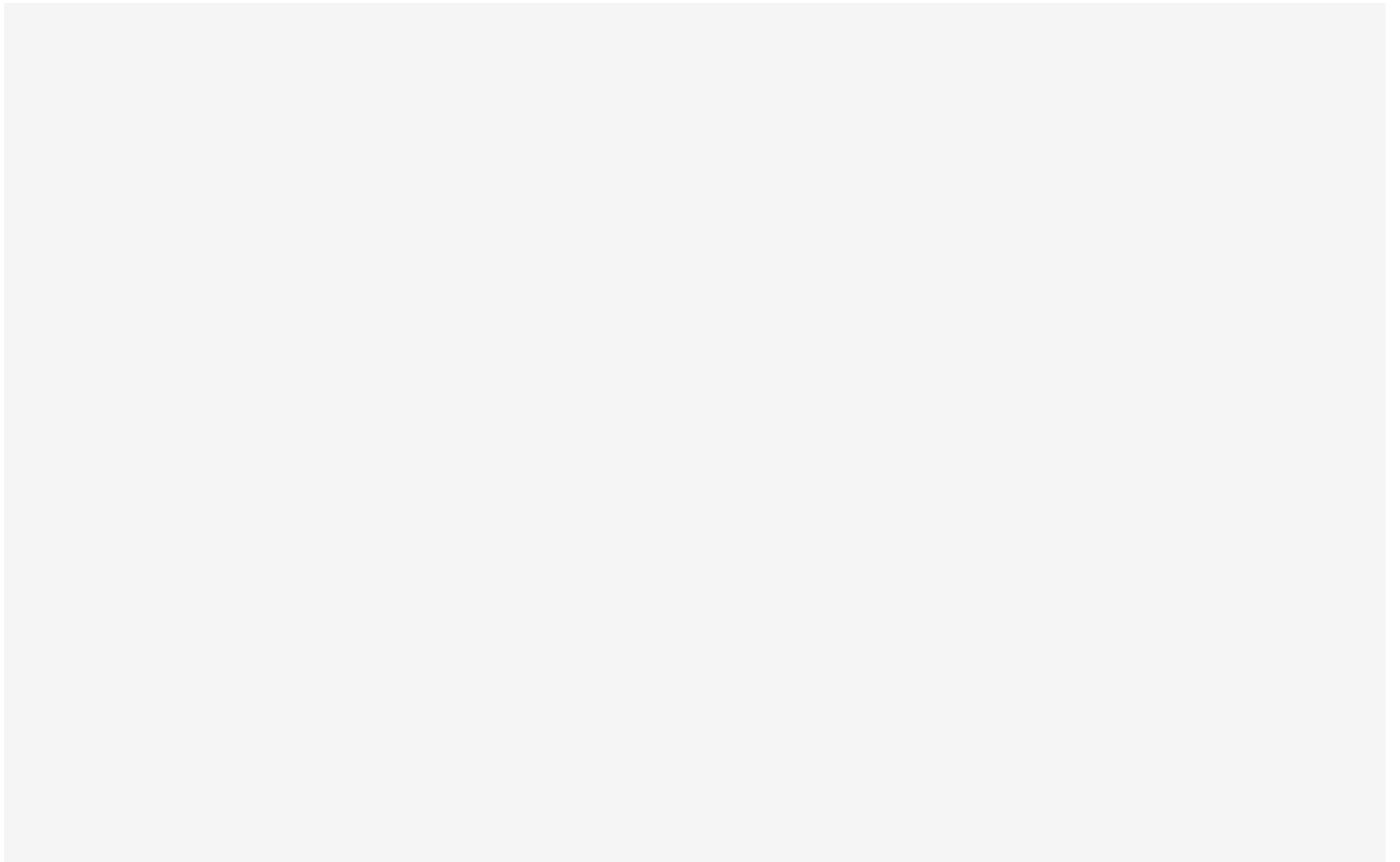
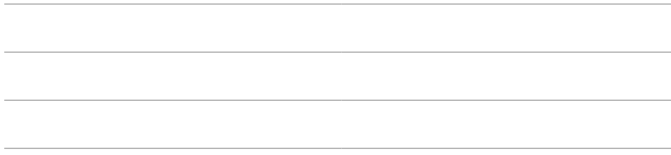
- With the Red Hat OpenShift Cluster load on the Worker nodes at 50% CPU and memory – 30%
- The IBM i load for the Core was 50% CPU

Our clients are modernizing their applications with cloud-native capabilities leveraging Red Hat OpenShift, enabling workloads for a hybrid cloud environment. The strength and leading isolation capabilities of IBM Power's hypervisor technology, PowerVM, enables clients to securely run AIX® or IBM i applications side by side with cloud native applications on Red Hat OpenShift. This maximizes efficiency and utilization, and provides greater flexibility to run across multiple clouds. Red Hat OpenShift extends Kubernetes with built-in tools to enhance application lifecycle development, operations, and security. With Red Hat OpenShift, clients can consistently deploy workloads across multiple public or private clouds with ease.

Running Red Hat OpenShift on Power10 enables customers to take advantage of the superior scale, RAS and security advantages.

The Red Hat OpenShift Cluster and IBM i shared a 100GbE network. Load was generated over a 10GbE network.



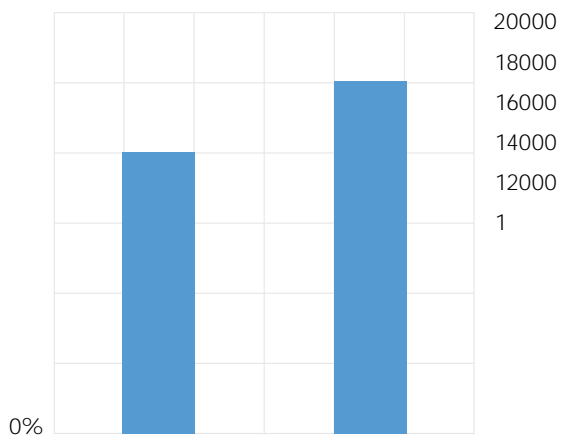


For performance testing we tested Microservices for Signature and Signature. Load was generated from virtual machines using JMeter and sent to

## Test Configuration

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Target load was expected to be between 50 and 60%.  
However, we achieved the TPS with a load of 40 to 50%.





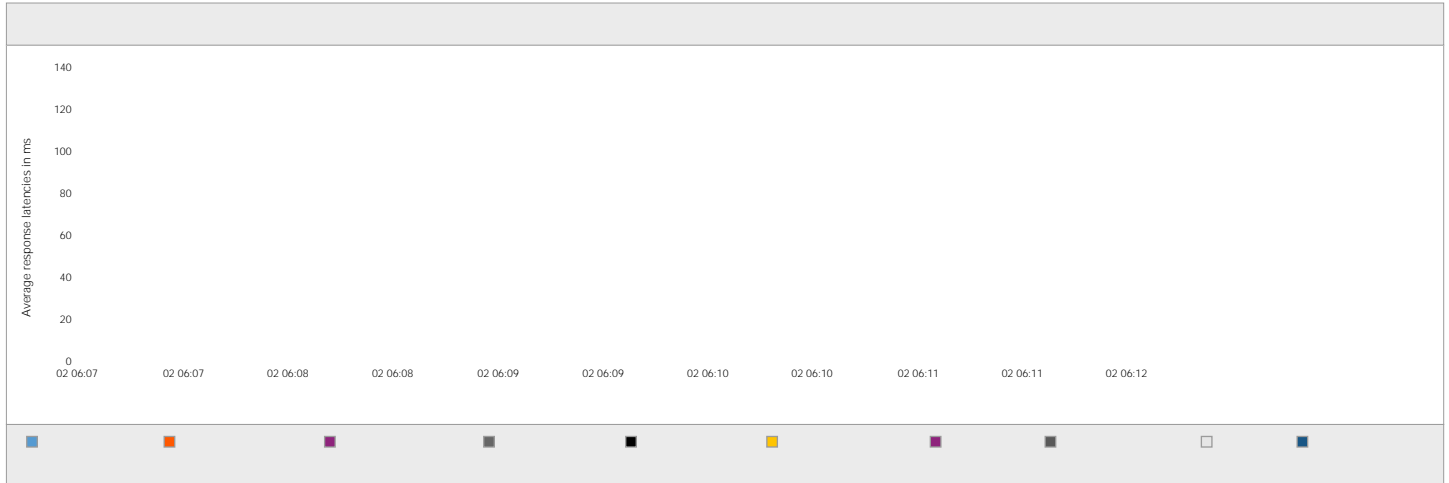
The next two graphs show the individual TPS per service and the overall TPS.





Latency wasn't really a concern as we can see that response times (see response graph below) and latency

are pretty much in line. This was to be expected, given that we ran all of the testing within the same lab.



Fiserv and IBM continue to collaborate on performance and optimization of its latest technologies in order to deliver superior solutions to our commercial and retail-focused banking clients. Because of this ongoing

collaboration, your organization will be able to introduce new services, deliver value and meet the evolving demand for the hyper-personalization of customer experiences in banking, today and in the future.

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