



IBM LinuxONE™

build more | sleep more | grow more

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LinuxONE Offering Management

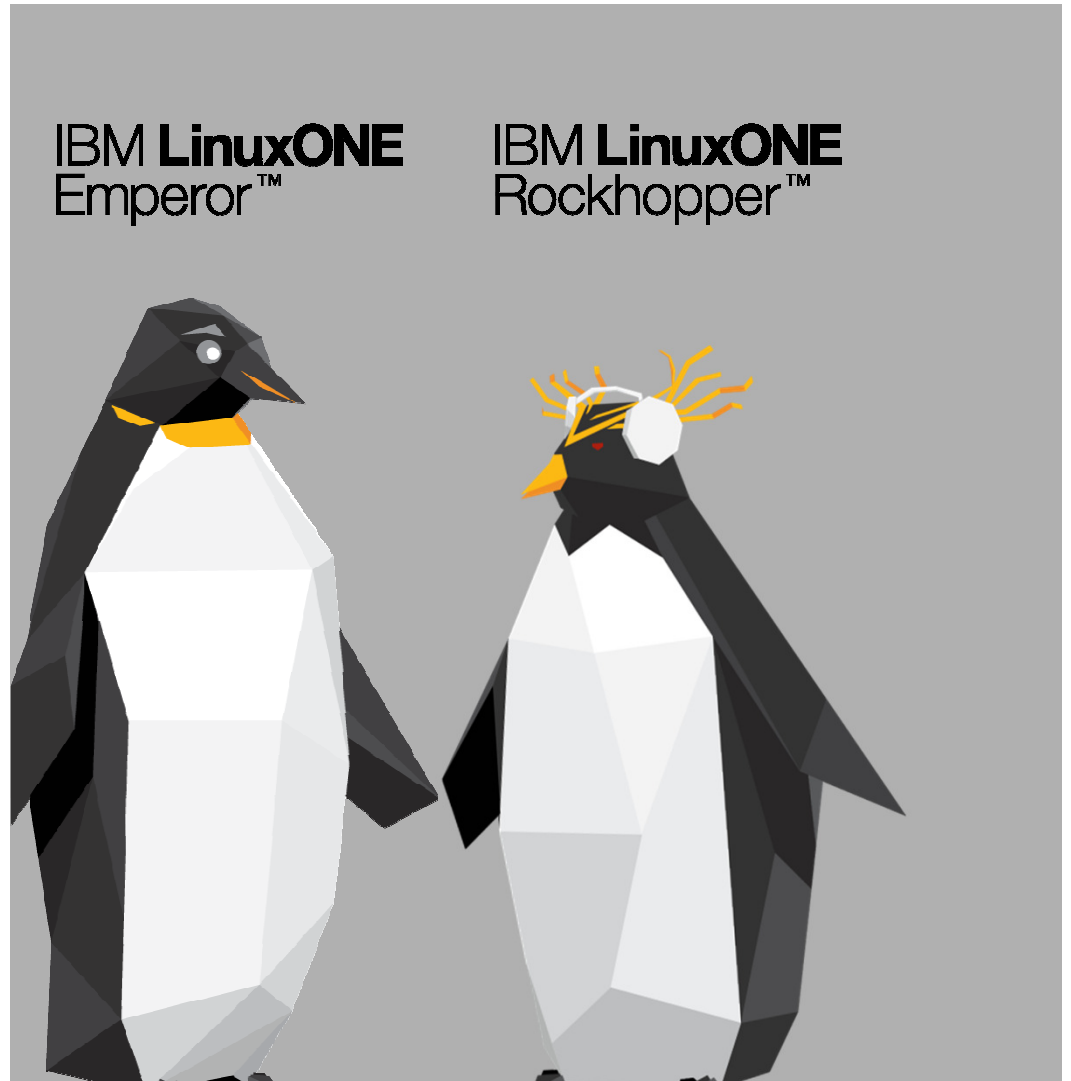
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Agenda

The business challenges

Introducing IBM LinuxONE™

How LinuxONE helps

Use cases

Next steps





of the **9 Billion** records breached since 2013, **only 4%** were encrypted



45% more security incidents due to **unauthorized access**

average cost of downtime is an estimated **\$1-5M/hour**



the **always on** culture means customers expect **24x365 service** (or as close as possible)



nearly **4 million records stolen per day** – that's **2,623 per minute**



1/3 of companies have **no process for tracking or fixing vulnerabilities** in the open-source code they use

of the **9 Billion** records breached since 2013, **only 4%** were encrypted

1 in 4 companies are likely to experience a **breach**



a business will fall victim to a ransomware attack **every 14 seconds**

the greatest security mistake organizations make is failing to protect their networks and data from **internal threats**



45% more security incidents due to **unauthorized access**



cyber attacks can put **60%** of their victims out of business

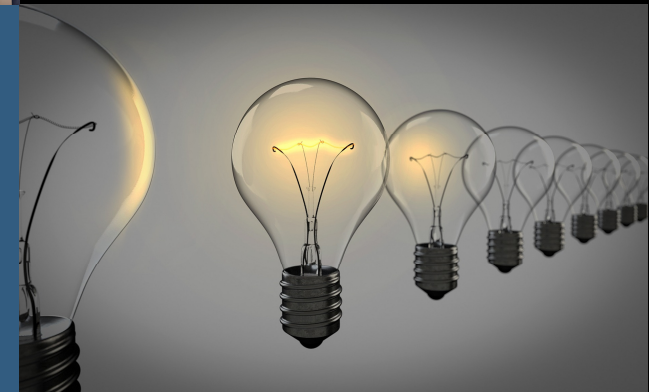
average cost of **downtime**
is an estimated
\$1-5M/hour



technology has made it
easier than ever for
consumers to **take their
business elsewhere** if their
expectations are not met



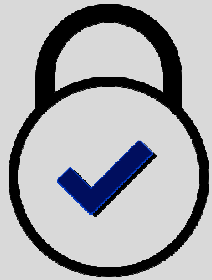
57% of consumers agree
that it is very important for
the companies they buy
from to be innovative



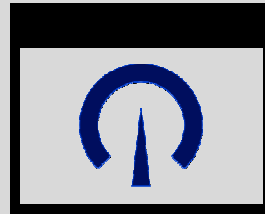
it can cost **5X** more to
acquire new customers
than to retain
existing ones



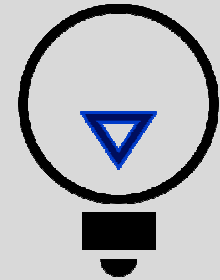
the **always on** culture
means customers expect
24x365 service
(or as close as possible)



unmatched
security & privacy



unparalleled engineering
for
data & cloud serving



foundation for
next-generation
apps and data



IBM **LinuxONE**™

IBM LinuxONE portfolio - siblings with footprint & scale differences

IBM LinuxONE
Rockhopper II



A LinuxOne for Everyone

"Right-sized" to fit your needs

*The world's premier Linux server hardware
for highly secure data and cloud serving*

Engineered for performance and scale

*Foundation for data serving
and next generation applications*

IBM LinuxONE
Emperor II



**Built on decades of
proven and trusted
IBM technology**

**Built for the cloud
with standardization
and simplicity**

**Lower cost than x86 for
mission critical data
serving at scale**

**Right-sized
for your
business needs**

IBM LinuxONE portfolio - siblings with footprint & scale differences

IBM LinuxONE Rockhopper II



- Equivalent to ~200 x86 cores
- Up to 8 TB memory
- I/O support for up to 2 million IOPS
- 19" industry standard form factor
- PDU-based¹ with 200v to 240v power
- Optional 16U of available frame space for additional components, e.g., storage, server, network switch
- Air-cooled only

IBM LinuxONE Emperor II



- Equivalent to ~1300x86 cores
- Up to 32 TB memory
- I/O requirements up to 9 million IOPS, raw I/O bandwidth of 832 GB/S
- Massive Capacity Back Up (CBU) on demand
- Need for on-site disaster recovery
- Bulk power based on 480v
- Option for water cooling

**BIG THROUGHPUT IN
A SMALL FOOTPRINT**

**EXTREME
SCALE**

Delivering secure digital experiences that can change the world

Redefining the
security perimeter
for the next
generation of
applications

Protect Against...

Threats to data privacy
Stolen Credentials
Malware / Ransomware
Database Manipulation

Unrivaled economics through engineering

Consolidate
“priced per core”
data serving
infrastructures

Consolidate 100s, and possibly
more than a 1,000 x86 cores onto
a **single** Emperor II server

Reduce costs by up to 40% over a
3-year period compared to x86

Putting Technology to Use

*Performance, scale, and simplicity for
lower operational costs*

scale your
business, with
confidence, at a
lower cost

SCALE a single  **mongoDB**
database to **17TB** with less than **1ms**
response times at large scale

SAVE up to **37%** vs. x86

SIMPLIFY ... no need to shard

Efficient and powerful security without re-engineering

Value

Security is designed into the cores, with optimized crypto logic

Crypto Express 6S card provides more advanced and accelerated encryption / decryption and tamper-sensing and responding key management

Encrypt and protect more data with less hassle and no re-engineering or refactoring of code

Security compliance

Deliver new a secure digital experience in a game changing manner

Proof

Up to 7x better performance for OpenSSL per core vs. x86

FIPS 140-2 Level 4 certification

Data is encrypted in memory; when leaving the system (to network or storage) it requires **no additional hardware or software, or code changes ... plus it's faster than x86.**

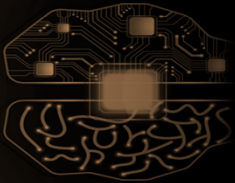
Real-time, **self-service audit** verification

Planned extensions to Secure Service Containers with **IBM Cloud Private** will speed up application development and deployment while protecting the contents from internal and external threats. 



**The world's most
secure Linux
server hardware**

- Encryption for data at rest and in motion
- Industry-leading workload & multitenant isolation
- Secure Service Container technology to help protect data and applications from internal and external threats



**Highly engineered for
high performance
and large scale data
and cloud serving**

- Consolidate 100s of x86 cores onto a single LinuxONE system
- Dedicated I/O processors to move massive amounts of data with uncompromised data integrity
- Vertical Scale architecture for responsiveness and efficiency



**The foundation for
data serving and next
generation apps**

- Performance and scale to consistently deliver on client and business demands
- Security & reliability keep business up and running
- Support for large portfolio of IBM, ISV, and open-source software to support new appDev and deployment
- Ability to reduce costs versus x86

Accelerating innovation with the data that drives your business

Value

Get more work done in one system than with any other data serving platform on the market, with the high performance Emperor II system, which can process more data per day than x86, and supports multiple database servers and data types on the same system

Your business logic runs faster

Proof

pgBench benchmark on PostgreSQL 9.6.1 with up to **2x more throughput per core** than x86

YCSB benchmark on MongoDB 3.4.1 with up to **2.6x more throughput per core** than x86

DayTrader benchmark on WebSphere Application Server 8.5.5.9 with up to **1.9x more throughput per core** than x86

DayTrader Apache TomEE 1.7.1 with up to **2.3x more throughput per core** than x86

Acme Air benchmark on Node.js 6.10 with up to **2.5x more throughput per core** than x86

MicroBM CPU benchmark on InfoSphere DataStage 11.5 with up to **2.8x more throughput per core** than x86

Java benchmark shows Java on LinuxONE performs **1.5x faster** than on x86 platforms



MSP Chooses LinuxONE for Scale

“LinuxONE is able to do the work of ~4000 x86 machines in the space of 1-2 refrigerators.”

Dr. Shuang Chen, CEO , Huaxia Express – Service Provider

provides
rapid innovation
and deployment
of open-source,
high value SaaS
driven solutions

cuts costs
and allows mass
transit companies
to better plan
supply and demand

transforms
millions of people's
lives with 24x7
instant e-ticketing

Secure Data Serving

“As we continue to expand our business, LinuxONE helps ensure that there's no impact on performance, reliability and security ... We don't see any convincing rivals to LinuxONE ... ”

Jeffrey Pochily, VP of Network Infrastructure

\$1B

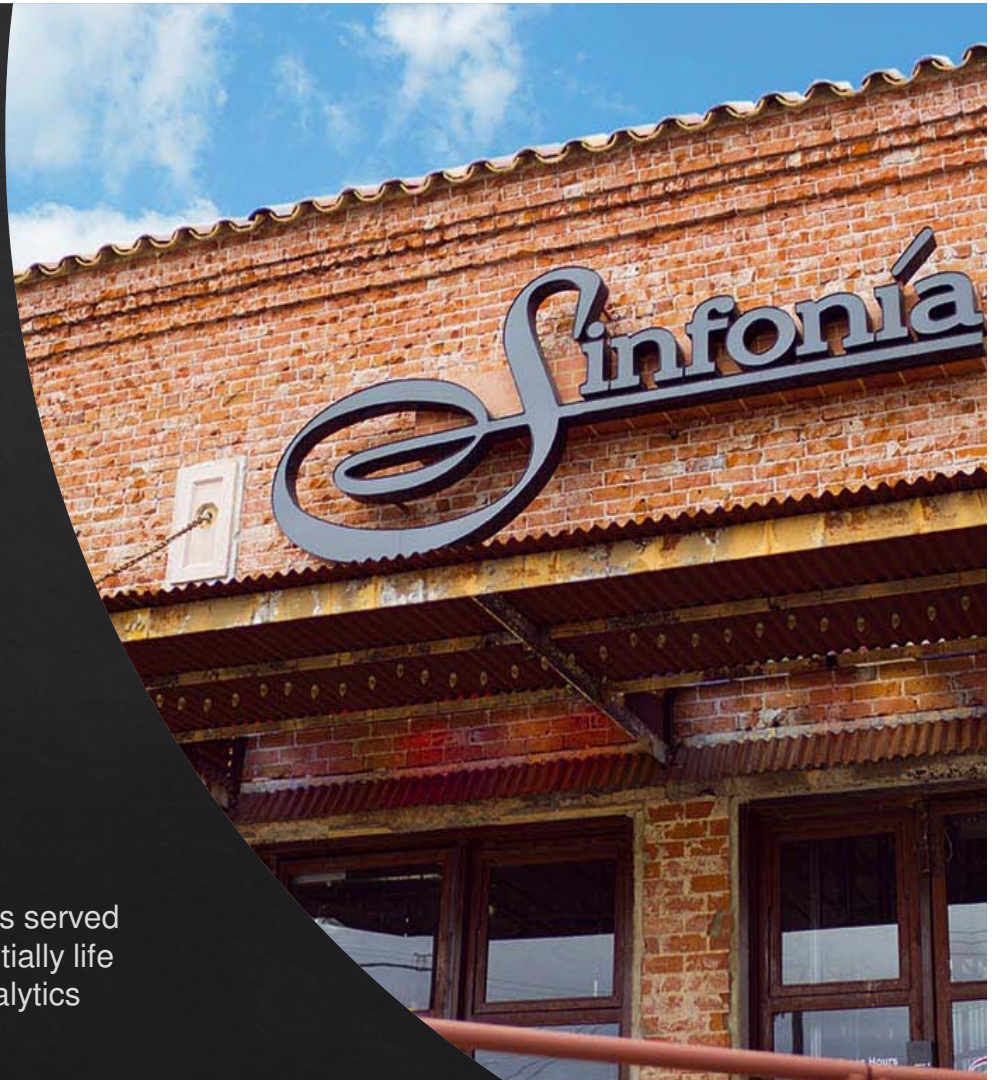
cumulative savings delivered to the healthcare industry

20M

members onboarded in one year with zero performance impact

1 in 7

US citizens served with potentially life saving analytics





Security

“The security offered by LinuxONE is key. Our customers can feel confident that their data is safe at all times”

Cristian Dinu, Co-founder and Technical Leader

enables

real-time audience feedback, helping further improve presentations

boosts

audience engagement, encouraging effective learning and knowledge transfer

empowers

audience members to ask questions, ensuring no one gets left behind



the **plasticbank**

and **CLOUD FOUNDRY**
are tackling ocean plastic
and global poverty with

IBM LinuxONE

“Thanks to IBM, we are transforming the lives of millions of the most disadvantaged people on earth, and realizing our vision for cleaner oceans.” David Katz, CEO, The Plastic Bank



Ensuring timely delivery of essential weather data to millions of customers

The Met Office migrated its meteorological databases from x86 systems to a resilient, high-performance and scalable IBM® LinuxONE platform—ensuring it can handle massive peaks in requests.

A single team supports a large number of core Linux apps
Cuts operational costs through database consolidation
Ensures millions of customers can access critical weather data 24x7

“We can bet the business on LinuxONE—and I can sleep easily in the knowledge that we can absolutely rely on our data delivery systems.”

Graham Mallin, Executive Head of Technology at the Met Office



Next Steps

Discuss your options

- Schedule an [Expert Consultation](#) or on-site workshop

Learn more

- Read "[10 Reasons Why LinuxONE](#)" paper by the Robert Francis Group
- Watch [LinuxONE provides a more secure Blockchain](#) (3:43)
- [Calculate](#) the TCO savings of LinuxONE vs. x86

Try before you buy on the [LinuxONE Community Cloud](#)



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