Introduction to OpenShift on Power

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CTO OpenShift and Hybrid Cloud
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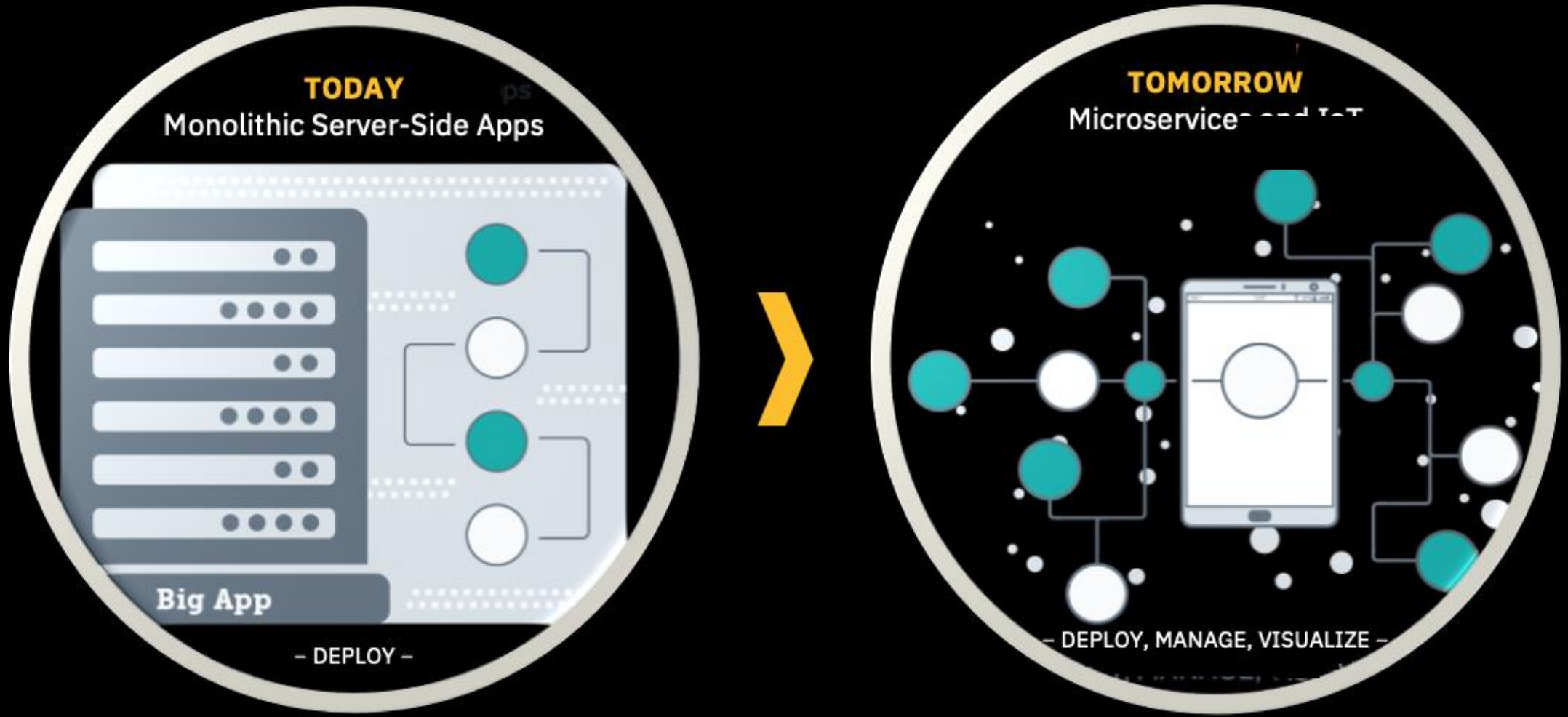
IBM | Red Hat

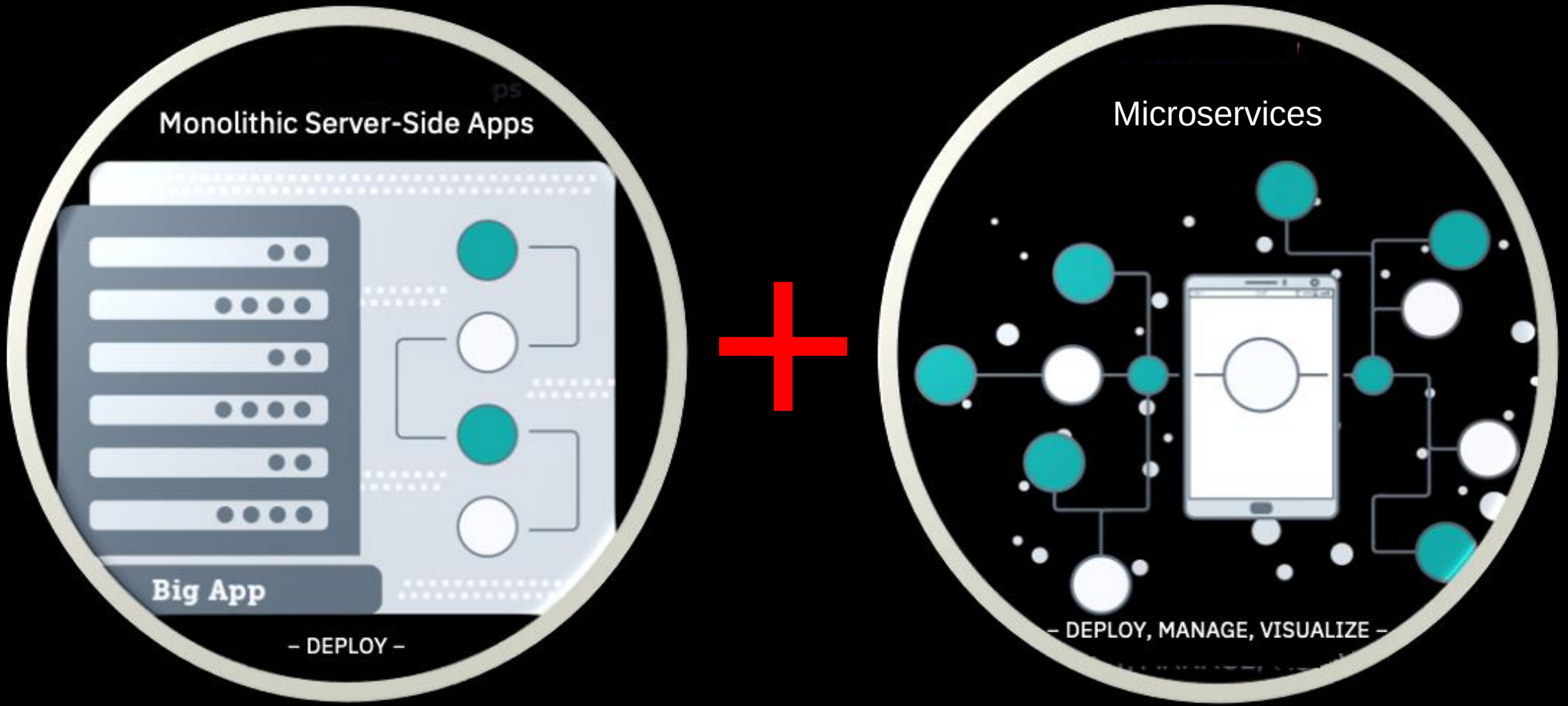
Introduction to OpenShift on Power
Agenda

- What is OpenShift and Why Should You Care?
- What can you do with OpenShift?
- What is the OpenShift & Open Source Ecosystem?
- What are the benefits of OpenShift on Power?

Application Modernization Theory



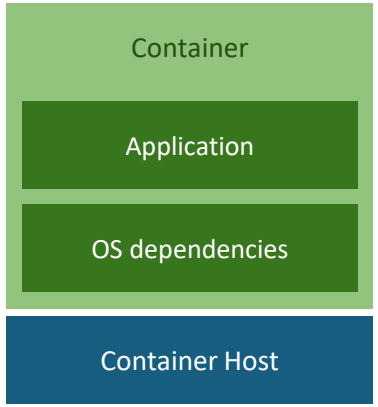
Application Modernization Reality

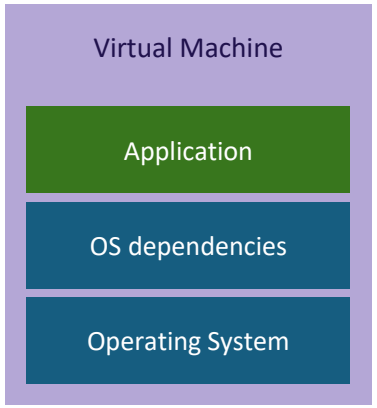


WHY CONTAINERS?

Benefits of Containers:

- Manage applications separately from Infrastructure
  - Hypervisors, Firmware, OS
- Content providers/developers directly control deployment
  - Immutable (non-variant)
- Develop Once Deploy Anywhere
  - High degree of portability
  - Avoid vendor lock-in
- De-compose monolithic application into composable units
  - Easier to scale independently
  - Faster iterations on individual components
- Less copies of the Host OS makes more efficient use of resources and is better for sustainability



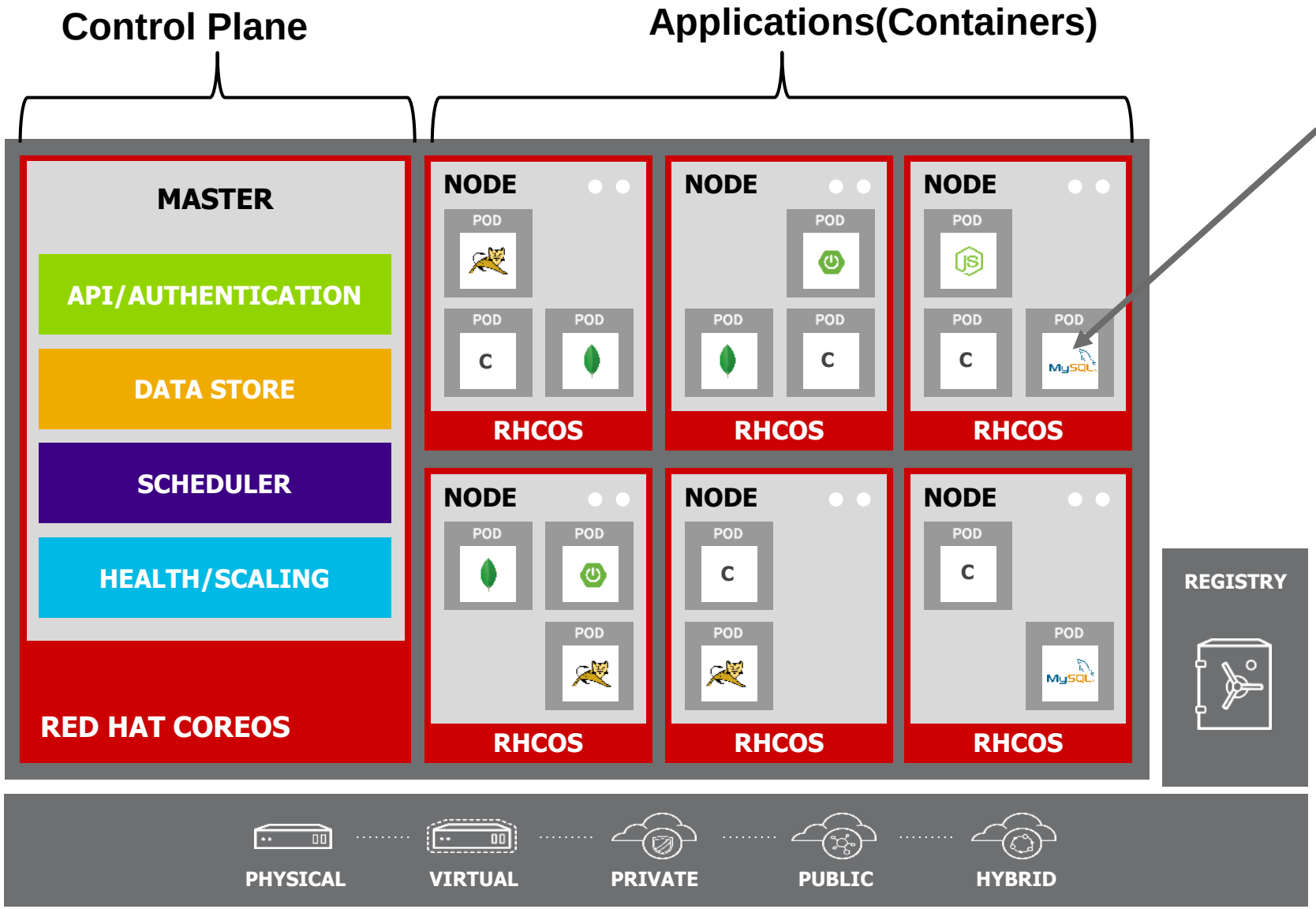


- ✚ Container Isolation
- ✚ Shared Kernel
- ✚ Burstable Compute
- ✚ Burstable Memory
- ✚ Low Resource Usage

- ✚ VM Isolation
- ➖ Complete OS
- ➖ Static Compute
- ➖ Static Memory
- ➖ High Resource Usage

Faster to Develop – Easier to Deploy and Manage – More Sustainable

OpenShift Architecture

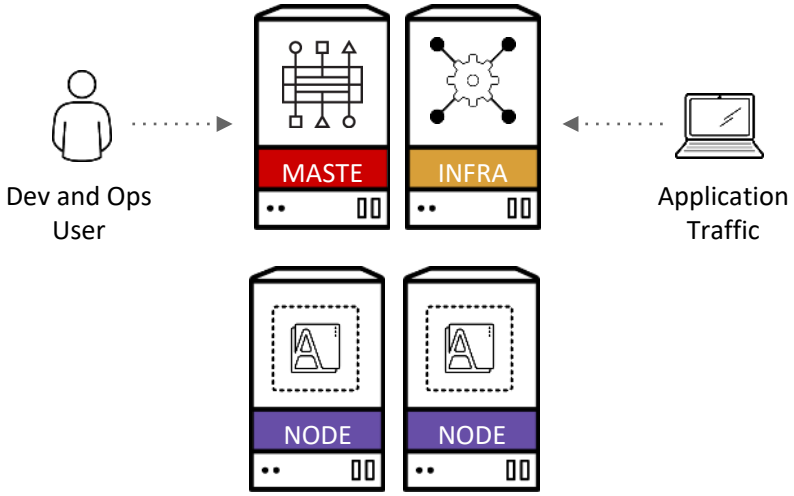


Container

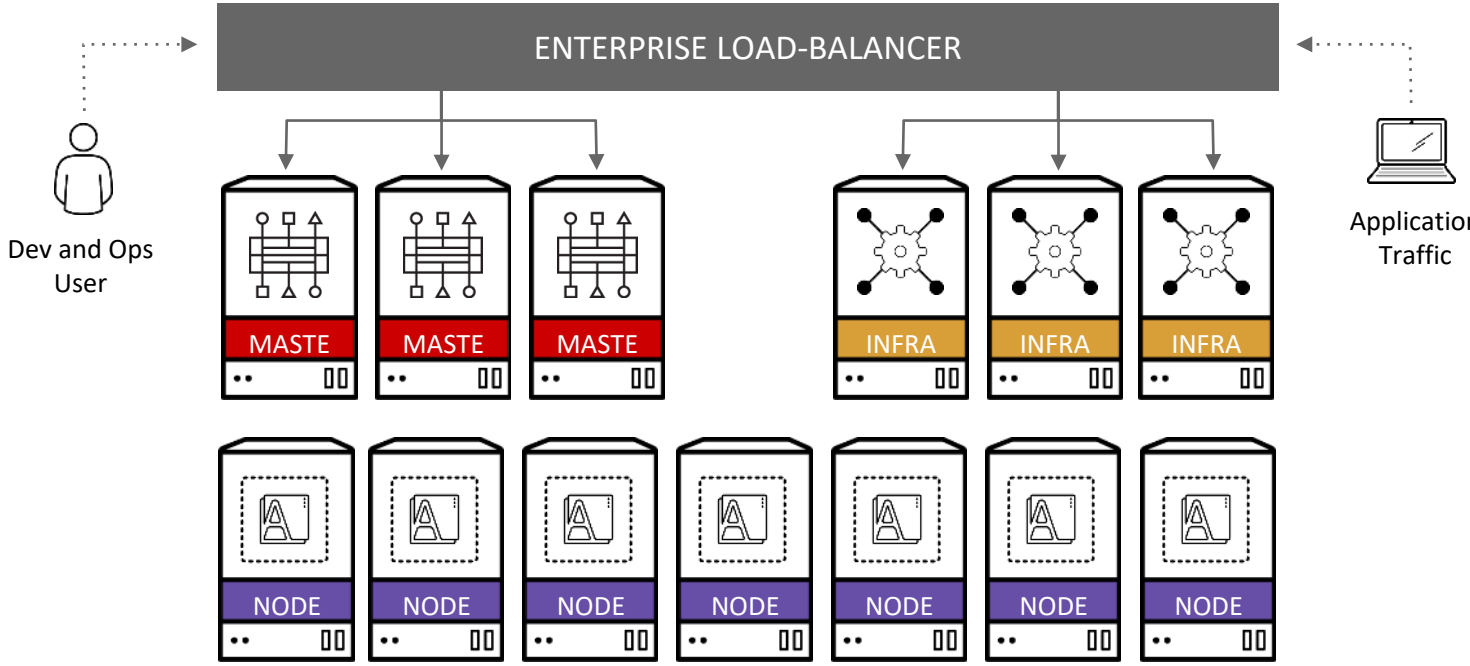
- Application Code + Base O/S Image
- Highly Available and Scalable via multiple copies
- Rapid Deployment
- Ability to move w/o change
- Autoscaling for adjusting to load demand (more or less copies)
- Integrated with Modern CICD tools and practices for automatic deployment and upgrade
- More Sustainable (no duplicated VM image per application)
- Dynamic environment, adjusting as workload changes (more environmentally friendly)

Many OpenShift Deployment Options

Proof of Concept



Full High Availability



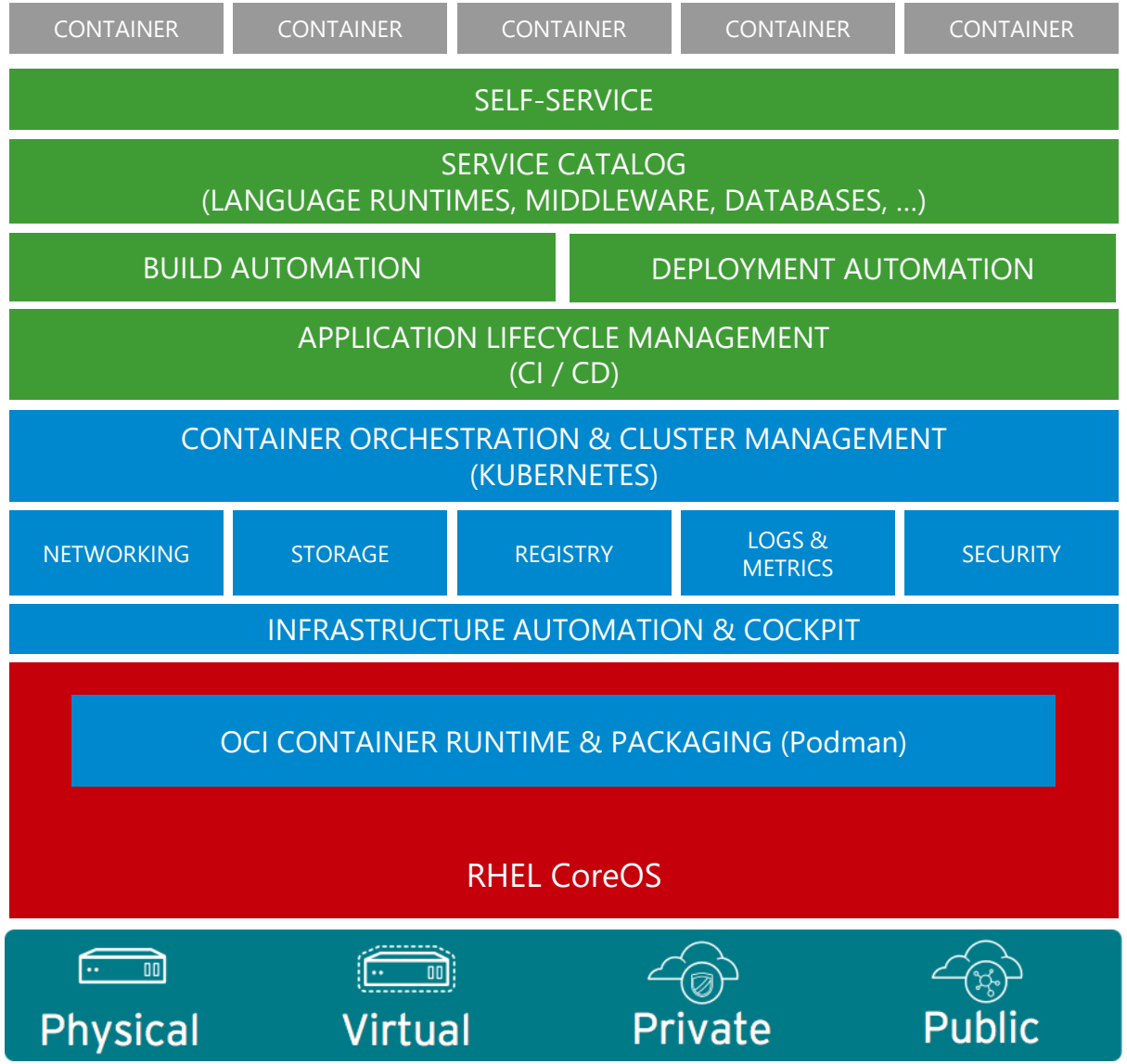
OpenShift = Enterprise Kubernetes+

Build, Deploy and Manage Containerized Apps

RED HAT® OPENSHIFT

Runs The Same on:

- **X86**
- **IBM Power**
- **IBM Z**
- **ARM**



IBM Power Systems – One Platform for Digital Modernization

Mission Critical Business Applications

ORACLE · IBM DB2 · Java · SAP · AIX · Linux · IBM i for Business

- ✓ Efficient scaling of Infrastructure
- ✓ Proven security and reliability
- ✓ More software with less servers

High Speed

New Cloud Native Applications

IBM Middlware & CloudPaks

Websphere Hybrid Edition · Data · Integration · Business Automation · Watson AIOps

Create New Cloud Apps

Red Hat Dev. Tools & MW

RH Runtimes
Node.js, OpenJDK, DataGrid, Jboss, AMQ Broker...

CodeReady, ODO, Pipelines, Server Mesh, Serverless

AMQ, Fuse, 3Scale

Growing Ecosystem

ISV & Open Source (Examples)

HCL Commerce · mongoDB · IBM FTM · PostgreSQL · kafka · edgeverve

IBM Spectrum Scale · Red Hat OpenShift · OCS: OpenShift Container Storage

- ✓ Add AI and Automation Capabilities
- ✓ Rapidly Develop and Deploy new Apps
- ✓ Incrementally Extend Existing IT Value

PowerVM Hypervisor – Enterprise Scale, Resiliency and Security

Power On-Premise

PowerVS

Dynamic Capacity, **Superior Integration**, **Performance**, and **Security** across Systems and Software

Red Hat OpenShift

300+ Customers

Use Case Patterns

- Exploit databases on Power
- Co-locate apps & data
- Infuse AI into apps
- Containerize ISV apps

Modernize Custom IBM i App with OpenShift

Mission Critical Business Apps

Back-End App. with REST Services

IBM i for Business | IBM DB2

OpenShift Ingress and Load Balancing

New OpenShift Solution

New Front-End container
Java App
Liberty Container
RHEL8 Base Image

New Front-End container
Java App
Liberty Container
RHEL8 Base Image

...

New Front-End container
Java App
Liberty Container
RHEL8 Base Image

Red Hat OpenShift

Production Cluster
Test & QA Cluster
Development Cluster

Red Hat Advanced Cluster Mgmt.

Development Environment and Tooling

Dev Spaces OCP Do Pipelines

Operations

turbonomic Resource Optimization

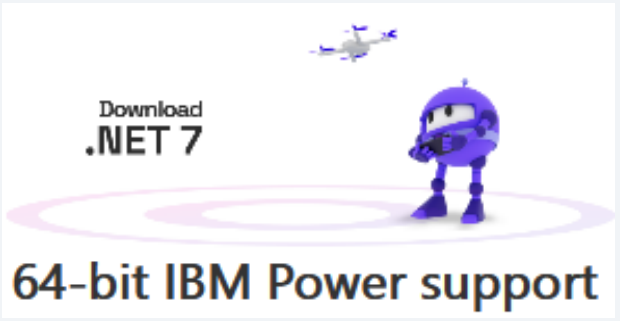
INSTANA Observability & App. Monitoring

PowerVM Hypervisor – Enterprise Scale, Resiliency and Security

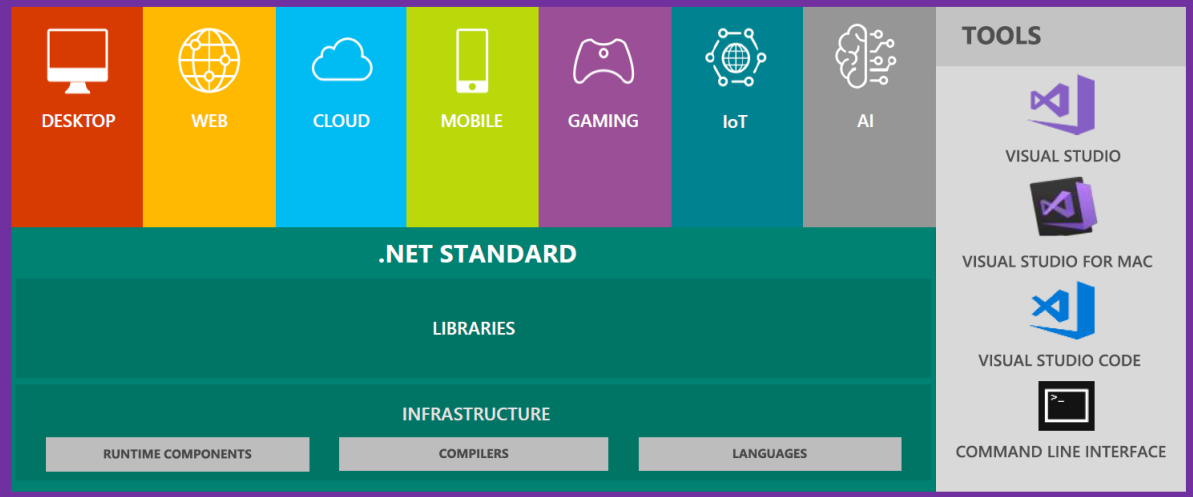
Power On-Premise

Dynamic Capacity, **Superior Integration**, **Performance**, and **Security** across Systems and SW

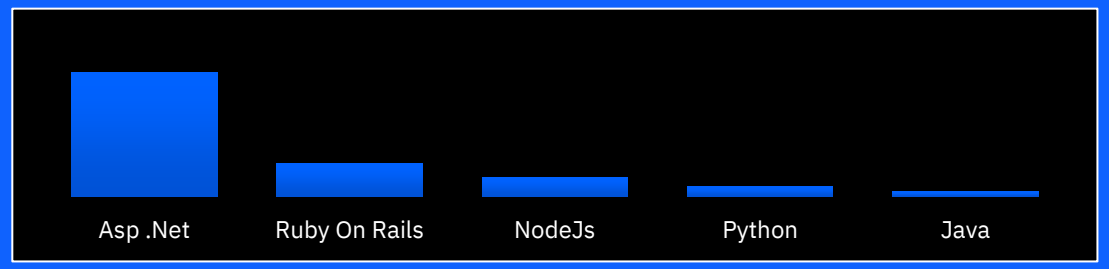
Run .NET on Power with .NET 7 – simplify your life and lowers costs



.NET is a software development platform



- Simplify .NET based web, mobile and cloud apps running on x86 on-prem and Cloud that connect to AIX and IBM i databases by consolidating on the same Power platform
- Run .NET solutions faster, use less compute resources, lower carbon footprints and costs with .NET 7 on Power.
- More top websites based on .NET than others combined.



Call to action:

- Use .NET 7 on Power to reframe Power as cloud platform for .NET apps + IBM i, AIX to lower TCO with CIO/CTOs
- Use .NET 7 on Power as door opener to help accelerate growth with Line of Business Executives
- Simplify developers lives with .NET apps & IBM i, AIX apps on same platform

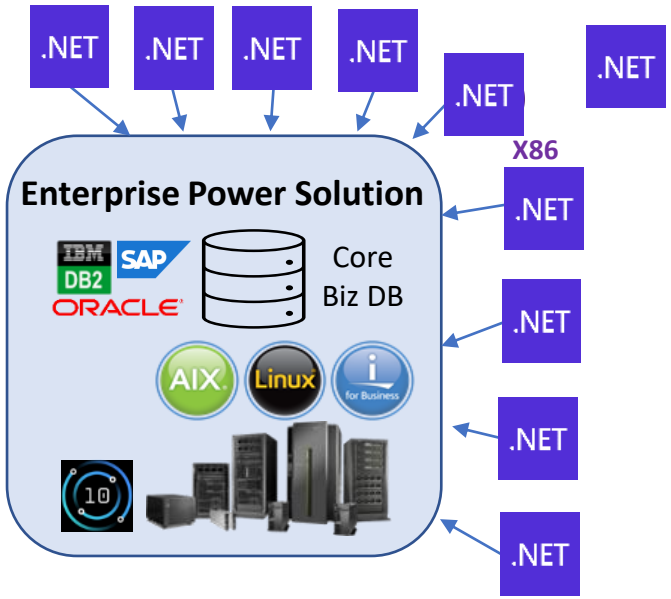
Contact IBM or your IBM Business Partner. We can help!

Read .NET 7 on Power blog on Power Developer eXchange

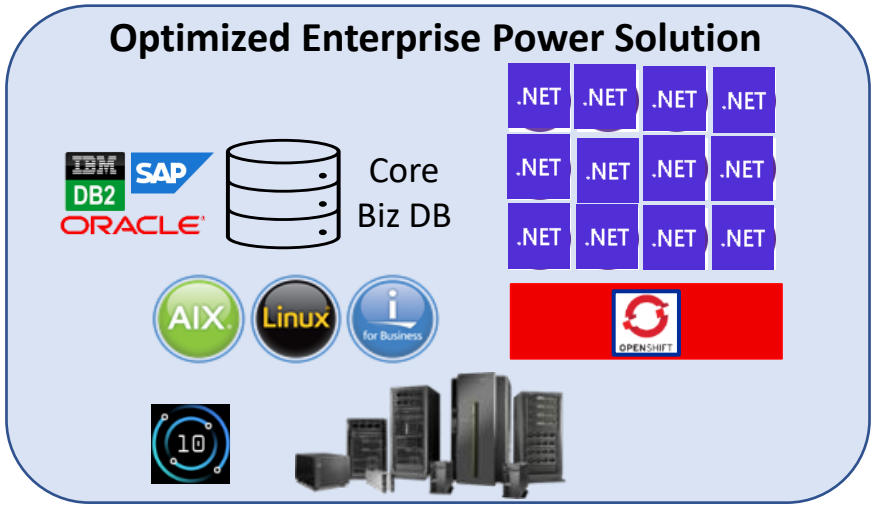
App Modernization and Consolidation for Windows .Net Apps

IBM and Red Hat delivered a joint solution for .NET 7 for Power the end of 2022.

Current Mixed Architecture Solution



Consolidated and Simplified Solution



- Power Enterprise surrounded by X86 Based .Net Apps
- Different Platform and Management Technologies
- More Capacity in .Net means more X86 boxes, increasing cost and complexity

- Power Enterprise and .Net Integrated via OCP
- Single Platform and Management Technologies
- More Capacity in .Net means more Power LPARS. Utilizing Dynamic Capacity enables Scaling based on time of day consumption, lowering costs

Customer Reference

Internal use only

Fueling innovation with hybrid cloud & application modernization

Company: SKM Informatik GmbH
Industry: IT software and services
Country: Germany

Paul Chapman,
Senior Red Hat & IBM Cloud Technology Architect for EMEA
paulchapman@uk.ibm.com

Business need: Migrate from Azure to Power Virtual Server with .Net7

SKM Informatik GmbH is an IT system house based out of Germany with 40 specialists that support companies worldwide with the introduction and use of IT/CAD/CAM/CAE technologies. SKM goes far beyond the delivery of hardware and software. Instead, SKM works to jointly develop and maintain the technology that comprises a company's digital framework for years to come.

Partnering with IBM, SKM Informatik has supplied and serviced a wide variety of IBM technology for its customers. Since the announcement of Red Hat OpenShift being supported on IBM Power Systems Virtual Server back in 2020, the inherent benefits have solicited substantial interest from clients and partners alike. With aspirations of conducting cloud-native development with Red Hat OpenShift on IBM Power Systems Virtual Servers, SKM began development and testing with the help of the local IBM team. All while continuing to work with IBM on other projects in the background, like the positioning of the open source MLOps tool, Kubeflow, demonstrating how aligned IBM has remained in assisting SKM with various business-critical operations.

Internal use only

Proposed solution

With its existing web service running on Azure, migrating the solution to run on Power Virtual Server required some reassurance from the IBM team that everything would work properly. If possible, SKM needed to build a web service with .Net 7 and Keycloak authentication for end-users to log in. In the beginning, SKM experienced technical difficulties when running Mono on IBM Power Virtual Server, which it looked to remedy by providing IBM with the generic code to troubleshoot. Using the code provided, the IBM team successfully demonstrated how the .Net code with pre GA .Net 7 runtime container could run on Power9. This success solidified SKM's willingness to move forward with the migration process with the help of IBM.

SKM and IBM collaborated to migrate the Azure workload to PVS Cloud. To test and receive feedback, the IBM Development team provided a pre-GA Alpha .Net 7 container, which SKM used to deliver specific application code through GitHub privately.

Embrace the benefits of Red Hat OpenShift running on IBM Power Systems Virtual Server.

- Deploy and scale workloads globally
- Build cloud-native applications
- Get back time for core tasks
- Get more from software with less servers
- Modernize your applications
- Accelerate digital transformation with IBM Cloud Paks

Solution outcome

With only a few minor changes needed in Dockerfile and Skm.Web.HoloServerCore.csproj, the IBM team successfully demonstrated SKM's specific application code working with .Net 7 on Power. IBM and SKM Informatik have continued their efforts to enable the migration of the Enterprise Solution from Azure to IBM Power Virtual Server. As a result of the collaboration, tremendous progress has been made. The IBM team has successfully wrapped up testing the final release, which has been provided to SKM to test with its application. With no reported problems thus far, SKM's testing of the Early Release .Net 7 with OpenShift on Power Virtual Server is said to be the last step in securing the holistic solution running on Power.

The IBM team is continuing their efforts to provide SKM with .Net 7 container support as the final testing and collaboration period continues, seeing the project through to the very end. Soon, SKM will serve as the first fully functioning example of how to run .Net 7 with OpenShift on IBM Power Virtual Server.

"I used the image and did not have any trouble with it. It is stable, even on heavy workload. Thanks to you we were able to create a fully functional development environment of all our web contents in the IBM Cloud under OpenShift."

"Anyway, thanks a lot for the image. It was the last puzzle piece missing for us to implement our services on Power-OpenShift."

Michael Hermelschmidt,
Software Developer at SKM Informatik

Internal use only

Initial changes required to run x86 .Net code on Power with .Net 7

Dockerfile

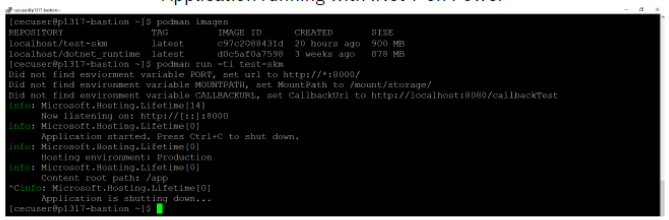
```
#FROM mcr.microsoft.com/dotnet/aspnet:5.0 AS base //commented
FROM dotnet_runtime_devel as base //used our image "dotnet_runtime_devel"
WORKDIR /app
EXPOSE 80

#FROM mcr.microsoft.com/dotnet/sdk:5.0 AS build //commented
FROM dotnet_runtime_devel as build //used our image "dotnet_runtime_devel"
RUN mkdir /holo
```

Skm.Web.HoloServerCore.csproj

```
<PropertyGroup>
    <TargetFramework>net7.0</TargetFramework>  //net7.0 instead of net5.0
    <DockerDefaultTargetOS>Linux</DockerDefaultTargetOS>
    <ErrorOnDuplicatePublishOutputFiles>false</ErrorOnDuplicatePublishOutputFiles>
  </PropertyGroup>
```

Application running with .Net 7 on Power



Want to see more? **CLICK HERE** to watch a video demonstration of Paul Chapman building and running the SKM application with .Net 7 on Power.

The winning team

SKM Informatik GmbH
Pascal Wille, pwille@skm-informatik.com
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IBM
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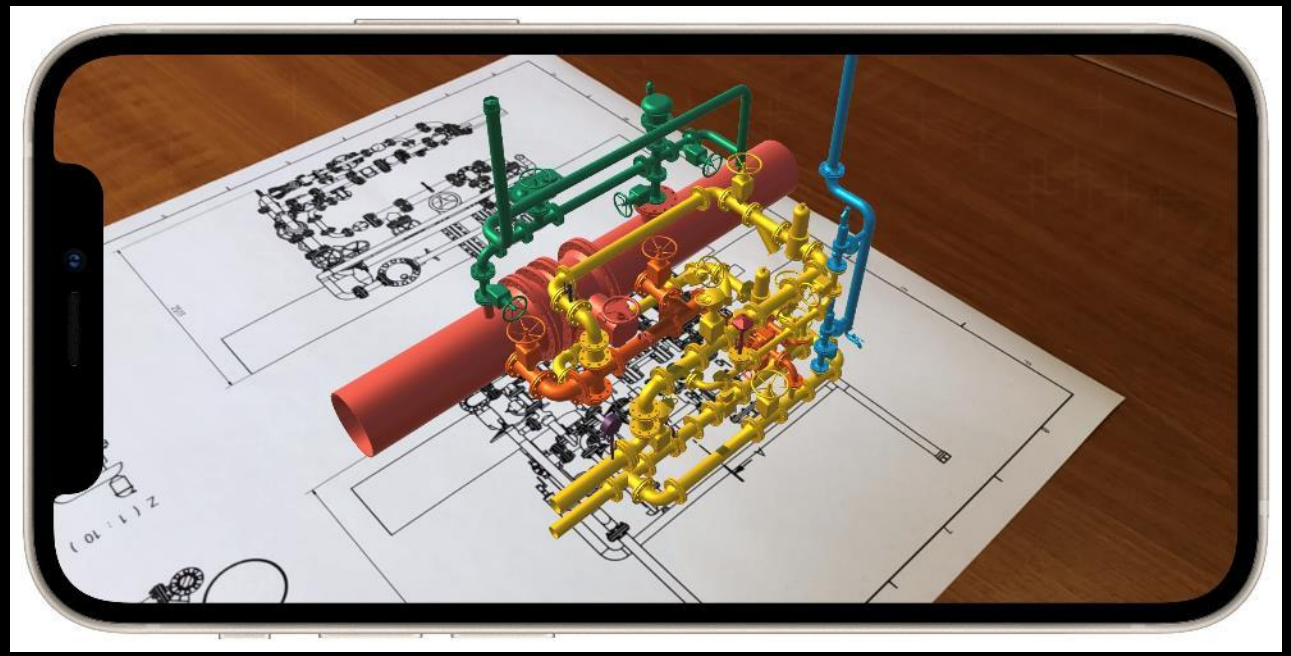
Marvin Giessing, MARVING@de.ibm.com
Sebastian Lehrig, Sebastian.Lehrig1@ibm.com

https://ibm.box.com/s/cbw5301lsudae9ywjy1cizylti1va996

SKM Application

The C# .NET 7 container packs 3D data for visualization in XR (mobile device AR, Hololense AR, VR-Headsets)



SKM Application

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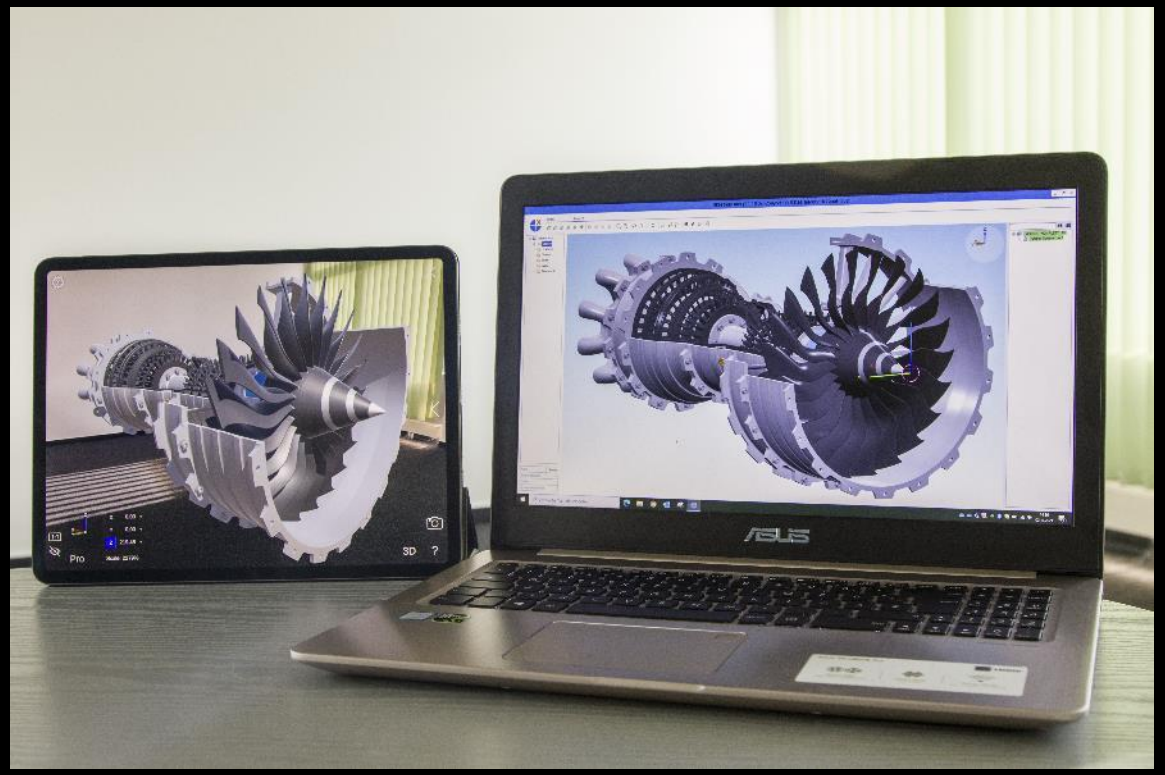
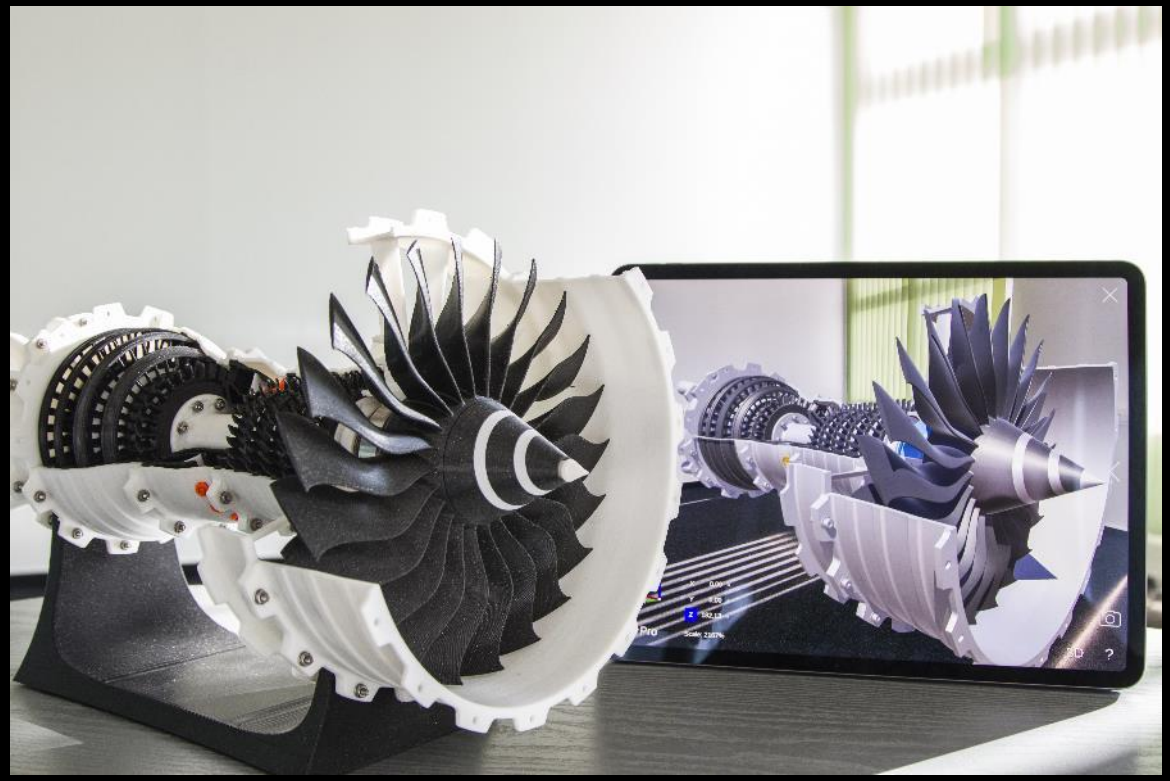
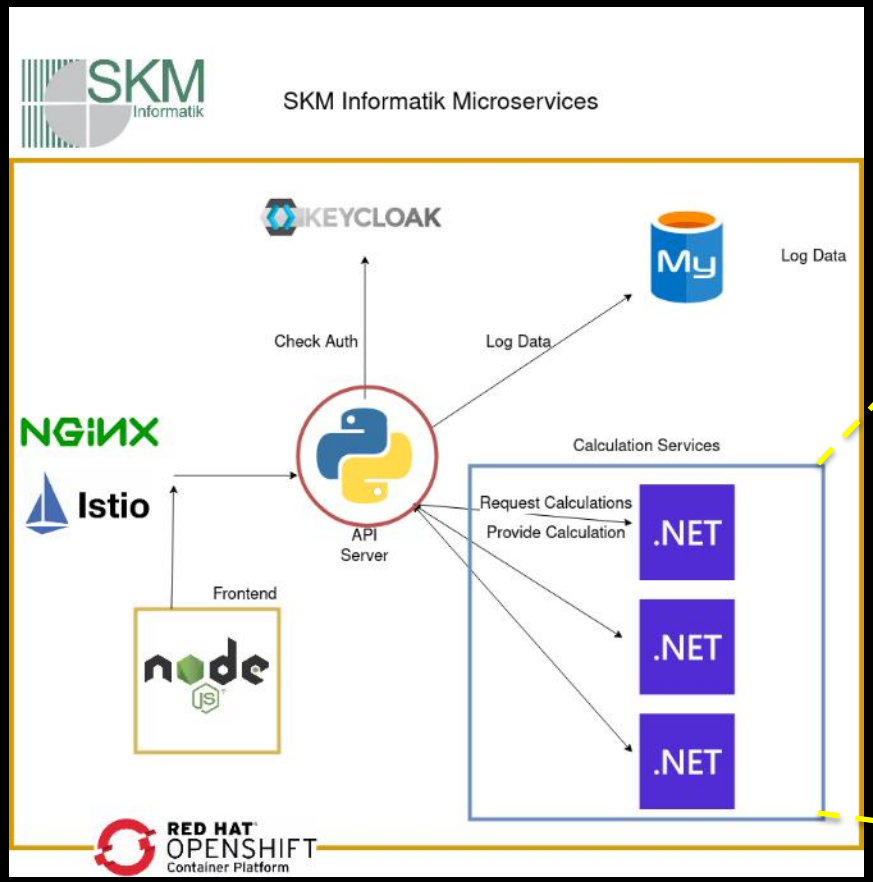


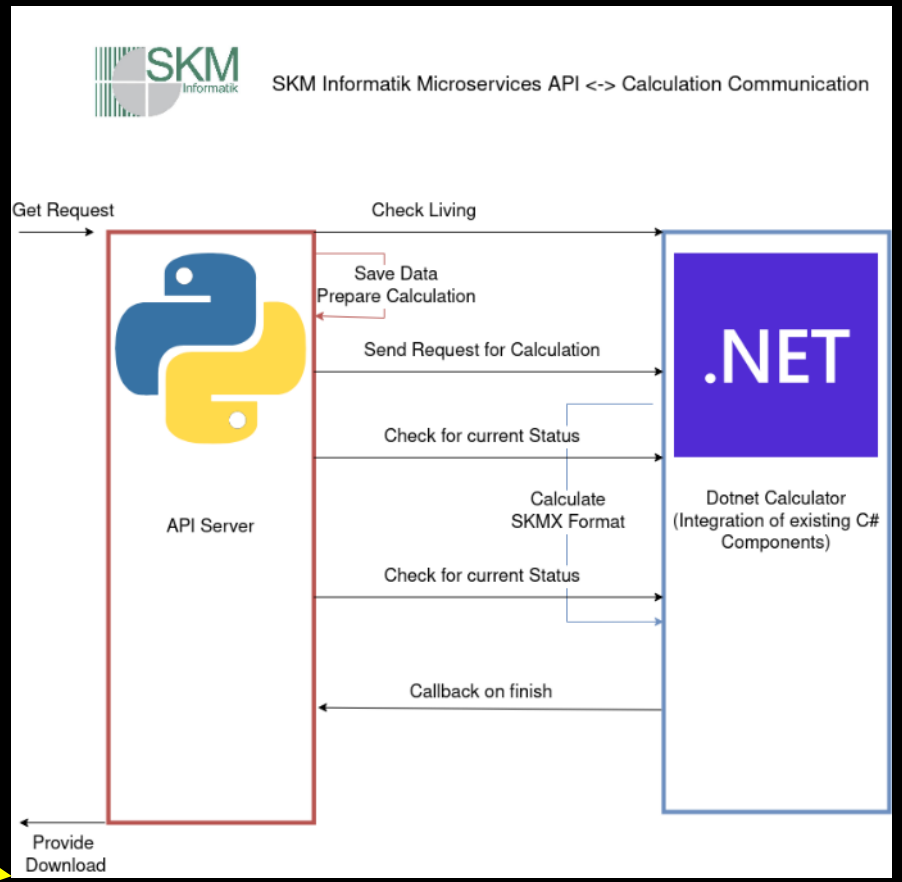


SKM Application Architecture

Overall Application using Open-Source Components

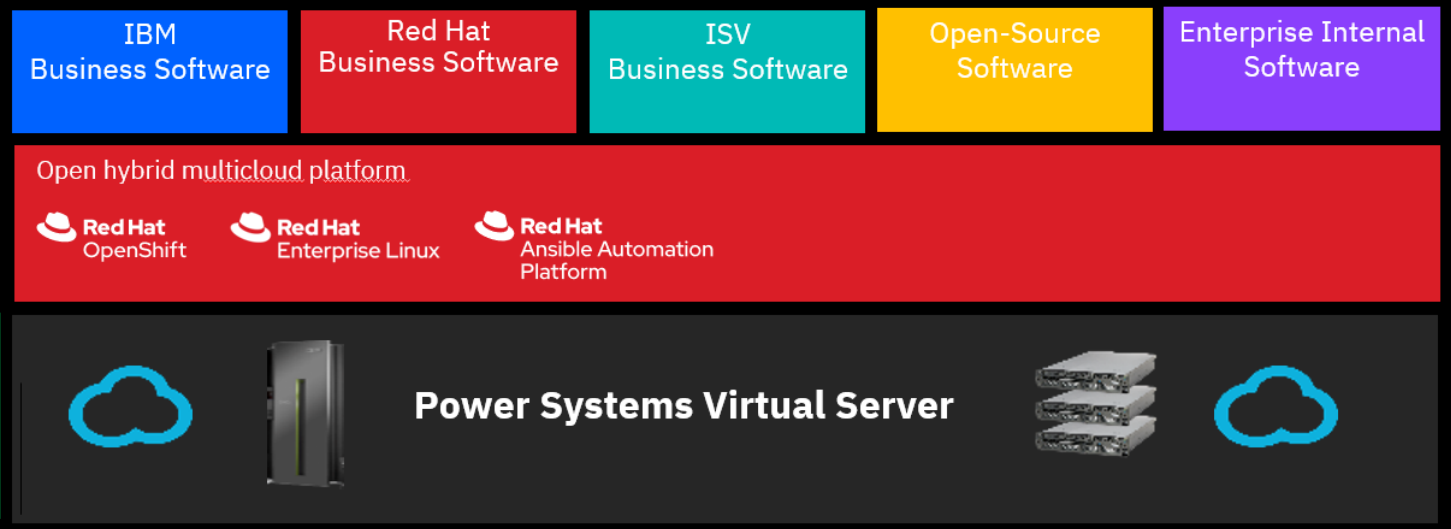


Detailed .Net Flow



Full OpenShift Experience in Power VS

Datacenters across the globe



- Bring your own (Red Hat OpenShift) License model
- Automation to UPI install OpenShift in Power Virtual Server
- Quickly create dev/test and production environments for application modernization projects
- Co-locate AIX and IBM i apps with containerized apps on OCP
- Deploy IBM Cloud Paks, ISV and Open-Source SW

Cloud Native Application Development on Power
using Red Hat Tooling and Middleware

Unified development experience for Cloud Native applications

on
X86
and
IBM Power Systems

(and other platforms and clouds.)

Red Hat Runtimes

Cloud-native runtimes

node VERT.X

Red Hat JBoss Enterprise Application Platform

Red Hat Data Grid

OpenJDK

Red Hat AMQ broker

Red Hat DevSpaces
Development IDE

OpenShift DO
Development CLI

Pipelines
Cloud Native CI/CD

Serverless
Simplified Development with Direct Function Execution

Service Mesh
Manage microservices

AMQ Streams
Kafka Messaging

Fuse
API Integration (Camel)

3SCALE
API Mgmt, Scale, Security

… More Coming

.NET

OPENSHIFT

Red Hat OpenShift Container Platform

Power On-Premise

PowerVS

Dynamic Capacity, **Superior Integration, Performance**, and **Security** across Systems and Software

Fintech accelerates Red Hat OpenShift with new Payment Service on Power

Digital Wallet

Core Banking Apps on Power E980s

Migrated from Public cloud to on-prem IBM Power

ATM Cash from Digital Wallet Solution

Payment Ingress Service → **Payment Approval Service** → **Payment Connector Service**

Red Hat Integration Middleware

- **Red Hat** Fuse
- **Red Hat** AMQ Streams (Kakfa)
- **Red Hat** 3scale API Management

Red Hat OpenShift

IBM Power Infrastructure

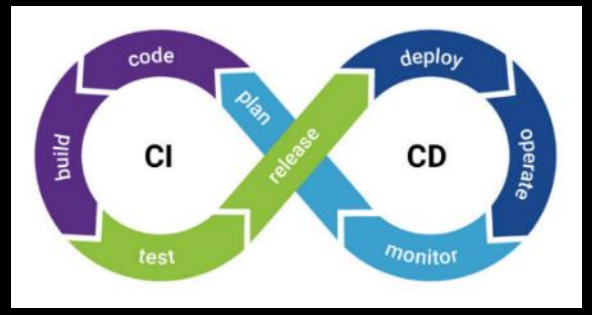
Power Private Cloud Pay-as-you-go

IBM Spectrum Storage Infrastructure

- Public cloud provider unable to scale to meet transaction volume and response time
- **1 DAY** to migrate OpenShift payment service app from Hyperscaler to IBM Power

Cloud Native Development

Same Experience as X86



Write Once – Deploy Anywhere – Operate Everywhere

With Common Skills

Red Hat DevSpaces

OpenShift Pipelines & GitOps

Coding	Code Repo	CI/CD
Dev, Test, Fix	Store, Track	Build, Test, Monitor

OpenShift Container Platform

IBM PowerVS
IBM Cloud

Production
Deploy, Operate

OpenShift Container Platform

On-Premises
IBM Power
IBM Z
X86

Production
Deploy, Operate

Develop New Cloud Native OpenShift Applications:

- In an OpenShift Environment for consistent DevOps experience
- Once and deploy on every platform in your enterprise
- In public clouds or on-premise to optimize agility, cost and control
- Which can leverage IBM Cloud Paks and Red Hat Middleware building blocks
- Using common skills across your enterprise with greater productivity

Automate with Ansible to increase operational efficiencies using common skills

- Supports X86, IBM AIX, IBM I, Linux, IBM Z and more
- Infrastructure Management as Code – Eliminate complexity

RED HAT ANSIBLE Automation

Open Source and OpenShift Container Packages for App Modernization and Cloud Native Apps

Over 15,000 Open-Source Packages for Power

Linux Images

Red Hat, CentOS, alpinelinux, SUSE, ubuntu, BusyBox, debian

Web and Middleware

WebSphere Liberty, JBoss by Red Hat, Open Liberty, WildFly, Apache Tomcat, RabbitMQ, WordPress, ActiveMQ

Cloud and DevOps

Jenkins, ANSIBLE, kubernetes, Red Hat OpenShift, Gradle, Maven, Terraform, Travis CI

Languages and Runtimes

Java, python, GO, php, OpenJDK, node, Ruby, The Rust Programming Language, GCC, TensorFlow, ERLANG, IBM Cloud Transformation Advisor, appsody

Databases

cassandra, mongoDB., CouchDB relax, MariaDB, PostgreSQL, MySQL, redis, IBM Db2

Analytics and AI

Grafana, kibana, elasticsearch, logstash, fluentd, IBM Watson Studio, kafka, IBM Watson Machine Learning

Storage

CONTAINER STORAGE INTERFACE, IBM Spectrum Virtualize, PowerVC CSI Driver, NFS

Networking and Monitoring

Prometheus, APACHE HTTP SERVER, NGINX, etcd, ZooKeeper, HAPROXY

~1000 packages in Red Hat Catalog

References:

Red Hat OpenShift Catalog: https://catalog.redhat.com/software/containers/search?p=1&architecture=ppc64le
Docker Hub (ppc64le): https://hub.docker.com/r/ppc64le/
Docker Hub (ibmcom): https://hub.docker.com/r/ibmcom/
Power Systems Ecosystem: https://github.com/ppc64le/build-scripts
Entitled registries as appropriate for licensed software (e.g., IBM, Red Hat, etc.)

App modernization and digital transformation with Open Source Databases on Power

Red Hat OpenShift

Supported with Red Hat OpenShift and Red Hat Enterprise Linux

Red Hat Enterprise Linux

Key Open Source Database Use Cases:

- New App Development
- Re-platforming to cloud and containers
- Alternative to Oracle

#1 Enterprise PostgreSQL

Growth trends:

- 70% from customers expanding existing Postgres environments[2]
- 30% from new, first time Postgres customers

Most customers have multi-platform deployments (public & private clouds)[2]

EDB on IBM Power

Modern, flexible database platform

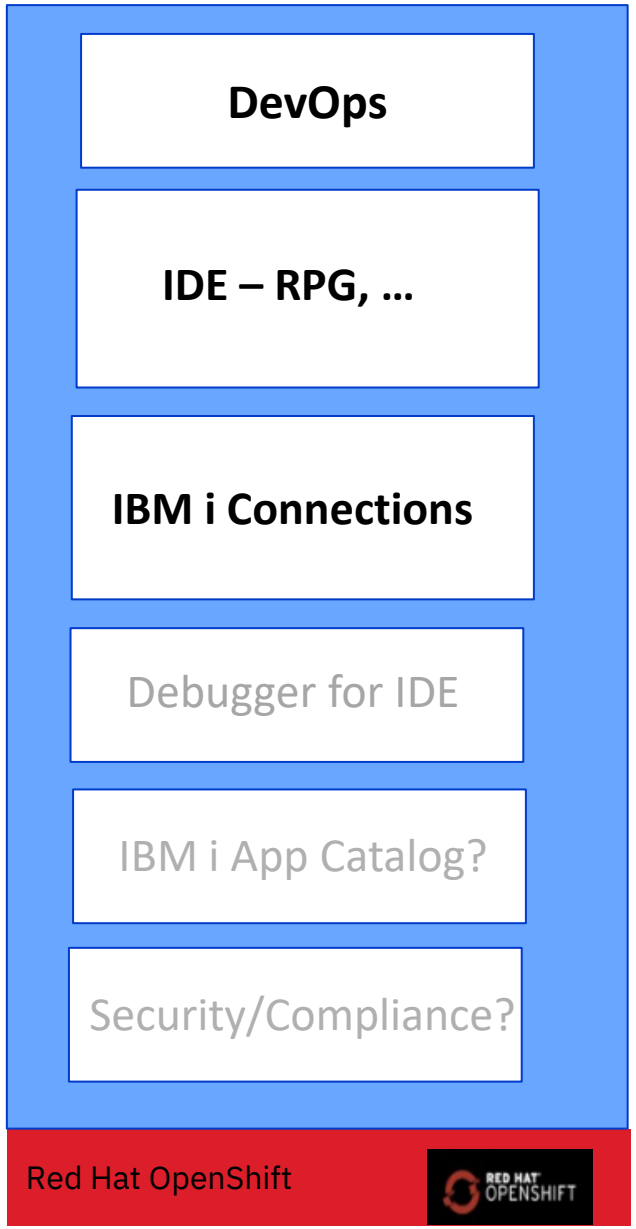
- Deploy, scale, and optimize with built in replication, sharding, indexing
- **Use Cases:** Single view, personalization, real-time analytics, payments

MongoDB on IBM Power

Banking Modernization with MongoDB, Red Hat OCP, and IBM Power

1. https://www.dbta.com/Editorial/Think-About-It/COVID-19-and-What-it-Means-for-IT-Infrastructure-Cost-and-People-140509.aspx
2. https://searchdatamanagement.techtarget.com/news/252478988/EnterpriseDB-looks-to-grow-market-for-PostgreSQL

IBM i Merlin – OpenShift-based tools which guide modernization



- IBM i Merlin is
  - a **set of tools** which
  - **run in OpenShift containers**, which
  - **guide and assist** software developers in the
  - **modernization** of **IBM i applications** and **development processes**, allowing them to
  - realize the value of a hybrid cloud, multi-platform DevOps implementation.
- The framework guides and simplifies the use of the tools which help implement **DevOps** & **CI/CD.**
- The technologies used to expose IBM i native functions and data promote Services-based software - Restful interface connections and enterprise message technologies.
- Future updates will be based on customer & partner feedback in support of the “IBM i Next Gen Apps” strategy.

IBM Power – Ideal Platform for Your Digital Modernization Journey

4X Better

40, 687 tps

2x+ performance

½ the # of cores

IBM Power E1080
Core Activations Only
(**20-core**, 512GB, 2 VMs)

Daytrader Stock Trading App Running as Containerized Microservices

WebSphere Hybrid Ed.

Red Hat OpenShift

Core/Memory Activations

$57,920

PowerVM Hypervisor – Enterprise Scale, Resiliency and Security

18,852 tps

< ½ performance

2x the # of cores

Intel Xeon SP based 2- Socket server
(**40-core,** 512GB, 2 VMs)

Daytrader Stock Trading App Running as Containerized Microservices

WebSphere Hybrid Ed.

Red Hat OpenShift

New x86 Server

$41,900

X86 Server

Note: Cost for DB2, AIX and associated P10 equivalent for both cases and not shown

*Based on IBM internal testing of Red Hat OpenShift Container Platform 4.8.2 worker nodes running 80 pods using the Daytrader7 workload (https://github.com/WASdev/sample.daytrader7/releases/tag/v1.4) accessing an AIX Db2 database. Comparison E1080 running OCP accessing AIX Db2 on a S922 versus OCP on Cascade Lake accessing AIX Db2 on a S922.. Valid as of 8/25/2021 and conducted under laboratory conditions. Individual result can vary based on workload size, use of storage subsystems & other conditions.
IBM Power E1080 (40 cores/3.8 GHz/2 TB memory) in maximum performance mode, 25 Gb two-port SRIOV adapter, 1 x 16gbps FCA, Websphere Liberty 21.0.0.6,Java(TM) SE Runtime Environment (build 8.0.6.36 - pxl6480sr6fp36-20210824_02(SR6 FP36)), CoreOS Linux 4.18.0-305.10.2.el8_4 with PowerVM. Configuration consists of 2 OCP worker lpars each with 10 cores running SMT8 with 256GB of memory.X86 s system: Intel(R) Xeon(R) Gold 6248 CPU (Cascade Lake) in performance mode, 40 cores/3.9GHz/512GB memory), 25Gb two-port SRIOV adapter, 1 x 16gbps FCA , Websphere Liberty 21.0.0.6,
Java(TM) SE Runtime Environment (build 8.0.6.36 - pxl6480sr6fp36-20210824_02(SR6 FP36)), CoreOS Linux 4.18.0-305.10.2.el8_4, RHEL 8.4 KVM. Configuration consists of 2 OCP worker KVM guests each with 20 cores running hyperthreading with 256GB of memory.
Database system S922: Model 9009-22G with 22 cores and 1TB of memory. Configuration consists of 2 AIX lpars each with 8 cores running SMT8 with 131GB of memory, and a VIOS lpar with 2 cores and 16GB of memory.

Power Developer eXchange (PDeX)

A place for IBM Power open source developers to learn, collaborate, contribute, and create

- **Discussion forums** for exchanging experiences, best practices, and lessons learned on a wide range of open source on Power topics
- **Library** of technical resources and **blogs** designed to help developers successfully create and deploy cloud-native open source applications on Power
- **Support** from a community of IBM subject matter experts
- **Recognition** for contributing and collaborating
- **Join** and start participating today: https://ibm.biz/power-developer

Power Developer eXchange

5 ways to start collaborating today

Please Join the Discussion

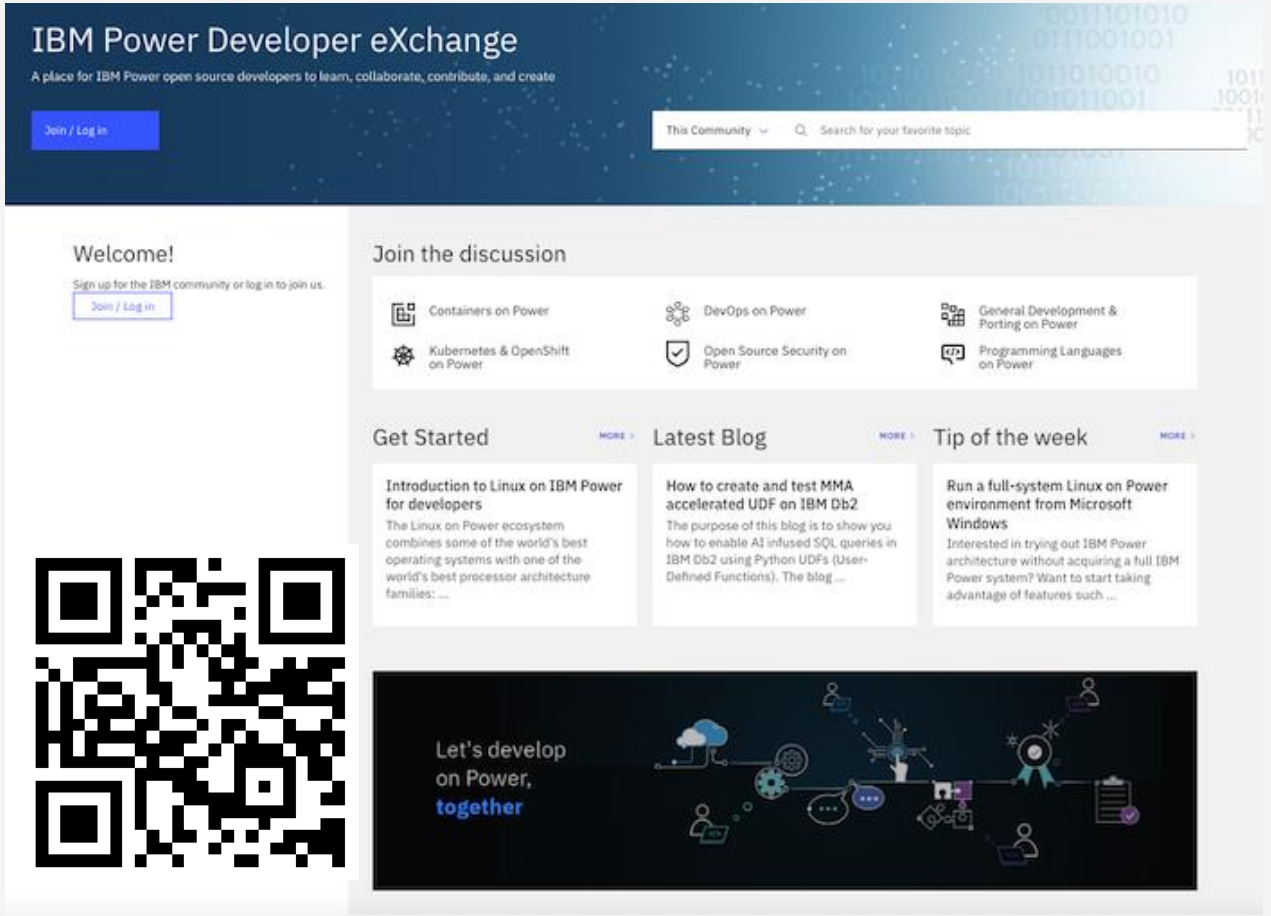
1. [Join the community](#) and then join any (or all) topics groups you'd like. The community consists of six topic groups and a landing page that curates the most recent content from across all groups.

2. [Complete Your Profile](#): Use your IBM Community profile to its full potential to build a more vibrant network! Add a profile photo, share your company name and more.

3. **Contribute content and join the conversation.** This is key to ensuring we have a robust and active community! Here are a few things you can do:
   - Upload a technical resource to one of the topic libraries
   - Post a blog – tell us your story, share a lesson you've learned or offer tips and tricks to other Power open source developers.
   - Comment on a blog post
   - Start a discussion or repond to one – Share best practices with fellow Power open source developers or ask the IBM experts for help or advice.

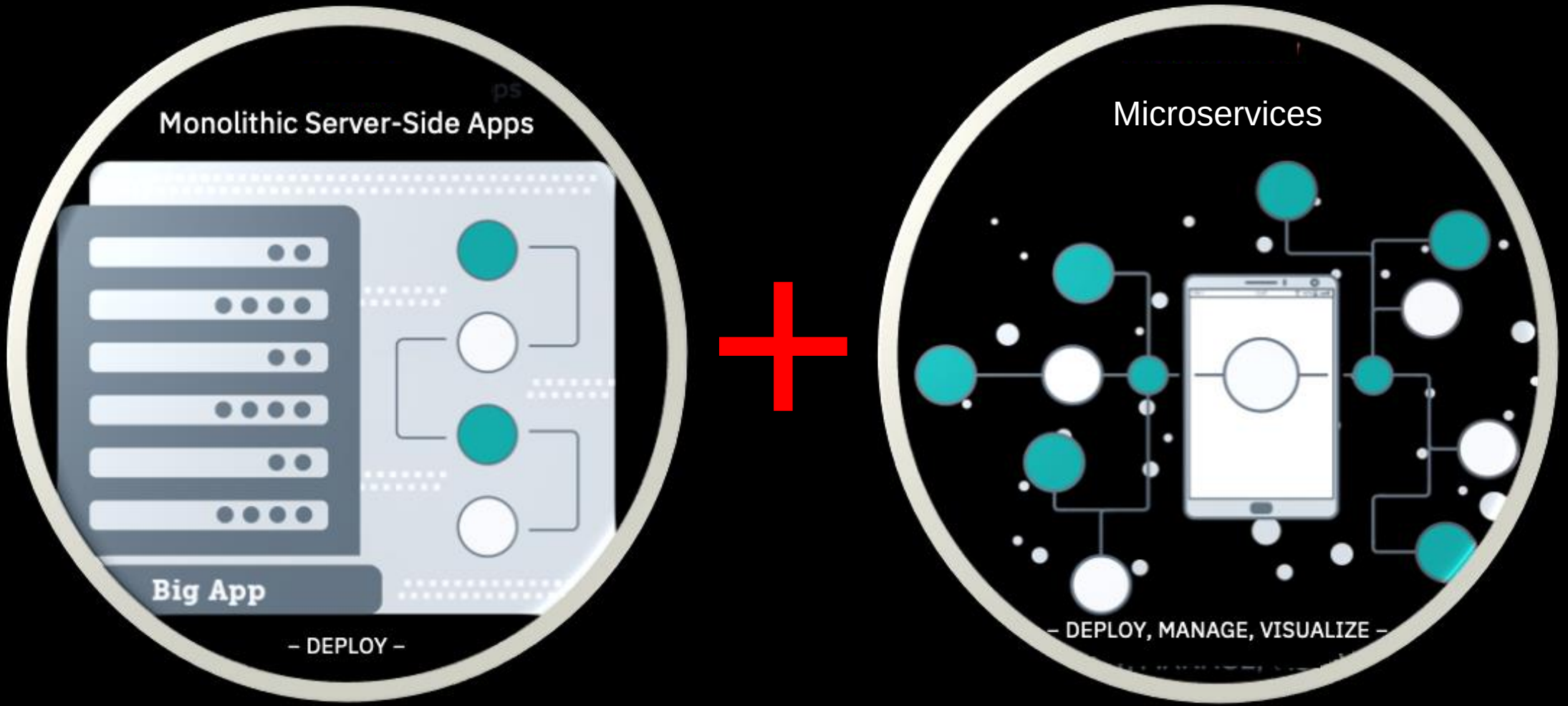
4. [Find a Peer](#): Browse the Community directory and start collaborating with peers and subject matter experts.

5. **Promote the community** by inviting to your colleagues, peers, and social networks to join.



https://community.ibm.com/community/user/powerdeveloper/home

Application Modernization Reality



IBM Power Systems – The Platform for Digital Modernization

250+
Customers

4X
Better

2x+
performance

½ the # of cores

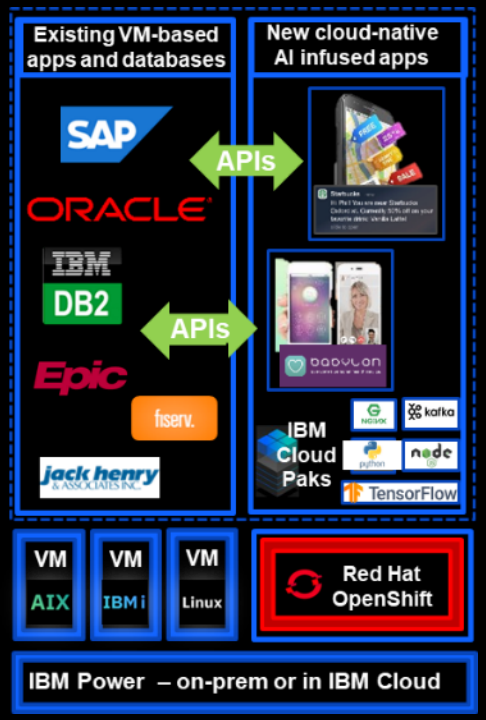
Superior economics

DevOps

Co-locate Apps & Data

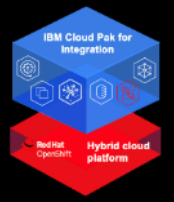
Low latency Data gravity

Modernize apps incrementally on IBM Power



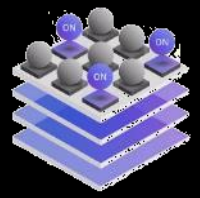
IBM OpenShift Container Software

Integration



Business Automation

Data



Watson AIOps

Websphere Hybrid Edition

IBM Power Cloud **Infrastructure Stack**

Pay-as-you-go on-premises or off-premises

Open hybrid multicloud platform

Red Hat OpenShift

Red Hat Enterprise Linux

Red Hat Ansible Automation Platform

Open Source Software & ISV Developer Community

open source initiative

Kubernetes

Travis CI

GitLab

GitHub

PostgreSQL

mongoDB.

aqua

ONNX

Private cloud

IBM Power servers
(on-premises datacenters)

Pay as you go with Power Private Cloud

AIX IBM i Linux

Public cloud

IBM Power Virtual Server

In 14 IBM Cloud datacenters globally

Comprehensive Hybrid Cloud Management

Red Hat Advanced Cluster Management for Kubernetes
Aggregated container management

INSTANA
Observability & app monitoring

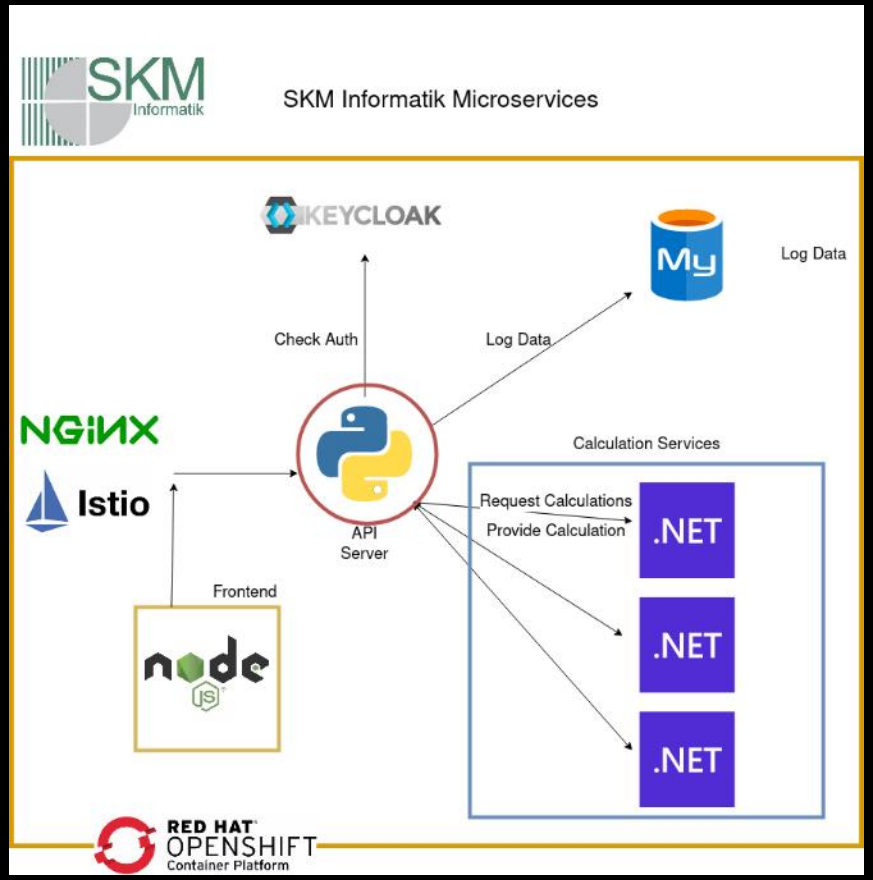
turbonomic
Resource optimization

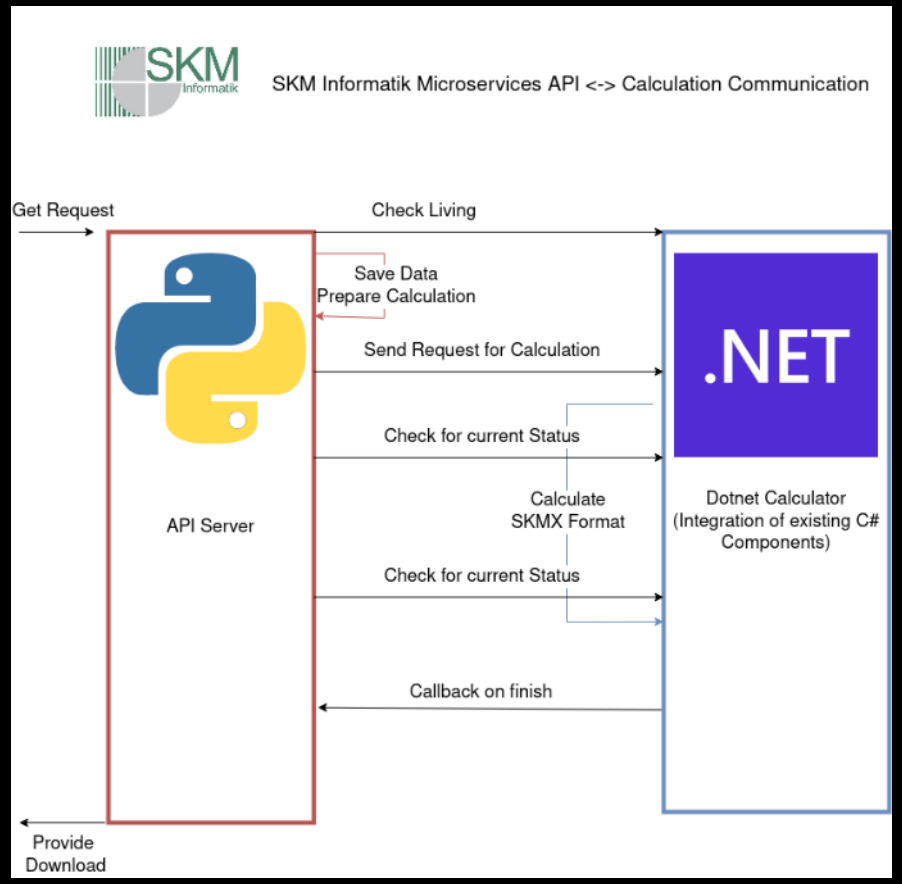
AIOps Infrastructure Automation
Hybrid VM management

Open and Flexible by Design. **Superior Economics** with Performance. **Secure** end to end.

Thank You!

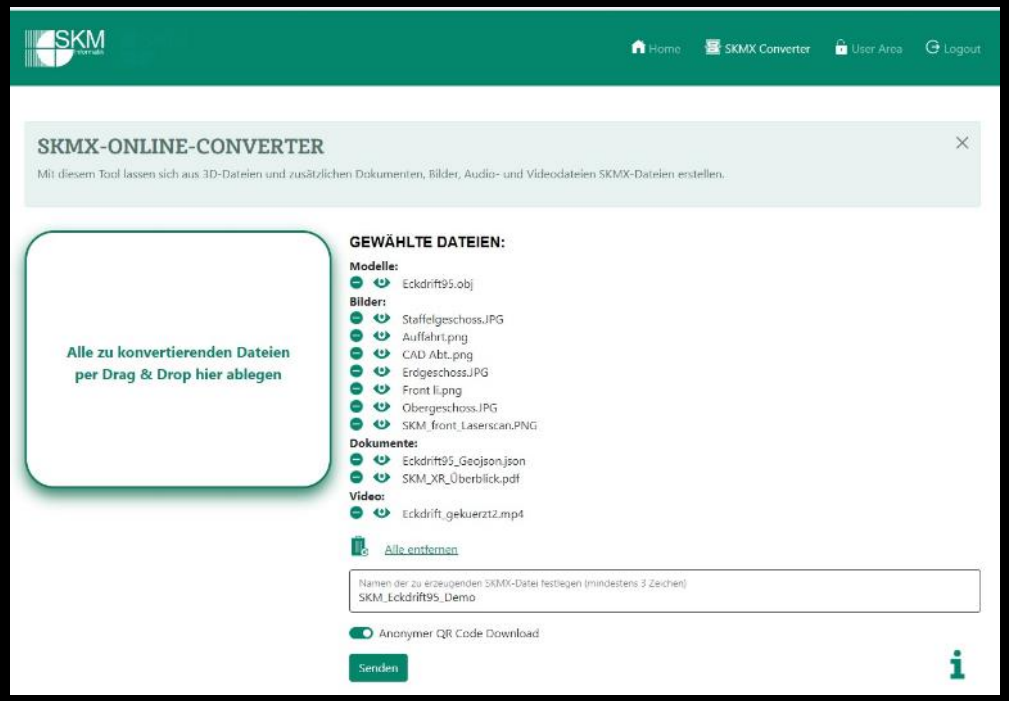
SKM Application Architecture

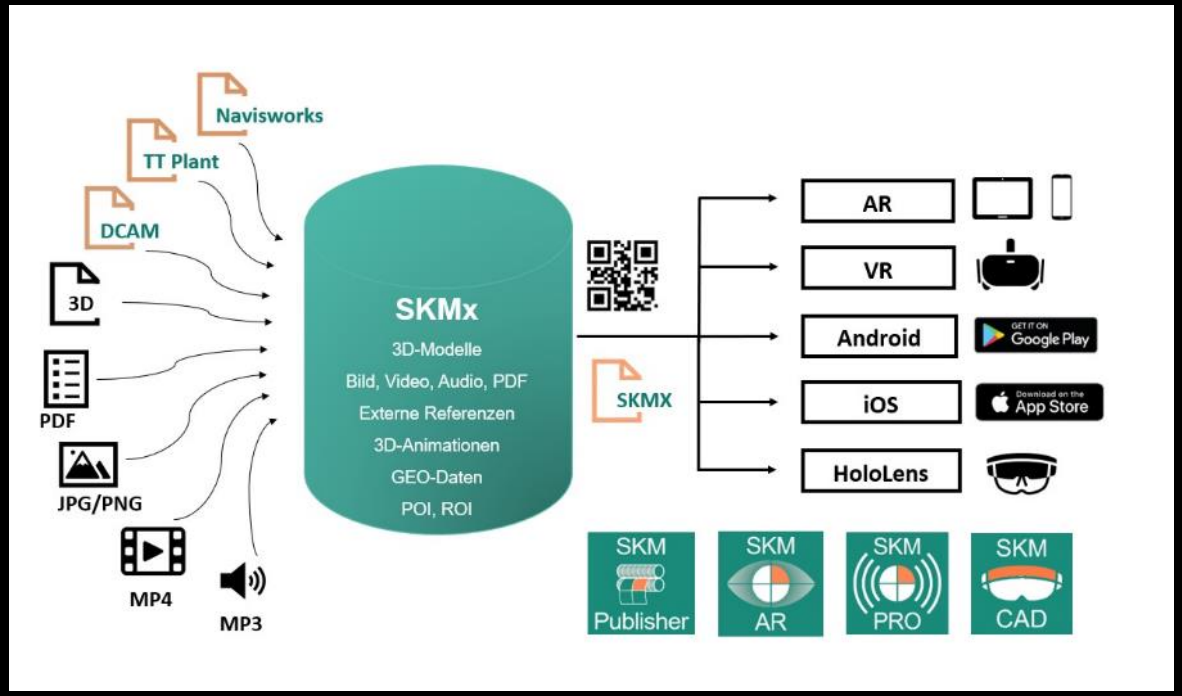




SKM Application 1-5

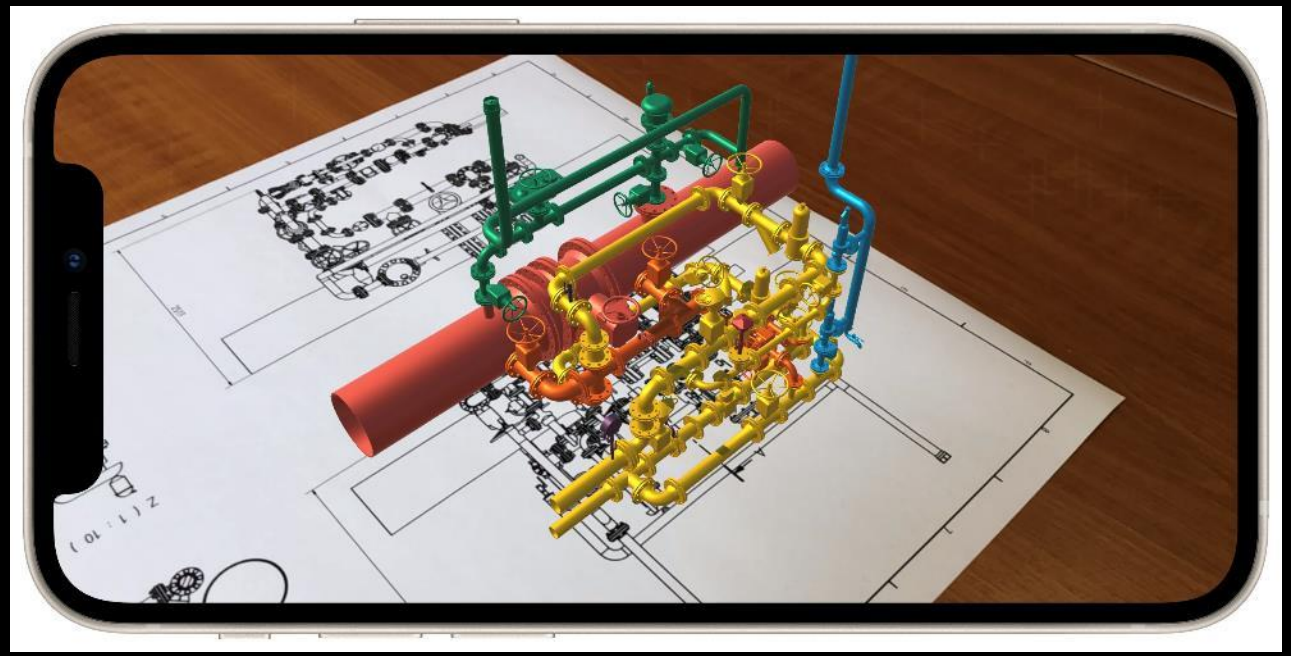
The C# .NET 7 container packs 3D data for visualization in XR (mobile device AR, Hololense AR, VR-Headsets)





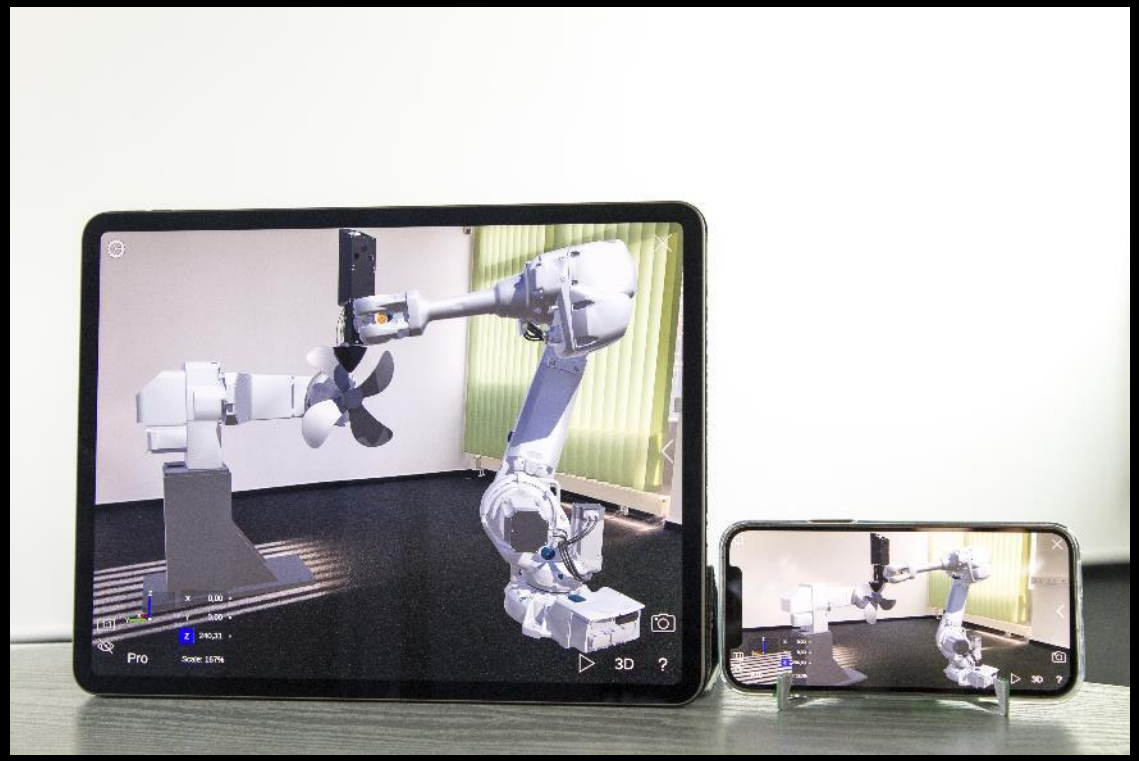
SKM Application 2-5

The C# .NET 7 container packs 3D data for visualization in XR (mobile device AR, Hololense AR, VR-Headsets)



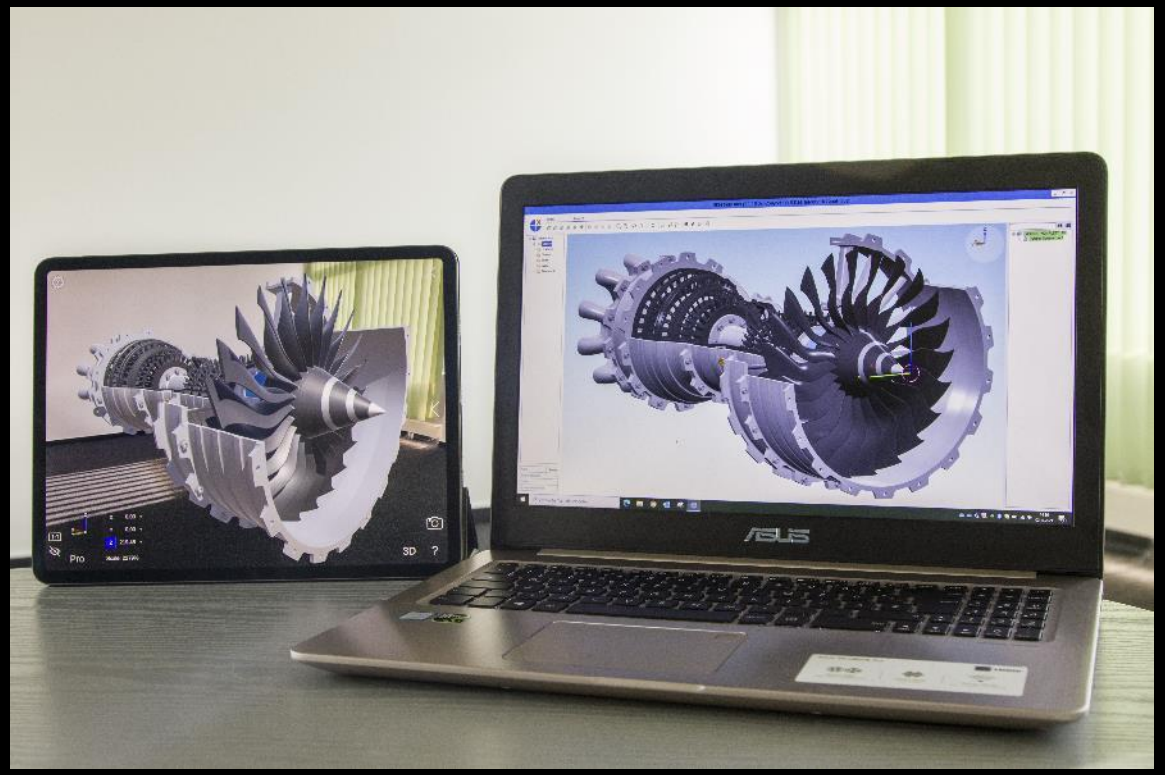
SKM Application 3-5

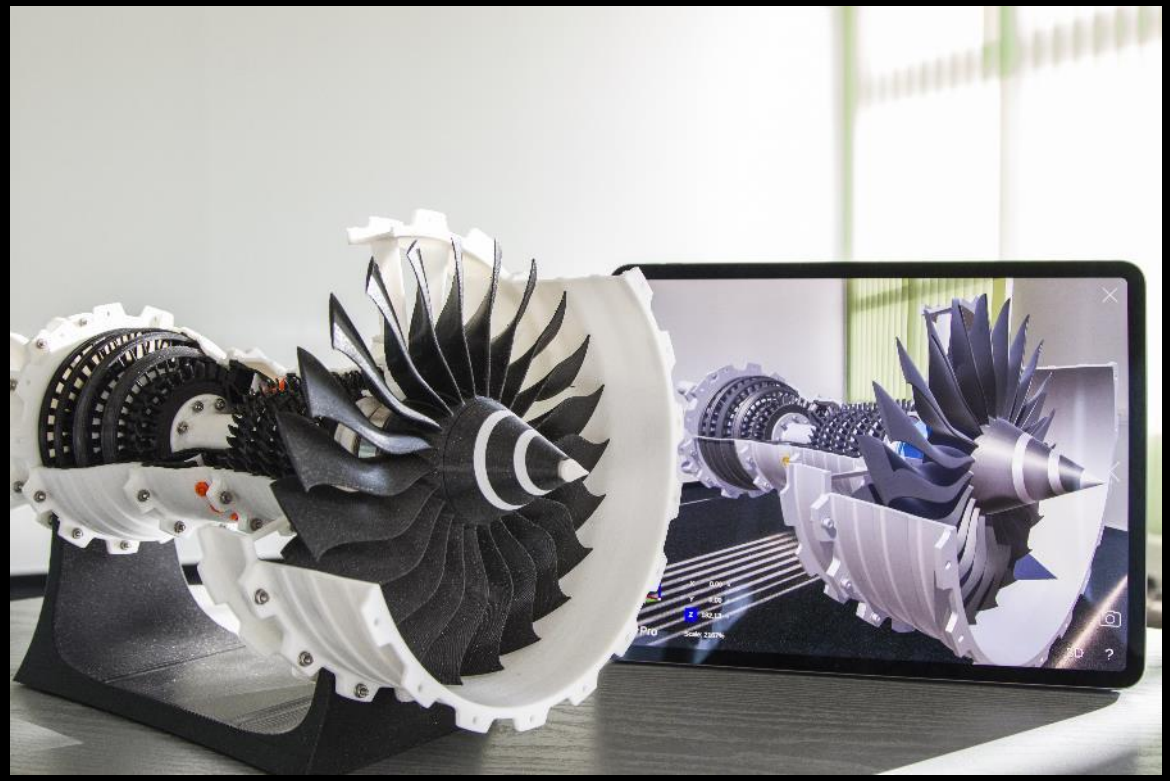
The C# .NET 7 container packs 3D data for visualization in XR (mobile device AR, Hololense AR, VR-Headsets)



SKM Application 4-5

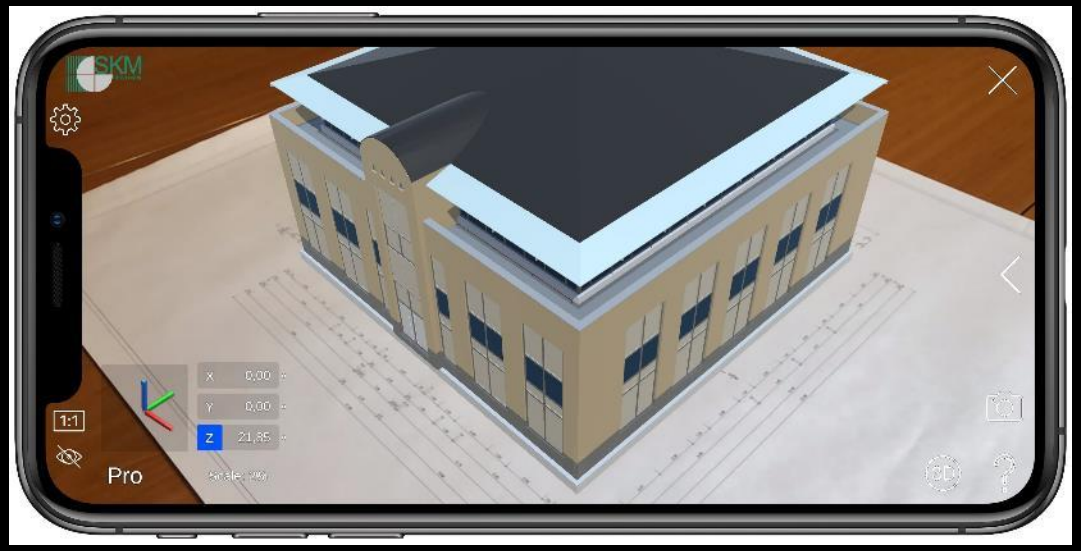
The C# .NET 7 container packs 3D data for visualization in XR (mobile device AR, Hololense AR, VR-Headsets)

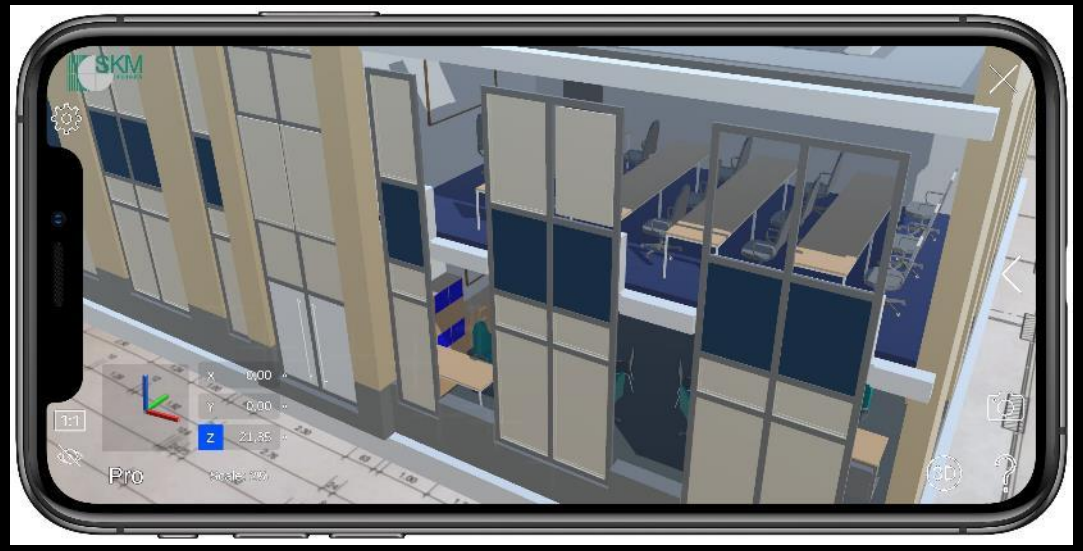




SKM Application 5-5

The C# .NET 7 container packs 3D data for visualization in XR (mobile device AR, Hololense AR, VR-Headsets)





.NET 7 components available on Power

We have all that we need with .NET 7 on Power!

Output from dotnet new list command on Power

ASP.NET Core Empty	web	[C#],F#	Web/Empty
ASP.NET Core gRPC Service	grpc	[C#]	Web/gRPC
ASP.NET Core Web API	webapi	[C#],F#	Web/WebAPI
ASP.NET Core Web App	webapp,razor	[C#]	Web/MVC/Razor Pages
ASP.NET Core Web App (Model-View-Controller)	mvc	[C#],F#	Web/MVC
ASP.NET Core with Angular	angular	[C#]	Web/MVC/SPA
ASP.NET Core with React.js	react	[C#]	Web/MVC/SPA
Blazor Server App	blazorserver	[C#]	Web/Blazor
Blazor Server App Empty	blazorserver-empty	[C#]	Web/Blazor/Empty
Blazor WebAssembly App	blazorwasm	[C#]	Web/Blazor/WebAssembly/PWA
Blazor WebAssembly App Empty	blazorwasm-empty	[C#]	Web/Blazor/WebAssembly/PWA/Empty
Class Library	classlib	[C#],F#,VB	Common/Library
Console App	console	[C#],F#,VB	Common/Console
dotnet gitignore file	gitignore		Config
Dotnet local tool manifest file	tool-manifest		Config
EditorConfig file	editorconfig		Config
global.json file	globaljson		Config
MSTest Test Project	mstest	[C#],F#,VB	Test/MSTest
MVC ViewImports	viewimports	[C#]	Web/ASP.NET
MVC ViewStart	viewstart	[C#]	Web/ASP.NET
NuGet Config	nugetconfig		Config
NUnit 3 Test Item	nunit-test	[C#],F#,VB	Test/NUnit
NUnit 3 Test Project	nunit	[C#],F#,VB	Test/NUnit
Protocol Buffer File	proto		Web/gRPC
Razor Class Library	razorclasslib	[C#]	Web/Razor/Library
Razor Component	razorcomponent	[C#]	Web/ASP.NET
Razor Page	page	[C#]	Web/ASP.NET
Solution File	sln,solution		Solution
Web Config	webconfig		Config
Worker Service	worker	[C#],F#	Common/Worker/Web
xUnit Test Project	xunit	[C#],F#,VB	Test/xUnit

Known Limitations

The full implementation of .NET 7 is available and supported on IBM Power Systems

1) The debuggers have not been ported

2) There is no support for a IDE for power as yet
Although code can be developed on VSCODE/Visual Studio on Windows and then copied over to Power
This is what I have done when creating demonstrations

Red Hat OpenShift Dev Spaces (formerly called CodeReady Workspaces) provides a web-based IDE (VS Code and Theia-ide) where a developer only needs a system with a web browser to code, build, test and run on developer workspaces provided with Dev Spaces. C# is one of the languages supported in RH Dev Spaces workspace.

A blog is coming soon that will show how a .NET user can use the web based IDE VSCode-editor in RH Dev spaces on ppc64le.

Learn about .NET on Power
https://ibm.biz/dotnet-on-power-blogs

Learn about .NET on Power

- Read the .NET 7 announcement from Microsoft.
- Read this article from Red Hat that describes what developers need to know about .NET 7 for RHEL and OpenShift.
- Learn how .NET 7 on Linux on Power is different from the Mono project that has been around for many years.
- Watch this demo to learn about deploying a .NET 7 application using ASP.NET Core with SignalR library on IBM Power with Red Hat OpenShift using both the command line and s2i via the OpenShift GUI.

Run .NET HelloWorld on Power
https://ibm.biz/dotnet-on-power-blogs

- Get access to a Power machine
  - Read this blog, Accelerate your open source development with access to IBM Power resources , that lists several IBM Power cloud, emulation, and on-prem options to help you get access to development tools and resources.
    - Enterprise users might consider Power Virtual Server
    - Independent software developers (ISVs) and Business Partners might consider IBM TechZone
    - ISVs may also consider a RADAR-ISV system in Montpellier France
    - Open source developers might consider the Open Source Lab at Oregon State University.
- Install .NET and run your first Hello World program

After you have access to a Power machine, you're ready to install .NET and run a sample Hello World application on IBM Power.