

# IBM XIV Storage System Announcement

*Evolution of the Revolution – XIV Gen3*

**Optimized systems.  
Optimal innovation.**



## What We Announced on July 12, 2011

- **The newest member of the XIV Storage System family**
  - builds upon XIV core client values
    - Ground breaking architecture
    - Transparent pricing
    - Extreme ease of use
    - Increased operational scalability

**New!**

**XIV Gen3 Storage system**, GA Sept. 8, 2011

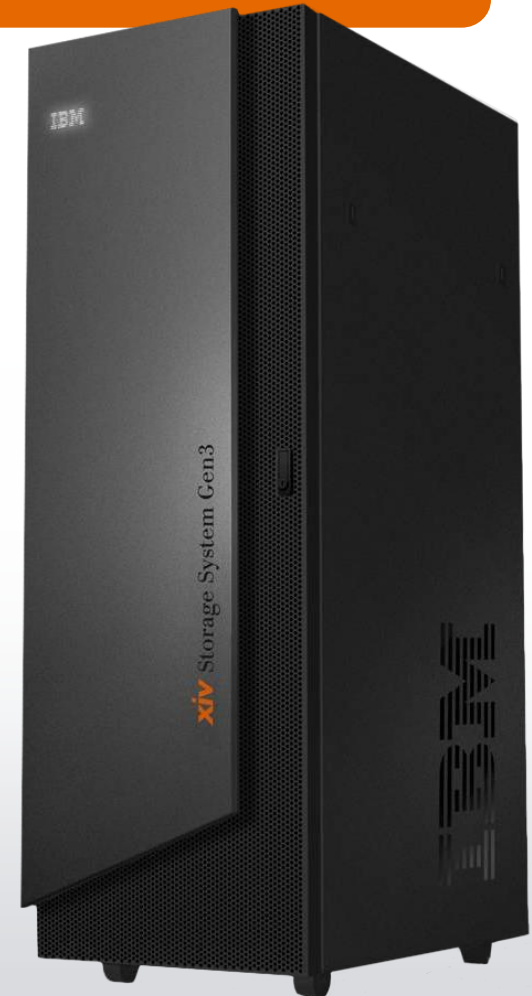
- Up to 4 times more performance
  - Enhanced Console
- **Pricing Action** on current XIV models averaging 12%, effective immediately
  - **Statement of Direction: Solid-state storage cache** for XIV Gen3, planned availability in 1H-2012
    - SSD-ready at GA for easy future upgrade option

# IBM XIV Gen3 Technology Highlights

## *Built for Performance*

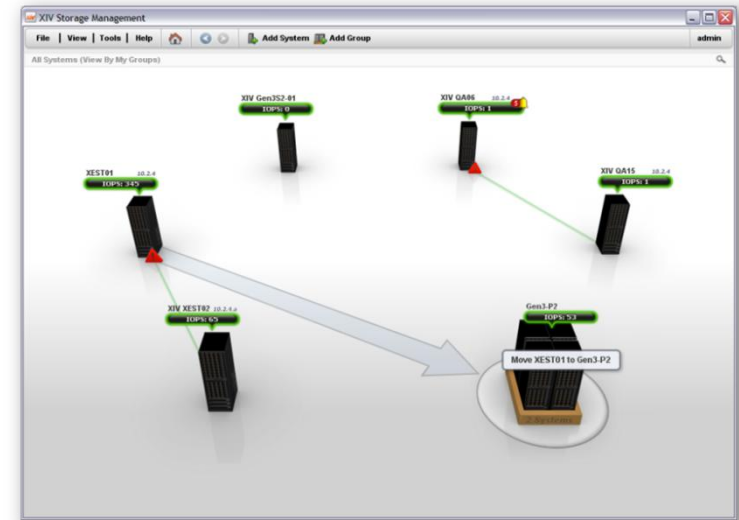
End-to-end component upgrades deliver significant performance improvement

- **20X more internal bandwidth**, using an Infiniband interconnect fabric instead of Ethernet
- **Over 2X more external bandwidth**, with the availability of 8 Gbps fibre channel cards and support for over 3 times more iSCSI cards than current XIV models [6 to 22 ports]
- **New motherboards and processors**, to deliver more system throughput
- **50% more cache capacity** than current XIV models [16GB to 24GB per module], up to 360GB/system
- **SSD ready**, optional cache of up to 7.5TB can provide a performance boost for certain read intensive workloads (SoD, planned for 1H, 2012)



# IBM XIV Gen3 Enhanced Console

- **Manage multiple XIV systems**
  - View up to 64 XIV systems at the same time and in context with each other
  - Status area – across bottom of screen status a button for each XIV which you can mouse over and see status of each
  
- **New QoS graphs**, based on performance classes
  
- **Performance Statistics** enhancement: Interface now has a slider bar calendar view, so you can easily select a day or date range for analysis
  
- **New module and disk temperature report**

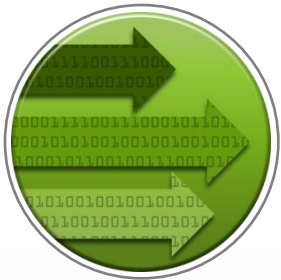


# A Set of Essential Technologies Enables Storage Efficiency



## Store more with what's on the floor

- Storage Virtualization
- Thin Provisioning



## Move data to the right place

- Automated Tiering
- Automated Data Migration



## Stop storing so much

- Data Compression
- Data Deduplication

# Introducing the IBM XIV Storage System Family

*Evolution of the Revolution*



July 2011

Storage Reinvented

# Agenda

- IBM XIV Storage System Core Client Values
- Application Performance
- Total Cost of Ownership
- IBM Storage Innovation Leadership
- Getting Started
- Q&A



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designed for  
**innovation***

## Why Talk to IBM About Storage?



IBM storage costs up to **69% less** to own and operate than EMC VMAX, while delivering Tier-1 performance

"Cost/Benefit Case for IBM XIV Systems: Comparing Cost Structures for IBM XIV and EMC VMAX Systems"

International Technology Group Santa Cruz, California, July 2011

## Introducing IBM XIV Storage System

**IBM XIV can help**

**reduce total storage costs**

**by delivering great service for demanding  
application workloads, using an innovative,  
extremely efficient storage design**

# IBM XIV Breakthrough Storage System Design

## Design Highlights

- **Grid architecture** helps deliver ultra-high availability and scalable high performance
- **Automated data placement** and load balancing help **eliminate hotspots** for consistent predictable performance
- **Self-tuning, self-healing** capability enables high application availability & performance with **no manual tuning**

→ Solving complex storage problems *mathematically*, not mechanically.

## IBM XIV Helps Improve Data Protection

- **Frequent, space efficient snapshots** are simple to set up and efficient to mirror
- **Stretched Cluster option** enables transparent application migration and automated failover
- **Automatic internal replication** with fast volume recovery

# IBM XIV is Ideal Storage for Highly Virtualized Data Centers

- Benefits of **Virtualized Infrastructures**
  - Maximum consolidation to reduce data center footprint
  - Ease of use
  - Increased resiliency
  - Streamline deployment and configuration processes
  - Automatic and dynamic load balancing
  
- **Demand the same benefits** from your storage
  - XIV VMware integration includes VAAI, VMware vCenter plugin, and storage failover automation with SRM Storage Replication Adapter

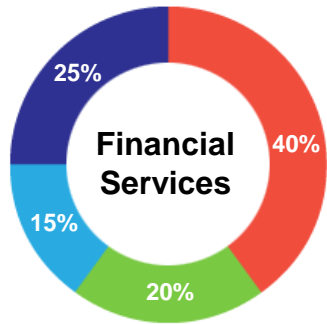
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- **Application Performance**
- Total Cost of Ownership
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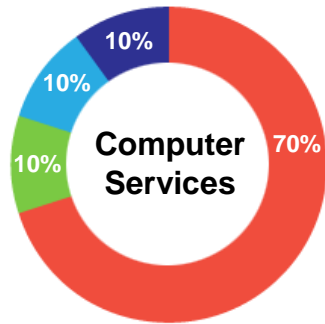


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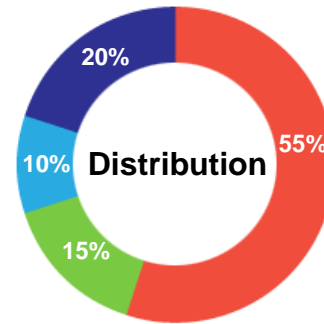
# Application Performance Requirements Vary by Industry



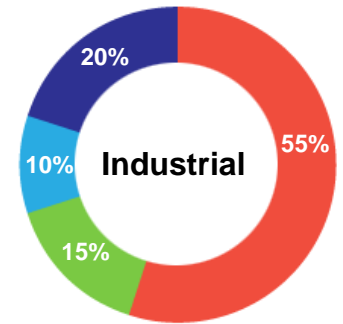
- Oracle/DB2
- MS Exchange
- Core Banking
- VMware Infr.



- Tenant Apps
- MS Exchange
- Monitoring
- Billing



- SCM (SAP)
- MS Exchange
- Logistics
- VMware Infr.



- SAP
- MS Exchange
- CAE
- VMware Infr.



“This advanced grid platform is giving us unparalleled performance.”

*Steven Lange  
Managing Director,  
Corp. Investments Group*

**SAS**  
Business Analytics



“Our IT infrastructure is our product. By building a best-in-class delivery platform we can offer a level of technology and expertise that most customers can’t easily develop internally.”

*Mark Clayman, VP IT*

**Cloud**  
Application Service  
Provider



“XIV combined with the performance of the Power Systems servers, improved overall response times.”

*Mukesh Sharma  
Manager ERP Infrastructure*

**Oracle**  
eBusiness Suite



“Over the years, IBM has proven to be an exceptional infrastructure partner.”

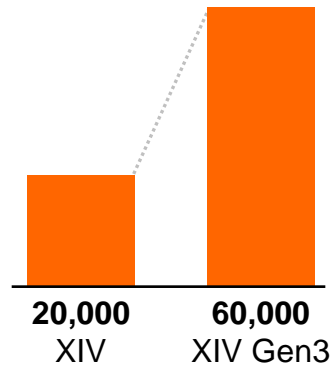
*Ted Hoffman  
Director Enterprise &  
Architecture & Operations*

**SAP**  
Over 14 million  
transactions per day

# IBM XIV Family Delivers Outstanding Performance Across Applications

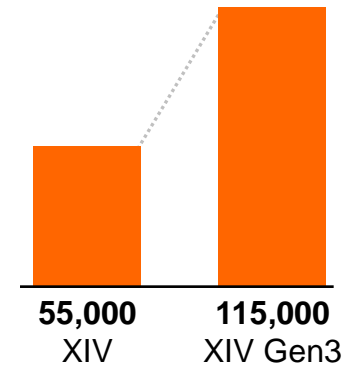
## Microsoft Exchange Mailboxes

- 2 hour performance test
- Requires latency under 20 ms
- ESRP-Storage test



## Oracle Data Warehouse (IOPS)

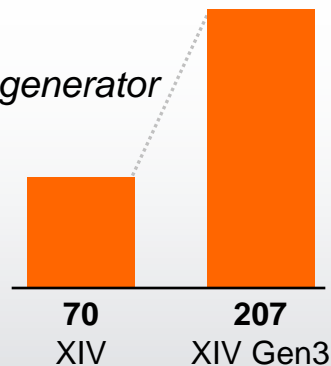
- Oracle DHW Workload



## SAS Business Analytics Workload

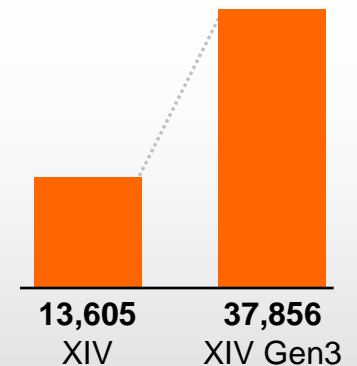
- Analytics reports created

*Simulated via Swingbench load generator*



## Microsoft HyperV Simulation (IOPS)

- 200GB dataset
- 60% write activity

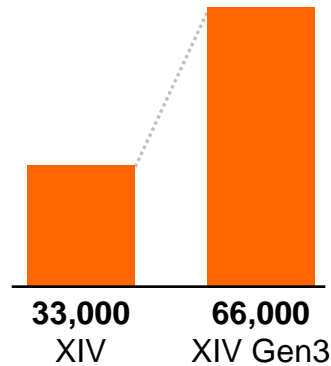


Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput improvements equivalent to the performance ratios stated here.

# IBM XIV Family Delivers Outstanding Raw Performance

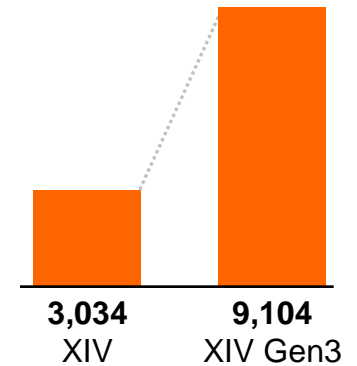
## Transaction Processing (IOPS)

- Mixed read / write workload



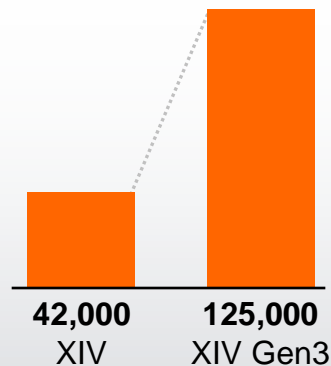
## Sequential Reads (MB/sec)

- System Bandwidth



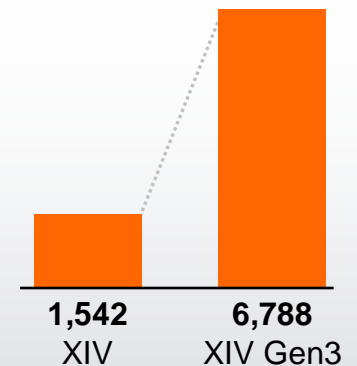
## File and Print Services (IOPS)

- Mixed file size workload
- XIV Gen3 also had 50% lower latency



## Sequential Writes (MB/sec)

- System Bandwidth



Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput improvements equivalent to the performance ratios stated here.

# IBM XIV Breakthrough Storage System Design

## Example: Enterprise Email workload

- **60,000 mailboxes** tested with high throughput and low latency
- IBM XIV Gen3 used **2TB SAS drives** with **88% utilization**
  - EMC VMAX reported only **45% utilization** so 2X more disks may be needed to do the same work
  - Hitachi AMS2500 used **450 GB drives** so 4X more disks may be needed to do the same work



Save power, cooling, and floor space  
with more efficient XIV storage

# IBM XIV: Consistent High Performance for Real World Workloads

**XIV is ideal for multiple, mixed, dynamic and unpredictable workloads**

- **Requires no tuning** as new workloads are added
- **Autonomic architecture** enables adaptability and broad workload affinity

# UK Technology Outsourcer, niu, Relies on IBM XIV

*VMware environment runs a wide variety of databases and applications*

## Business Challenge:

As a technology outsourcing partner for mid-sized companies, niu wanted to take advantage of opportunities to cross-sell its services to existing customers, and to extend its services to the largest mid-market companies. niu wanted to offer enterprise-class storage at an economic price point.

## Solution:

IBM XIV Storage Systems are used by almost every new hosted customer. The XIV systems support a large number of virtualised Linux and Windows servers on VMware ESX Server, running a wide variety of databases and applications.

## Benefits:

- Increased performance by a factor of three
- Reduced cost of additional capacity by 25 to 33 percent
- Cut administrative effort through automation



*'XIV gave us an immediate three-fold performance increase – and as we add capacity, it will get even faster.'*

*Steve Bedford  
Technical Director  
niu*

# Telekom Slovenia Group Supports Mixed Workloads with IBM XIV

*Revenue-assurance and anti-fraud applications share storage with VMware and databases*

## Business Challenge:

Telekom Slovenia Group deployed revenue-assurance and anti-fraud applications from Subex, both requiring extremely high I/Os per second. They needed a high-performance data storage and disaster recovery platform, but without adding IT staff or stretching energy demands in its data centers

## Solution:

The company deployed two IBM® XIV® Storage Systems, asynchronously mirrored over the 140-km distance between its data centers. After realizing the full potential of the XIV systems, it migrated numerous other systems to them, including a VMware environment with more than 400 virtual machines

## Benefits:

- Increased high performance for key applications and VMware
- No-impact disaster recovery
- Flexibility and cost-effectiveness in meeting internal user needs, with simple administration and bundled software tools

## TelekomSlovenije

*'We found a great synergy with our VMware landscape, and we have migrated more than 400 VMware virtual servers to the XIV environment. **It's very easy to manage the combination of XIV Storage System and VMware vSphere**, and this also offers enough performance for applications with demanding I/O requirements.'*

*Domen Rakovec  
CIO*

*Telekom Slovenia Group*

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# IBM XIV Delivers Breakthrough Storage Efficiency

- **Storage utilization is increased** by integrating virtualization, thin provisioning and space efficient snapshots
- **Operating expenses are reduced** by using a grid design, efficient high capacity components and All-In software
- **Cost of administration is reduced** with a powerful next generation user interface



# IBM XIV Grid Design and Common Components

- **High capacity disks:** 1TB and 2TB SATA, and 2TB SAS
- **High speed interconnect:** Ethernet or Infiniband
- **Standard controller units:** High performance, multi-core x86 technology
- **Flexible host connectivity:** iSCSI and 4 or 8 Gbps Fibre Channel
- **Software:** All-in pricing! Advanced snapshots, mirroring, thin provisioning, etc... all included

# Next Generation User Interface Reduces Total Costs



- **Guided administration** reduces complexity
- **Automation** eliminates many complex tasks

## IBM XIV Helps Significantly Increase Storage Utilization

- **Storage Virtualization** can increase utilization **up to 60%**
- **Thin Provisioning** can reduce storage capacity requirements **up to 20%**
- **Space efficient snapshots** can reduce the storage needed for snapshots by **up to 75%**

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## Why Consider IBM for Storage?

- **Innovative market leadership** for over 100 years
  - Magnetic disk drive
  - RAID
  - Storage area network virtualization
  - Solid-state storage optimization
  - Over 600 patents related to storage awarded in 2010
- **Trusted storage provider** with a broad portfolio of innovative hardware, software, and services offerings
- **Experience**
  - IBM reduced internal costs by more than 50% and increased utilization to 90% by consolidating and virtualizing storage
  - IBM has helped thousands of clients implement more effective storage solutions
- **IBM can help** you optimize your storage infrastructure, too



# Why Consider IBM XIV for Your Next Disk System Upgrade



## Ground-Breaking Architecture

provides consistent performance that grows as capacity grows and requires no tuning

## Transparent Pricing

includes snapshots, mirroring, thin provisioning; host software, advanced reporting; and virtualization plugins

## Extreme Ease of Use

best-in-class GUI; fully autonomic; minimal training required

## Increased Operational Scalability

XIV Gen3 has up to 4 times the performance of previous models; increases productivity

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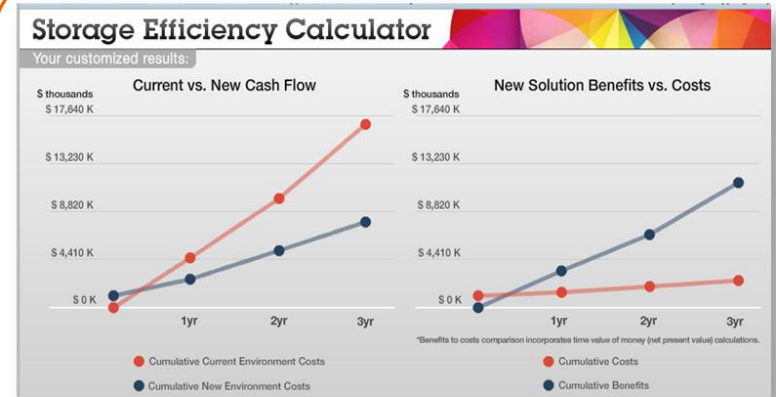


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# Getting Started with IBM Storage Has Never Been Easier

**New! ITG Group white paper**  
 – See how IBM XIV can **reduce TCO up to 69%**

**New! Storage Efficiency Calculator**  
 – See how much you could be saving



- **Storage Infrastructure Optimization (SIO) Assessment**  
 – Work with IBM to gain detailed storage efficiency insight
- **Get Started with XIV** with low monthly lease rates\*

\* Final lease pricing will be available at or close to launch