

caWorld'14

Mainframe

Big Data and Analytics Keynote

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Abstract

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Traditional data management is changing rapidly. Last year, CA reorganized several product families into the Data and Analytics Business Line to create synergies for CA IDMS and CA's other data management suites, and position CA to introduce Big Data Infrastructure Management solutions. Since the release of Hadoop 2.0, distributed (Hadoop) big data environments are emerging within many enterprises and they are realizing they need a more efficient way to view, monitor and manage their ever growing and disparate data environments that can include one or more Hadoop distributions and even the mainframe. Big Data is here; let's talk about what it can do for your business.

Agenda

- 1 MARKET CHANGES AFFECTING ENTERPRISE IT INVESTMENTS IN DATA MANAGEMENT
- 2 HOLISTIC DATABASE AND BIG DATA MANAGEMENT APPROACH
- 3 CA TECHNOLOGIES – STRATEGY / VISION /ROADMAP
- 4 WRAP-UP / Q&A

Unlock the Value of Big Data

Wearable
Device Analysis



Security and
Law
Enforcement



Self-Driving
Cars



High
Frequency
Trading



Understanding
and Targeting
Customers



Optimize
Business
Processes



Delivery Route
Optimization



Supply
Chain
Optimization

Big Data – Growing Fast

Capturing and Managing lots of information

- Data volumes are doubling every year
- Organizations are storing three or more years of data

Working with many new types of data

- 80 percent of data is unstructured (images, audio, tweets, etc.)
- New analytic applications based on a next generation big data platform are reaching the market

New Personas

- Hadoop Administrator
- Hadoop Developer/Architect
- Data Scientist, etc.

Commoditized Hardware and Software

- Low-cost hardware and software environments
 - Less costly capture and exploitation of big data



Data Management - 5 Product Lines

An integrated Product Strategy for the Application Economy

Product Line	Customer needs in the application economy
z/OS Databases	<ul style="list-style-type: none"> • Customers with z/OS databases need to unleash the potential of the data held there for analytics, and need to make that data available to modern mobile apps • 24x7, High Availability operations with ability to maintain on the fly
Database Management	<ul style="list-style-type: none"> • Database Management needs to be updated and simplified so that z/OS databases can be managed more affordably and so that data across the enterprise, including that in the new NoSQL databases, can be viewed as a Logical Data Warehouse (LDW)¹
Analytics	<ul style="list-style-type: none"> • Customers with z/OS need to unleash the potential of their log data, and their files outside of formal databases by using it in modern analytic tools • Our customers lack the skills and tools needed to efficiently manage heterogeneous analytics environments across many platforms, mainframe to cloud • IT operations needs to be able to empower LoBs to use what ever diverse analytical technology will give them a business advantage
Data Compliance	<ul style="list-style-type: none"> • Our customers need to use their MF data off platform without compromising the security or compliance controls around access to that data and actually extending that same discipline to the explosion of unstructured data they are beginning to collect
Access Control	<ul style="list-style-type: none"> • To pass the audits of the future, Access Control needs to evolve to business logic that ensures that people and applications, identified by function and role, can access the data they need based on business policy

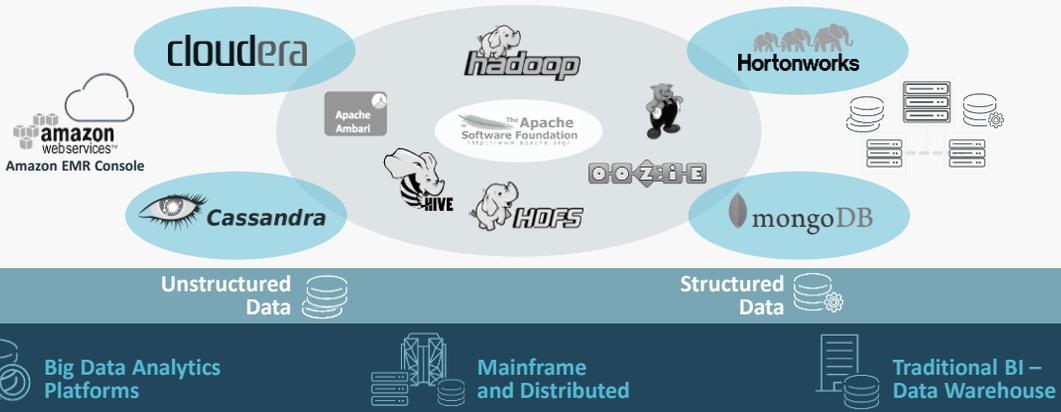
Vision
CA Data Management solutions, existing and new, should combine and interoperate to address the Data Management needs of the Application Economy

1. for more details on LDW see Gartner paper G00264326, 2015 Planning Guide for Data Management, published 3 October 2014

Enable Complex Big Data Environments

We Empower Choice

Multiple → Domains – Implementations – Environments



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1 Market Changes Affecting Data Management

Big Data is Forcing Change



- A typical mobile user checks their phone 150 times a day for updates
- Every customer interaction is generating a growing trail of data (“data exhaust”)
- Every machine that services the customer is generating data



- Vast majority of users we have talked to **combine Hadoop with other databases** to perform Big Data analysis.
- Analyst firms now tracking non-relational technologies—including those based on Hadoop and NoSQL.



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1 Market Changes Affecting Data Management

Big Data Survey Shows Significant Momentum in Big Data Adoption

Survey Category:

Is your company currently implementing, planning or considering Big Data projects (i.e. developing strategies and projects to generate more value from existing data)?

■ <1,000 SMB ■ 1,000+ Enterprise

Survey Question	SMB %	Enterprise%
Have already implemented big data projects	9	16
Have started implementation of big data projects	12	20
Plans are in place to start projects over the next 12 months	10	10
Are considering to begin big data projects next year	9	12
No plans right now but likely to start projects in future	15	12
No plans as of now	44	30
Total % of Big Data projects implemented or planning phase→	55 %	70 %

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1 Market Changes Affecting Data Management

Growth On The Horizon: Key Market Drivers

- Big Data placing new demands on traditional relational DB mgmt tools
 - > 65M voiceprints on DB's today
 - Volume of data created by U.S. companies annually can fill ten thousand Libraries of Congress
 - The overall need to simplify the data environment
 - Cloud requiring new methods of deploying databases
- The NoSQL market
 - Technology progression in Data-in-DRAM-Memory and Data-in-Flash-Memory will improve the scalability of SQL databases.
 - Applications are easier to program and require lower maintenance if SQL is used; NoSQL has greater scalability and lower technology costs for very large big-data applications

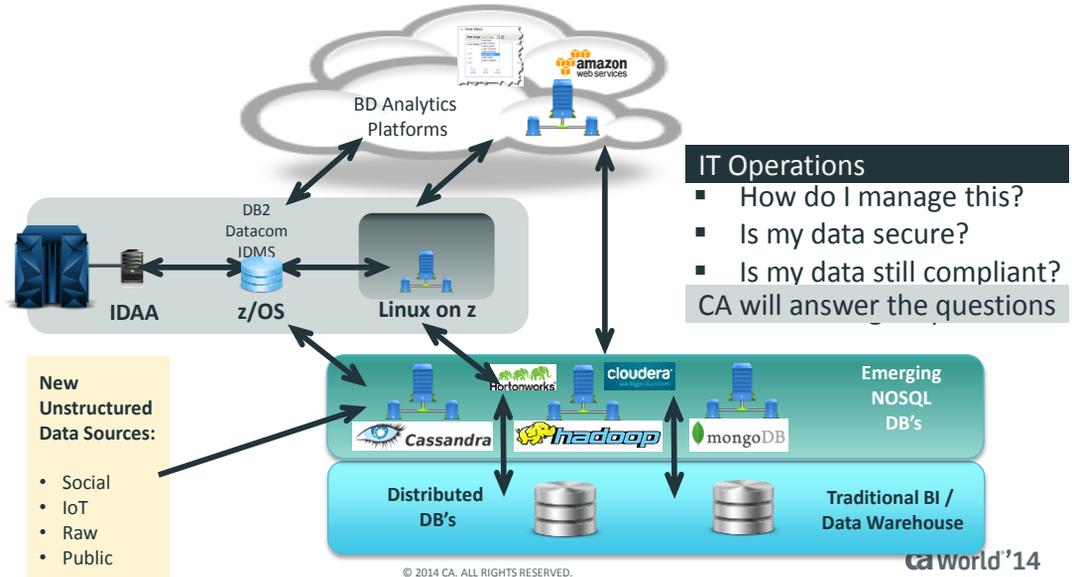
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2 Holistic Database & Big Data Management Approach

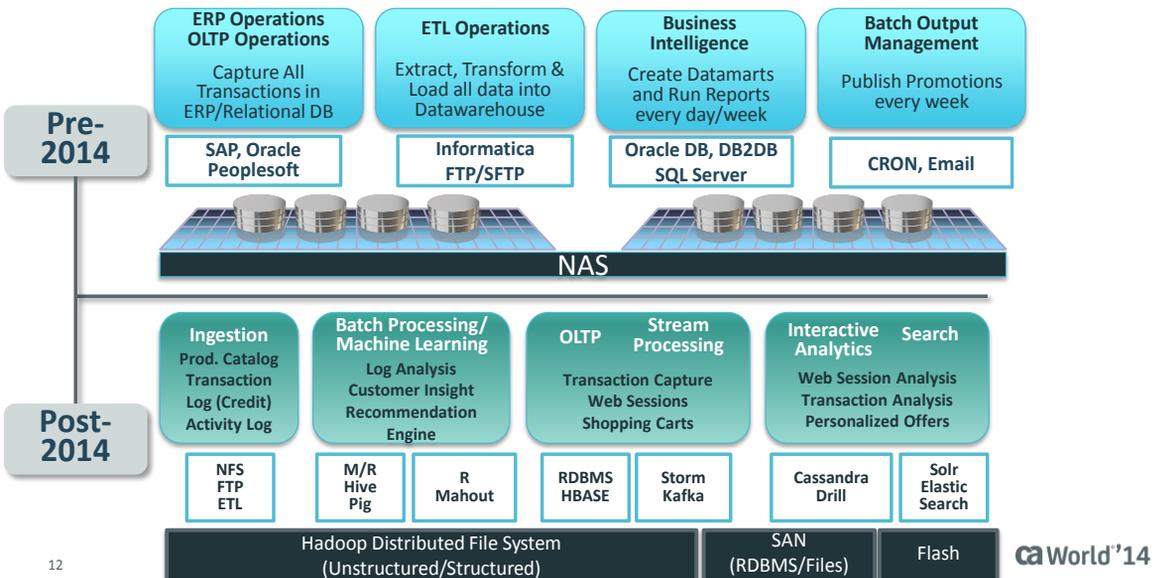
Unleashing corporate data for secure & compliant analytic transformations, from mainframe to cloud



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2 Holistic Database & Big Data Management Approach

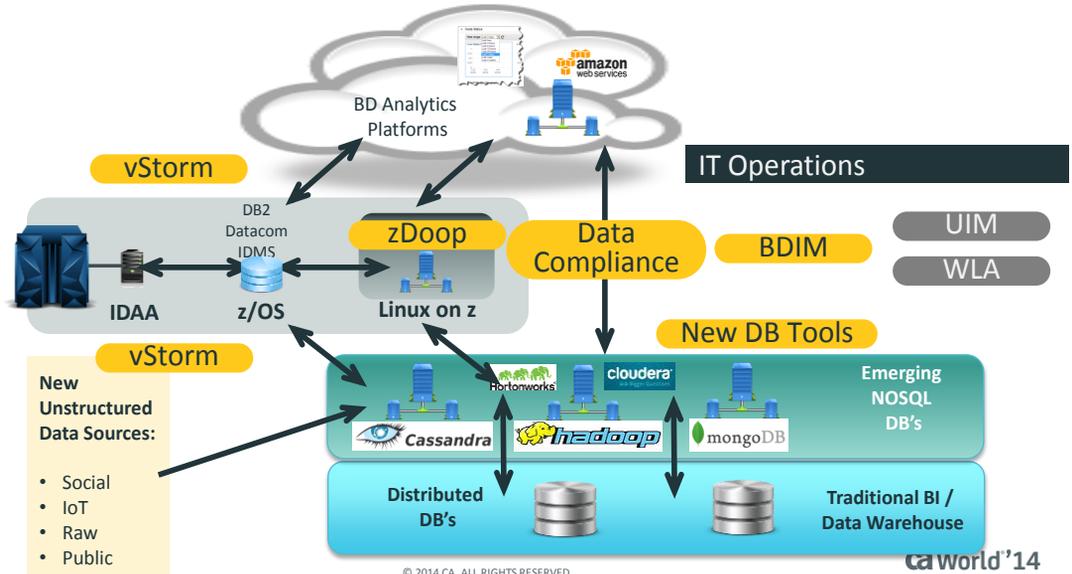
Example: Data Management Customer Needs (for Retail Store Analytics)



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2 Holistic Database & Big Data Management Approach

Unleashing corporate data for secure & compliant analytic transformations, from mainframe to cloud



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2 Holistic Database & Big Data Management Approach

As our strategy evolves, the personas evolve

Personas We Build For

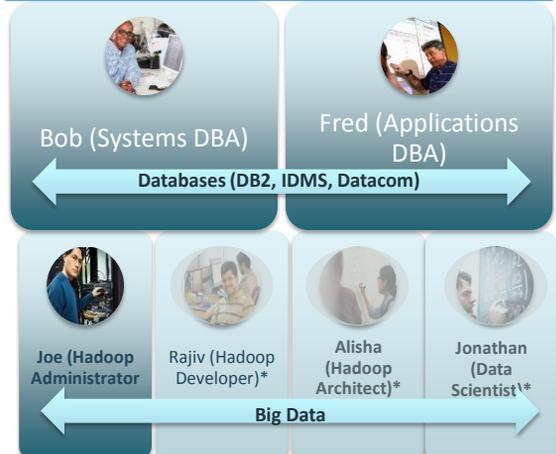
From:

- Bob, Systems DBA (experienced)
- Fred, Application DBA (experienced)

To:

- Joe, Hadoop Administrator
- Rajiv, Hadoop Developer
- Alisha, Hadoop Architect
- Jonathan, Data Scientist

Connections to Products



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* (Future BD personas)

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2 Holistic Database & Big Data Management Approach

As our strategy evolves, the personas evolve

Personas We Build For

From:

- Larry, Security Administrator (Experienced)
- Dean, Security Architect (Experienced)

To:

- Shelley, Internal Auditor
- Cathy, Chief Information Security Officer/Compliance Officer

Connections to Products



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3 Strategy / Roadmap: Big Data

A New Role in the Organization is Born

Role / Responsibilities:

- Perform day-to-day operations and support of Hadoop infrastructure
- Monitor/maintain existing clusters and provision new ones
- Integrate enterprise monitoring tools
- Analyze current workloads and perform capacity planning

Key Management Capabilities:

- Hadoop Multi-Vendor Management
- Hadoop Resource Management / Reporting
- Hadoop Process Management / Automation
- Hadoop Job Management & Monitoring
- Hadoop System Health Monitoring & Alerts

Big Data / Hadoop Administrator

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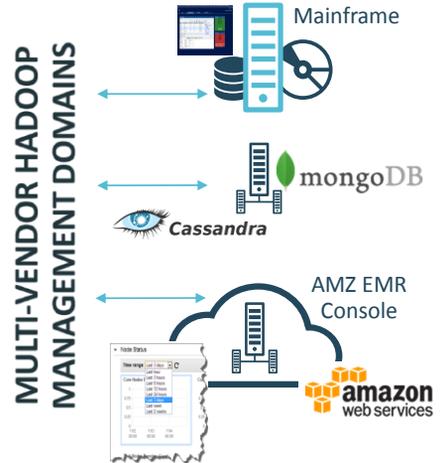
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3 Strategy / Roadmap: Big Data

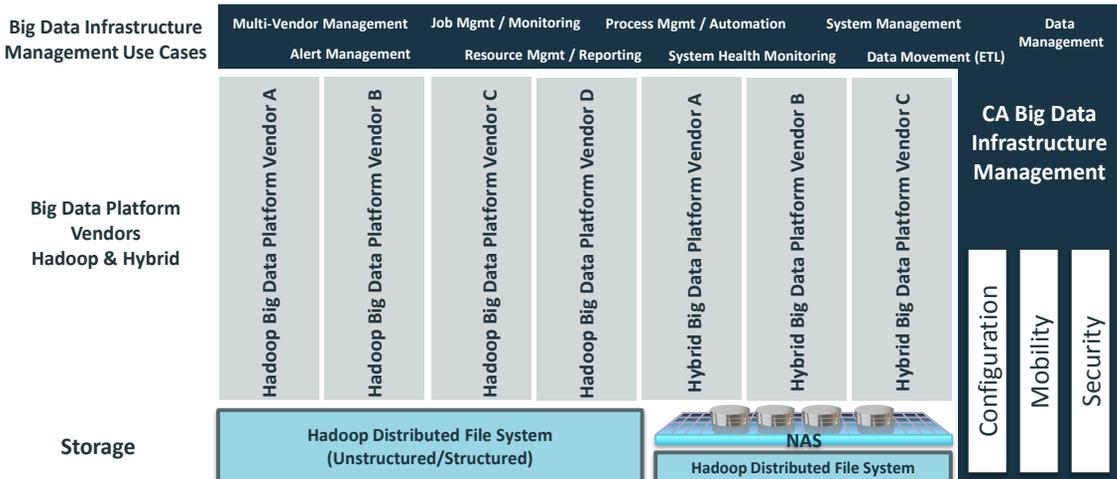
The Need to Overcome Many Challenges

- Managing complex multi-vendor big data environments
- Finding Hadoop/Big Data experts
- Understanding capacity requirements for rapidly changing business needs
- As complexity increases, manual processes are often required
- System problems are hard to isolate, downtime increases
- Unique tools and shortcomings
- Driving forces... acquisitions, department consolidations demand greater operational efficiency



3 Strategy / Roadmap: Big Data

360° Big Data Infrastructure Management Approach



3 Strategy / Roadmap: Big Data

360° Big Data Infrastructure Management Approach

CA Big Data Infrastructure Management (In Development)

SINGLE, CONSISTENT MANAGEMENT UI EXPERIENCE

(In Development)

SINGLE ACCESS POINT INTO HETEROGENEOUS ENVIRONMENT

Big Data Infrastructure Management Server

Linux / x86

Big Data Infrastructure

OPERATIONALIZE, MANAGE MULTI-VENDOR HADOOP MANAGEMENT DOMAINS

Powered by AMAPAC HADOOP

Planned →

Future →

Mainframe

3 CA Big Data Infrastructure Management

Demonstration

(Under development)

Demo Scenario:

- A global financial institution has been using Big Data technologies to bring new investment products to the market.
- They are now expanding their Big Data environment to support 6 other business units and an ever growing number of business initiatives.
- They also discovered that some of the business units had already started their own Big Data projects using different big data platforms.

Challenges:

- Revised budget remains flat and requires a 30% to 50% increase in Big Data environment utilization.
- Significant complexity associated to hosting multiple Hadoop distributions and an increasing number of business-critical Hadoop clusters to support their business applications.

ca Big Data Infrastructure Management

Summary **Monitoring** System Data Automation Auditing Kris Gaidis

Resources Sort By: Priority | Size | Capacity

Customer Insight Status: Good Actions ▾ **34** **13** **15** **25** Jobs GB Alerts Nodes More Info

Sales Cluster Status: Concerning Actions ▾ **13** **42** **0** **25** Jobs GB Alerts Nodes More Info

Dev Cluster Status: Good Actions ▾ **31** **14** **0** **1** Jobs GB Alerts Nodes More Info

Dev Cluster Status: Good Actions ▾ **0** **80** **15** **3** Jobs GB Alerts Nodes More Info

Cluster... Status: Good Actions ▾ **3** **13** **0** **25** Jobs GB Alerts Nodes More Info

Cluster... Status: Good Actions ▾ **11** **90** **13** **9** Jobs GB Alerts Nodes More Info

Cluster... Status: UNKNOWN Actions ▾ **13** **13** **12** **9** Jobs GB Alerts Nodes More Info

Cluster... Status: UNKNOWN Actions ▾ **34** **13** **15** **2** Jobs GB Alerts Nodes More Info

Cluster... Status: UNKNOWN Actions ▾ **20** **69** **10** **3** Jobs GB Alerts Nodes More Info

Competitive Research Status: Bad Actions ▾ **10** **13** **33** **12** Jobs GB Alerts Nodes More Info

Job Activity

- Job 46 State: Running Complete: 75%
- Job 47 State: Failed Complete: 34%
- Job 48 State: Completed Complete: 100%
- Job 49 State: Completed Complete: 100%
- Job 50 State: Completed Complete: 100%

System Stats CPU Usage ▾

Customer Insight

Competitive Research

Alerts 10/09/2014 - 10/10/2014 Mark all read | Unread

- Move Data To Cluster 3 Service: Apache 10/10/2014 10:30:18 PM Status: Failed: Not enough Space on Cluster
- Deletion of Expired Data Service: Apache 10/10/2014 4:01:57 PM Status: Completed With Errors
- Move Data To Cluster 3 Service: Apache 10/10/2014 1:01:47 PM Status: Failed: Not enough Space on Cluster
- Deletion of Expired Data Service: Apache 10/09/2014 4:21:57 PM Status: Completed With Errors
- Move Data To Cluster 3 Service: Apache

ca Big Data Infrastructure Management

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Job Activity

- Job 46 State: Running Complete: 75%
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- Job 48 State: Completed Complete: 100%

System Stats (Competitive Research) CPU Usage ▾

CPU Usage

Memory Usage

Alerts 10/09/2014 - 10/10/2014 Mark all read | Unread

- Move Data To Cluster 3 Service: Apache 10/10/2014 10:30:18 PM Status: Failed: Not enough Space on Cluster
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Summary | **Monitoring** | System | Data | Automation | Auditing | Kris Gaidis

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Cluster... Status: UNKNOWN Actions ▾ **20** Jobs **69** GB **10** Alerts **3** Nodes [More Info](#)

Job Activity

Job 46 State: Running Complete: **75%**

Job 47 State: Failed Complete: **34%**
Description: Exceeded configured duration. Aborted automatically...

Job 48 State: Completed Complete: **100%**

System Stats (Competitive Research)

CPU Usage

Memory Usage

Alerts 10/09/2014 - 10/10/2014

- Move Data To Cluster 3** Service: Apache Status: Failed: Not enough Space on Cluster
- Deletion of Expired Data** Service: Apache Status: Completed With Errors
- Move Data To Cluster 3** Service: Apache Status: Failed: Not enough Space on Cluster
- Deletion of Expired Data** Service: Apache Status: Completed With Errors
- Move Data To Cluster 3** Service: Apache

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Summary | Monitoring | **System** | Data | Automation | Auditing | Kris Gaidis

System | Competitive Research

Competitive Research Status: WARNING

Data On Disk: 462gb
Nodes: 25
Running Jobs: 4

Add Node

Rebalance

Restart

All Actions >>

15 Alerts

Job ID	Status	Time
Job 22	Prepare	10/9/14 8:32:23 PM
Job 29	Killed	10/9/14 11:37:23 AM
Job 14	Failed	10/9/14 9:16:48 PM
Job 28	Succeeded	10/9/14 11:53:20 PM
Job 47	Failed	10/9/14 8:58:42 PM
Job 20	Running	10/9/14 2:14:34 AM
Job 22	Running	10/9/14 9:54:57 PM

Job 47 ID: BDA_Job12345678 Status: Failed

Description
This is a job to analyze the data collected by 'Competitive Research' cluster.

Duration: 10 hours [View Definition](#)

34% Completed

Alerts | Files | Stats

- Exceeded configured duration** 10/31/2014, 1:06:06 PM
Description: The running Time for this job exceeded configured duration.
- Memory availability is lower than 100MB** 10/31/2014, 1:05:53 PM

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Summary Monitoring **System** Data Automation Auditing Kris Gaidis

System Competitive Research

Competitive Research 15 Alerts Nodes Data Activity Stats List Cards Search

Status: **WARNING**

Data On Disk: 462gb
Nodes: 25
Running Jobs: 4

Add Node
Rebalance
Restart

All Actions >>

Node 1 Status: WARNING 50 GB total	Node 6 Status: GOOD 50 GB total	Node 19 Status: GOOD 50 GB total
Node 7 Status: GOOD 50 GB total	Node 16 Status: WARNING 50 GB total	Node 3 Status: GOOD 50 GB total
Node 4 Status: WARNING 50 GB total	Node 18 Status: GOOD 50 GB total	Node 25 Status: GOOD 50 GB total
Node 28 Status: GOOD 50 GB total	Node 4 Status: WARNING 50 GB total	Node 15 Status: GOOD 50 GB total
Node 6 Status: WARNING 50 GB total	Node 13 Status: GOOD 50 GB total	Node 3 Status: GOOD 50 GB total

Node 1 CPU Usage Service Usage Disk I/O

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Summary Monitoring **System** Data Automation Auditing Kris Gaidis

System **Social Media** 15 Alerts Nodes Data Activity Stats List Cards Search

Status: **WARNING**

Data On Disk: 462gb
Nodes: 25
Running Jobs: 4

Add Node
Rebalance
Restart

All Actions >>

Create a New Node

Node Name

Cluster

Description

Node Size

Apply Cancel

Node 1 Status: WARNING 50 GB total	Node 2 Status: GOOD 50 GB total	Node 2 Status: GOOD 50 GB total
Node 2 Status: GOOD 50 GB total	Node 3 Status: WARNING 50 GB total	Node 2 Status: GOOD 50 GB total
Node 4 Status: WARNING 50 GB total	Node 2 Status: GOOD 50 GB total	Node 2 Status: GOOD 50 GB total
Node 2 Status: GOOD 50 GB total	Node 2 Status: GOOD 50 GB total	Node 2 Status: GOOD 50 GB total
Node 4 Status: WARNING 50 GB total	Node 2 Status: GOOD 50 GB total	Node 2 Status: GOOD 50 GB total

Node 1 CPU Usage Service Usage Disk I/O

Big Data Infrastructure Management

Summary | Monitoring | **System** | Data | Automation | Auditing | Kris Gaidis

System | Competitive Research

Competitive Research 15 Alerts

Status: **WARNING**

Data On Disk: 462gb
Nodes: 25
Running Jobs: 4

Add Node
Rebalance
Restart
All Actions >>

Node ID	Status	Alerts	Service	50 GB total
Node 5	GOOD	0	3	More info
Node 6	GOOD	0	3	More info
Node 19	GOOD	0	3	More info
Node 7	GOOD	0	3	More info
Node 16	WARNING	15	3	More info
Node 3	GOOD	0	3	More info
Node 4	WARNING	15	3	More info
Node 18	GOOD	0	3	More info
Node 25	GOOD	0	3	More info
Node 28	GOOD	0	3	More info
Node 4	WARNING	15	3	More info
Node 15	GOOD	0	3	More info
Node 6	WARNING	15	3	More info
Node 13	GOOD	0	3	More info
Node 3	GOOD	0	3	More info

Node 1 | CPU Usage | Service Usage | Disk I/O

Big Data Infrastructure Management

Summary | **Monitoring** | System | Data | Automation | Auditing | Kris Gaidis

Resources

Sort By: Priority | Size | Capacity

Resource	Status	Jobs	GB	Alerts	Nodes	More Info
Customer Insight	Good	34	13	15	25	More Info
Competitive Research	Good	10	13	33	13	More Info
Sales Cluster	Concerning	13	42	0	25	More Info
Dev Cluster	Good	31	14	0	1	More Info
Dev Cluster	Good	0	80	15	3	More Info
Cluster...	Good	3	13	0	25	More Info
Cluster...	Good	11	90	13	9	More Info
Cluster...	UNKNOWN	13	13	12	9	More Info
Cluster...	UNKNOWN	34	13	15	2	More Info
Cluster...	UNKNOWN	20	69	10	3	More Info

Job Activity

- Job 46: State: Running, Complete: 75%
- Job 47: State: Failed, Complete: 34%
- Job 48: State: Completed, Complete: 100%
- Job 49: State: Completed, Complete: 100%
- Job 50: State: Completed, Complete: 100%

System Stats CPU Usage

Customer Insight

Competitive Research

Alerts 10/09/2014 - 10/10/2014

- Move Data To Cluster 3 (Service: Apache) - Status: Failed: Not enough Space on Cluster
- Deletion of Expired Data (Service: Apache) - Status: Completed With Errors
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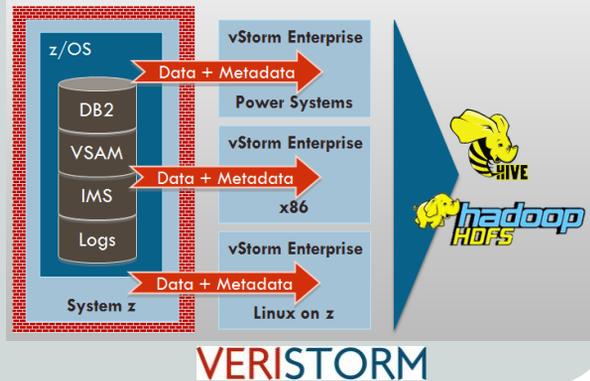
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Wrap Up

CA Technologies Makes it Easier for Mainframe Customers to Participate in Big Data Projects Increases the Ability to Move Mainframe Data into Hadoop/Hive

LAS VEGAS, November 10, 2014 — CA WORLD '14 — CA Technologies (NASDAQ:CA) today announced a new global distribution agreement with Veristorm, a software company focused on Big Data management. The agreement strengthens CA's ability to help customers leverage key business data on the mainframe for Big Data and analytics projects.

"It's extremely difficult for data scientists, Chief Marketing Officers (CMOs) and other stakeholders to get access to their raw System z data in tandem with machine logs and other types of transactional information," said Mike Madden, general manager, Mainframe, CA Technologies. "Customers around the world are looking for greater insight to gain competitive advantage and much of the world's most important transactional data resides on System z. Veristorm provides next-generation data movement technology that makes it easier to move System z data into Hadoop, lowering overall total cost of ownership."



VERISTORM

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4 Wrap Up

A Few Words to Remember

Key Thoughts...

- ✓ Big Data places new demands on traditional relational database management tools
- ✓ Data Management is evolving and provides new options for data security and compliance
- ✓ Don't wait! It's time to develop a holistic approach with your database & Big Data plans

Next Steps

- ✓ Understand the evolution and determine how that may affect your data management roadmap
- ✓ Determine where you may have (or will soon have) data security and compliance exposures
- ✓ Engage with CA Technologies now to develop a flexible roadmap to support your business needs.

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