

September 2024

SAP Migration on AWS powered by Intel[®] Xeon[®] Processors

The business benefits of migrating SAP to AWS powered by Intel technology



intel[®]



aws

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SAP RISE

Edge Platform-as-a-Service

Call to Action

Resources



Key Takeaways

Cloud Accelerates SAP Business Transformation

Businesses are migrating their SAP workloads to the cloud to improve scalability, performance, and cost efficiency, and to accelerate insights and innovation.

AWS and Intel continue to provide state of the art instances, **optimized for SAP landscapes.**

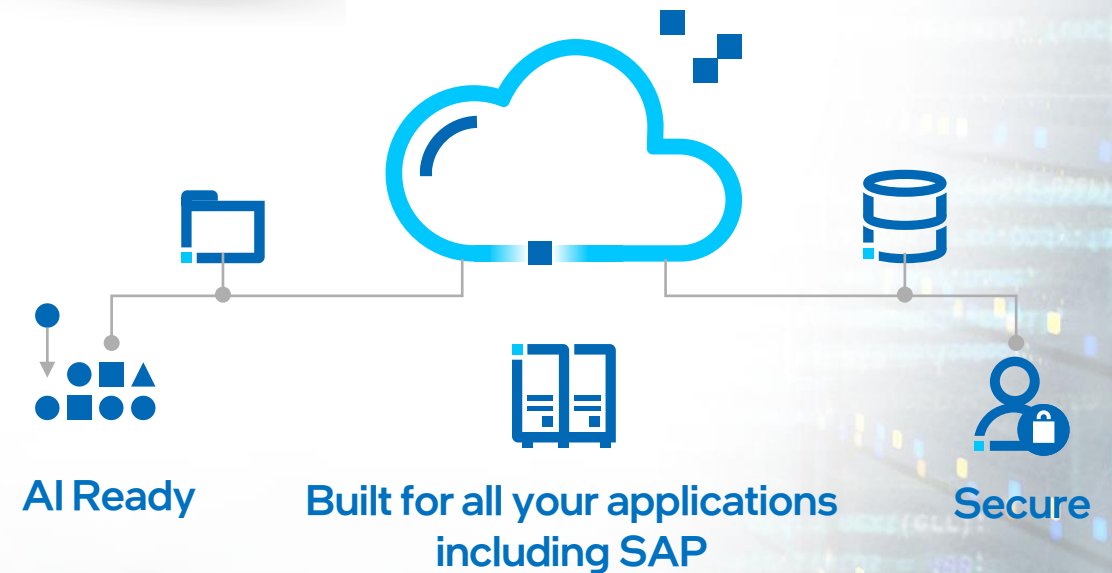
Business Opportunity

- **99 of world's 100 largest companies are SAP customers¹**
- **SAP customers generate 87% of total global commerce¹**



18+ years of collaborating and innovation with AWS

Over 475 Amazon EC2 instances are powered by Intel processors²



¹[SAP Corporate Fact Sheet](#), April 22, 2024.

²[Cloud Computing: Why You Should be Looking Under The Hood](#)

Key Takeaways

Meet mission-critical business needs with AWS instances on 4th Gen Intel® Xeon® processors*



U7i, M7i and R7i powered by 4th Gen Intel® Xeon® processors provide the opportunity to **optimize your SAP landscape**

U7i Instance

U7i delivers the **best compute price performance** for large in-memory workloads

>135% better compute performance

Compared to previous generation²

M7i Instance

M7i is best suited for **SAP Application Tier** and **non-Production Tier**

Up to 36%

More SAPS performance
In a single instance Compared to M6i (previous generation)¹

R7i Instance

R7i is suited for **SAP HANA** and allows a consolidation thorough scale-up

29%

More SAPS/\$*
Compared to R6i (previous generation)¹

CALL TO ACTION

Modernize your SAP landscape onto S / 4HANA with the agility, insights and innovation from [running it on AWS](#), powered by Intel® Xeon® processors

¹See backup slides for configuration details. Results may vary.

² <https://aws.amazon.com/blogs/aws/amazon-ec2-high-memory-u7i-instances-for-large-in-memory-databases/>

* COMING SOON: 5th Gen Xeon® optimized AWS instances





Current Market Landscape

5 Cloud Predictions and Opportunities for 2024

Cloud computing is set for a transformative year. Navigate trends, future decisions, and customer conversations with these top cloud predictions.

1

Security, cloud and AI will be top focus areas in 2024

In a recent Intel survey, tech executives, developers, and architects selected their top priorities for 2024.

27%¹ Meet security requirements

27%¹ Adopt cloud services and solutions

22%¹ Adapt to new technology

17%¹ Adopt artificial intelligence (AI) / machine learning (ML)

11%¹ Improve efficiency and performance

2

Decision-makers will increasingly take a "cloud first" approach.

Enterprises are investing in cloud technology to pursue digital transformation and AI opportunities and overwhelmingly prefer cloud solutions when making new purchases.²

Investment in public cloud services is soaring

(US \$1.1 trillion by 2027) and is notably higher than on-premises data center systems spending (US \$275 billion).²

SaaS and cloud services are the top choices

For new application workloads, growing from 77% in 2022 to 91% in 2023.³

3

Enterprises will embrace a mix of workload locations

Organizations are staying flexible with their infrastructure and aren't afraid to distribute workloads.

Decision makers report that workloads are typically distributed by function:

89% choose cloud for email, collaboration, and content¹

71% choose on-premises or public cloud for security and confidential computing¹

12% choose edge or remote locations for application development and deployment¹

In the last year, 17% of organizations moved at least one workload, service or application back on-premises from cloud, citing:

62%
Cost savings

42%
Latency

35%
Security Concerns

1. Respondents are data scientists and AI professionals. Source: <https://cnvrg.io/ml-insider-results-2023/>

2. "Gartner Says Cloud Will Become a Business Necessity by 2028," Gartner, November 29, 2023, [gartner.com/en/newsroom/press-releases/2023-11-29-gartner-says-cloud-will-become-a-business-necessity-by-2028](https://www.gartner.com/en/newsroom/press-releases/2023-11-29-gartner-says-cloud-will-become-a-business-necessity-by-2028)

3. BCSE: I&A 2016-23 data.

5 Cloud Predictions and Opportunities for 2024

Cloud computing is set for a transformative year. Navigate trends, future decisions, and customer conversations with these top cloud predictions.

4

AI and ML investment will drive new business opportunities

AI and ML continue to gain attention with signs pointing to fast growth of this segment.

More than 70% of CSPs and enterprises predict that **AI/ML will gain importance** for their companies in the next 3-5 years.¹

Markets with potential for **high AI/ML platform spend** include banking (US \$15 Billion), professional services (US \$12 Billion), and retail (US 8 Billion).¹

Cloud solution architects are especially interested in **generative AI**, with 97% already using in in some capacity and 61% interested in gaining certifications.¹

1. Respondents are data scientists and AI professionals. Source: <https://cnvrg.io/ml-insider-results-2023/>

5

Edge as a Service is the future

Edge as a Service – processing, analyzing, and storing data closer to where it's generated – is gaining increased interest among developers.

76% of developers are already using or planning to use Edge as a Service offerings in the next 12 to 18 months.¹

Top drivers for adopting Edge as a Service include privacy and security requirements or concerns (55%), regulatory requirements (50%), and resilience to network faults(47%).¹

81% of Edge as a Service offerings are preferred through public and cloud providers like Amazon Web Services (AWS) Azure, and Google.¹

Cloud Accelerates SAP Business Transformation

Innovate, integrate, orchestrate, and manage across your **SAP Cloud Infrastructure**, with **Intel technology**

- Intel-based cloud instances are available across AWS instances. RISE with SAP is standardized on Intel® Xeon® processors
- Meet your SAP landscape's needs with a range of powerful SAP-certified, Intel-based instances in the cloud
- Move data to, from, and between your servers with minimal latency and zero cost
- Get the flexibility, speed, and agility to innovate without jeopardizing security



AI ready

Accelerates innovation with your data, all of it, creating new insights with AI

Built for all your applications including SAP

Intel architecture guides your cloud journey, allowing you to modernize and extend existing applications and build new cloud native apps

Secure

The cloud, powered by Intel, is a secure and trusted foundation for computing

Today's clouds are powered by Intel

Through co-engineering and business relationships with top CSPs, Intel has delivered five generations of custom silicon built for cloud scale.¹

¹[The business imperative for migrating SAP to the cloud — at your own pace](#)



Intel - SAP - AWS

A Winning Combination

A Winning Combination

intel®

SAP®

aws

Proven Leadership &
Certified Scalability

AWS is an Early Adopter of Next
Gen Intel Technologies

Intel® Platforms are Tuned and Certified
for SAP Workloads on AWS





- ✓ 18+ year engineering partnership
- ✓ Collaboration with AWS and its partners on Digital Transformation
- ✓ Shared customer passion
- ✓ High performance + low costs
- ✓ World class supply chain

Andy Jassy – CEO, Amazon

“Intel is a very deep partner of AWS and will be for a long time. That’s not changing.”

Pat Gelsinger – CEO, Intel

“Intel recently agreed to expand its partnership with AWS to include the co-development of multi-generational data center solutions optimized for AWS infrastructure, and Intel as a strategic customer for internal workloads, including EDA. Intel expects these custom Intel® Xeon® solutions will bring greater levels of differentiation and a durable TCO advantage to AWS and its customers, including Intel.”

Why Intel and SAP in the Cloud?

Certified SAP Instances running Intel® Technology designed for performance and/or TCO

Enable a single source of truth



Grow business value from faster insights

With massive memory capacity, enable near-real-time analysis at the source without having to make multiple copies of data. Get closer to your goal of a single source of truth.

Run on pre-validated, certified SAP HANA cloud instances



Safe, future-proof cloud investment

Reassurance that your cloud instances are running on modern Intel® technology that has been validated for SAP HANA workloads to perform more optimally and securely.

Simplify your SAP HANA landscape



Achieve high return on your cloud investment

Consolidate your server footprint to realize operational efficiencies for quality assurance (QA), high availability (HA), disaster recovery (DR), and business intelligence (BI). Consolidate your application server landscape.

SAP on Amazon Web Services

AWS has a wide range of SAP instances for scale up and scale out powered by the Intel® Xeon® platform

- Latest 4th Generation Intel® Xeon® processors-based Instances
- Up to 24 TB memory; SAP-certified
- Out-of-the-box integration native to AWS
- Simple management: AWS CLI, console, AWS Identity and Access Management (IAM)
- Flexibility to scale and resize in minutes

SAP Customer Use cases

- AWS offers a wide range of certified instances for SAP HANA in a variety of shapes to meet diverse customer needs. SAP certified instances (U7i, M7i, R7i, X2i & High-Memory U family) run on latest Intel technology.
- Business transformation: Accelerate innovation by extending your SAP landscape to an extremely broad and deep set of cloud services.
- Test, dev, QA, training, demo, proof of concept (POC), and project systems: Deploy infrastructure and systems in a short time, without any commitment or upfront cost. Pay only for resources you need when you need them.
- Hybrid SAP hosting: Migrate existing SAP development and test landscapes to AWS while keeping production on premises. Easily enable more secure integration between on-premises resources and AWS by using Amazon Virtual Private Cloud (Amazon VPC).
- Disaster recovery: Use AWS cloud as a disaster-recovery (DR) site for on-premises SAP systems without the expense of a second physical site and standby infrastructure.

Case Study



Florida Crystals Corporation Migrated its SAP Infrastructure to Amazon EC2 Instances to Reduce Costs and Meet Sustainability Goals

Lemongrass, an SAP specialist, chose Amazon instances with underlying Intel® Xeon® Processors to maximize performance and workload flexibility.

WATCH THE VIDEO



Innovating with Intel

18+ years of collaborating and innovation with AWS



Collaboration

Deep engineering collaboration across the AWS portfolio



Integration

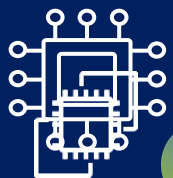
Over 400 Amazon EC2 instances are powered by Intel processors¹



Fastest

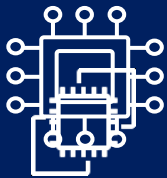
R7i instances are the fastest 4th Gen Intel[®] Xeon[®] based instances in the cloud²

Recent Intel-based Instances

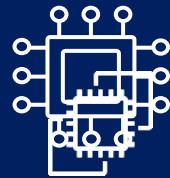


NEW

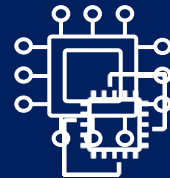
U7i
Memory-Optimized



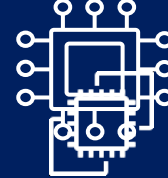
M7i
General Purpose



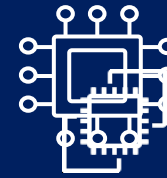
M7i-flex
General Purpose



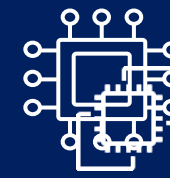
R7iz
High Performance



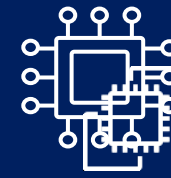
C7i
Compute-Optimized



R6(D)IN
Network-Optimized



M6i(D)N
Network-Optimized



R6iD
Memory-Optimized

¹ [Cloud Computing: Why You Should be Looking Under The Hood](#)

² [Amazon EC2 R7iz Instances](#)

Introducing AWS U7i Family for SAP HANA

SAP
Landscape



SAP certified for both in Scale-Up and Scale-Out configurations with up to 24 TB¹ of Memory combined with 896 vCPUs:

Business Suite on HANA (SoH), next-generation Business Suite S/4HANA, Data Mart Solutions on HANA, Business Warehouse on HANA (BW), and SAP BW/4HANA

Optimized
Costs



Powered by latest 4th Gen Intel Xeon Scalable Processor (Codename: Sapphire Rapids)

- 36:1 ratio of memory to vCPU
- 45%² better price performance over existing High Memory (U-1) instances.

Performance



U7i instances are powered by 1.9 GHz (Turbo Boost to 2.90 GHz) 4th Generation Intel Xeon Scalable processors.

EC2 U7i instances deliver 135%¹ more compute performance and up to 115%¹ higher memory performance over existing High Memory (U-1) instances.

Flexibility



Flexibility in choosing from 4 sizes today in AWS Regions:

US East (N. Virginia),
US West (Oregon)

Enhanced
Security

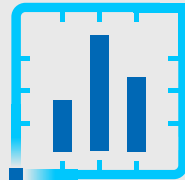


Always protected with Intel Total Memory Encryption (TME)

Improve Performance and ROI

Take Advantage of Cutting-edge Intel® Technology in AWS with 4th Gen Intel® Xeon® Scalable processors

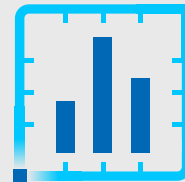
Instance
Type:
U7i vs U-1



Up to 88%

More SAPS/\$
Compared to High Memory U-1 (previous generation)

Instance
Type:
U7i vs U-1



Up to 164%

More SAPS performance
In a single instance Compared to High Memory U-1
(previous generation)



The AWS M7i Instance for SAP Landscapes

This SAP-certified Instance Family is Ideal for Large Databases and Workloads

SAP Landscape



SAP Certified and supported for SAP Application Server in 2-tier & 3-tier configs and pure database.

- SQL Server
- ASE
- DB2
- Oracle DB

Supports SAP ECC Lift & Shift Scenarios

Optimized Costs



Powered by newest 4th Gen

Intel® Xeon® processor

- 4:1 ratio of memory to vCPU
- All-core Turbo frequency of 3.2 GHz

Flexibility



Flexibility in choosing from 11 sizes today in AWS Regions:

US East (Ohio), US East (N. Virginia), US West (Oregon), and Europe (Ireland, London, Zurich, Stockholm, Spain)

Enhanced Security



Always protected with Intel® Total Memory Encryption (Intel® TME)

Workload Accelerators



4th Gen Intel® Xeon® processor build-in Accelerators enable efficient offload and acceleration of data operations.

- Intel® Advance Matrix Extensions (Intel® AMX)
- Intel® Data Streaming Accelerator (DSA)
- Intel® In-Memory Analytics Accelerator (IAA), and
- Intel® QuickAssist Technology (QAT)

M7i Instance Improves Performance and ROI

Take Advantage of Cutting-edge Intel Technology with 4th Gen Intel[®] Xeon[®] Processors

SAP Applications

(ECC, S4, Netweaver Based)

Instance Type:
M7i vs M6i



Up to 30%
More SAPS/\$
Compared to M6i (previous generation)

Intel based vs. AMD based Instances

(ECC, S4, Netweaver Based)

Instance Type:
M7i vs M7a



Up to 8%
More SAPS/\$
Compared to M7a (AMD based Instance)
Current Generation

Instance Type:
M7i vs M6i



Up to 36%
More SAPS performance
In a single instance Compared to M6i
(previous generation)

Instance Type:
M7i vs M6a



Up to 40%
More SAPS
Compared to M6a (AMD based Instance)
Previous Generation

See backup slides for configuration details. Results may vary.

Introducing **AWS R7i Family** for **SAP HANA**

SAP Landscape



SAP Certified and supported for SAP HANA Scale-Up and Scale-Out configurations

Provides up to 1.5TB of Memory combined with 192 vCPUs

Optimized Costs



Powered by latest 4th Gen Intel® Xeon® processor

- 8:1 ratio of memory to vCPU

Flexibility



Flexibility in choosing from 11 sizes today in AWS Regions:

US East (Ohio), US East (N. Virginia), US West (Oregon), and Europe (Ireland, Stockholm, Spain)

Enhanced Security



Always protected with Intel Total Memory Encryption (TME)

Workload Accelerators



4th Gen Intel® Xeon® Processor build-in Accelerators enable efficient offload and acceleration of data operations.

- Intel® Advance Matrix Extensions (Intel® AMX)
- Intel® Data Streaming Accelerator (DSA)
- Intel® In-Memory Analytics Accelerator (IAA), and
- Intel® QuickAssist Technology (QAT)

Improve Performance and ROI

Take Advantage of Cutting-edge Intel® Technology in AWS with 4th Gen Intel® Xeon® Processors

R – Family for SAP HANA

(Powered by 4th Gen Intel® Xeon® Processor)

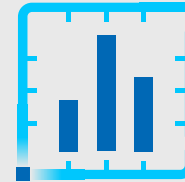
Instance Type: X2i



Up to **50%**
Better Performance/\$**
compared to X1, previous generation

Up to **4x**
Network Bandwidth**
compared to X1 (previous generation)

Instance Type: R7i vs. R6i



36%
More SAPS Performance*
Compared to R6i (previous generation)

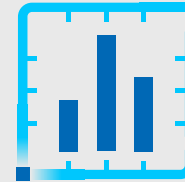
Instance Type: R7i vs. R5



44%
More SAP Performance*
Compared to R5 (previous generation)

37%
More SAPS/\$*
Compared to R5 (previous generation)

Instance Type: R7i vs. R6i



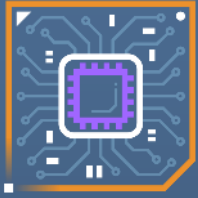
29%
More SAPS/\$*
Compared to R6i (previous generation)

* See backup slides for configuration details. Results may vary.

** Based on [AWS claims](#) and instance details.

Intel® Architecture Instance Types on AWS

Over **400** Intel-based instances available



	General Purpose	Compute Optimized	Memory Optimized	Accelerated Compute	Storage Optimized	HPC Optimized
	General purpose instances provide a balance of compute, memory and networking resources, and can be used for a variety of diverse workloads.	Compute Optimized instances are ideal for compute bound applications that benefit from high performance processors.	Memory optimized instances are designed to deliver fast performance for workloads that process large data sets in memory.	Accelerated computing instances use hardware accelerators, or co-processors, to perform functions more efficiently.	Storage optimized instances are designed for workloads that require high, sequential read and write access to very large data sets on local storage.	Ideal for applications that benefit from high-performance processors including large, complex simulations and deep learning workloads.
4th Gen Intel® Xeon® processors	M7i & M7i-flex	C7i	R7iz U7i			
Habana Gaudi				DL1		
3rd Gen Intel® Xeon® processors	M6i(d) M6i(d)n	C6i(d) C6in	X2idn X2iedn R6i(d) R6i(d)n		I4i	HPC6id
2nd Gen Intel® Xeon® processors	M5zn		R5(d)n R5b X2iezn	G4dn P4d	D3 D3en	
1st and 2nd Gen Intel® Xeon® processors	T3 M5(d)n	C5(d)	R5(d) HMI			
Intel® Xeon® processors	M5(d)	C5n	z1d	P3dn	I3en	
Intel® Xeon® v4 Processors	T2 M4		X1 R4	P2 P3 G3 F1	H1 I3	
Intel® Xeon® v3 Processors		C4	X1e		D2	

The Right Instance for the Right Workload

Instance Family	vCPU	Memory (GB)	CPU Type	Supported for NetWeaver	Supported for HANA	Support for AnyDB
M7i	2-192	8-768	4 th Gen Xeon	Yes	No	Yes
M6i, C6l, C6ld	2-128	8-512	Ice Lake	Yes	No	M6i, C6l, C6ld
C5	2-64	16-504	2 nd Gen Xeon	Yes	No	Yes

Instance Family	vCPU	Memory (GB)	CPU Type	Supported for NetWeaver	Supported for HANA	Support for AnyDB
R7i	2-192	16-1,568	4 th Gen Xeon	Yes	Yes	Yes
R6i	2-128	16-1,024	3 rd Gen Xeon	Yes	Yes	Yes
R5/R5b	2-96	16-768	2 nd Gen Xeon	Yes	Yes	Yes

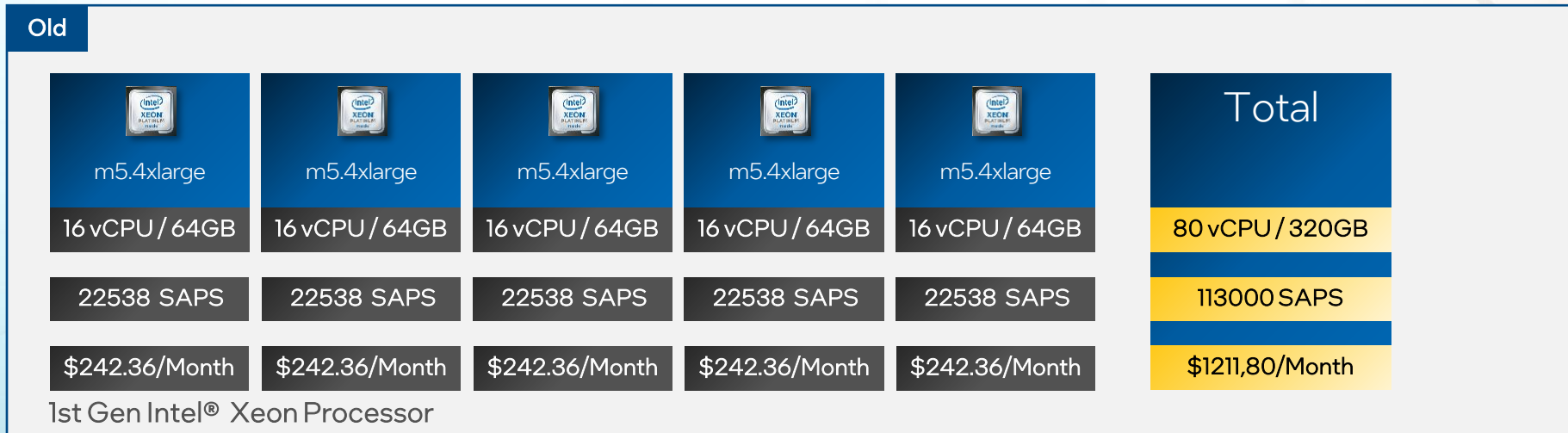
Instance Family	vCPU	Memory (GB)	CPU Type	Supported for NetWeaver	Supported for HANA
U7i	Up to 896	12,288 – 32,768	4 th Gen Xeon	Yes	Yes
X2i	4-128	128-4,096	3 rd Gen Xeon	Yes	Yes
U Family High-Memory ¹	224-448	6,144-24,576	2 nd Gen Xeon	Yes	Yes


30% better SAPS/\$ with the first 4th Gen Intel® Xeon® processor-based M7i instances certified for SAP NetWeaver in the cloud²


¹ Options for Bare-Metal and virtualized instances.

² Based on SAP Note 1656099 (<https://me.sap.com/notes/1656099>) and AWS Cost Calculator as of 5th October 2023. See backup slides for details. Results may vary.

Consolidate SAP Application Server Previous M5 to Latest M7i Family^{1,2}



 **No Sacrifice;
Consolidate
SAP AppTier**

 **Optimize &
Reduce your
Landscape TCO**




 **Utilize Latest
AWS M7i Family
for SAP**

¹ SAP SAPS based on SAP – AWS Note 1656099 (<https://me.sap.com/notes/1656099>)

² Configurations based on <https://calculator.aws> (Date: 25.10.2023 Region: US East OS: Linux, 3 years savings plan). Refer to slides in back up . Results may vary.


Transform **SAP HANA Scale-Out Cluster** with 512GB Previous R5 to Latest R7i Family ^{1,2}

Old Master, Scale Out Configuration, 3rd Node Standby

 r5.8xlarge 32 vCPU / 256GB \$635,83/Month	 r5.8xlarge 32 vCPU / 256GB \$635,83/Month	 r5.8xlarge 32 vCPU / 256GB \$635,83/Month	Total 96 vCPU / 768GB 512GB HANA DB \$1907,49/Month
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2nd Gen Intel® Xeon® Processor (Cascade Lake)

New

 R7i.16xlarge 64 vCPU / 512GB \$1401,86/Month	<p>27% Reduced Costs</p> <p>Consolidate Scale-Out to Scale-Up SAP HANA DB</p> <p>Additional TCO Savings with Dev/Test Tier Consolidation</p>	Total 64 vCPU / 512GB \$1401,86/Month
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4th Gen Intel® Xeon® Processor

intel XEON PLATINUM

No Sacrifice; Consolidate SAP App Tier

Optimize & Reduce your Landscape TCO

Utilize Latest AWS R7i Family for SAP

Reduced OS/Maintenance Costs

¹ SAP SAPS based on SAP – AWS Note 1656099 (<https://me.sap.com/notes/1656099>)

² Configurations based on <https://calculator.aws> (Date: 25.10.2023 Region: US East OS: Linux, 3 years savings plan). Refer to slides in back up . Results may vary.

Summary

Modernize your SAP landscape onto S / 4 HANA with the **agility, insights** and **innovation** from running it on AWS, powered by **Intel® Xeon® processors**

U7i, M7i and **R7i** powered by **4th Gen Intel® Xeon® processors** provide the opportunity to **optimize your SAP landscape**



U7i Instance

U7i delivers the **best compute price performance** for large in-memory workloads

Up to 164%
More SAPS performance
In a single instance Compared to High Memory U-1
(previous generation)¹

M7i Instance

M7i is best suited for **SAP Application Tier** and **non-Production Tier**

Up to 36%
More SAPS performance
In a single instance Compared to M6i
(previous generation)¹

R7i Instance

R7i is suited for **SAP HANA** and allows a consolidation through scale-up

29%
More SAPS/\$*
Compared to R6i (previous generation)¹

[Get Started with SAP on AWS](#)

¹See backup slides for configuration details. Results may vary.

² <https://aws.amazon.com/blogs/aws/amazon-ec2-high-memory-u7i-instances-for-large-in-memory-databases/>



Strategic Collaboration: Intel and SAP RISE

Strategic Collaboration: Intel and SAP RISE

Intel and SAP RISE announced a strategic collaboration to deliver a more powerful and sustainable SAP® software landscapes in the cloud. Designed to help customers derive greater scalability, agility and consolidation of existing SAP software landscapes, the collaboration deepens Intel's focus on delivering extremely powerful and secure instances for SAP, powered by Intel® Xeon® processors.

Intel embarks on the SAP RISE Journey in the coming years with the migration to S/4HANA

[LEARN MORE](#)



RISE with SAP

Powered by Intel Technology

1

Migrate to S/4HANA

intel.
XEON
PLATINUM

All Options require SAP Certified Infrastructure

- SAP Certified Appliances (OEMs)
- SAP Certified IaaS (CSPs)
- SAP Certified Hypervisor on Intel x86 (Broadcom/VMWare, Nutanix, SUSE KVM)

Intel powers the worldwide largest ecosystem of SAP certified Infrastructure

SAP RISE
Commercial Framework

1

RISE with SAP –
S/4HANA Cloud – Private Edition

Private cloud within Hyperscalers (Azure, AWS, GCP, Alibaba) or SAP DataCenter

2

RISE with SAP
S/4HANA – Private Edition –
Customer Data Center Option

Moving Customers to cloud, without moving their data center

Private cloud within Customer Data Center (HPE Greenlake, Dell Apex, Lenovo TruScale, Fujitsu uSCALE)

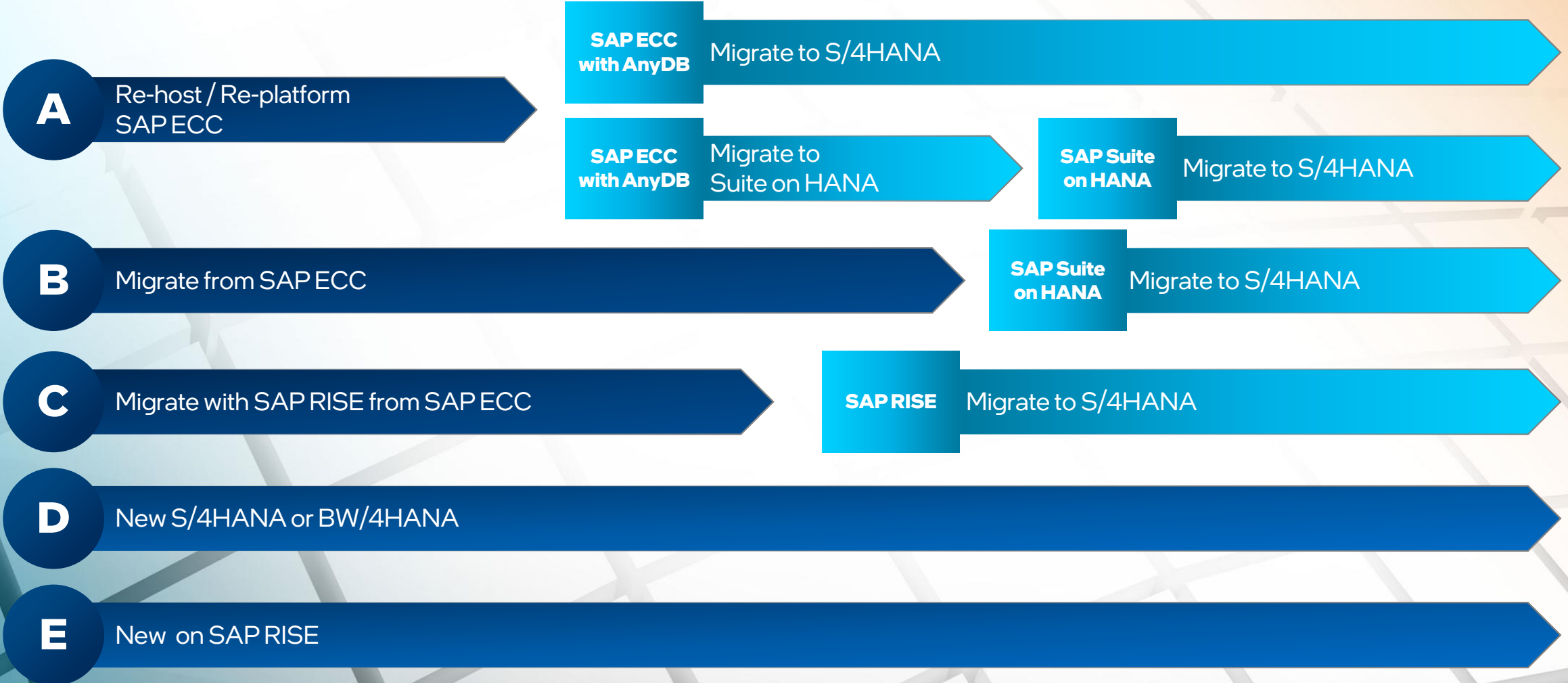
3

S/4HANA / SAPECC

Customer Data Center or Partner IaaS or DCaaS with Co-Location

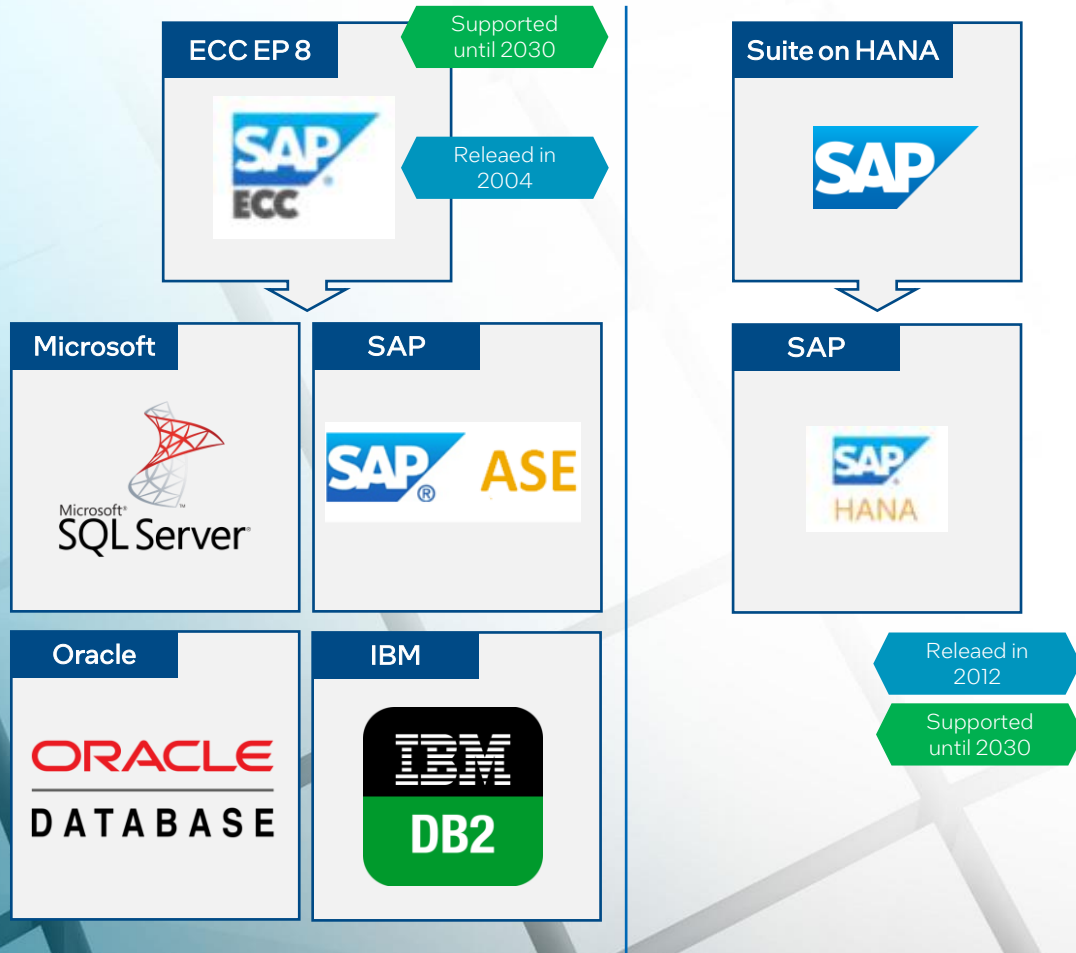
intel.
XEON
PLATINUM

Intel Supports the Journey to SAP S4 / HANA

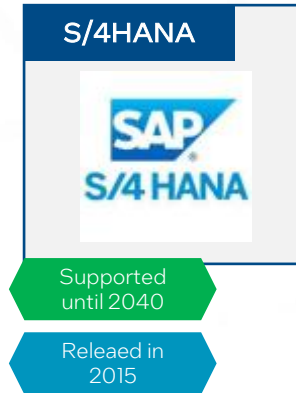


Intel® Xeon® Scalable Platform - 360° Support for SAP

Re-Host/Re-Platform/Transform




Greenfield/ Migrate



- Intel Xeon Platform powers the SAP landscape for the last 2 decades
- Benefit from Intel's partnership with SAP, Microsoft, Oracle and IBM to deliver highest performance, resilience at lower TCO for their database products
- Intel enables an open ecosystem of SAP hardware and software vendors to provide highest flexibility
- Future Proof Investment in case you Re-Host or Re-Platform your existing SAP landscape or start your migration to S4/HANA
- Scale-Up to 32TB SAP HANA and consolidate your SAP landscape with Intel® Xeon® processors to optimize TCO and help meet your sustainability goals





Edge Platform-as-a-Service (PaaS) from SAP and Intel

Enabled by SAP RISE & SAP BTP

Introducing Edge Platform-as-a-Service from SAP and Intel

Intel's new commercial software platform enabling enterprises to build, deploy, run, and manage scalable edge and AI solutions on standard hardware with cloud-like simplicity

A Modular Platform for Network and Edge Transformation

Foundational components that drive network and edge transformation

Industry Solutions

AI-enabled edge end-solutions optimized for various use-cases

AI and Applications

Tools to build and deploy edge-native application software and AI

Infrastructure Software

Secure infrastructure software for edge-to-cloud hybrid implementations

Foundational HW built for the edge

Platform Hardware built for the edge (CPUs, GPUs, network accelerators)

Build

Deploy

Run

Manage

Security

Partner Ecosystem Support

SAP / Alert Enterprise Solution – Edge PaaS



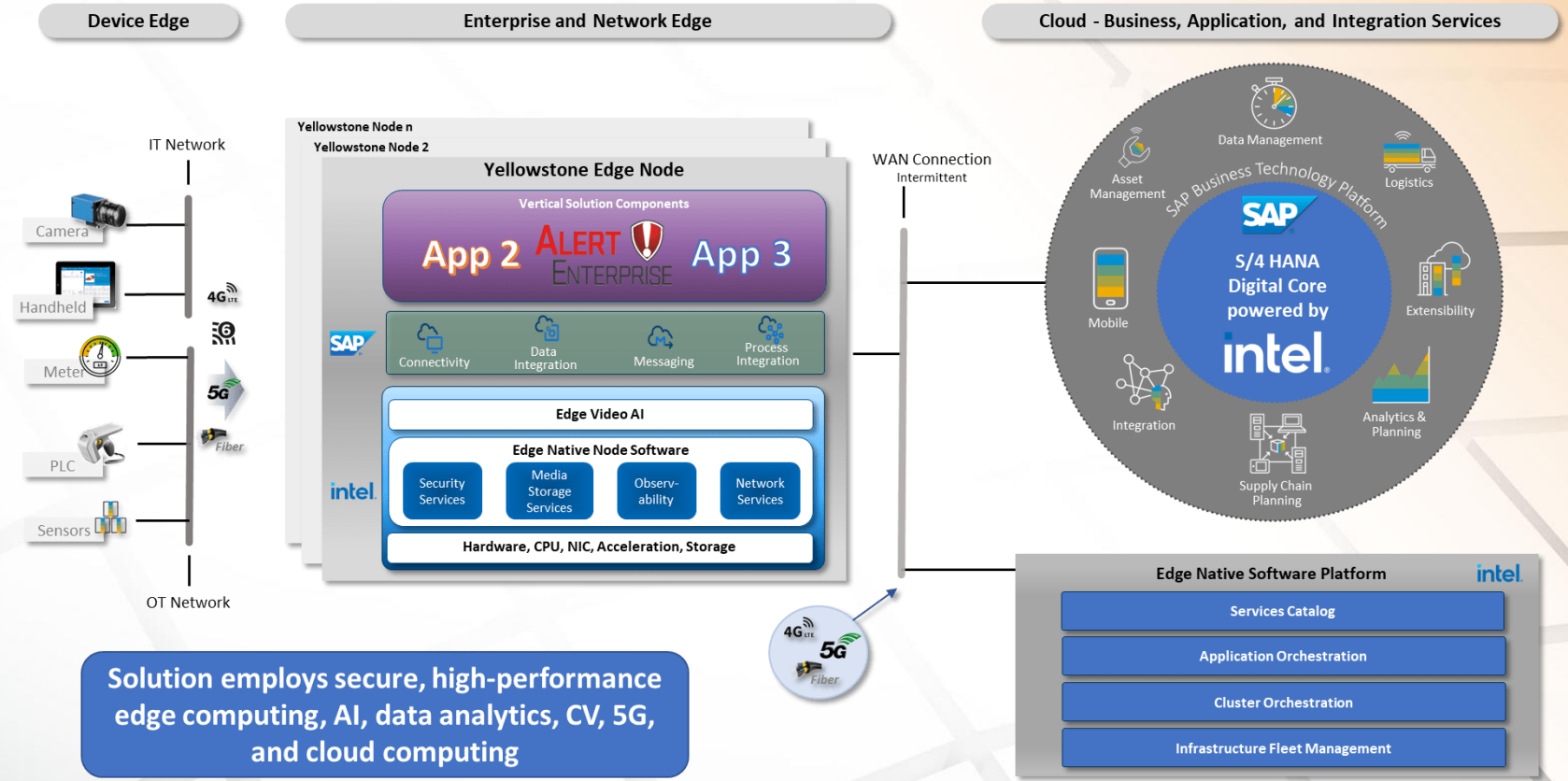
Solution Overview

Cyber-Physical Security Governance
Risk and Compliance –
“Cyber Physical GRC” for Utilities

Based on Intel® Xeon®, Core, Edge
Platform

Alert Enterprise Prevents, Detects &
Mitigates Electrical Substation Threats

SAP S/4 Hana Delivers Enterprise to
Edge Vertical Solutions



Solution employs secure, high-performance edge computing, AI, data analytics, CV, 5G, and cloud computing

SAP / QuayChain Solution – Edge PaaS



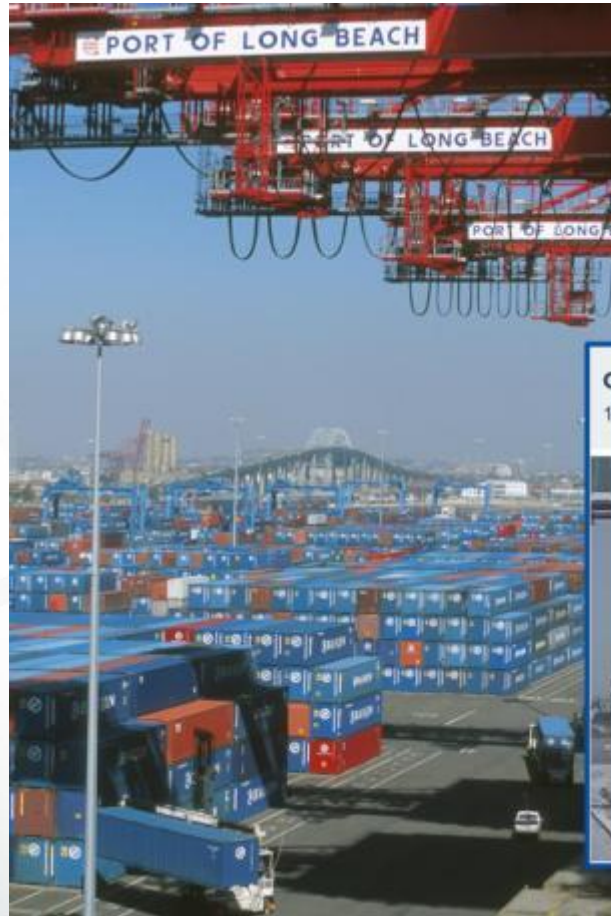
Solution Overview

Drives Value for Ports, their Supply Chain Stakeholders, Communities and the Environment

Based on Intel® Xeon®, Core, Edge Platform

QuayChain Edge Devices (QEDs):

- Computer Vision
- Machine Learning/AI
- Local Edge Compute
- Environmental Sensors
- Dynamic Physical Sensors 5G Connectivity
- End to end encryption



Automate Reporting

For specific location within, or across entire Port automate:

- Air monitoring
- Traffic count, aggregate type, speed
- Weather, wind, seasonality, light etc

Automate reporting to:

- EPA, local and state regulatory authorities

Adaptable Insights

Easily scale and add new use cases

Granular data to correlate dependencies

Robust machine learning to surface unseen factors on sustainability

Plan infrastructure and sustainability decisions using accurate, not snapshot, data

Impact Port Community

Real-world, accurate data enables addressing port community concerns:

- Shared baseline data to co-create solutions
- Increased transparency and understanding of decisions and ongoing impact
- Real-time data to reroute traffic, reduce noise, improve air quality
- Communicate traffic count type eg supply chain vs. construction

Computer Vision:

100% Recognition on all Equipment

<h4>Container</h4> <p>Number: FDU 952007 Size/Type: 40R General Hazard Plaque: Yes Shipline: Florida Owner: Florens Container History: 74/last 30 days at this location</p>	<h4>Location</h4> <p>Current location: QuickPick, 1021 E 233rd St, Carson, CA 90746 Direction: Inbound Time and Date: Sept 12, 2021, 1:43pm PST Greenhouse (GHG): 22 CO2e MT/last 30 days</p>
<h4>Truck</h4> <p>Truck Owner: ABC Trucks SCAC: AACT License Plate: T603306 State: TN Make, Model and Year: Freightliner, Cascadia Evolution New Cascadia, 2014</p>	<h4>Chassis</h4> <p>Number: FLT2 4T9682 EP: Chassis Management Services, Southern California SCAC: FWAZ License plate: T603306 State: TN Plate: 4T9682</p>

Call to Action

Modernize your SAP landscape with 4th Gen Intel® Xeon® Processors leveraging the largest SAP certified ecosystem for improved performance and optimized TCO on AWS

*5th Gen Intel Xeon AWS instances
COMING SOON

Migrate to SAP S4 / HANA with support from SAP RISE - powered by Intel® Xeon®.
Support your journey to SAP RISE and benefit from the SAP & Intel partnership delivering better performance, scalability and resiliency for your business-critical processes.

Connect with an Intel representative to learn more about the Edge Platform-as-a-Service from SAP and Intel, integrated with SAP RISE and SAP BTP, enables new business cases already integrated into SAP landscapes for faster adoption and improved efficiencies.

Training

Competency

[Business Transformation for SAP Software](#)



SAP is one of the leading global providers of business software solutions. These solutions can be found in many enterprise and public sector organizations, including many of your customers.

SAP and Intel have a two-decade-long relationship, with SAP software solutions optimized on Intel® technologies, including server processors, memory, storage, and AI acceleration. Explore SAP software solutions and how they work with Intel® technologies will help you deliver digital transformation services to your customers. This curriculum will help explain the value of SAP on Intel data center technologies. Delve into topics such as Business Transformation, Digital Disruptions, and Key Market Trends. Gain skills and insights about SAP software system requirements, benchmarks and sizing, and deployment options.

CloudTV



COMING SOON
[Intel.com/cloudtv](https://www.intel.com/cloudtv)
CloudTV: SAP Migration on AWS

Notices and Disclaimers

Performance varies by use, configuration and other factors. Learn more on the [Performance Index site](#).

Performance results are based on testing as of dates shown in configurations and may not reflect all publicly available updates. See backup for configuration details. No product or component can be absolutely secure.

Your costs and results may vary.

Intel technologies may require enabled hardware, software or service activation.

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The Intel logo is centered on a solid blue background. It features the word "intel" in a white, lowercase, sans-serif font. A small blue square is positioned above the letter 'i'. To the right of the word "intel" is a registered trademark symbol (®).

intel®

U7i

Improve Performance and ROI

Take Advantage of Cutting-edge Intel® Technology in AWS with 4th Gen Intel® Xeon® Scalable processors

SPR vs. CLX	U7i (Sapphire Rapids) performance relative to prior gen Utb1 (Cascade Lake)													
	U-1 (cascade lake)	vCPU	Memory	SAPS*	On-Demand	SAPS/\$/hr**	U7i (Intel Sapphire Rapids)	vCPU	Memory	SAPS*	On-Demand	SAPS/\$/hr**	Perf Change***	Perf/\$ change
	u-12tb1.112xlarge	448	12288	475,500	109.2	4354.40	u7i-12tb.224xlarge	896	12288 GiB	1254030	152.880	8202.71	164%	88%
	u-18tb1.112xlarge	448	18432	520,330	163.8	3176.62	u7in-16tb.224xlarge	896	16384 GiB	1281620	203.840	6287.38	146%	98%
	u-24tb1.112xlarge	448	24576	508,720	218.4	2329.30	u7in-24tb.224xlarge	896	24576 GiB	1225150	305.760	4006.90	141%	72%
						u7in-32tb.224xlarge	896	32768 GiB		407.680				

SAP-Certified AWS Instances for SAP HANA & Improve Performance and ROI

Analysis based on public pricing from AWS for Region: US East on 17 Oct 2023: (<https://calculator.aws/>) (OS: Linux, on-Demand and 3 years reserve)

R7i performance relative to prior gen R6i

R7i (Sapphire Rapids) Certified for Netweaver Certified for SAP HANA	R6i (Icelake) Certified for Netweaver Certified for SAP HANA							R7i performance relative to prior gen R6i								
	vCPU	Memory	SAPS	Paygo onDemand/Hour	SAPS/\$	EC2 Saving Plans 3 years Reserve / No Upfront	vCPU	Memory	SAPS	Paygo onDemand/Hour	SAPS/\$	EC2 Saving Plans 3 years Reserve / No Upfront	Perf Improvement R7i SAPS	Perf/\$ Improvement R7i SAPS/\$	Perf/\$ Monthly Costs Delta R7i	
r6i.large	2	16	3,063	\$ 0.126 /hour	24309.52	\$ 41.72 /month	r7i.large	2	16	4,155	\$ 0.1323 /hour	31406	\$ 43.81 /month	35.65 %	29.19 %	5.01 %
r6i.xlarge	4	32	6,127	\$ 0.252 /hour	24313.49	\$ 83.45 /month	r7i.xlarge	4	32	8,310	\$ 0.2646 /hour	31406	\$ 87.61 /month	35.63 %	29.17 %	4.99 %
r6i.2xlarge	8	64	12,253	\$ 0.504 /hour	24311.51	\$ 166.89 /month	r7i.2xlarge	8	64	16,620	\$ 0.5292 /hour	31406	\$ 175.24 /month	35.64 %	29.18 %	5.00 %
r6i.4xlarge	16	128	24,506	\$ 1.008 /hour	24311.51	\$ 333.78 /month	r7i.4xlarge	16	128	33,240	\$ 1.0584 /hour	31406	\$ 350.47 /month	35.64 %	29.18 %	5.00 %
r6i.8xlarge	32	256	49,013	\$ 2.016 /hour	24312.00	\$ 667.56 /month	r7i.8xlarge	32	256	66,480	\$ 2.1168 /hour	31406	\$ 700.93 /month	35.64 %	29.18 %	5.00 %
r6i.12xlarge	48	384	73,519	\$ 3.024 /hour	24311.84	\$ 1001.33 /month	r7i.12xlarge	48	384	99,720	\$ 3.1752 /hour	31406	\$ 1051.4 /month	35.64 %	29.18 %	5.00 %
r6i.16xlarge	64	512	98,025	\$ 4.032 /hour	24311.76	\$ 1335.11 /month	r7i.16xlarge	64	512	105,500	\$ 4.2336 /hour	24920	\$ 1401.86 /month	7.63 %	2.50 %	5.00 %
r6i.24xlarge	96	768	147,038	\$ 6.048 /hour	24311.84	\$ 2002.66 /month	r7i.24xlarge	96	768	158,250	\$ 6.3504 /hour	24920	\$ 2102.79 /month	7.63 %	2.50 %	5.00 %
r6i.32xlarge	128	1024	196,050	\$ 8.064 /hour	24311.76	\$ 2670.22 /month	r7i.48xlarge	192	1536	296,200	\$ 12.7008 /hour	23321	\$ 4205.59 /month			

Analysis based on public pricing from AWS for Region: US East on 24 Oct 2023: (<https://calculator.aws/>) (OS: Linux, on-Demand and 3 years reserve)

R7i performance relative to prior gen R6i

R7i (Sapphire Rapids) Certified for Netweaver Certified for SAP HANA	R6i (Icelake) Certified for Netweaver Certified for SAP HANA							R7i performance relative to prior gen R6i								
	vCPU	Memory	SAPS	Paygo onDemand/Hour	SAPS/\$	EC2 Saving Plans 3 years Reserve / No Upfront	vCPU	Memory	SAPS	Paygo onDemand/Hour	SAPS/\$	EC2 Saving Plans 3 years Reserve / No Upfront	Perf Improvement R7i SAPS	Perf/\$ Improvement R7i SAPS/\$	Perf/\$ Monthly Costs Delta R7i	
r5.large	2	16	2,891	\$ 0.126 /hour	22944.44	\$ 39.42 /month	r7i.large	2	16	4,155	\$ 0.1323 /hour	31406	\$ 43.81 /month	43.72 %	36.88 %	11.14 %
r5.xlarge	4	32	5,782	\$ 0.252 /hour	22944.44	\$ 79.57 /month	r7i.xlarge	4	32	8,310	\$ 0.2646 /hour	31406	\$ 87.61 /month	43.72 %	36.88 %	10.10 %
r5.2xlarge	8	64	11,564	\$ 0.504 /hour	22944.44	\$ 159.14 /month	r7i.2xlarge	8	64	16,620	\$ 0.5292 /hour	31406	\$ 175.24 /month	43.72 %	36.88 %	10.12 %
r5.4xlarge	16	128	23,128	\$ 1.008 /hour	22944.44	\$ 317.55 /month	r7i.4xlarge	16	128	33,240	\$ 1.0584 /hour	31406	\$ 350.47 /month	43.72 %	36.88 %	10.37 %
r5.8xlarge	32	256	46,257	\$ 2.016 /hour	22944.94	\$ 635.83 /month	r7i.8xlarge	32	256	66,480	\$ 2.1168 /hour	31406	\$ 700.93 /month	43.72 %	36.88 %	10.24 %
r5.12xlarge	48	384	69,385	\$ 3.024 /hour	22944.78	\$ 953.38 /month	r7i.12xlarge	48	384	99,720	\$ 3.1752 /hour	31406	\$ 1051.4 /month	43.72 %	36.88 %	10.28 %
r5.16xlarge	64	512	92,513	\$ 4.032 /hour	22944.69	\$ 1271.66 /month	r7i.16xlarge	64	512	105,500	\$ 4.2336 /hour	24920	\$ 1401.86 /month	14.04 %	8.61 %	10.24 %
r5.24xlarge	96	768	138,770	\$ 6.048 /hour	22944.78	\$ 1907.49 /month	r7i.24xlarge	96	768	158,250	\$ 6.3504 /hour	24920	\$ 2102.79 /month	14.04 %	8.61 %	10.24 %
							r7i.48xlarge	192	1536	296,200	\$ 12.7008 /hour	23321	\$ 4205.59 /month			

Improve Performance and ROI

Take Advantage of Cutting-edge Intel® Technology in AWS with 4th Gen Intel® Xeon® Scalable processors

Analysis based on public pricing from AWS for US East on 10/5/2023: <https://aws.amazon.com/ec2/pricing/on-demand/>

M7i (SAP) performance relative to M6i (ICX)

M7i (Sapphire Rapids) Certified for NetWeaver	vCPU	Memory	SAPS	Paygo onDemand/Hour	SAPS/\$	EC2 Saving Plans 3 years Reserve / No Upfront	M6i (Icelake) Certified for NetWeaver	vCPU	Memory	SAPS	Paygo onDemand/Hour	SAPS/\$	EC2 Saving Plans 3 years Reserve / No Upfront	Perf Improvement SAPS	Perf/\$ SAPS/\$	Perf/\$ Monthly Costs
m7i.large	2	8	4218	\$ 0.1008 /hour	41845	\$ 33.38 /month	m6i.large	2	8	3095	\$ 0.096 /hour	32240	\$ 31.79 /month	36.28 %	29.79 %	5.00 %
m7i.xlarge	4	16	8435	\$ 0.2016 /hour	41840	\$ 66.76 /month	m6i.xlarge	4	16	6190	\$ 0.192 /hour	32240	\$ 63.58 /month	36.27 %	29.78 %	5.00 %
m7i.2xlarge	8	32	16870	\$ 0.4032 /hour	41840	\$ 133.51 /month	m6i.2xlarge	8	32	12380	\$ 0.384 /hour	32240	\$ 127.15 /month	36.27 %	29.78 %	5.00 %
m7i.4xlarge	16	64	33740	\$ 0.8064 /hour	41840	\$ 267.02 /month	m6i.4xlarge	16	64	24760	\$ 0.768 /hour	32240	\$ 254.3 /month	36.27 %	29.78 %	5.00 %
m7i.8xlarge	32	128	67480	\$ 1.6128 /hour	41840	\$ 534.05 /month	m6i.8xlarge	32	128	49520	\$ 1.536 /hour	32240	\$ 508.61 /month	36.27 %	29.78 %	5.00 %
m7i.12xlarge	48	192	101220	\$ 2.4192 /hour	41840	\$ 801.07 /month	m6i.12xlarge	48	192	74280	\$ 2.304 /hour	32240	\$ 762.92 /month	36.27 %	29.78 %	5.00 %
m7i.16xlarge	64	256	123300	\$ 3.2256 /hour	38225	\$ 1068.08 /month	m6i.16xlarge	64	256	99040	\$ 3.072 /hour	32240	\$ 1017.23 /month	24.50 %	18.57 %	5.00 %
m7i.24xlarge	96	384	167470	\$ 4.8384 /hour	34613	\$ 1602.13 /month	m6i.24xlarge	96	384	148560	\$ 4.608 /hour	32240	\$ 1525.84 /month	12.73 %	7.36 %	5.00 %
n/a	n/a	n/a	n/a	n/a	n/a	n/a	m6i.32xlarge	128	512	198080	\$ 6.144 /hour	32240	\$ 2034.45 /month	n/a	n/a	n/a
m7i.48xlarge	192	768	306020	\$ 9.6768 /hour	31624	\$ 3204.26 /month	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Analysis based on public pricing from AWS for US East on 10/5/2023: <https://aws.amazon.com/ec2/pricing/on-demand/>

M7i (SAP) performance relative to M6a (AMD Milan)

M7i (Sapphire Rapids) Certified for NetWeaver	vCPU	Memory	SAPS	Paygo onDemand/Hour	SAPS/\$	EC2 Saving Plans 3 years Reserve / No Upfront	M6a (AMD Milan) Certified for NetWeaver	vCPU	Memory	SAPS	Paygo onDemand/Hour	SAPS/\$	EC2 Saving Plans 3 years Reserve / No Upfront	Perf Improvement SAPS	Perf/\$ SAPS/\$	Perf/\$ Monthly Costs
m7i.large	2	8	4218	\$ 0.1008 /hour	41845	\$ 33.38 /month	m6a.large	2	8	3023	\$ 0.0864 /hour	34988	\$ 28.61 /month	39.53 %	19.60 %	16.67 %
m7i.xlarge	4	16	8435	\$ 0.2016 /hour	41840	\$ 66.76 /month	m6a.xlarge	4	16	6046	\$ 0.1728 /hour	34988	\$ 57.22 /month	39.51 %	19.58 %	16.67 %
m7i.2xlarge	8	32	16870	\$ 0.4032 /hour	41840	\$ 133.51 /month	m6a.2xlarge	8	32	12093	\$ 0.3456 /hour	34991	\$ 114.43 /month	39.50 %	19.57 %	16.67 %
m7i.4xlarge	16	64	33740	\$ 0.8064 /hour	41840	\$ 267.02 /month	m6a.4xlarge	16	64	24185	\$ 0.6912 /hour	34990	\$ 228.88 /month	39.51 %	19.58 %	16.66 %
m7i.8xlarge	32	128	67480	\$ 1.6128 /hour	41840	\$ 534.05 /month	m6a.8xlarge	32	128	48370	\$ 1.3824 /hour	34990	\$ 457.75 /month	39.51 %	19.58 %	16.67 %
m7i.12xlarge	48	192	101220	\$ 2.4192 /hour	41840	\$ 801.07 /month	m6a.12xlarge	48	192	72555	\$ 2.0736 /hour	34990	\$ 686.62 /month	39.51 %	19.58 %	16.67 %
m7i.16xlarge	64	256	123300	\$ 3.2256 /hour	38225	\$ 1068.08 /month	m6a.16xlarge	64	256	96740	\$ 2.7648 /hour	34990	\$ 915.5 /month	27.46 %	9.25 %	16.67 %
m7i.24xlarge	96	384	167470	\$ 4.8384 /hour	34613	\$ 1602.13 /month	m6a.24xlarge	96	384	145110	\$ 4.1472 /hour	34990	\$ 1373.25 /month	15.41 %	-1.08 %	16.67 %
n/a	n/a	n/a	n/a	n/a	n/a	n/a	m6a.32xlarge	128	512	193480	\$ 5.5296 /hour	34990	\$ 1831.01 /month	n/a	n/a	n/a
m7i.48xlarge	192	768	306020	\$ 9.6768 /hour	31624	\$ 3204.26 /month	m6a.48xlarge	192	768	290220	\$ 8.2944 /hour	34990	\$ 2746.51 /month	n/a	n/a	n/a

Improve Performance and ROI

Take Advantage of Cutting-edge Intel® Technology in AWS with 4th Gen Intel® Xeon® Scalable processors

Analysis based on public pricing from AWS for US East on 10/5/2023: <https://aws.amazon.com/ec2/pricing/on-demand/>

M7i (SPR) performance relative to M7a (AMD Genoa)

M7i vs M7a	M7i (Sapphire Rapids) Certified for NetWeaver							M7a (AMD Genoa) Certified for NetWeaver							EC2 Saving Plans 3 years Reserve / No Upfront	Perf Improvement SAPS	Perf/\$ SAPS/\$	Perf/\$ Monthly Costs			
	vCPU	Memory	SAPS	Paygo onDemand/Hour	SAPS/\$	EC2 Saving Plans 3 years Reserve / No Upfront	M7a (AMD Genoa) Certified for NetWeaver	vCPU	Memory	SAPS	Paygo onDemand/Hour	SAPS/\$									
	m7i.large	2	8	4218	\$ 0.1008 /hour	41845	\$ 33.38 /month	m7a.large	2	8	4476	\$ 0.11592 /hour	38613	\$ 36.38 /month					-5.76 %	8.37 %	-8.25 %
	m7i.xlarge	4	16	8435	\$ 0.2016 /hour	41840	\$ 66.76 /month	m7a.xlarge	4	16	8953	\$ 0.23184 /hour	38617	\$ 76.77 /month					-5.79 %	8.35 %	-13.04 %
	m7i.2xlarge	8	32	16870	\$ 0.4032 /hour	41840	\$ 133.51 /month	m7a.2xlarge	8	32	17905	\$ 0.46368 /hour	38615	\$ 153.54 /month					-5.78 %	8.35 %	-13.05 %
	m7i.4xlarge	16	64	33740	\$ 0.8064 /hour	41840	\$ 267.02 /month	m7a.4xlarge	16	64	35810	\$ 0.92736 /hour	38615	\$ 307.07 /month					-5.78 %	8.35 %	-13.04 %
	m7i.8xlarge	32	128	67480	\$ 1.6128 /hour	41840	\$ 534.05 /month	m7a.8xlarge	32	128	71620	\$ 1.85472 /hour	38615	\$ 614.15 /month					-5.78 %	8.35 %	-13.04 %
	m7i.12xlarge	48	192	101220	\$ 2.4192 /hour	41840	\$ 801.07 /month	m7a.12xlarge	48	192	107430	\$ 2.78208 /hour	38615	\$ 921.22 /month					-5.78 %	8.35 %	-13.04 %
	m7i.16xlarge	64	256	123300	\$ 3.2256 /hour	38225	\$ 1068.08 /month	m7a.16xlarge	64	256	143240	\$ 3.70944 /hour	38615	\$ 1228.3 /month					-13.92 %	-1.01 %	-13.04 %
	m7i.24xlarge	96	384	167470	\$ 4.8384 /hour	34613	\$ 1602.13 /month	m7a.24xlarge	96	384	214860	\$ 5.56416 /hour	38615	\$ 1842.45 /month					-22.06 %	-10.36 %	-13.04 %
n/a	n/a	n/a	n/a	n/a	n/a	n/a	m7a.32xlarge	128	512	286480	\$ 7.41888 /hour	38615	\$ 2456.6 /month	n/a	n/a	n/a					
m7i.48xlarge	192	768	306020	\$ 9.6768 /hour	31624	\$ 3204.26 /month	m7a.48xlarge	192	768	429720	\$ 11.12832 /hour	38615	\$ 3684.9 /month	n/a	n/a	n/a					

Price Calculations sourced from AWS Pricing Calculator (<https://calculator.aws>) in Oct 2023
 Performance Numbers are based on SAP Note 1656099 (<https://me.sap.com/notes/1656099>)



Slide #	Claim	Config/Back up slide # reference													Perf Improvement SAPS	Perf/\$ SAPS/\$	Perf/\$ Monthly Costs
Slide 4 and 20	R7i based on latest 4 th Gen Intel Xeon provide up to 29% higher SAPS/\$ vs R6i ¹	Slide 21 29% more SAPS/\$ Analysis based on public pricing from AWS for US East on 10/24/2023: https://aws.amazon.com/ec2/pricing/on-demand/ New: 1-instance R7i.4xlarge: 16 vCPU (4th Gen Xeon), 128 GB total memory, https://me.sap.com/notes/1656099 Baseline: 1-instance R6i.4xlarge: 16 vCPU (3 rd Gen Xeon), 128 GB total memory, https://me.sap.com/notes/1656099															
			r6i.4xlarge	16	128	24,506	\$1.008 /hour	24311.51	\$333.78 /month	r7i.4xlarge	16	128	33,240	\$1.0584 /hour	31406	\$350.47 /month	35.64 %
Slide 18	M7i vs M6i – up to 30% more SAPS/\$ M7i vs M6i Up to 36% more SAPS performance	Slide 22 30% higher SAPS/\$ Analysis based on public pricing from AWS for US East on 10/5/2023: https://aws.amazon.com/ec2/pricing/on-demand/ New: 1-instance M7i.4xlarge (4 th Gen Xeon), 16 vCPU, 64GB total memory, https://me.sap.com/notes/1656099 Baseline: 1-instance M6i.4xlarge (3 rd Gen Xeon), 16 vCPU, 64GB total memory, https://me.sap.com/notes/1656099															
			m7i.4xlarge	16	64	33740	\$0.8064 /hour	41840	\$267.02 /month	m6i.4xlarge	16	64	24760	\$0.768 /hour	32240	\$254.3 /month	36.27 %
	M7i vs M7a Up to 8% More SAPS/\$	Slide 23 8% more SAPS/\$ Analysis based on public pricing from AWS for US East on 10/5/2023: https://aws.amazon.com/ec2/pricing/on-demand/ New: 1-instance M7i.4xlarge: 16 vCPU (4th Gen Xeon), 64 GB total memory, https://me.sap.com/notes/1656099 Baseline: 1-instance M7a.4xlarge: 16 vCPU (AMD Genoa), 64 GB total memory, https://me.sap.com/notes/1656099															
			m7i.4xlarge	16	64	33740	\$0.8064 /hour	41840	\$267.02 /month	m7a.4xlarge	16	64	35810	\$0.92736 /hour	38615	\$307.07 /month	-5.78 %
M7i vs M6a Up to 40% more SAPS	Slide 22 40% more SAPS/\$ Analysis based on public pricing from AWS for US East on 10/5/2023: https://aws.amazon.com/ec2/pricing/on-demand/ New: 1-instance M7i.4xlarge: 16 vCPU (4th Gen Xeon), 64 GB total memory, https://me.sap.com/notes/1656099 Baseline: 1-instance M6a.4xlarge: 16 vCPU (AMD Milan), 64 GB total memory, https://me.sap.com/notes/1656099																
		m7i.4xlarge	16	64	33740	\$0.8064 /hour	41840	\$267.02 /month	m6a.4xlarge	16	64	24185	\$0.6912 /hour	34990	\$228.88 /month	39.51 %	19.58 %

Slide #	Claim	Config/Back up slide #																																	
Slide 20	X2i vs X1 – Up to 50% better performance and up to 4x Network bandwidth	Based on AWS claims and instance details. https://aws.amazon.com/ec2/instance-types/x2i/																																	
	R7i vs R6i – up to 36% more SAPS performance and 29% more SAPS/\$	Slide 21 36% more SAPS & 29% more SAPS/\$ Analysis based on public pricing from AWS for US East on 10/24/2023: https://aws.amazon.com/ec2/pricing/on-demand/ New: 1-instance R7i.4xlarge: 16 vCPU (4th Gen Xeon), 128 GB total memory, https://me.sap.com/notes/1656099 Baseline: 1-instance R6i.4xlarge: 16 vCPU (3rd Gen Xeon), 128 GB total memory, https://me.sap.com/notes/1656099																																	
		<table border="1"> <thead> <tr> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>Perf Improvement SAPS</th> <th>Perf/\$ SAPS/\$</th> <th>Perf/\$ Monthly Costs</th> </tr> </thead> <tbody> <tr> <td>r6i.4xlarge</td> <td>16</td> <td>128</td> <td>24,506</td> <td>\$ 1.008 /hour</td> <td>24311.51</td> <td>\$ 333.78 /month</td> <td>r7i.4xlarge</td> <td>16</td> <td>128</td> <td>33,240</td> <td>\$ 1.0584 /hour</td> <td>31406</td> <td>\$ 350.47 /month</td> <td>35.64%</td> <td>29.18%</td> <td>5.00%</td> </tr> </tbody> </table>														Perf Improvement SAPS	Perf/\$ SAPS/\$	Perf/\$ Monthly Costs	r6i.4xlarge	16	128	24,506	\$ 1.008 /hour	24311.51	\$ 333.78 /month	r7i.4xlarge	16	128	33,240	\$ 1.0584 /hour	31406	\$ 350.47 /month	35.64%	29.18%	5.00%
													Perf Improvement SAPS	Perf/\$ SAPS/\$	Perf/\$ Monthly Costs																				
r6i.4xlarge	16	128	24,506	\$ 1.008 /hour	24311.51	\$ 333.78 /month	r7i.4xlarge	16	128	33,240	\$ 1.0584 /hour	31406	\$ 350.47 /month	35.64%	29.18%	5.00%																			
Slide 21	R7i vs R5 - Up to 44% better SAPS and up to 37% better SAPS/\$	Slide 21 44% more SAPS & 37% more SAPS/\$ Analysis based on public pricing from AWS for US East on 10/24/2023: https://aws.amazon.com/ec2/pricing/on-demand/ New: 1-instance R7i.4xlarge: 16 vCPU (4th Gen Xeon), 128 GB total memory, https://me.sap.com/notes/1656099 Baseline: 1-instance R5.4xlarge: 16 vCPU (2nd Gen Xeon), 128 GB total memory, https://me.sap.com/notes/1656099																																	
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r5.4xlarge	16	128	23,128	\$ 1.008 /hour	22944.44	\$ 317.55 /month	r7i.4xlarge	16	128	33,240	\$ 1.0584 /hour	31406	\$ 350.47 /month	43.72%	36.88%	10.37%																			
Slide 22	30% better SAPS	Slide 22 30% higher SAPS/\$ Analysis based on public pricing from AWS for US East on 10/5/2023: https://aws.amazon.com/ec2/pricing/on-demand/ New: 1-instance M7i.4xlarge (4th Gen Xeon), 16 vCPU, 64GB total memory, https://me.sap.com/notes/1656099 Baseline: 1-instance M6i.4xlarge (4th Gen Xeon), 16 vCPU, 64GB total memory, https://me.sap.com/notes/1656099																																	
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Slide 23	M5 to M7i: 12% reduced costs +9% SAPS additional headroom	Slide 26 ¹ SAP SAPS based on SAP – AWS Note 1656099 (https://me.sap.com/notes/1656099)																																	
Slide 24	R5 to R7i: 27% reduced costs																																		

References

▪ Slide 23

Calculation based on

<https://aws.amazon.com/ec2/pricing/on-demand/>
M5.4xlarge
OS: Linux
Content Use
3 year savings plan, no upfront payment
Region: US East (Ohio)
 $242.36/\text{Month} = 5x = \$1211,80$
25.10.2023

Vs.
M7.16xlarge
 $(1068,08/1211,80)-1(\%)$

Same settings as above
20.10.2023

▪ Slide 24

Calculation based on

$(1401,86/1907,49)-1(\%) - 27\%$

<https://calculator.aws/#/addService>

R5.8xlarge
OS: Linux
Content Use
Region: US East (Ohio)
3 years commit
20.10.2023
 $635.83/\text{month} * 3 = 1907,49$

Vs.
R7i.16xlarge
1401,86/month

Same settings as above
16.10.2023

Performance Business Warehouse Benchmark

Nb.	SAP-Benchmark	Processor	Memory	Datasets	Phase 2 Query per Hour	Perf Gain
1	2020046	8280L (2nd Gen)	1536 GB	1.3	10106	
2	2023017	8480+ (4th Gen)	1024 GB	1.3	15198	1.17x

	SAP-Benchmark	Processor	Memory	Datasets	Phase 2 Query per Hour	Perf Gain
3	2020046	8280L (2nd Gen)	1536 GB	1.3	10106	
4	2023075	8592+ (5th Gen)	1536 GB	1.3	17846	1.77x

	SAP-Benchmark	Processor	Memory	Datasets	Phase 2 Query per Hour	Perf Gain
5	2018043	8176	6144 GB	2.6	4383	
6	2023076	8592+ (5th Gen)	1536 GB	2.6	13410	3.06x

2.3x OLAP - SAP BW4HANA

4th Gen Intel Xeon relative to 2nd Gen Intel Xeon

	SAPBW4H				
	CLX	ICX	SPR	Phase2 SPR/ICX	Phase2 SPR/CLX
Phase1(seconds)	18,997	17,573	14,450		
Phase2 (QpH)	3,376	4,933	7,893	1.60	2.34
Phase3 (seconds)	123.02	129.35	134.49		
logical cores	112	160	240	1.50	2.14
TDP (W)	205	270	350		

4th Gen Xeon - SPR System Config

4th Gen Config : Tested by Intel on November 2022, 1-node, 2x Intel® Xeon® 8490H, E3 stepping, 60 cores, 80KB L1 cache and 2MB L2 cache per core, 112MB L3 cache per processor, HT On, Turbo On, SNC disabled, Total Memory 2048 GB (32 x 64GB 4800 MHz [run @ 4400 MHz]), BKC WW41->BIOS: EGSDCRB1.SYS.8901.P01.2209200243, ucode: 0xAB0000C0, OS: SLES15 SP4, kernel: 5.14.21-150400.22-default, HANA: 2.00.052.00.1599235305, NetWeaver: 7.50, Benchmark kit: 3.17, Score 7893 Queries/Hour

2nd Gen Xeon - CLX System Config

2nd Gen Config: Tested by Intel: 1-node, Wolf Pass; Processor: 2x Intel Xeon 8280L 28C, 2.7GHz, 205W; BIOS: SE5C620.86B.02.01.0013.121520200651; Microcode: 0x5003006; Memory: 1.5TB (24x64GB DDR4 2667 MT/s); OS SLE 15 SP2; Linux Kernel: 5.3.18-22-default
Score 3376 Queries/Hour

4th Gen Intel Xeon (SPR) of 7893 QpH divided by 2nd Gen Intel Xeon (CLX) score of 3376 QpH = 2.34X