# GSE 2019 – Accelerate your analytics
## IBM Db2 Analytics Accelerator – An exciting 2019

**Db2**

**Db2 Analytics Accelerator for z/OS**

**GSE session number: ID**

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# Legal Disclaimer

# Agenda

- **IBM Db2 Analytics Accelerator (a.k.a. IDAA)**
- What's New 2019 - V7.1
- What's Coming 2019 - V7.5
- What's New 2019 - Documentation

IBM

# IDAA Data Gravity approach to analytics

**Simplified infrastructure with more resiliency**

- One copy of the data not dozens

**Much more secure**
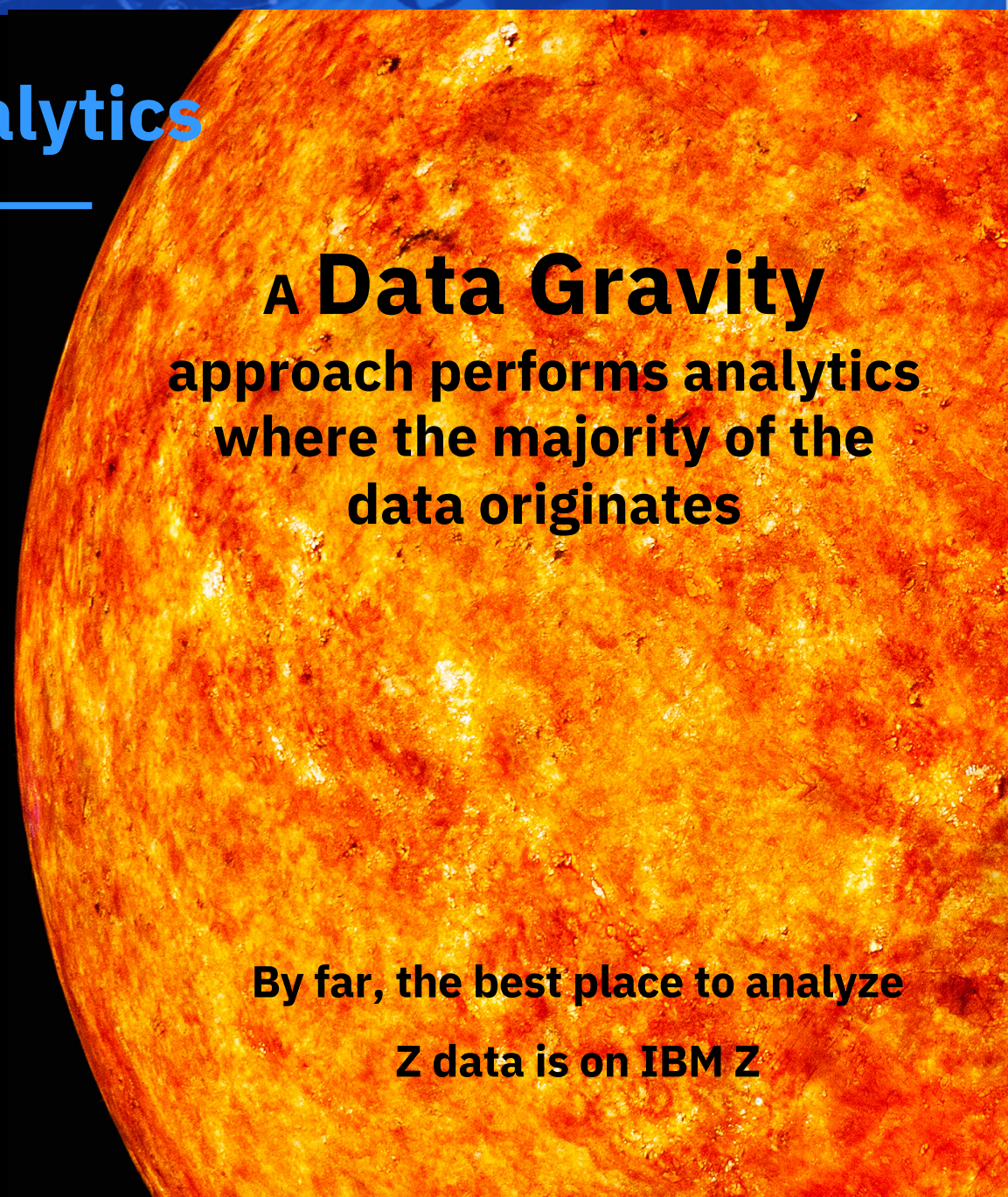
- Z security built in

**Lower cost**

- Saves money (Infrastructure, SW, and people)

**Much lower analytics latency**

- Low to no latency with transactional data

A **Data Gravity** approach performs analytics where the majority of the data originates

**By far, the best place to analyze Z data is on IBM Z**

# Db2 Analytics Accelerator on IBM Z

## Fully integrated software appliance

- Extends Db2 on Z "in the box"

- Runs full SW stack in a **Secure** Service Container (SSC) LPAR

- "Download & go" – Very easy to deploy + update

## Leverages IBM Z infrastructure

- z13 upwards and LinuxONE

- Leverage unused capacity  or  dedicated stand-alone system

    - Single-node:  2 – 40 IFLs & 4TB memory      Multi-node 30 – 190 IFLs & 20TB memory

- Leverage existing Z HA/DR solution - GDPS/Metro integration

# Deployment Considerations
*Accelerator Instances 'On IIAS' and 'On Z'*

– Single vs. Multiple
Accelerators "per box"

**Db2 Analytics Accelerator
On IIAS (e.g., full rack)**

**Db2 Analytics Accelerator on Z**

**Db2 Analytics Accelerator on Z**

**Db2 Analytics Accelerator on Z**

**Db2 Analytics Accelerator on Z**
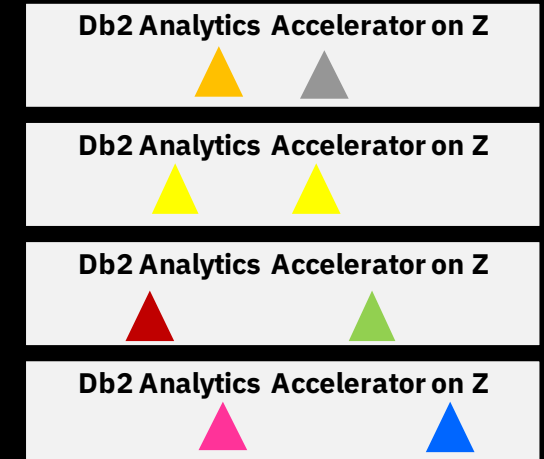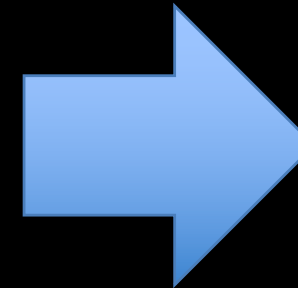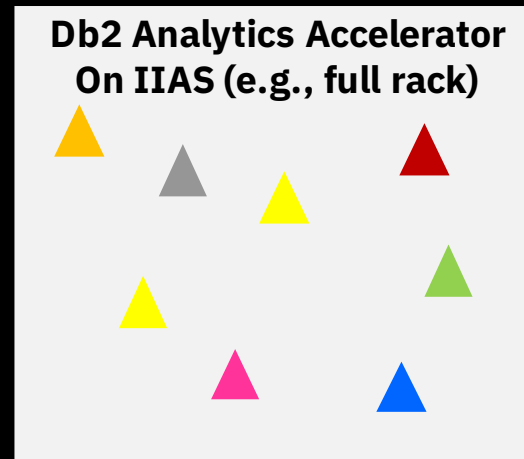
– Consider splitting up large accelerators to smaller instances, for example to ...
  - Isolation of workloads, selective support of HA/DR, address LOB-/workload specific requirements, more flexible management (e.g., maintenance/update/...)

– Consider consolidating multiple accelerators on the same CPC, for example to ...
  - Reduce cost by sharing IFLs, flexible DEV/TEST environments, flexible resource adjustments between accelerators

– Consider creating additional accelerator instances, for example to help with
  - Update or new feature testing, support for new workload development, sandboxes,...

# Db2 Analytics Accelerator Version 7
## Significant steps in continuous development
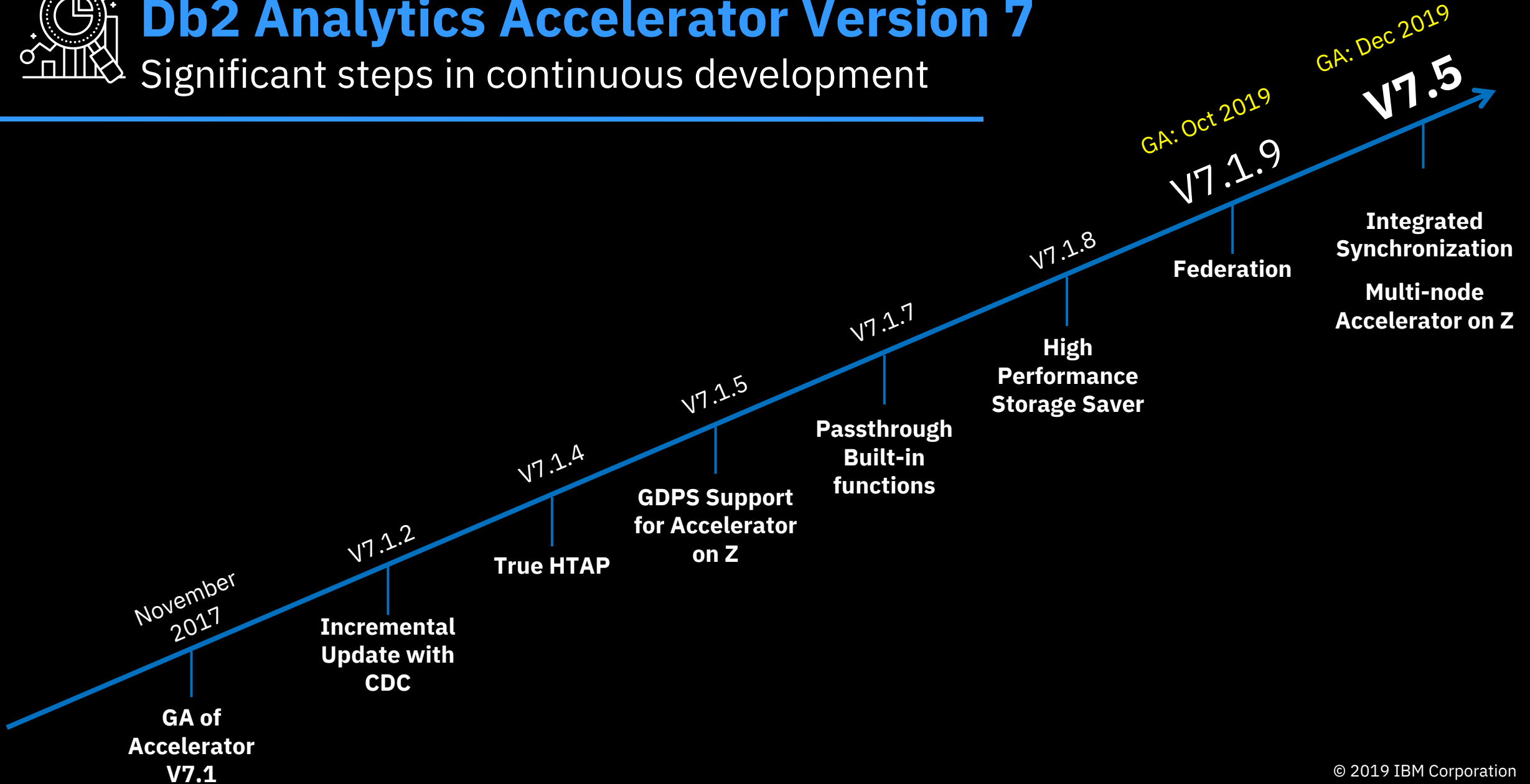
November 2017

**GA of Accelerator V7.1**

V7.1.2

**Incremental Update with CDC**

V7.1.4

**True HTAP**

V7.1.5

**GDPS Support for Accelerator on Z**

V7.1.7

**Passthrough Built-in functions**

V7.1.8

**High Performance Storage Saver**

GA: Oct 2019

V7.1.9

**Federation**

GA: Dec 2019

V7.5

**Integrated Synchronization**

**Multi-node Accelerator on Z**

# Agenda

- IBM Db2 Analytics Accelerator (a.k.a. IDAA) - Motivation
- What's New 2019 - Documentation
- **What's New 2019 - V7.1**
- What's Coming 2019 - V7.5

IBM

# IBM Db2 Analytics Accelerator Version 7.1
## *Continuous delivery – Fixes and new features approx every other month*

**Accelerator on IBM Z**

**Accelerator on IIAS (Appliance)**

### Enhancements in 7.1.6 (Feb 2019)

- **Encryption of data-in-motion**: Network traffic optionally encrypted
- **Call Home for Accelerator on IIAS**, via HMC

### Enhancements in 7.1.7 (April 2019)

- **High Performance Storage Saver (HPSS)** – Technical Preview
- Support for more **pass-thru built-in functions** (e.g. REGEXP*)
- **Improved compression:** Full table reloads, alter key, or archive actions
- Support for **Partition reloads of replicated tables**

# High Performance Storage Saver
*Storing historical data in Accelerator only*

**?** *Query from Application to either Active only or Active and Historical*

**Active**

Part #1

**Db2 Analytics Accelerator for z/OS**

Part #1

*No longer present on DB2 Storage*

| Part #2 | Part #3 | Part #4 |
| Part #5 | Part #6 | Part #7 |

**Historical**

---

**Support for partitioned-by-range tables, for example:**

Time-based partitions, where only the recent partitions are used in a transactional context (frequent data changes, short running queries), but the entire table is used for analytics, regulatory/audit purposes, etc. (data intensive, complex queries)

# Pass-through support for Db2 Warehouse built-in functions
*Enhancing Db2's native SQL Capabilities with the Accelerator*

- Many built-in functions that are supported by the underlaying DBMS (Db2 Warehouse) in the Accelerator are not supported natively by Db2 for z/OS (yet).

- Some functions can now be used in SQL queries routed to the Accelerator with the new Built-In-Function (BIF) Pass-through support
  - Db2 for z/OS is "aware" of the Accelerator, **when parsing** the SQL statement.
  - If a BIF is referenced, which is only available on the Accelerator, the Db2 for z/OS parser validates the signature and allows its invocation within the rewritten SQL
  - Db2 for z/OS still needs to validate parameters, return types, …. Therefore limited to commonly requested BIFs

- Accelerator V7.1.5: First set of supported BIFs (OLAP functions):
  - CUME_DIST, FIRST_VALUE, LAG, LAST_VALUE, LEAD, NTH_VALUE, NTILE, PERCENT_RANK, RATIO_TO_REPORT

- Added in V7.1.7:
  - Aggregate functions: CUME_DIST, PERCENT_RANK
  - Scalar functions: REGEXP_COUNT, REGEXP_INSTR, REGEXP_LIKE, REGEXP_REPLACE, REGEXP_SUBSTR

- Db2 12 only, FL504

# IBM Db2 Analytics Accelerator Version 7.1
## *Continuous delivery – Fixes and new features approx every other month*

**Accelerator on IBM Z**

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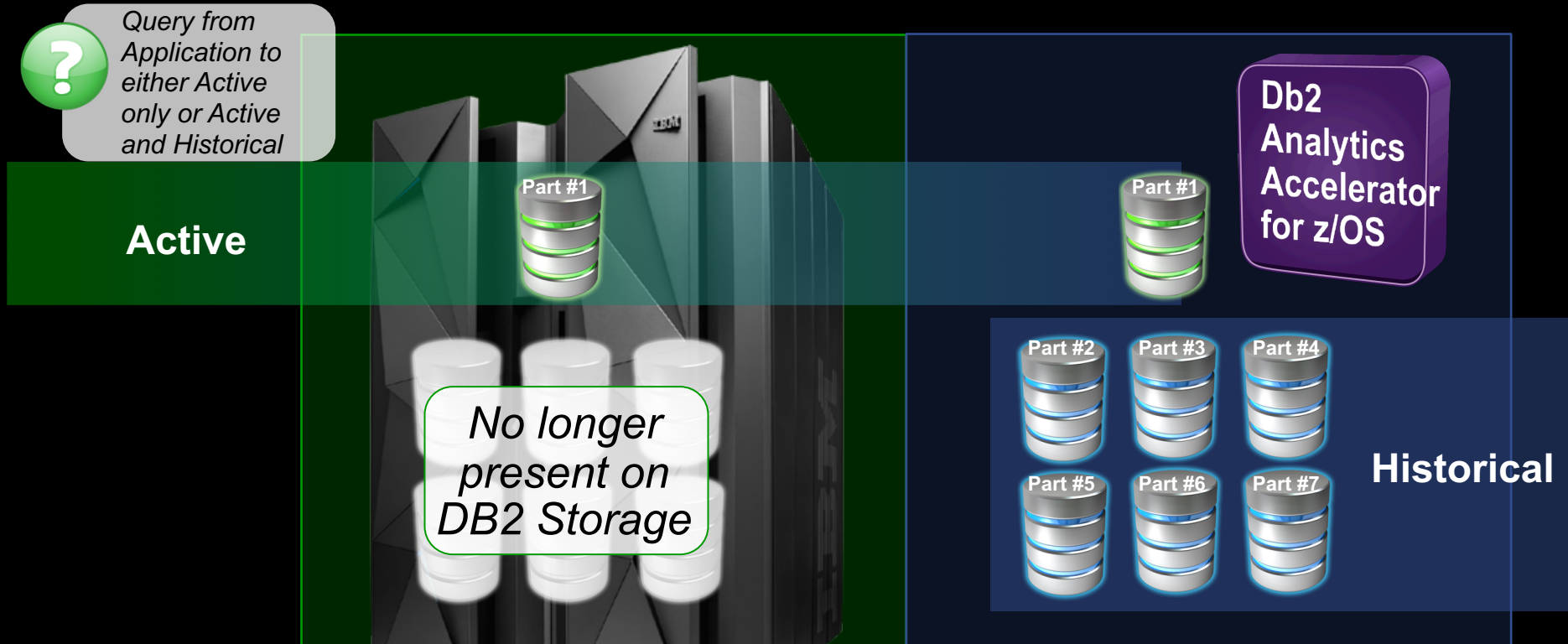
### Enhancements in 7.1.8 (June 2019)

- High Performance Storage Saver (HPSS) – GA Release

- Improved compression (Initial load, Re-load, Alter key, Archive)

- Mapping of Db2 for z/OS REAL column type to DOUBLE on Accelerator

- Call-back interfaces for external load programs

- Several Stability and User Experience Improvements, e.g.

    - Query performance: automatic column-group statistics

    - Improved table size display

    - Improved fetch performance for queries with large resultsets

- Integrated Synchronisation: Early Support Program

# IBM Db2 Analytics Accelerator Version 7.1
## *Continuous delivery – Fixes and new features approx every other month*

**Accelerator on IBM Z**

**Accelerator on IIAS (Appliance)**

### Enhancements in 7.1.9 (Oct 2019)

- Federation
  - Enable read access to all data (from multiple Db2 subsystems) in one Accelerator through a single DB2 subsystem
- "True" HTAP (Db2 z/OS 12 enhancements)
  - Support for **static** SQL
  - Shorter wait times with **object level wait**
- Workload balancing between Accelerator V5 and V7 (Db2 z/OS 12)
- Load performance improvements
- Software Update
  - Show software update installation progress
  - Essential-only install option to reduce SW update time
  - SW Update robustness and stability

# IBM Db2 Analytics Accelerator Version 7.1
## *Continuous delivery – Fixes and new features approx every other month*

**Accelerator on IBM Z**

**Accelerator on IIAS (Appliance)**

### Enhancements in 7.1.9 (Oct 2019)

- Several Stability and User Experience Improvements
  - Improved system level space reporting
  - Warning for tables with missing statistics
  - Diagnostics (Save Trace improvements)
  - Compression: Autogrooming to compress uncompressed rows
  - Accelerator on Z: Isolation and limitation of various accelerator storage areas to limit impact of running out of disk space
  - Replication using CDC: Reduced memory consumption on Accelerator to enable replication for up to 10 paired Db2 subsystems in parallel
  - Improved query performance when using TIMESTAMPDIFF function

# "True HTAP" support for static queries

- HTAP support in the Accelerator removes the need to manage the replication latency between DB2 and the Accelerator.

- Ability to delay the execution of queries until the latest incremental updates have been applied.

- Guarantees that any change committed on Db2 will be seen by a subsequent query executed on the Accelerator.

- Dynamic SQL support available since V7.1.4

- Static SQL support added with V7.1.9
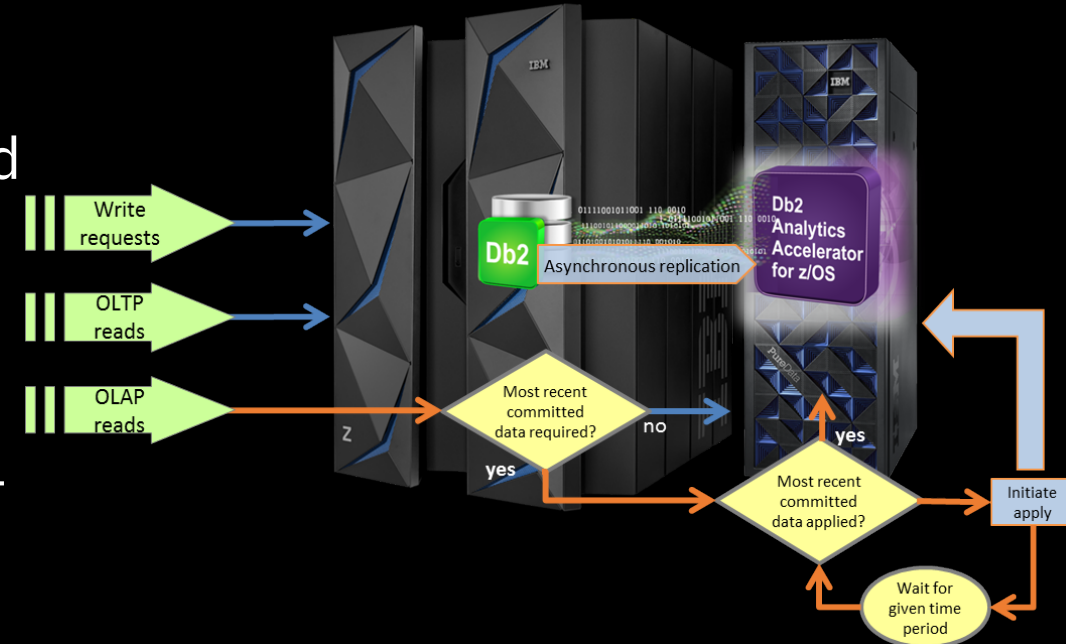
- Prerequisites:
  - Db2 12 with APAR PH14116
    - Adds a new column ACCELERATION_WAITFORDATA to SYSACCEL.SYSACCELERATEDPACKAGES

# "True HTAP" support for static queries (*contd.*)

- New bind option: ACCELERATIONWAITFORDATA
  - For BIND, BIND COPY and REBIND PACKAGE
  - For BIND DEPLOY for SQL PL procedure package
  - QUERYACCELERATION bind option must be used in combination

- New option: ACCELERATION WAITFORDATA
  - For CREATE/ALTER PROCEDURE/FUNCTION for SQL PL procedures and SQL PL scalar functions

- Statement level monitoring counters in IFCID 401
  - E.g. Accumulated wait time, Accumulated number of expired statements for that wait time

# "True" HTAP – Object Level LRSN

- **Queries do not wait for non-relevant changes**

  - DB2 sends LRSN for the objects referenced in the query to accelerator

  - Example: UPDATE AAA; COMMIT
    UPDATE BBB; COMMIT
    SELECT X FROM AAA        => Waits for AAA **only**

  - Advantage: Shorter wait times as with previous approach

- **Object granularity is on the table space level**

  - Multiple tables in a single table space will have the same LRSN regardless of which table is updated

  - Recommended to have a single table per table space (UTS)

- Prerequisites: Db2 v12 FL 505 with APAR PI98126 and Accelerator v7
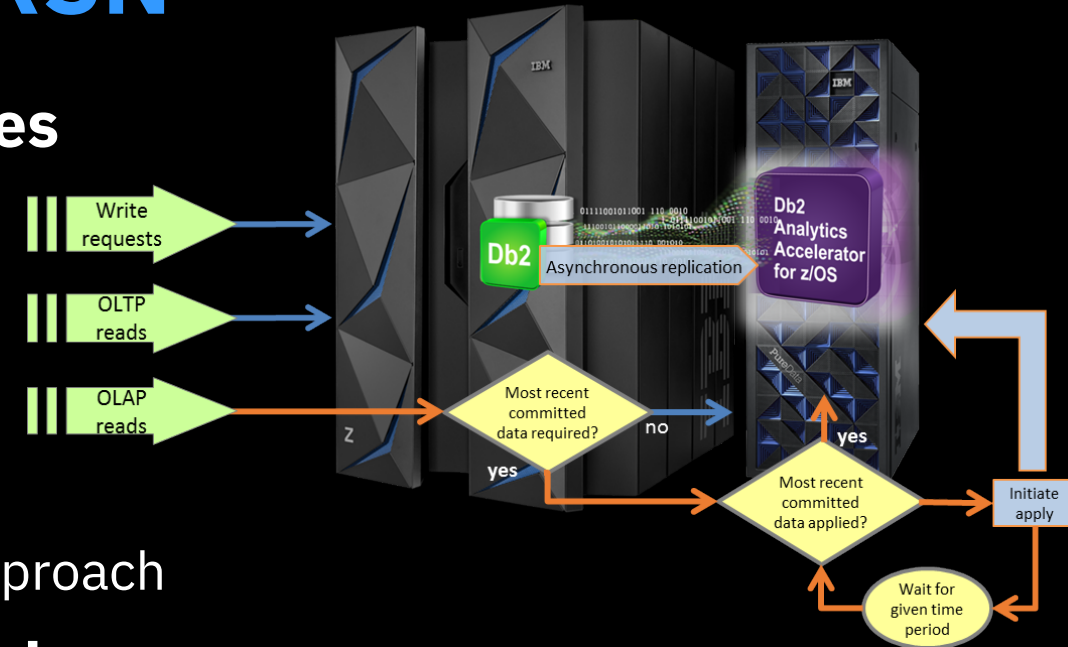
# Accelerator "on Z" setup via JSON configuration files

## Up to 7.1.8:

1. Define and activate SSC LPAR via HMC
2. Upload Accelerator image with SSC installer
3. Use the Accelerator Admin UI:
   - Complete network / storage settings in UI panels
   - Apply settings and initialize the Accelerator
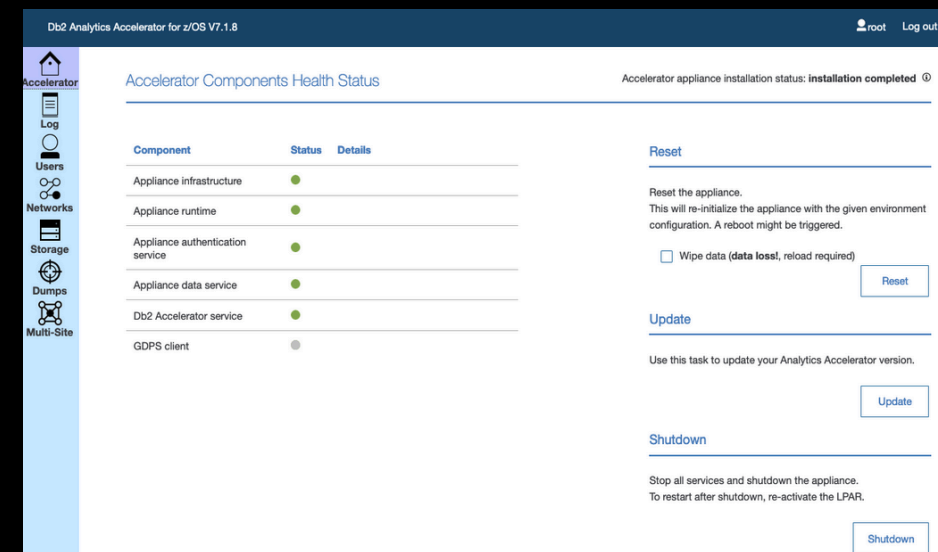


## With 7.1.9:

1. Define and activate SSC LPAR via HMC
2. Upload Accelerator image with SSC installer
3. Using the Accelerator Admin UI:
   - Upload a JSON configuration file containing network and storage settings
   - Apply settings and initialize the Accelerator



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# Sample Config File: *Simple, Single-Node Accelerator*

```
1  ▾ {
2        "accelerator_name": "igor01",
3        "accelerator_description": "SAMPLE-single-node",
4        "accelerator_type": "single-node",
5        "db2_pairing_ipv4": "10.1.1.101/24",
6        "network_interface_bindings": {
7           "mgmt_nw": "activation-profile",
8           "db2_nw": "osa-0A-p0"
9        },
10 ▾     "runtime_environments": [
11        {
12           "cpc_name": "CPC001",
13           "lpar_name": "IGOR01",
14           "network_interfaces": [
15              {
16                 "name": "osa-0A-p0",
17                 "device": "0.0.0a00",
18                 "port": "0"
19              }
20           ]
21        }
22     },
23     "primary_storage": {
24        "boot_device": {
25           "type": "dasd",
26           "device": "0.0.5e29"
27        },
28        "runtime_devices": {
29           "type": "dasd",
30           "devices": [
31              "0.0.5e25",
32              "0.0.5e26"
33           ]
34        },
35        "data_devices": {
36           "type": "dasd",
37           "devices": [
38              "0.0.5e14",
39              [
40                 "0.0.5e80",
41                 "0.0.5e8f"
42              ]
43           ]
44        },
45        "hyperpav": "auto"
46     }
47  }
```

- Complete example for a basic accelerator:
  - Network interfaces for administration and Db2 acceleration
  - ECKD (DASD) storage for the various required storage pools

- General accelerator properties

- Runtime environments
  - Specify each LPAR the accelerator should run in
  - Network interfaces valid in this LPAR

- Storage definition
  - "primary_storage" is the set of storage devices used for the initial installation of the accelerator

# Agenda

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- What's New 2019 - V7.1
- **What's Coming 2019 - V7.5**

# Introducing Db2 Analytics Accelerator Version 7.5
## Unprecedented enterprise-grade transactional and analytic processing

**Db2 Analytics Accelerator Version 7.5 delivers:**

- A wider range of scalability for Db2 Analytics:
**Multi-node** Accelerator on IBM Z deployments
  - From very small to very large


- **Integrated Synchronization (a.k.a. InSync)**
A new advanced data synchronization technique


**Announcement:**     October 15, 2019
**GA:**     December 6, 2019

Db2

Db2 Analytics Accelerator for z/OS

# Very Large Accelerator Deployments
*aka Multi-Node Deployment*

**TechPreview in V7.1.9**

**GA in V7.5**

Background

- IIAS accelerator deployments are available in different sizes, ranging from M4002-002GoD (1/3-rack "growth-on-demand" with 3 capped server nodes) to M4002-020 (double-rack with 13/14 server nodes)

- In V7.1  Z accelerator deployments are supported from very small (2 IFLs, 64 GB) to large (40 IFLs, 4 TB)

  - This extends the offering at the low end –> significantly smaller deployments than on IIAS are possible and valuable

  - It fully covers the majority of actual accelerator deployment sizes

  - But it represents a limitation for growth at the high end, since 35 IFLs / 2.5 TB provide performance/capacity "comparable" to M4002-003

➔ **The new "Multi-Node Deployment Option on IBM Z" will close that gap and is designed to scale up to performance/capacity comparable to M4002-020**

# Accelerator on IBM Z – Deployment Options

| SINGLE-NODE | MULTI-NODE |
|---|---|
| 1 Accelerator = 1 LPAR | 1 Accelerator = 6 LPARs on the same CPC |
| 2 – 40 IFLs, 64 GB – 4 TB memory<br>(32 GB per IFL minimum requirement) | 30 – 190 IFLs, 1.25 TB – 20 TB memory (total)<br>(limited by maximum #IFLs on single CPC – z15 → 190) |
| Accelerator size can be flexibly adjusted within full range without data reload | |
| 1 LPAR for combined head + data | 1 LPAR group with absolute capping at total #IFLs |
| | 1 LPAR for head: 30 IFLs (shared), 256 GB memory |
| | 5 LPARs for data: (total #IFLs / 5) IFLs (shared), 256 GB – 4 TB memory |
| Ideal for "white space" deployments in existing CPCs | Ideal for deployment on a dedicated IBM Z or LinuxONE system (can be shared between multiple accelerators and/or other Linux on Z workloads) |
| Recommended up to 20 TB uncompressed user data | Recommended up to 100 TB uncompressed user data |
| Less if special performance requirements exist, e.g., IU latency, query elapsed time,... | |
| More in special cases like online archives | |

# Accelerator on IBM Z – Scaling Targets    ,c' = IFL

**Netezza**

| N3001-02 | N3001-05 | | N3001-10 | | | | N3001-20 | |
|---|---|---|---|---|---|---|---|---|

**Accelerator on Z Single-node**

| ← 1 → |
|---|
| 2c – 40c |
| 0.125 TB – 4 TB |

**This chart shows design goals and preliminary data.**

Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision.
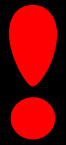
**Accelerator on Z Multi-node**

preliminary

| 6 34c 3TB | 6 50c 4.5TB | 6 71c 6TB | 6 85c 7.5TB | 6 108c 9TB | 6 125c 10.5TB | 6 145c 12TB | 6 165c 13.5TB | 6 190c 15TB |
|---|---|---|---|---|---|---|---|---|

1fr T01 Max34 → 1fr T01 Max71 → 1fr T01 Max108 → 2fr T01 Max145 → 2fr T01 Max190 →

**Accelerator on IIAS**

| 3 72c 1.5TB | 4 | 5 120c 2.5TB | 6 | 7 168c 3.5TB | 8 | 9 | 10 | 11 | 12 | 13 312c 6.5TB |
|---|---|---|---|---|---|---|---|---|---|---|

1fr M4002-003/006/010 → 2fr M4002-020 →
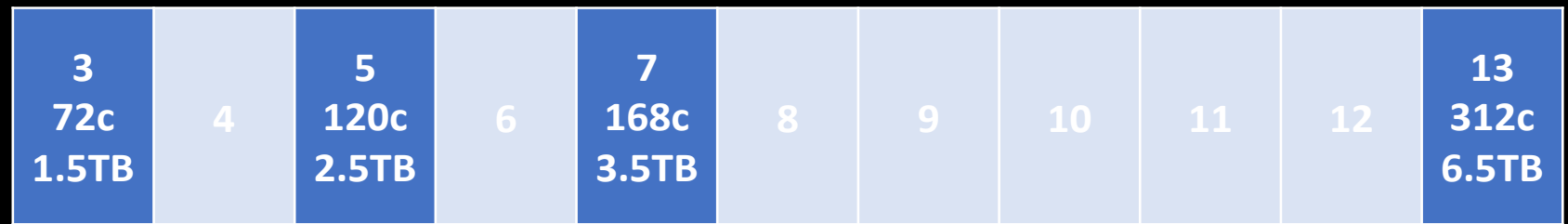
# Integrated Synchronization – "InSync"
# Deeper integration of Db2 and Accelerator

- Integrated, low-latency data coherence protocol between Db2 for z/OS and the Db2 Warehouse engine inside the Accelerator
  - zIIP enabled
  - Complete application transparency
  - Enterprise-grade HTAP enabler

- Allows better handling of non-logged changes to Db2 tables
  - Future item to be able to replicate selected non-logged utility actions, such as load with dummy partition or reorg discard full partition

- Simplified installation, packaging, administration, upgrade

# Integrated Synchronization - Db2/Z to-Accelerator data synchronization

Applications executing
I/U/D Statements on replicated tables

Accelerator Users enabling
tables for replication

Table
T1

Table
T2

Table
T3

**Stored
Procedures**

**Db2**

**Db2 Log**

**Log Data
Provider**

Process control

**Log Data**

**Accelerator
Server**

Table
T1

Table
T2

Table
T3

**Log data
processor**

Staging
area

**Db2
Analytics
Accelerator
for z/OS**
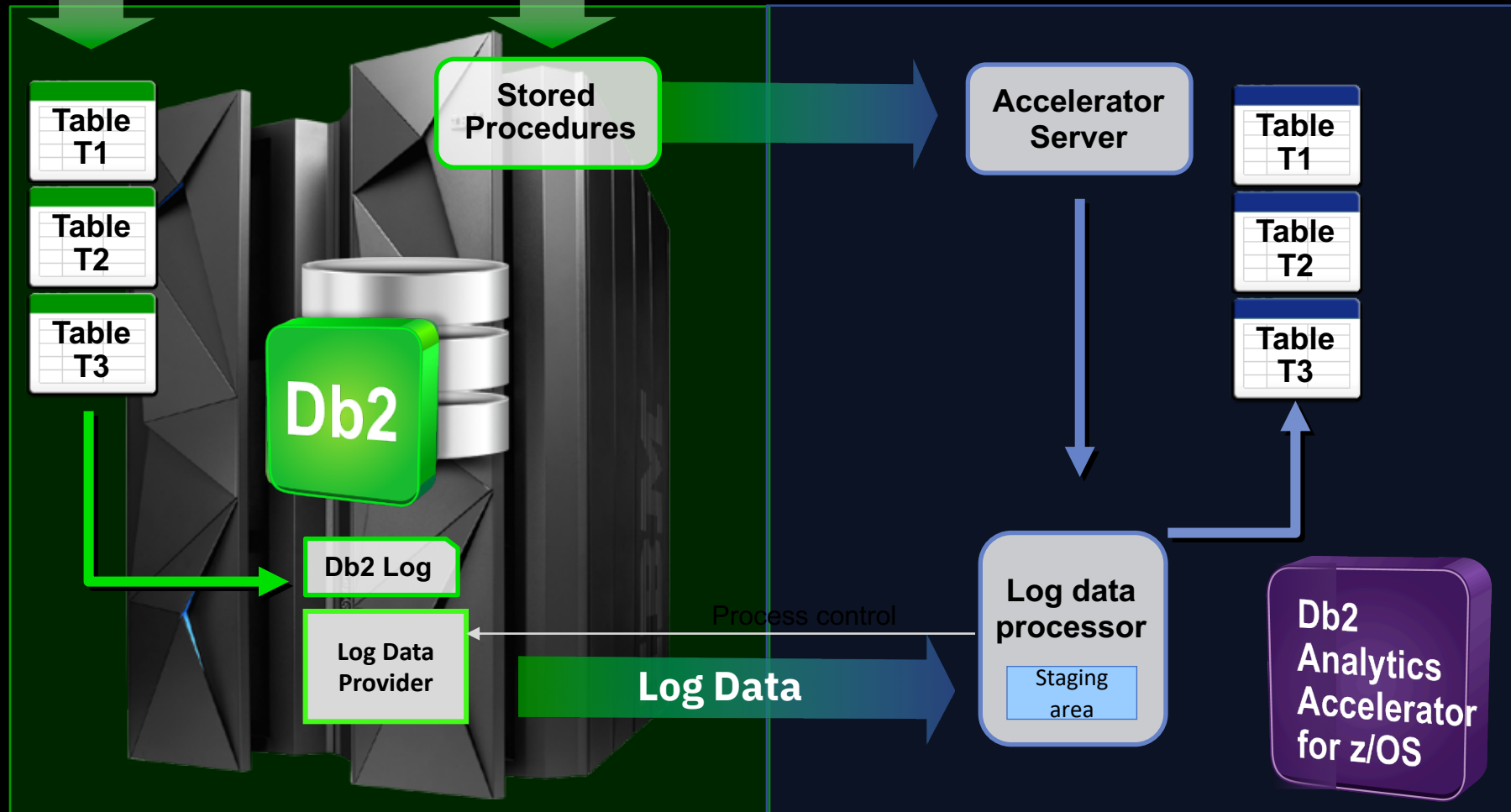
# Initial Performance Test Environment

**Hard- and Software Configuration**

- 6 z/14 GCPs and 2 ZIIPs
- 96G Memory
- 10Gbit network to Accelerator

- z/OS 02.02.00
- Db2 for z/OS v12
- M4002-010 (IIAS 1-rack)

**Test Workload and Test Case**

- Total of 500 partitioned tables with concurrent insert/updates.
  - 50 Java clients committing every few seconds
- Max Db2 transaction rate with distributed Java test case
  - 64.4K rows/second inserted
  - 64.4K rows/second updated

- Scenario 1: Capture and apply with **concurrent Db2 transactions**
- Scenario 2: Capture and apply the **pre-populated log**

# CP and %zIIP-Eligible Comparison of InSync and CDC (Prepopulated logs)

CPU Usage comparison between Integrated Sync and CDC at Log read side
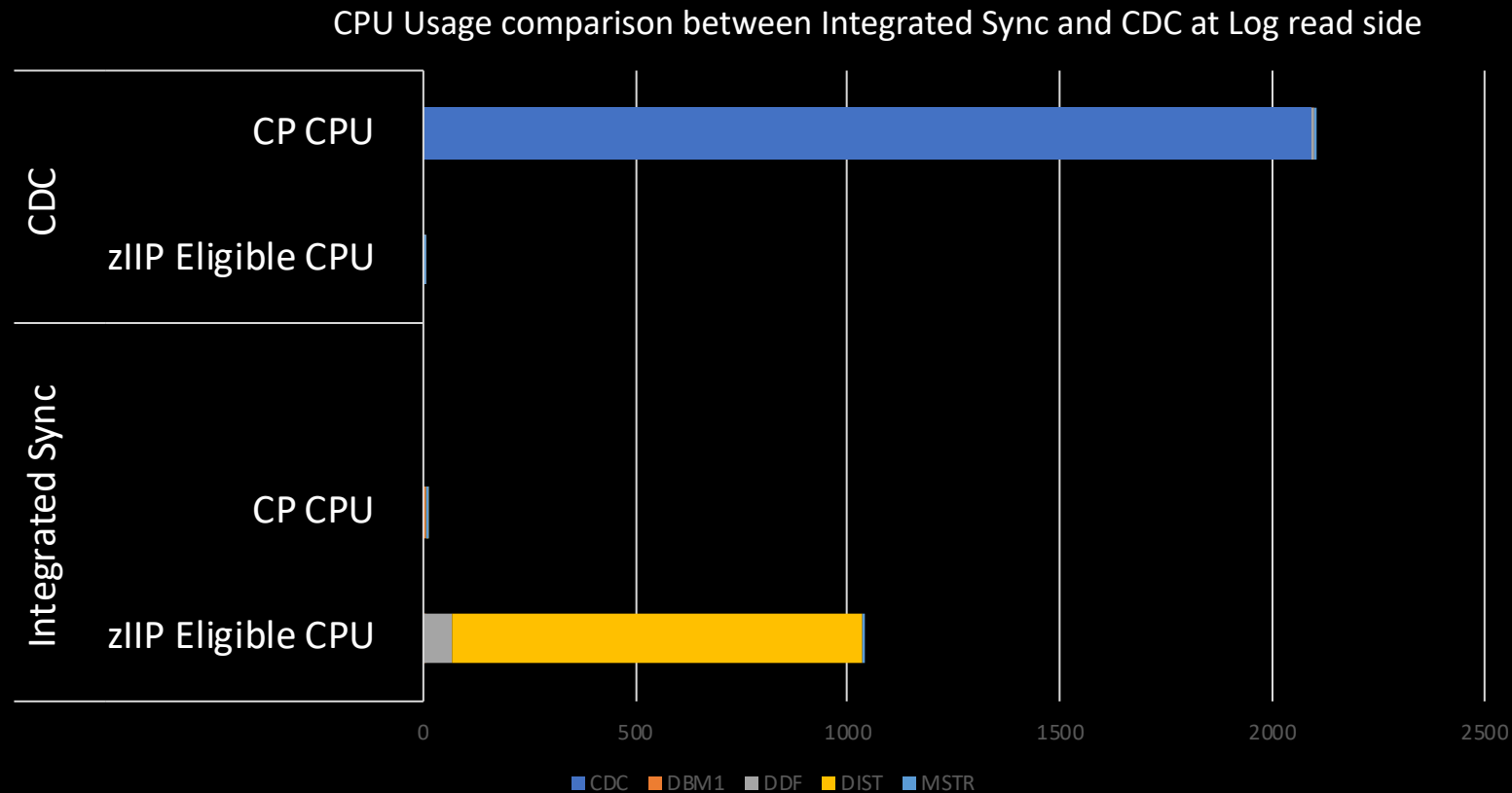


**InSync uses about 49% of CPU time vs. CDC for the same work:** CDC 2114 seconds vs InSync 1076 seconds
**Combined InSync work across all address-spaces is 98% zIIP offloadable**

# Performance Summary*

- CPU Usage
  - **Up to 49% CPU time reduction** for log reading vs. CDC
  - **InSync log reading is 99% zIIP eligible** (counted in DIST address space)
  - All this **despite massive filtering** of "out-of-scope" log records for test!

- Latency and Throughput
  - **Significant reduction in replication latency** and **big improvement in replication throughput**
    - CDC: Latency increased during ~1 hour test timeframe up to 20 min.
    - InSync: Maximum latency during ~1 hour test timeframe of 10 sec

- HTAP
  - With InSync, **HTAP query scalability is significantly improved.**
    - No more impact on replication throughput and latency
  - First lab measurements **show significant reduction in query wait times**
    - Average wait time dropped from 51 seconds to 6 seconds across a total of 89 queries
    - Average latency of the workload dropped from 50 seconds to 3
  - Expect WAITFORDATA to be applicable to a much broader set of use-cases with InSync

* Results of first internal tests with pre-populated logs scenario

# Mixed CDC and Integrated Synchronization environments

- For each Db2 connection to an Accelerator ("pairing") you can decide whether to enable Incremental Update based on CDC or based on Integrated Synchronization (using Configuration Console)
  - One Accelerator supports both Incremental Update methods
  - From the same Db2 subsystem data can be replicated to one Accelerator with CDC and to another one with Integrated Synchronization
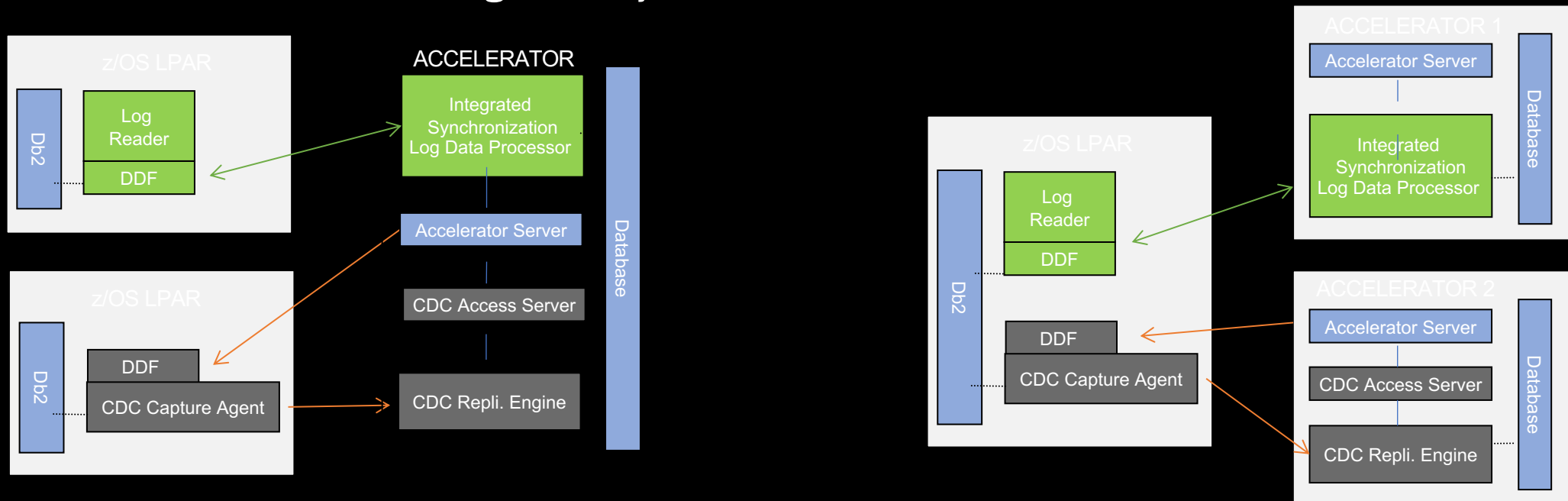
# Prerequisites and setup

- Prereqs:
  - Accelerator V7.1.8 or V7.1.9   + Join Early Support Program
  - Db2 12 for z/OS with APAR PH06628 PTF UI63356 installed (Db2 needs to be recycled)
  - Db2 running in function level V12R1M500
  - DDF configured with secure port access and encryption through AT-TLS
  - For data sharing: The ability to connect to a specific member, e.g. through a member-specific secure port defined with a location alias

- Setup:
  - Install Accelerator and Db2 prereqs
  - Configure DDF or data sharing group to meet the prerequisites
  - Enable Incremental Update for a Db2 subsystem using Integrated Synchronization using the Accelerator Configuration Console

# Integrated Synchronization Technical Preview

- To validate our goals for this technology, we have started an **Early Support Program**. This will allow us to work closely with our customers and gather feedback about our objectives.

- To participate in the program, a customer must accept specific terms and conditions, and provide resources:
    - Install prerequisites
    - Allow installation of ++APAR & early code and libraries
    - Separate non-production environment for Db2 Z and the Accelerator (Do not test this in production)
    - Allow remote support (via Web-Ex) together with IBM Support
    - The customer will actively test and provide feedback about the new functionality. This feedback will be integrated into further development efforts and into the Accelerator in general.
    - Allow IBM to share testing results in presentations at conferences (Either anonymized or presented by the customer)
    - Regular status calls with customers, including education provided by IBM

- Contact: dwhz@de.ibm.com

# Integrated Synchronization
## First results from Early Support Program

- Successful installation and configuration
  - Resolved initial challenges with security certificates for AT-TLS
- Successful replication of Inserts, Updates, and Deletes
  - Multiple tables with millions of rows each
  - Very low latency →
- Successful transaction rollback tests
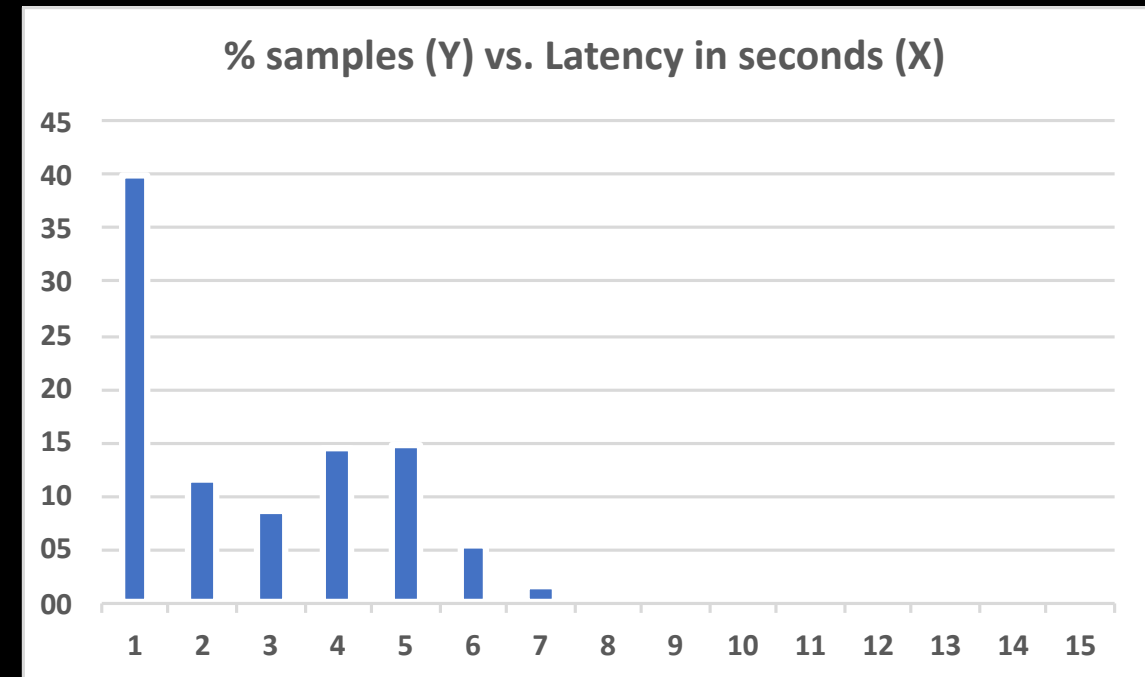
**% samples (Y) vs. Latency in seconds (X)**

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- What's Coming 2019 - V7.5
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# Solution Assurance Guides for Accelerator V7

- Essential help for planning and initial installation

- **Updated:** Solution Assurance guide for **Accelerator on IIAS**
  - Now includes chapter for Call-Home and Encryption

- **New:** Solution Assurance guide for **Accelerator on Z**
  - Platform specific guide
  - Additional instructions as IBM engineer not essential on site

- Copies available via email

# Accelerator V7 High Availability Redpaper (May 2019)

- How IBM Db2 Analytics Accelerator V7 can easily integrate into or complement existing IBM Z environments for HA and DR

- Both deployment options are covered (IIAS and Z)

- For Accelerator on Z the GDPS Metro integration is covered

- Download link:
  - http://www.redbooks.ibm.com/abstracts/redp5536.html?Open

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Chapter 6. Planning for HA and DR with IBM Db2 Analytics Accelerator on Z
Chapter 7. Summary

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Redbooks

**IBM Db2 Analytics Accelerator V7 High Availability and Disaster Recovery**

Ute Baumbach

Frank Neumann

Information Management

IBM.                    Redpaper

ISBN-10: 073845768x
ISBN-13: 9780738457680
IBM Form #: REDP-5536-00
(54 pages)
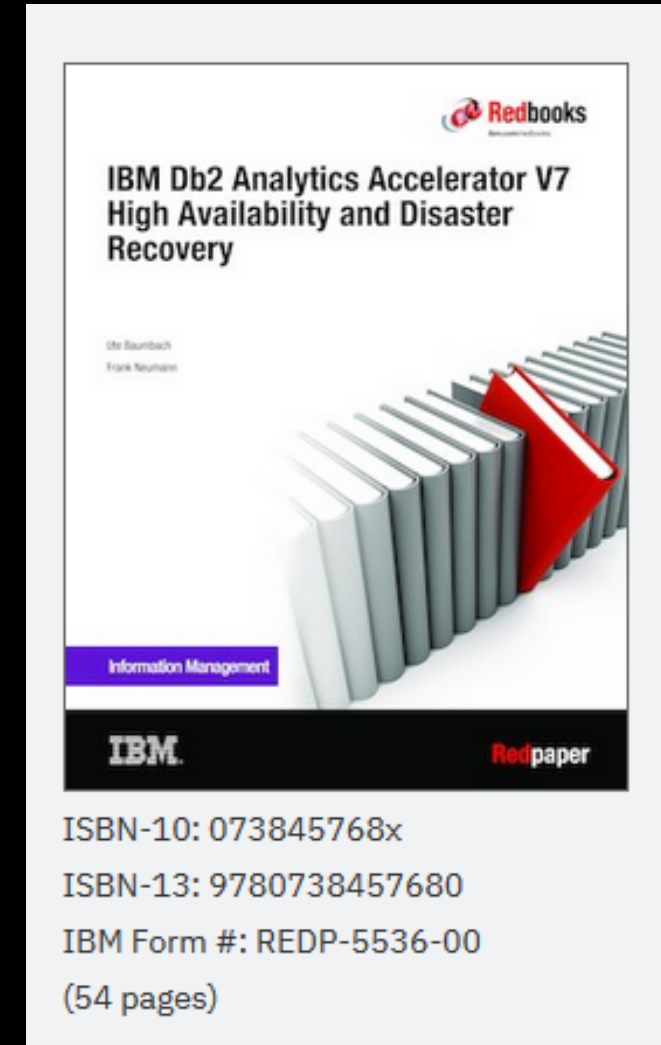
# Links

- Release Notes V7.1.7
  - http://www-01.ibm.com/support/docview.wss?uid=ibm10876158

- Release Notes V7.1.8
  - https://www-01.ibm.com/support/docview.wss?uid=ibm10885773

- Release Notes V7.1.9
  - https://www.ibm.com/support/pages/node/1075299

- V7.1 Prerequisites and maintenance
  - https://www-01.ibm.com/support/docview.wss?uid=swg27050440

- Knowledge Center
  - https://www.ibm.com/support/knowledgecenter/SS4LQ8_7.1.0/com.ibm.datatools.aqt.doc/idaa_kc_welcome.html

# Learn more
IBM Demos Site

**New Integrated Synchronization Video Now Available!**

Visit the Db2 Analytics Accelerator on IBM Demos:
http://ibm.biz/Acceleratordemos

- ## What's available?

  - Product videos - for a quick glance at product features and capabilities

  - A guided demo - provides a guided walk-through of the Accelerator's basic capabilities

  - A hands-on lab - offers a full product experience with a guided tutorial

**IBM Db2 Analytics Accelerator for z/OS**

IBM Db2 Analytics Accelerator for z/OS

IBM® Db2® Analytics Accelerator is a high-performance component tightly integrated with Db2 for z/OS®. It delivers high-speed processing for complex Db2 queries to support business-critical reporting and analytic workloads. The Accelerator transforms the mainframe into a hybrid transaction and analytic processing (HTAP) environment. It drives out cost and complexity and enables analytics on transactional data as it is generated. Leverage your business-critical data where it originates to integrate real-time insight with real-time operational decisions.

Products:

IBM Db2 Analytics Accelerator for z/OS

Videos

Watch technical experts walk you through common use cases, highlighting product features key capabilities.

| Introduction to Db2 Analytics for z/OS | Connecting the Db2 Analytics Accelerator to a Db2 subsystem | True HTAP" queries on the Db2 Analytics Accelerator |
| --- | --- | --- |
| ▶ Video          ⏱ 0hr 7min | ▶ Video          ⏱ 0hr 3min | ▶ Video          ⏱ 0hr 7min |
| Introductory video explaining the features and benefits of running the Db2 Analytics Accelerator with Db2 for z/OS. | This video outlines the easy steps to connect the Accelerator to a Db2 subsystem, define and attach an Accelerator and start/stop query acceleration. | Detailed overview of how to setup and run True HTAP queries on the Db2 Analytics Accelerator. |

# Please submit your session feedback!

- Do it online at http://conferences.gse.org.uk/2019/feedback/ID

- This session is ID

1. What is your conference registration number?

💡 **This is the three digit number on the bottom of your delegate badge**

2. Was the length of this presentation correct?

💡 **1 to 4 = "Too Short" 5 = "OK" 6-9 = "Too Long"**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

3. Did this presentation meet your requirements?

💡 **1 to 4 = "No" 5 = "OK" 6-9 = "Yes"**

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| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

4. Was the session content what you expected?

💡 **1 to 4 = "No" 5 = "OK" 6-9 = "Yes"**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

# GSE 2019 – Accelerate your analytics
## IBM Db2 Analytics Accelerator – An exciting 2019

**GSE session number: ID**

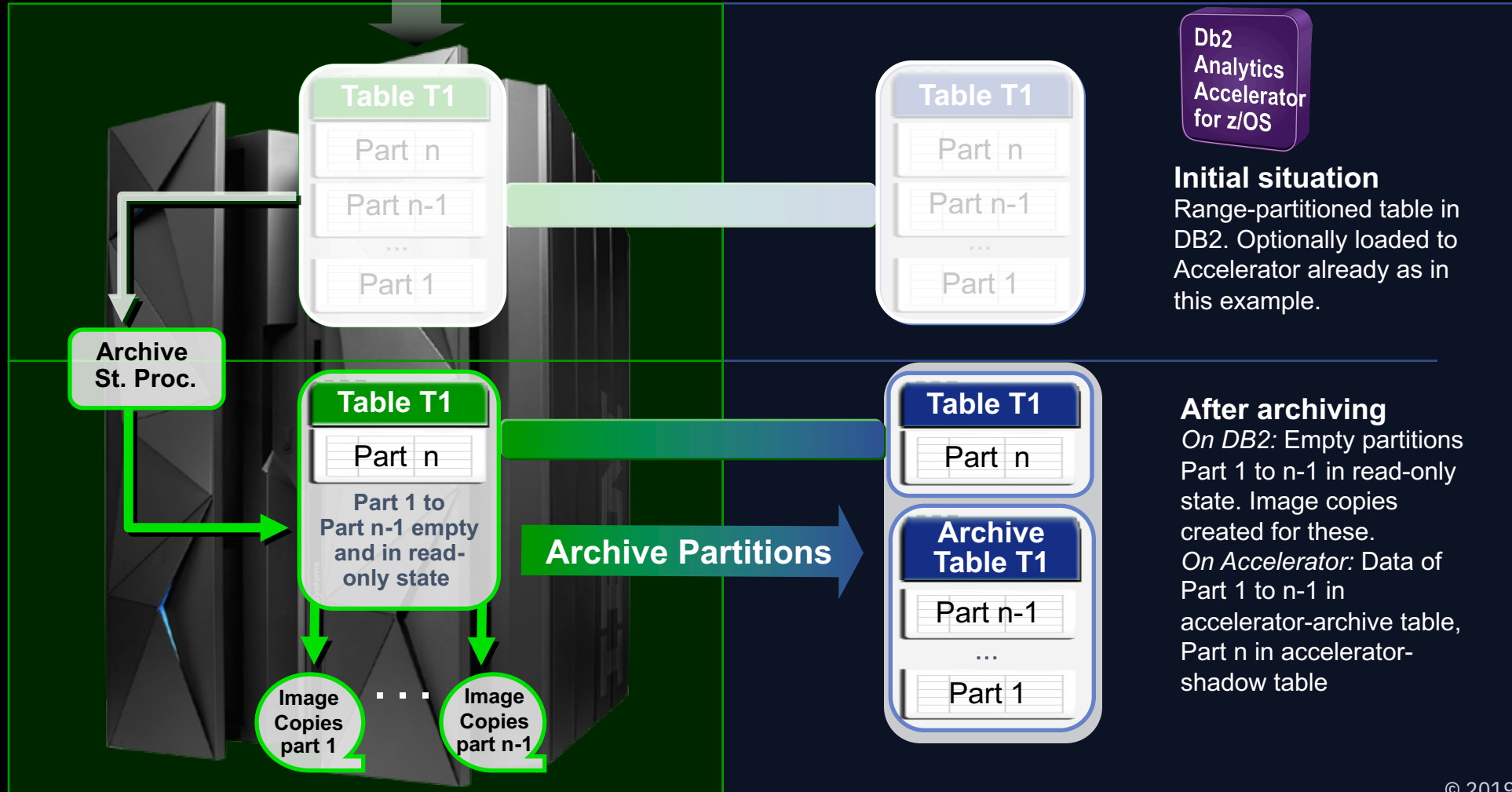**Chris Watson – IBM Analytics on IBM Z Center of Excellence**
watson@de.ibm.com  (Linked In: Christopher Watson)

Backup

# High Performance Storage Saver process

User requests to archive partitions 1 to n-1
using the ACCEL_ARCHIVE_TABLES stored procedure

**Table T1**

Part n

Part n-1

...

Part 1

**Table T1**

Part n

Part n-1

...

Part 1

Db2
Analytics
Accelerator
for z/OS

**Initial situation**
Range-partitioned table in
DB2. Optionally loaded to
Accelerator already as in
this example.

**Archive
St. Proc.**

**Table T1**

Part n

**Part 1 to
Part n-1 empty
and in read-
only state**

**Archive Partitions**

Image
Copies
part 1

• • •

Image
Copies
part n-1

**Table T1**

Part n

**Archive
Table T1**

Part n-1

...

Part 1

**After archiving**
*On DB2:* Empty partitions
Part 1 to n-1 in read-only
state. Image copies
created for these.
*On Accelerator:* Data of
Part 1 to n-1 in
accelerator-archive table,
Part n in accelerator-
shadow table

# High Performance Storage Saver (HPSS) – GA with 7.1.8

- Supported Use Cases
  - Archiving of partitions of range-partitioned tables
  - Restoring of partitions
    - Restore uses the Db2 image copy taken during archiving
  - High availability: Archiving to multiple accelerators
    - Archive to second accelerator done using the Db2 image copy taken during first archive
  - Migration: Archiving of partitions to V7 that are already archived on V5
    - Archive to V7 accelerator done from Db2 image copy taken during archive to V5 accelerator
- Not yet available:
  - Incremental Update for active (non-archived) partitions of Accelerator-archive table