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**ISY0458**

# Customer Experience with Linux on z Systems

**2015**

IBM z Systems

Technical University

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## Why Linux on z Systems

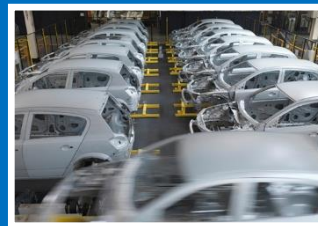
- Client quotes
- Client stories
- Going mobile
- Virtualization benefits



**Easy  
Workload  
Integration**



**High Flexibility,  
Scalability and  
Manageability**



**High  
Productivity**



**High Resource  
Utilization**



**High levels of  
Quality of  
Service**

# Clients run many workloads on Linux on z Systems



Database deployment

- [EVERTEC](#) (Oracle)
- [L3C LLP](#) (Oracle)
- [Dundee City Council](#) (Oracle)
- [Met Office](#) (Oracle)
- [America First Credit Union](#) (DB2)
- [SinfoniaRx](#) (DB2)
- [Marist College](#) (DB2)



Web application and SOA infrastructure

- [BTMU](#)
- [Nationwide](#)
- [Halkbank](#)
- [Renfe](#)
- [Bank of New Zealand](#)



Real-time insights

- [Sicoob](#)
- [White Cube](#)
- [Bankia](#)
- [Miami-Dade County](#)
- [IBM](#)



... and much more

- [ABK-Systeme GmbH](#) (MobileFirst P.F.)
- [Banca Carige](#) (MobileFirst P.F.)
- [German Pension Fund](#) (Content Mgt)
- [BCBS Minnesota](#) (SAP)
- [Baldor](#) (SAP)
- [Porto Alegre](#) (Maximo)
- [City a. County of Honolulu](#) (Maximo)
- [IBM](#) (Connections/Notes)

More cases: [ibm.com/systems/z/os/linux/success/index.html](http://ibm.com/systems/z/os/linux/success/index.html)



**Flexible through virtualization**  
**Scalable through server capacity**  
**Manageable through intuitive interface**

The whole architecture offers the traditional mainframe virtues of **massive scalability, very high reliability and availability, and centralised management.**

In addition to cost savings, consolidating in a single place simplifies management.

- The Met Office, UK





**Integrating applications and data from silos allows to realize the full potential of your IT investment**

*“DB2 running on Linux on z Systems [vs. existing distributed infrastructure] offers **more reliability and performance, and better integration with our backup, monitoring and ETL tools.**”*

- Paulo Nassar, IT Processing and Storage Infrastructure Manager, Sicoob



*“IBM [Enterprise Linux Servers] have the ability to **operate even when resources are at 100% utilization.**”*

- Kuniaki Nakajima, Systems Infrastructure No.1, Systems Division, Bank of Tokyo-Mitsubishi UFJ

## High resource utilization saves costs

### **Example:**

Software costs, when priced per core, are the same for a low-utilized or a high-utilized core. Therefore the usage of fewer high utilized cores contributes to savings in software costs.



**Responsive, agile and simple  
management techniques realize  
operational excellence**

*“Our overall  
maintenance and  
support effort  
has been  
reduced by at  
least 65 percent.*

*We needed six people ...,  
now we have just two  
people.”*

**- Rogério Okada, IT  
Manager,  
Algar Telecom**





**Meet stringent IT service delivery**

*“An [Enterprise Linux Server] hosting a virtualized Linux environment differentiates in level of service and quality of service.”*

- Lubo Cheytanov, founder and co-owner,  
L3C LLP



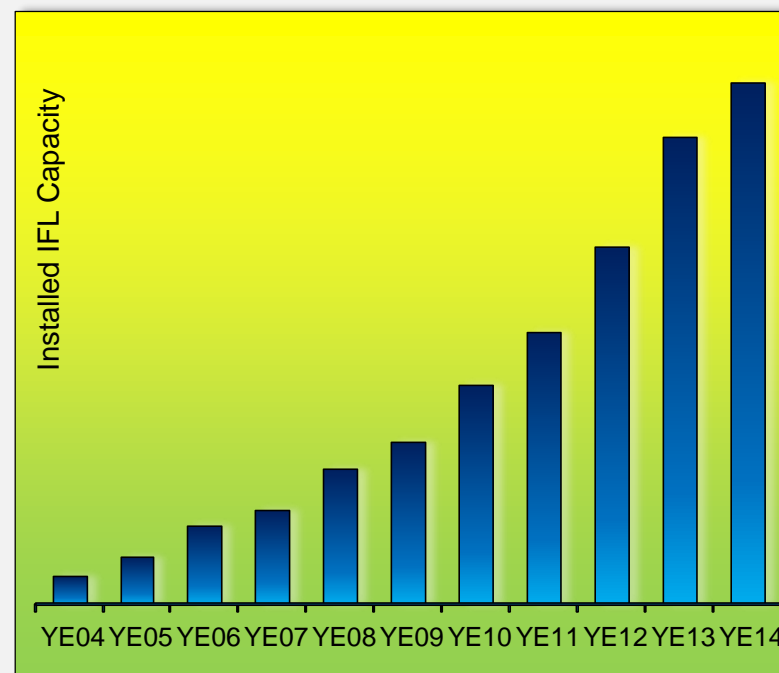




## *Installed Linux MIPS at 45% CAGR\**

- 27.3% of Total installed MIPS run Linux as of 4Q14
- Installed IFL MIPS increased 12% from 4Q13 to 4Q14
- 39% of z Systems clients have IFL's installed as of 4Q14
- 82 of the top 100 z Systems clients are running Linux on the mainframe as of 4Q14 \*\*
- 35% of all z Systems servers have IFLs
- 60% of new FIE/FIC z Systems accounts run Linux

### Installed Capacity Over Time



\* Based on YE 2003 to YE 2014    \*\*Top 100 is based on total installed MIPS



### Offers high performance

and near-total availability to support transaction processing

### Reduces costs,

space, and energy use by consolidating from multiple physical servers to a virtualized environment

### Takes hours, not days

to provision new workloads, improving responsiveness to business demands

#### Solution components

##### Hardware

- IBM® zEnterprise® EC12

##### Software

- IBM z/OS®
- IBM z/VM®
- IBM z/VSE®
- Oracle Database 11g Release 2
- SUSE Linux Enterprise Server for System z

#### The transformation:

EVERTEC migrated core Oracle databases supporting its transaction processing systems to a virtualized SUSE Linux Enterprise Server environment, running on an IBM® zEnterprise® EC12 (zEC12)

mainframe server. The company has currently migrated approximately 40 databases to the zEC12, with plans to make IBM System z® the strategic platform for all Oracle databases.



*"IBM System z offers the lowest cost for processing large amounts of data, hands-down."*

*—Eduardo Camargo, Executive Vice-President and CIO, EVERTEC Inc.*



Success Story  
Enterprise Linux Servers

NWK

Seeking to boost the flexibility and reliability of its mainframe environment, agricultural service provider NWK chose to migrate its entire z/VSE mainframe workload to SUSE® Linux Enterprise Server for System z. The company is using one IFL on its new IBM zEnterprise 114 server, improving processing speeds by more than 70 percent compared with the old platform and gaining a stable, reliable platform for running its most important financial applications and business systems.



Overview

NWK Limited is a leading agricultural service provider, operating in the North Western Province of South Africa since 1909. The organisation provides both independent farmers and large-scale producers with a variety of products and services, as well as expert advice and financing. NWK employs more than 2,000 people and reported revenue of more than \$200 million in 2012. The company's activities include retail trading, grain storage and marketing, the production of day-old broilers, feed production, transport and food processing.

Challenge

With an extensive network of operational outlets and subsidiaries, ensuring the continued growth and profitability of NWK's operating segments requires tight control over business systems and financial processes. To achieve this, the company has custom-developed a broad suite of financial applications for managing a full

spectrum of processes from credit control to general ledger.

For the past 18 years, NWK has trusted in the reliability and stability of the IBM mainframe platform to support these vital business systems. The company previously ran all of its applications under the IBM z/VSE operating system, but a growing need for greater flexibility and support prompted the IT team to consider alternative options.

Solution

Linux quickly emerged as the front runner in NWK's search for a new operating system, its flexibility giving the company considerable scope for embracing a more open infrastructure model.

After evaluating the different distributions of Linux available on the mainframe, NWK chose to deploy SUSE Linux Enterprise Server for IBM System z—a decision that was strongly guided by the platform's reliability and the close collaboration between SUSE and IBM.



NWK at a glance:

A leading supplier of agricultural products and services, NWK has been operating in the North West Province of South Africa for more than 100 years

- **Industry and Location**  
Agriculture, Lichtenburg, South Africa
- **Products and Services**  
SUSE Linux Enterprise Server for System z
- **Results**
  - + Improves processing speeds and reduces database backup window by more than five times
  - + Offers strong reliability for key financial applications and business systems
  - + Supports a more open and flexible infrastructure model

After evaluating the different distributions of Linux available on the mainframe, NWK chose to deploy SUSE Linux Enterprise Server for IBM System z—a decision that was strongly guided by the platform's reliability and the close collaboration between SUSE and IBM.

**“We have been running SUSE Linux Enterprise Server on the IBM zEnterprise 114 (z114) for a few months now and everything has been operating very smoothly,” says Eddie Leighton.**

**“We support around 450 users on one IFL with an average CPU usage of 60 to 70 percent, and so far performance has been excellent, even when running at 100 percent utilization.”**

The z114 running SUSE Linux Enterprise Server for System z offers 600 MIPS versus the 172 MIPS of NWK's previous mainframe, which translates into significantly faster processing for a number of key tasks.

SUSE Linux Enterprise Server provides NWK with solid performance, and a reliable platform for running its most important workloads.

**“The IBM z114 is a fantastic server and SUSE Linux Enterprise Server for System z really helps us to get the most out of it. The solution has met all of our requirements in terms of performance and stability.”**

- EDDIE LEIGHTON, Technology Manager, NWK



“ System z is the most cost-effective platform for large Oracle workloads. Whether our customers need to consolidate or isolate processes, our Oracle services would be impossible without it. ”

- Lubo Cheytanov, founder and co-owner, L3C LLP

Read the full story ZSC03285USEN

<http://www-03.ibm.com/software/businesscasestudies/us/en/corp?synkey=W133353R73108L21>

## **Business need**

L3C LLP needed to bring the robust reliability, security and affordability of the mainframe to its cloud customers, while also using the platform as a key differentiator for its managed services.

## **Solution**

L3C deployed IBM® System z® servers running Linux to provide companies of any size—including small, mid-sized and very large enterprises—with scalable, cost-effective, high-performance cloud services.

## **Benefits**

L3C can now provide Infrastructure-as-a-Service (IaaS) options, with differentiated qualities of service and price performance, to help expand its reach and reduce costs for customers.

***Delivers extreme reliability and cost savings to cloud customers using IBM z Systems***





## Dundee City Council

### City government discovers the outstanding reliability of Linux on System z

#### The need

“We were facing major problems. We had an overflowing data center, so we could not physically get any more power into the building without spending significant sums of money, and the air conditioning was grossly overloaded.”

#### The solution

IBM zEnterprise BC12-based Enterprise Linux Server is dedicated to running the council’s business-critical Oracle Database environment on SUSE Linux Enterprise Server, supporting a range of critical services.

- Linux on System z cost less than replacing existing servers
- Recovery in just 20 minutes in the event of a disaster
- Consolidation has alleviated concerns around data center space and cooling

*“You can sum up moving to System z in one sentence: it’s easy and cost-effective, so go ahead.”*

*Tim Simpson, IT Infrastructure Manager, Dundee City Council*



## Offers excellent availability

by providing automated failover within seconds

**Reduces total cost of ownership** by about 50%, cuts administration effort and enables a team of three to manage 120 servers

## Accelerates deployment of new systems

### Solution components

#### Hardware

- IBM® zEnterprise® EC12

#### Software

- IBM z/OS®
- IBM z/VM®
- DB2 for Linux
- WebSphere Application Server
- Tivoli Storage Manager
- Tivoli System Automation for Multiplatforms
- Tivoli System Automation for z/OS
- Oracle Database
- SUSE Linux Enterprise Server for System z

## Leveraging a world-class enterprise computing system to ensure 24x7 customer service

Sparda-Datenverarbeitung eG (SDV) is the IT service provider for the Sparda-Bank Group in Germany. SDV develops secure and innovative IT solutions for retail banking, payment, distribution and financing to improve the products and services of Sparda-Bank Group.

The group's 12 banks employ over 7,300 people and operate more than 400 branches, serving 3.5 million customers and a total of 23 million accounts.

*"The great thing about IBM Geographically Dispersed Parallel Sysplex in combination with SUSE Linux Enterprise Server for System z and all Linux workloads including Oracle Database software is that it just works reliably."*

*—Oliver Röthinger, System Programmer and Administrator z/VM and Linux on System z, Sparda-Datenverarbeitung eG*



# The Met Office forecasts a bright outlook

## Company Overview

- United Kingdom, Government, 1,800 people at 60 locations around the world
- UK's national weather service, providing >3,000 weather forecasts for public, government and other businesses, as well as conducting weather- and climate-related research
- 10 million daily weather observations are processed by a supercomputer; results need post-processing handled by an array of database-driven applications, most of which run on Linux®

## *Situation before*

- **A mixture of IBM System z® and distributed landscape of commodity x86 servers**
  - 120 Oracle instances on 204 x86-cores
- **Heterogeneous infrastructure was becoming large, complex and difficult to manage**
  - Due to increased I/O and processing
- “Commodity x86-based systems do cost far less to acquire per unit of capability, ... But the longer-term costs, including support, infrastructure, environmental issues and mirroring for resilience, quickly add up.”



## Considerations

- Did an extremely rigorous process of putting the Enterprise Linux Server technology up against commodity technology in terms of total lifecycle management and business benefit
- Develop a total cost model for their environment
- IT Infrastructure team analyzed the full-lifecycle costs
- Looked at the many different aspects in terms of:
  - Hardware,
  - Infrastructure support,
  - Environmental,
  - Software-licensing costs

## Solution

- **Benchmark showed that consolidating on an Enterprise Linux Server based on IBM zEnterprise 196 (z196) would be more cost-effective than the commodity alternative**
  - Considerably better performance, particularly for I/O-intensive workloads including Oracle databases
- **Oracle workload from 204 x86-cores run on just 17 Enterprise Linux Server-cores (IFLs<sup>1</sup>)**
  - Ratio of 12:1
- **Very significant difference in TCO, approx. to 75% reduction in licensing costs**
- **Consolidating environment in a single place simplifies management**
- **IT team can focus on delivering more effective services**

<sup>1</sup> IFL = Integrated Facility for Linux = dedicated Linux core on Enterprise Linux Server





*Enabling 50,000 students, 5,400 faculty members and staff access to online features anytime, anywhere*

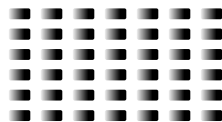
## Data provided to students real time

Mobile formatted information of class schedules, textbooks, academic dates, grades, emergency information and campus map

## IBM Solution

Accessing CICS with System z information via smartphones

Up to **1M** transactions/day





## Client drivers for mobile solutions span all industries

### Finance & Banking

Manage their investment portfolios and accounts from anywhere for complete bank transactions



### Construction & Manufacturing

Manage complex projects and operations on site and streamline survey and work order processes



### Insurance

File, process and manage claims and document damages



### Retail

Engage shoppers in new ways and intelligently target personalized and location sensitive marketing offers



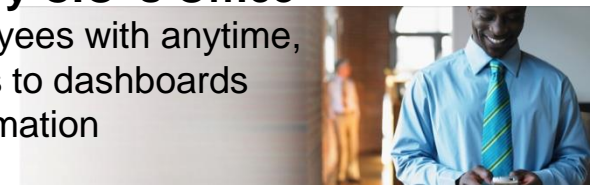
### Travel & Transportation

Provide up to date information specific to their itineraries and location and enable customer self-service



### Cross-Industry CIO's Office

Empower employees with anytime, anyplace access to dashboards and critical information





## Worklight environment deployed on Linux on z in 7 days

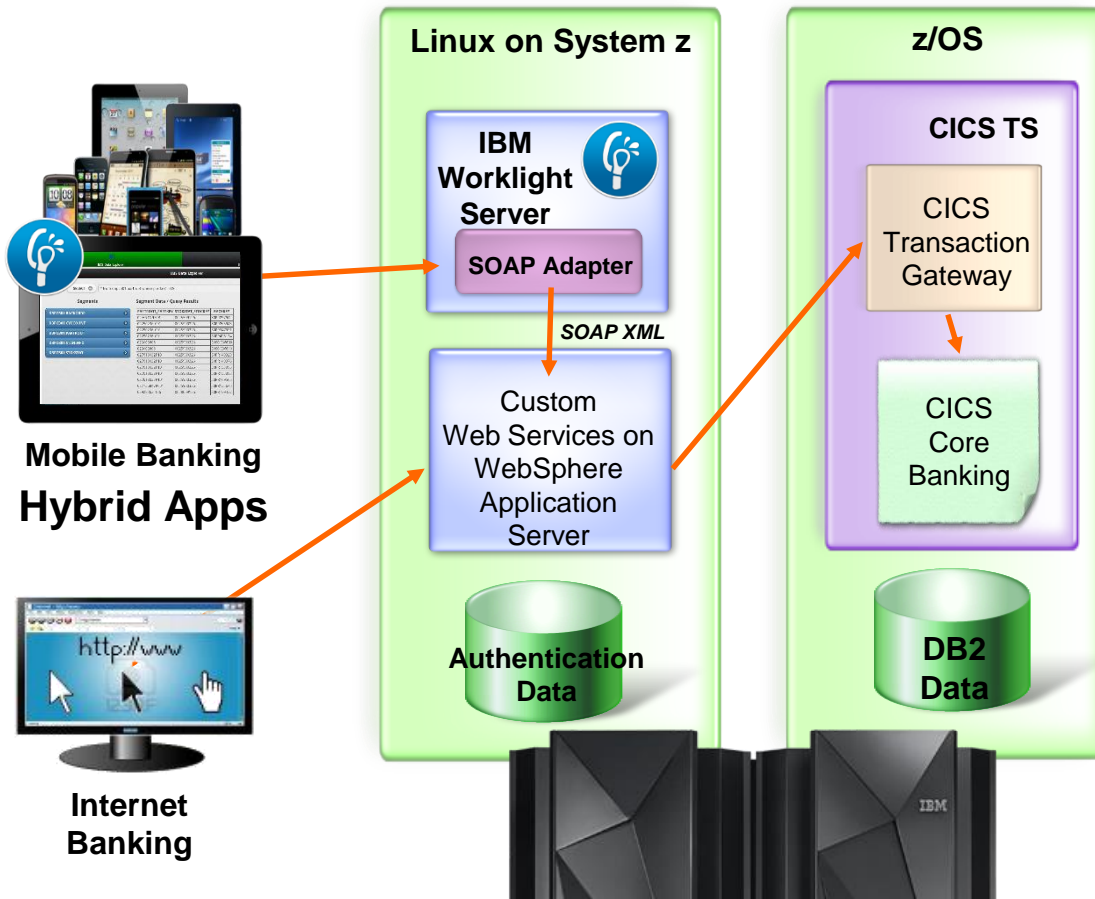
- 2 day software Installation on site
- 5 day Worklight App development (2 days) and integration with CICS (3 days)

Application is currently deployed on a Linux on z server on z/VM



# New Mobile Banking Architecture

## Customer Reference - Banca Carige



*“Running our mobile banking service on Linux on zEnterprise is another step forward in our continual evolution on the mainframe.*

*The key value for our business is that **the most important services can be managed together on a consistent, stable and highly secure platform that offers enormous scalability and performance.**”*

Daniele Cericola,  
CT Governance Manager, Banca Carige





## 63% of people

expect to be doing more shopping on their mobile devices over the next couple of years



## 40% of people

socialize more online than they do face-to-face



## 57% of companies

using cloud to drive competitive and cost advantages



## 300x growth

of digital content between 2005-2020



## 80% of all data

is unstructured and growing 15x the rate of structured data

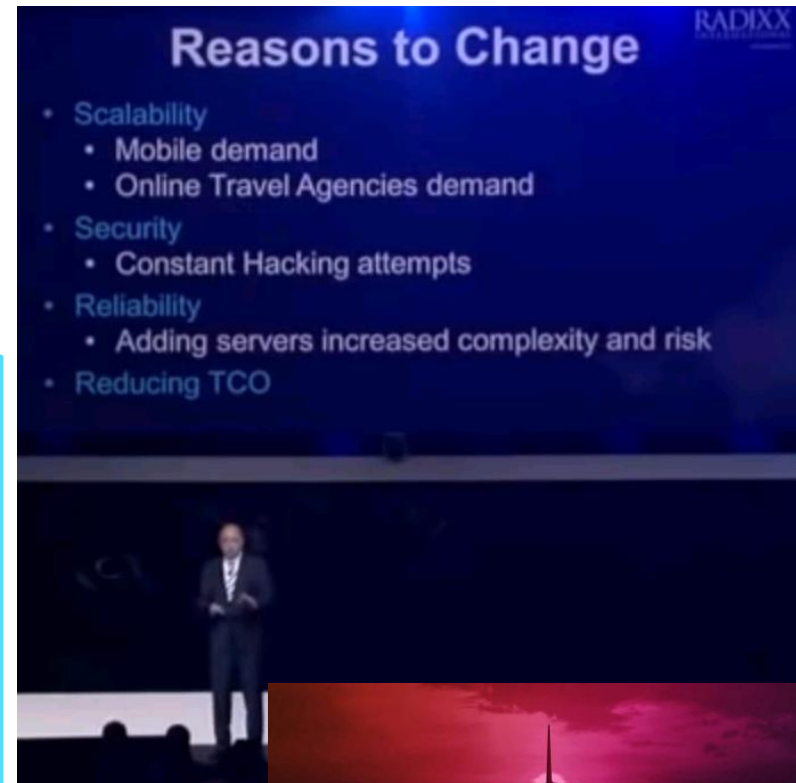


## Ron Peri CEO Radixx International on Hybrid Cloud & z Economics

- **SaaS Hosting of Core Airline Reservations System**
  - All airline business models
  - Optimized for developing world
- **Mission critical application**
  - One hour down = \$ 1,000,000 loss

### *Hybrid Cloud*

- **Systems of Record move to z Systems**
  - Database
  - Big Data Apps/Cognos/Data Warehouse
  - MQ
  - APIs
  - Payment processing
  - 172 x86 cores move to 10 z Systems cores
- **Systems of Engagement move to SoftLayer Cloud**
  - Client facing IBE\*
  - Travel agency portal



<https://www.youtube.com/watch?v=yIBy6aNTqhQ>

\*) Integrated Business Environment

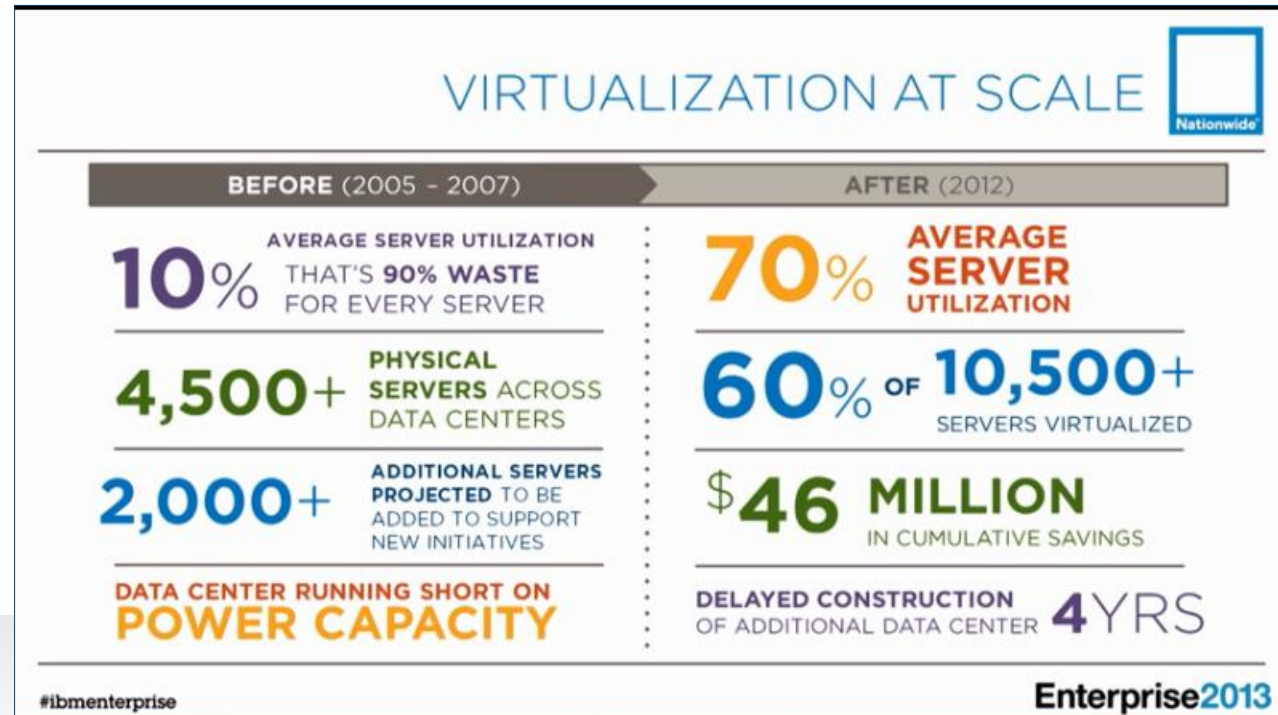


## Nationwide Mutual Insurance

With cloud, IBM helped Nationwide Insurance save \$46 million  
 „Nationwide’s mission is to protect what matters most for our members.”



**Jim Tussing**  
 Infrastructure CTO  
 Nationwide Insurance



*“For a financial services company we make promises, in order for us to make and keep them our information systems have to be available and secure, they have to be cost-effective and agile.*

*We need that so that we can fulfill our promise to be on your side.”* – Jim Tussing

# Linux provides the common infrastructure for growing workloads on System z

Edge2015

#ibmedge



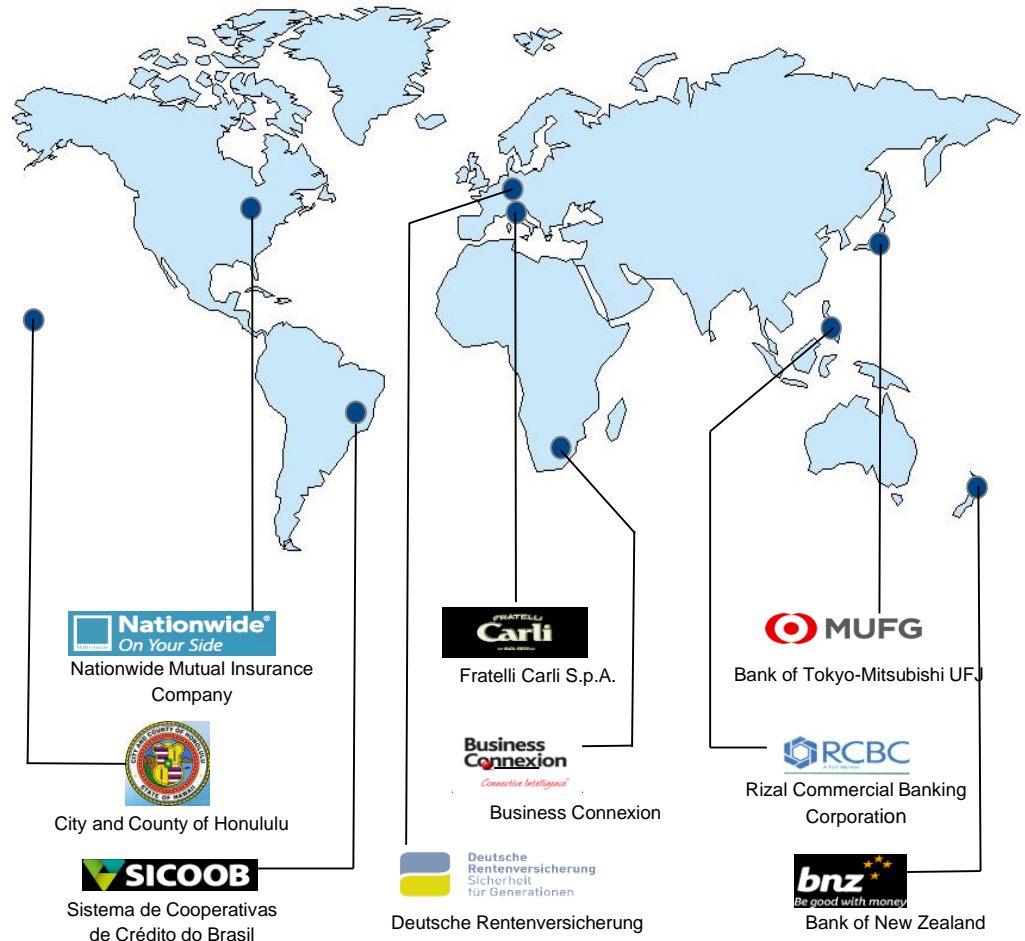
**Analytics**



**Mobile & Social**



**Security**







The **enterprise grade Linux solution on z Systems** is designed to bring unique business value in the areas of *operational efficiency, scalability, workload management, reliability, disaster recovery and security.*

*“I consider IBM System z to be more cost-effective than any other platform. Having worked with both the mainframe and a number of distributed systems, I can say that when it comes to the cost of computing, IBM System z offers the lowest cost of processing large amounts of data, hands-down,” says Eduardo Camargo, Executive Vice-President and CIO, EVERTEC.*



# Questions



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Global Skills Initiative