

Z Expertenforum vom 17.April 2018

Z Software Update

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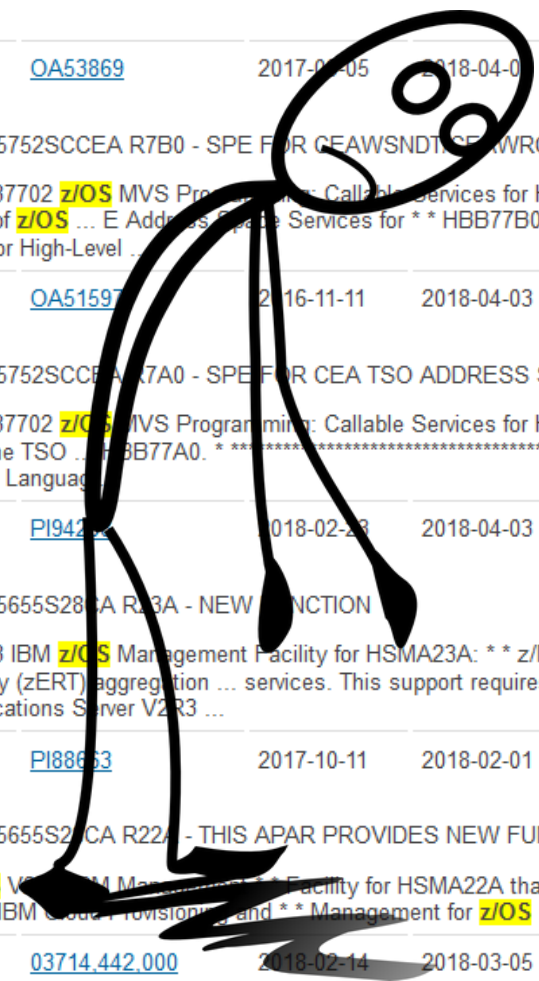
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Z Software Update



| | | | | | | | | | | |
|--|------|-------------------------------|------------|------------|--------|---|--------|-----------|---------|-------|
| 4 | APAR | OA53869 | 2017-09-05 | 2018-04-03 | CLOSED | 3 | | | | |
| Abstract: 5752SCCEA R7B0 - SPE FOR CEAWSNDTSE WRCVT INTERFACE | | | | | | | | | | |
| ... SA23137702 z/OS MVS Programming: Callable Services for High-Level Languages. Documentation can be found here ... ***** | | | | | | | | | | |
| All users of z/OS ... E Address Space Services for * * HBB77B0 using the new Version 2 (remote) support running * * applications in the TSO ... book: SA23137702 z/OS MVS Programming: Callable Services for High-Level Languages | | | | | | | | | | |
| 5 | APAR | OA51597 | 2016-11-11 | 2018-04-03 | CLOSED | 3 | | | | |
| Abstract: 5752SCCEA R7A0 - SPE FOR CEA TSO ADDRESS SPACE SERVICES | | | | | | | | | | |
| ... SA23137702 z/OS MVS Programming: Callable Services for High-Level Languages. Documentation can be found here ... ***** | | | | | | | | | | |
| users of the TSO ... HBB77A0. * * * * * PROBLEM DESCRIPTION: Provide new ... book: SA23137702 z/OS MVS Programming: Callable Services for High-Level Languages | | | | | | | | | | |
| 6 | APAR | PI94232 | 2018-02-28 | 2018-04-03 | CLOSED | 3 | | | | |
| Abstract: 5655S28 CA R3A - NEW FUNCTION | | | | | | | | | | |
| ... of V2R3 IBM z/OS Management Facility for HSMA23A: * * z/MF Configuration Assistant * * using TCP/IP Profile ... function SPE provides TCP/IP configuration updates * * - z/OS Technology (zERT) aggregation ... services. This support requires z/OS * * Communications * * Server V2R3 APAR PI83362. zERT aggregation summarizes ... settings. * * This support requires z/OS * * Communications * * Server V2R3 ... | | | | | | | | | | |
| 7 | APAR | PI88653 | 2017-10-11 | 2018-02-01 | CLOSED | 3 | | | | |
| Abstract: 5655S28 CA R22A - THIS APAR PROVIDES NEW FUNCTION IN CONFIGURATION ASSISTANT: Z/OS CLOUD SUPPORT FOR SYSPLEX MOVABLE INSTANCES | | | | | | | | | | |
| ... of z/OS V2R3 Management Facility for HSMA22A that use IBM * * Cloud Provisioning and Management for * * z/OS : z ... OSMF Configuration Assistant ... SPE that * * provides * * the IBM Cloud Provisioning and * * Management for z/OS ... now be moved to * * other systems in the sysplex for * * purposes of disaster recovery or * * in preparation for plan | | | | | | | | | | |
| 8 | PMR | 03714.442.000 | 2018-02-14 | 2018-03-05 | CQ1L2 | 3 | STBHEE | HEERDINK, | 9210222 | INTER |



Agenda

1. Machine Learning on Z
2. Accelerator on IBM Z
IBM DB2 Analytics Accelerator (IDAA)
3. IBM Cloud Private (ICP)

What is Machine Learning?

- Identifies patterns in historical data
- Builds behavioral models from patterns
- Makes recommendations
- Does predictions



Waze personalized driving experience

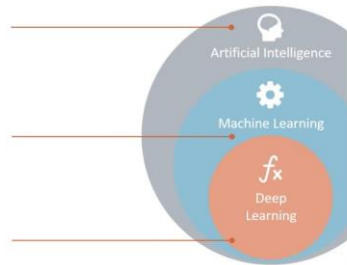
Netflix personalized movie recommendations



Artificial Intelligence
Any technique which enables computers to mimic human behavior.

Machine Learning
Subset of AI techniques which use statistical methods to enable machines to improve with experiences.

Deep Learning
Subset of ML which make the computation of multi-layer neural networks feasible.

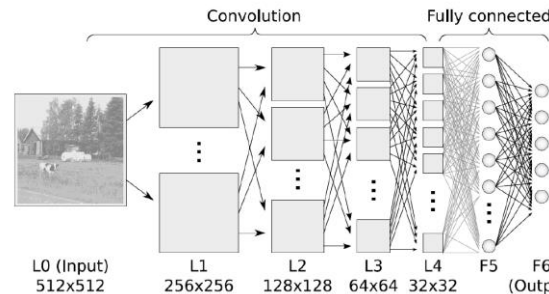
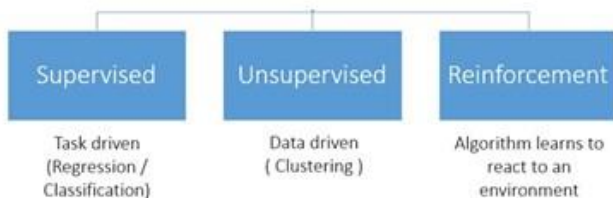


ROBO ADVISORS



7 out of 10 financial customers would take recommendations from a robo advisor

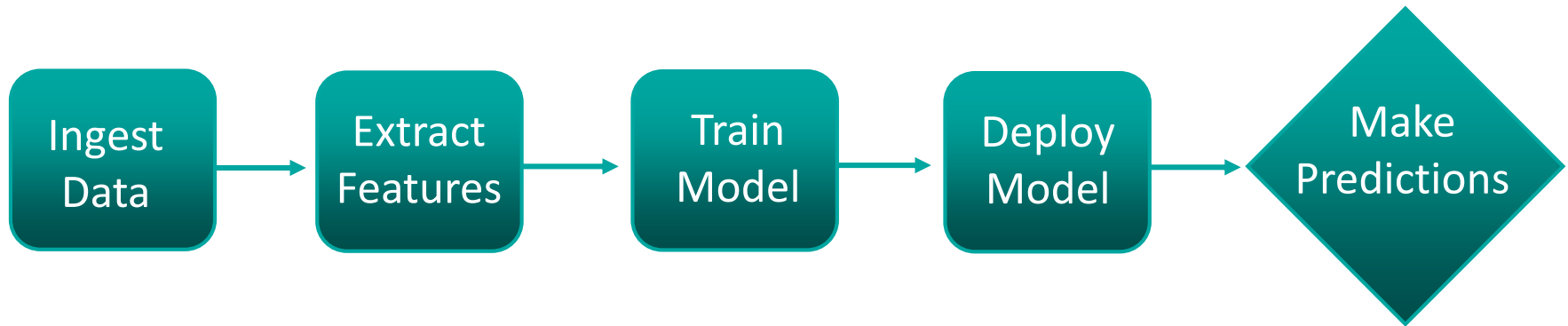
Machine Learning



Deep Learning

The (incomplete) machine learning process

Takes significant development, deployment and management efforts



Human Intervention

Choose Best Model

Identify Model Degradation

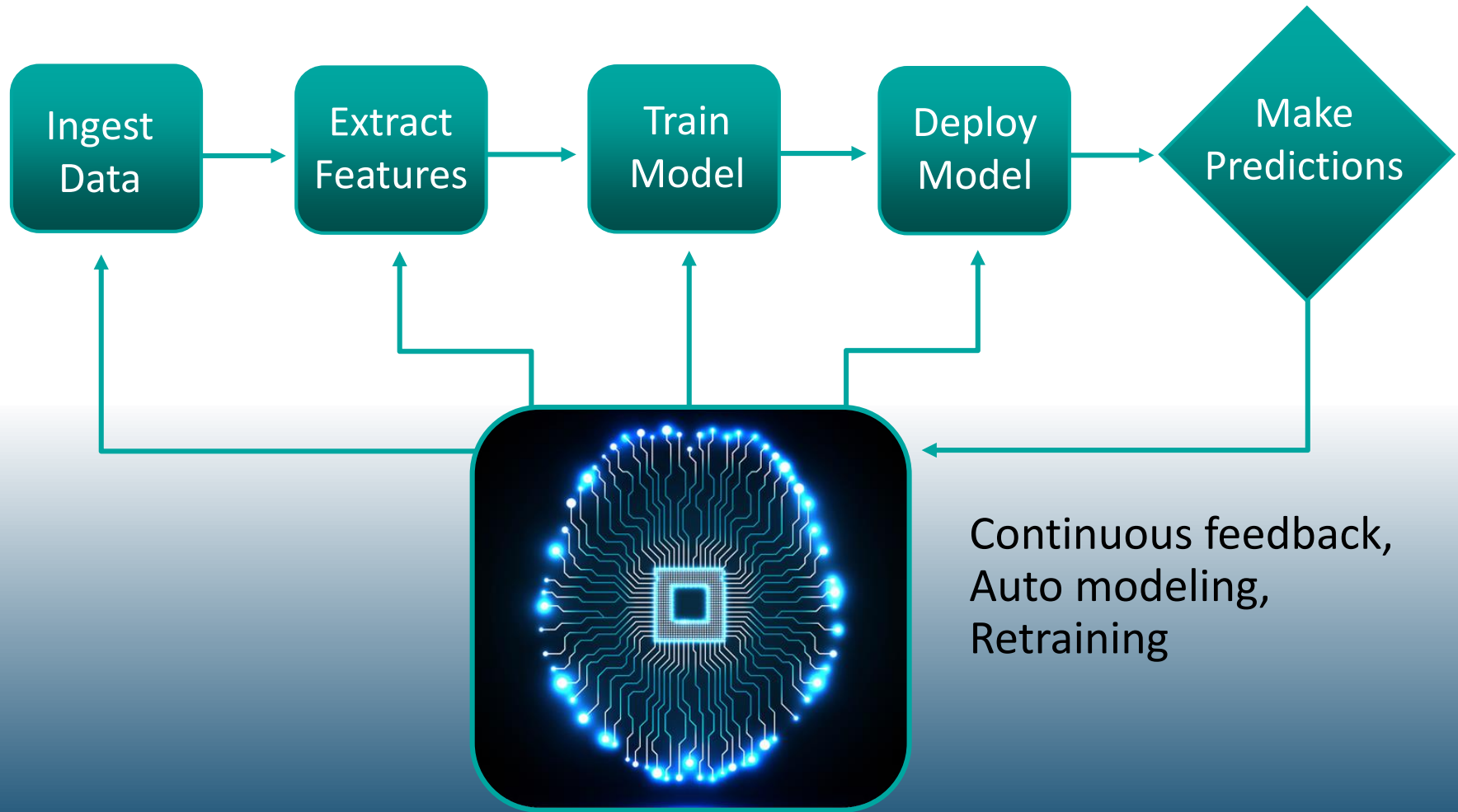
Create Examples

Ensure Scalability



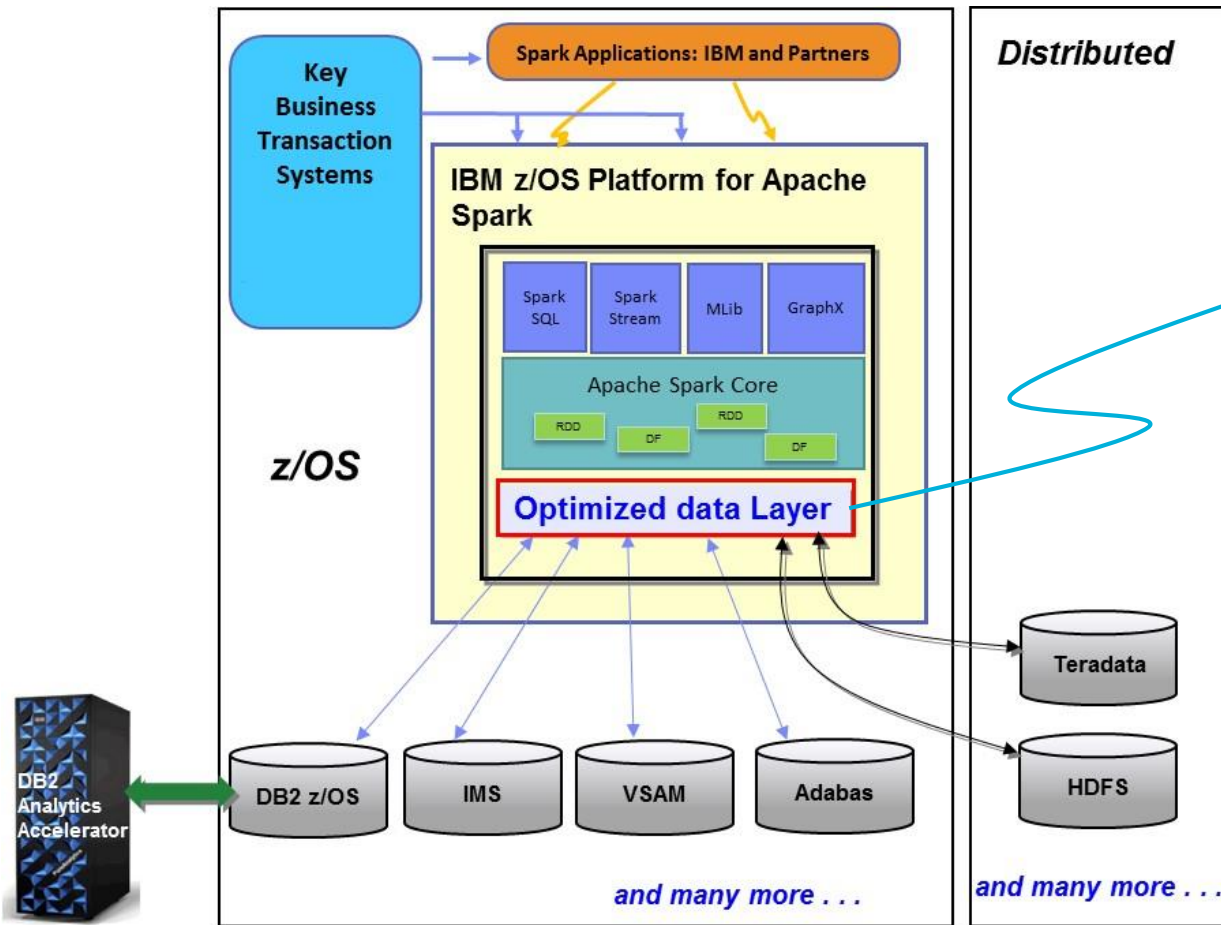
The (complete) machine learning process

IBM transformed Machine Learning to Learning Machines



IBM Open Data Access (Spark on z/OS)

Available since December 2015 via Open Source



Security:

- Integrate OLTP and Business Critical Data

Unique capability:

- Only found on Apache Spark on z/OS

Integrate:

- DB2 for z/OS, IMS, VSAM, PDSE, Syslog, SMF, ...
- Remote (non-z) data on distributed servers, Hadoop, Oracle, ...
- **Defining security authorizations for instance using RACF**

Benefit from z Systems Investment

Cost effective, low latency, high security



- Gain advantage from z Systems infrastructure, people and processes
- Leverage z Systems data in place while combining structured and unstructured data from z and non-z data sources
- Access live transactional data

Accelerator on IBM Z

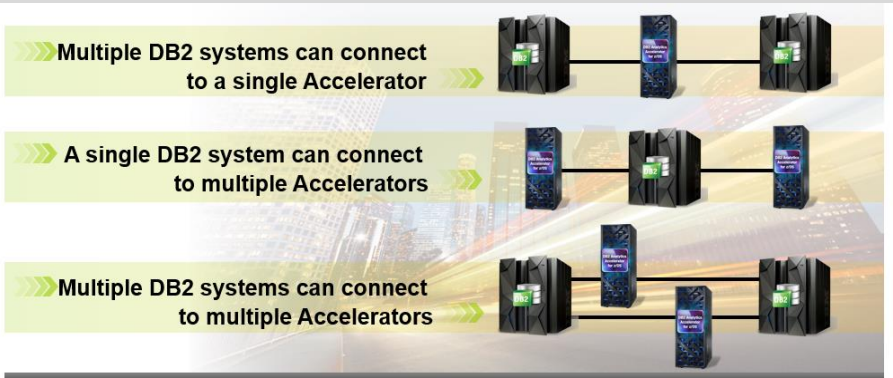
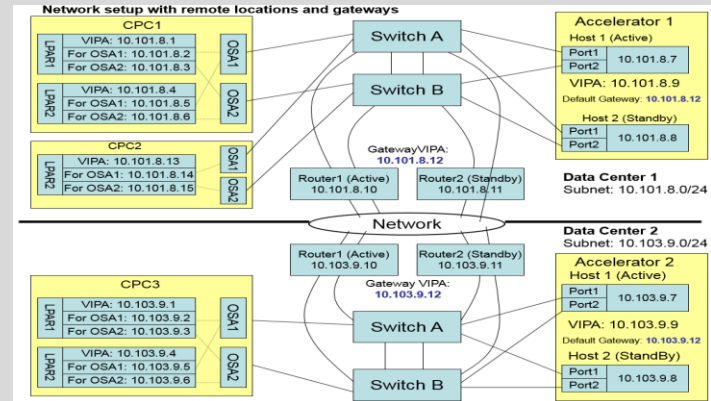
IBM DB2 Analytics Accelerator (IDAA)



Today

Current infrastructure

- based on Netezza technology
 - N1001.., N2001.., N3001..
- and
- DB2 Analytics Accelerator for z/OS V4 or V5



Full flexibility for DB2 systems:

- residing in the same LPAR
- residing in different LPARs
- residing in different CECs
- being independent (non-data sharing)
- belonging to the same data sharing group
- belonging to different data sharing groups

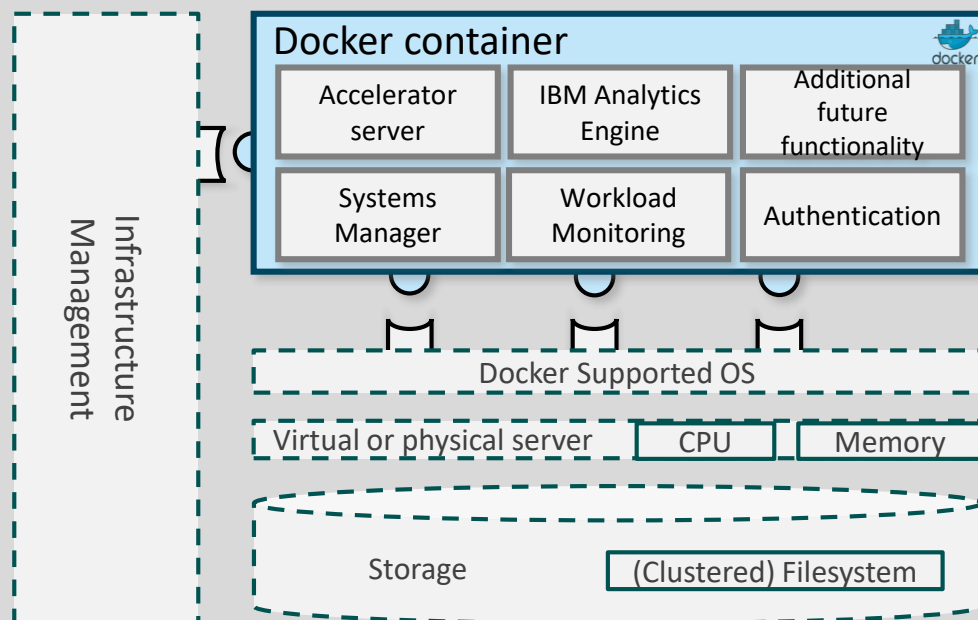
IT Use Case

PDA N3001

| | |
|----------------------------|-------|
| Query Acceleration | today |
| In-database transformation | today |
| Incremental Update | today |
| True HTAP | 01/18 |
| Federation | today |
| In-database analytics | today |
| Use historical data (HPSS) | today |



The core of V7.1 Accelerator Deployments (Common)



Docker is a widely adopted, open-source project that automates the deployment of applications inside software containers.

It allows to bundle and preinstall components in a Docker image and then to launch the container from the image.

The accelerator Docker container includes

- the accelerator server that establishes the connection between the Db2 for z/OS subsystem and manages all accelerator tasks
- a database engine
- other components required for high availability, monitoring and security

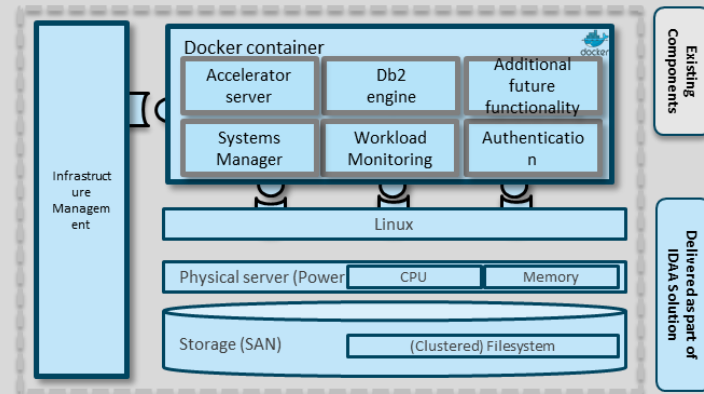
Outside of the container physical compute resources are needed

- a server that includes multi-core CPUs
- large memory
- shared filesystem to persist the data

On top of the physical hardware there is a Docker supported Linux operating system that is just used to launch the Docker container and manage the HW resources.



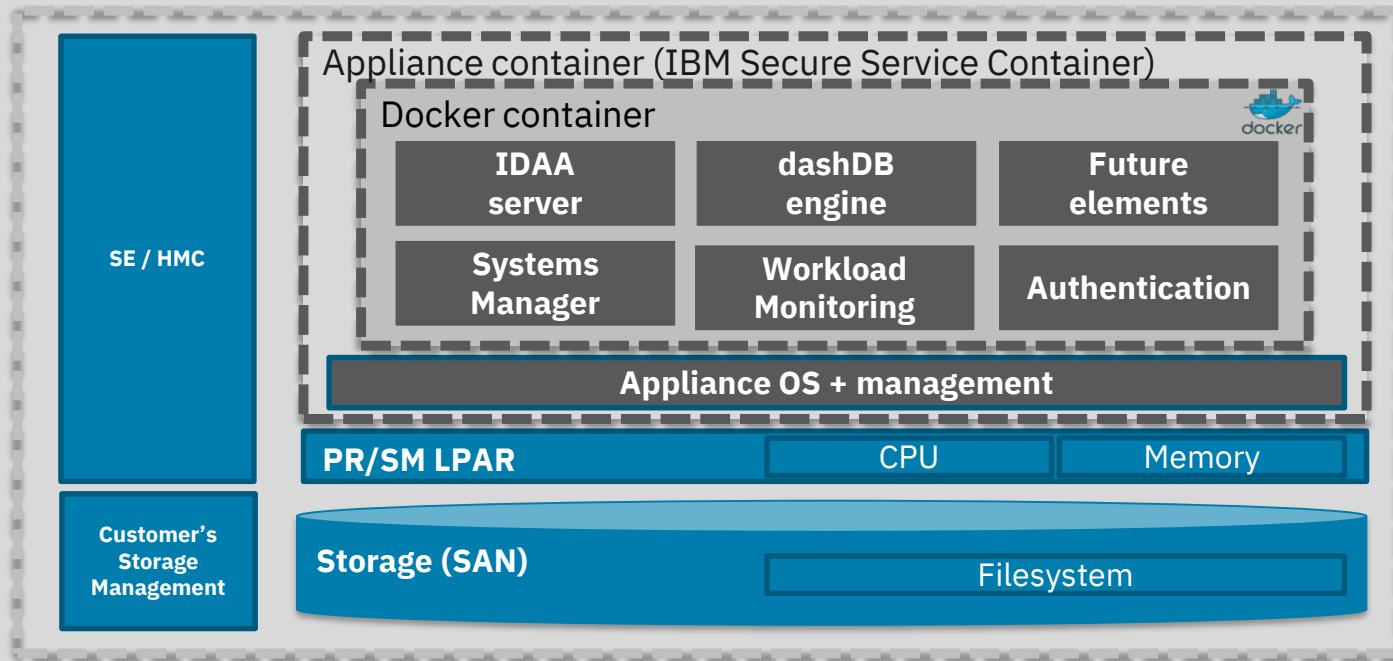
Db2 Analytics Accelerator V7.1, deployment on IBM Integrated Analytics System (IIAS)



- New generation hardware appliance
- A full solution that provides all components out of the box – including optimized hardware and software
- All components provided by IBM in a balanced, performance-optimized configuration
 - HW, which includes the rack, the physical servers and the storage
 - SW stack including the Linux operating system, the docker software as well as the Docker container and the infrastructure management
- IBM Power hardware for the appliance, balanced and optimized for price/performance



Accelerator on IBM Z



CPU, Memory, IO according to your requirements and infrastructure availability

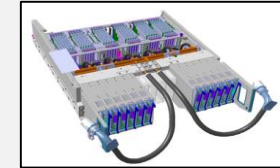
Customer-provided **IBM-provided**



Hardware considerations

- 1 Accelerator = 1 LPAR
- Each LPAR requires IFLs (up to one drawer), RAM, and Storage
- IBM z14, HMC and SE firmware 2.13.1, at least SE bundle S47 / HMC bundle H36

Drawer (35 IFLs)



| IFLs on z14 | Dedicated z14 Drawer | Storage |
|---|---|---|
| <p>Use existing IFLs and memory For small production test/dev or getting-started use cases Minimum suggested configuration:</p> <ul style="list-style-type: none"> • 4 IFLs, 256 GB memory for test/dev • 8 IFLs, 512 GB memory for production | <ul style="list-style-type: none"> • Order one drawer, comprised of 35 IFLs and up to 2.56 TB memory, with your z14 order • You can convert your z14 models M01, M02, M03 servers by adding a dedicated drawer containing IFLs and memory at a very attractive price • Also available on M04, M05 as a new build inclusive of the drawer, as you cannot add another drawer to M04 or M05 machines | <ul style="list-style-type: none"> • Requires customer-provided storage (actual size depends on workload) • FCP or FICON attached |



Key Characteristics of the deployment options

Db2 Analytics Accelerator on Pure Data for Analytics N3001 (Netezza Technology)



Db2 Analytics Accelerator on Integrated Analytics System M4001



Db2 Analytics Accelerator on IBM Z



Key advantages

- Out-of-the-box experience
- Workload Optimized System
- Wide set of Analytics use cases
- Proven technology with client references cross-industry

- Out-of-the-box experience
- Workload Optimized System
- Optimized for True HTAP
- Evolving set of Analytics use cases

- Download & Go experience
- Homogeneity within IBM Z: common resources, operation
- Evolving set of Analytics use cases

Workload Size

- Very good scale-out

- Very good scale-out
- Optimized for very large query throughput and load performance

- Good scale-up to full drawer

IBM Cloud Private (ICP)



IBM Cloud

IBM Cloud Private – Overview

- A private cloud platform for enterprises to develop and run their workloads locally
- An integrated platform consisting of PaaS and developer services necessary to create, run, and manage cloud applications
- An open-source embracing platform
- Platform to deliver modernized IBM middleware and data services to enterprise customers
- Non-tethered, Kubernetes-based, tight integration with your data center

Catalog

| | | |
|--|--|--|
| <p>IBM-logging Log storage and search management solution</p> <p>Get started</p> | <p>IBM-logging-k8s Elastic Kibana, a web UI to query and visualize data in existing Elasticsearch clusters</p> <p>Get started</p> | <p>IBM-logging IBM monitoring service in private cloud</p> <p>Get started</p> |
| <p>IBM-ibm-eval IBM InfoSphere Information Server for Evaluation VLLT (Evaluation)</p> <p>Get started</p> | <p>IBM-ibm-integration IBM Integration Bus for application integration, routing and transformation</p> <p>Get started</p> | <p>IBM-ibm-dev IBM IEP Community Edition cluster with Application Center GUI</p> <p>Get started</p> |
| <p>IBM-ibm-micro MicroE is developed as open source software and as a relational database it provides an SQL</p> <p>Get started</p> | <p>IBM-ibm-micro Microservice Builder Fabric</p> <p>Get started</p> | <p>IBM-ibm-micro Microservice Builder Pipeline</p> <p>Get started</p> |
| <p>IBM-ibm-mongo MongoDB document-oriented database that stores JSON-like documents with dynamic schemas.</p> <p>Get started</p> | <p>IBM-ibm-mongo IBM MQ queue manager</p> <p>Get started</p> | <p>IBM-ibm-mongo A self-describing node, is sample application</p> <p>Get started</p> |

Dashboard

System Overview

| | | |
|--|--|---|
| <p>Nodes (4)</p> <p>100% Active</p> <p>4 Active</p> <p>0 Inactive</p> | <p>Shared Storage (40 GB)</p> <p>0% Available</p> <p>82 GB Used</p> <p>0 GB Released</p> <p>0 GB Failed</p> | <p>Deployments (36)</p> <p>100% Healthy</p> <p>35 Healthy</p> <p>0 Unhealthy</p> |
|--|--|---|

Resource Overview

| | | |
|--|--|---|
| <p>CPU (36)</p> <p>Utilization: 1.7% CPU / 12%</p> <p>Allocated: 1.6 CPU / 1%</p> | <p>Memory (36 GB)</p> <p>Utilization: 21.02 GB / 60%</p> <p>Allocated: 4 GB / 11%</p> | <p>GPU (0)</p> <p>Utilization: 0 GPU / 0%</p> <p>Allocated: 0 GPU / 0%</p> |
|--|--|---|

IBM Cloud Private – Overview

IBM Middleware



Cloud enabled middleware, databases & analytics to leverage and optimize current investments

Kubernetes



Tested with 9,000 PODs

Industry leading container orchestration platform across private, dedicated & public clouds

Cloud Foundry



For rapid application development & deployment

Cloud Functions (2018)



Serverless computing
Maximum scalability and flexibility

Common Platform



Tested with up to 10,000 Users

Simplify hybrid automation, integration, IAM, management & developer experience

Virtualization



Tested with up to 300 nodes

Customer Hardware

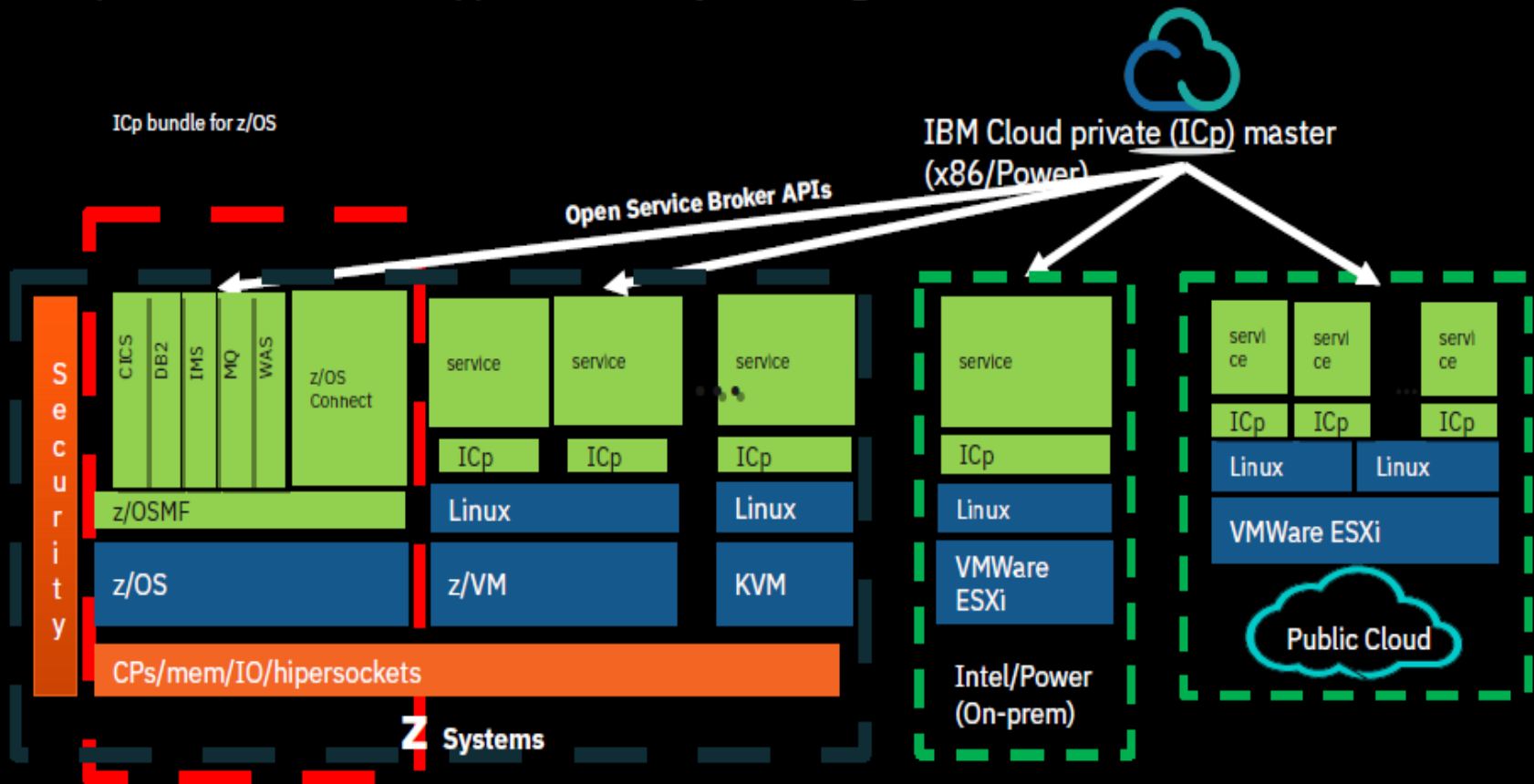


With flexible management options: *Managed by customer to Managed by IBM Cloud*

Digital Transformation Inclusive of z/OS

IBM Z as a differentiating asset in ICP from services that span z/OS, Linux on Z, private and public cloud

- Cloud consumption for z/OS (DBz-aaS, WASz-aaS, MQ-aaS, CICS-aaS etc)
- DevOps, microservices and application life-cycle management for zOS



ICP Bundle for z/OS - MVP

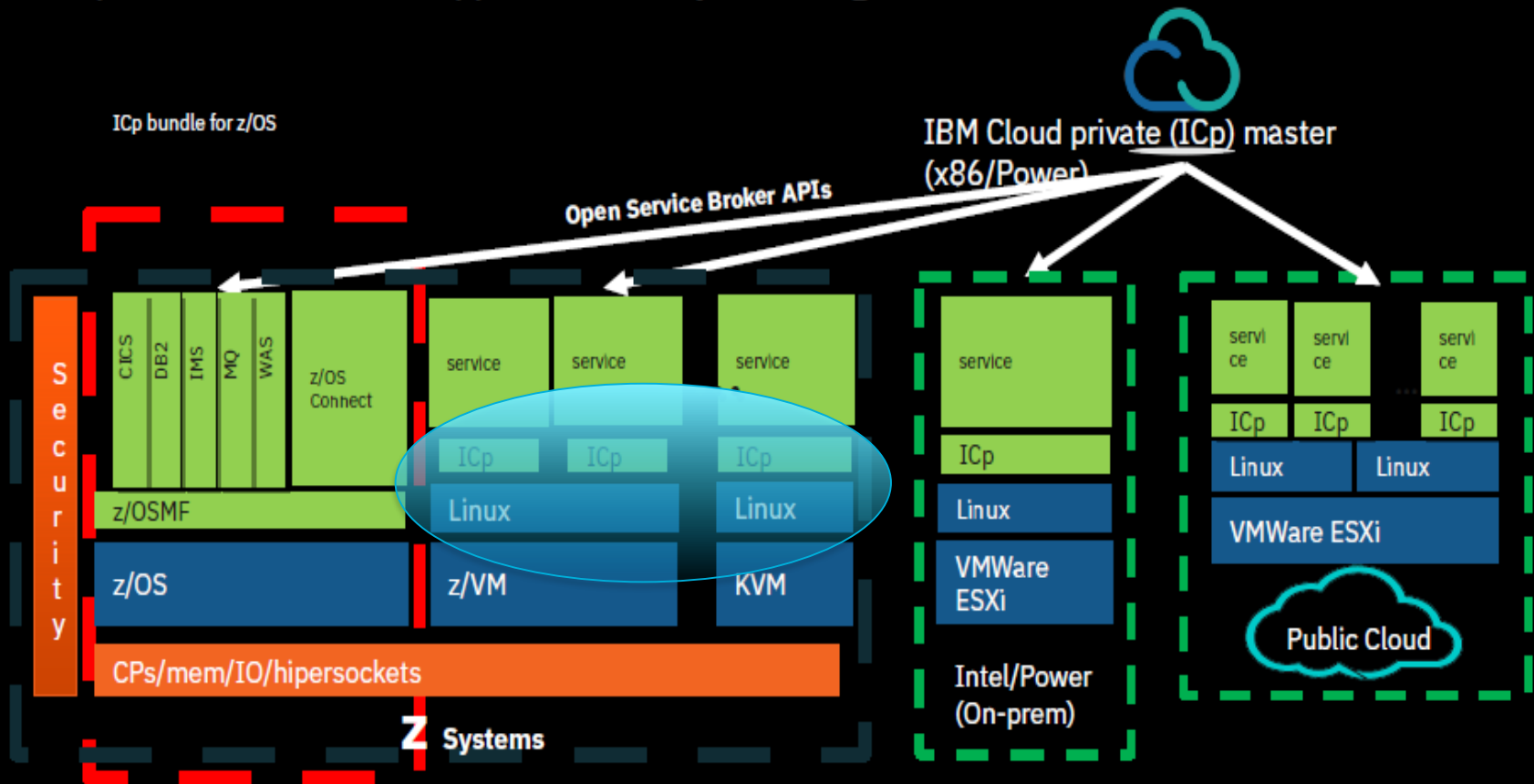
- Enable holistic cloud consumption of z/OS middleware
 - Make z/OS middleware available in the ICp catalog
 - ICp open service broker API drives z/OSMF workflows
 - Self-service/agility for developers

| Services | Description |
|--------------|--|
| | MVP (IBM Cloud Provisioning and Management for z/OS templates) |
| DB2 | Services to provision/deprovision Db2 subsystems, schemas, and databases + <i>snapshot / restore (new)</i> |
| CICS | Services to provision/deprovision CICS regions |
| IMS | Services to provision/deprovision IMS TM/DB systems and IMS FastPath databases |
| MQ | Services to provision/deprovision MQ Queue Manager subsystem and load messages |
| WAS | WLP server provisioning (with option to connect to Db2 data source with type 2 or type 4 connectivity) |
| z/OS Connect | <i>Services to provision/deprovision z/OS Connect (new)</i> |

Digital Transformation Inclusive of z/OS

IBM Z as a differentiating asset in ICP from services that span z/OS, Linux on Z, private and public cloud

- Cloud consumption for z/OS (DBz-aaS, WASz-aaS, MQ-aaS, CICS-aaS etc)
- DevOps, microservices and application life-cycle management for zOS



MFaaS Overview

- Lifecycle Management of IBM Z services using Open Service Broker API and z/OSMF
- Integration with IBM Cloud Private (ICp) for service discovery and management
- Cloud platform interoperability through standardized service broker
- z/OS back end services are published in z/OSMF Software Catalog using IBM Cloud Provisioning and Management for z/OS
- Enable self-serve consumption model for z/OS middleware
- Future: Bundle devops, micro-service and app life-cycle management patterns

MFaaS Benefits

- IBM Z shops as Cloud services providers
 - Provide world class services internally to partners
 - Data Center and Workload consolidation
- Improved configuration and deployment of software
 - Self service provisioning
 - Improve time to value
- Visualize IT as a Value vs Cost
 - Move from cost savings to value generation
 - Include metrics, capping, multi-tenancy, etc

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DANKE

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