Data-Driven Possibilities

Using data analytics to transform organizations

ABOUT THIS PERSPECTIVE

Learn about the capabilities and benefits of data analytics when starting on and maturing along a data analytics journey, as well as the overarching benefits of digital transformation using the many data solutions available.

July 2017

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Published in the USA 7/17.

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THE DIGITAL TRANSFORMATION WILL CAUSE DISRUPTION

Welcome to the fourth industrial revolution: digital transformation. This is a revolution that is fundamentally altering the way we live, work and relate to one another, and will transform the way every business in every industry operates. The growing accumulation of data, increasing diverse sources of data, especially through the Internet of Things (IoT), artificial intelligence (AI), machine learning, as well as leveraging data through data analytics, is transforming the way every business operates. The ability to make sense of data transformation is dramatically reshaping industries and reinventing our futures. Though digital transformation is considered an imperative, some companies are faring better than others in the race to become a data-driven organization. The revolution is already here.

Business leaders see a chaotic, uncertain future ahead. Consider these findings from a survey of 4000 business leaders:

- 48 percent don't know what their industry will look like in three years
- 78 percent feel threatened by digital startups
- 45 percent fear they may become obsolete in three to five years[1]

Digital transformation efforts are being inhibited by a wide range of challenges — two most often heard from organizations are the lack of budget and the lack of skilled resources. The lack of qualified resources points to the bigger issue: digital transformation is not a strategic focus for many organizations. Additionally, Gartner cited that early stage failures, up to 61 percent by 2017[2], are the direct result of the inability to define a use case and process to gain insights from data.

Despite these challenges, lines of business, competitors, customers, and C-suite executives are recognizing the need to understand more about digital transformation to stay relevant. Change is patchy across organizations. At times, investments are focused on only parts of an organization rather than a holistic application across the entire organization. A holistic and collaborative approach is needed to bring IT and business together in support of a strategic approach to digital transformation. Leaders must agree that the following digital business attributes are imperatives for success:

- Predictively discover new opportunities
- Deliver unique and personalized experiences
- Innovate in agile ways
- Operate in real time

Successfully navigating in this new era requires a commitment from organizations to transform not only people and processes, but also modernizing the environment upon which a business is built — from the edge to the core to the cloud. Data analytics is at the core of these initiatives, and there are many opportunities for starting on the data analytics journey. Data consolidation, whether adopting a data lake solution, self-service analytics, or the Apache™ Hadoop® framework, will be a major prerequisite for organizations looking to capitalize on data using analytics.

1 Vanson Bourne, "big.data," 2015
2 Gartner Report: Predicts 2017: Digital Initiatives Must Focus on Long-Term Transformation to Avoid Failure, November, 2016

PLAN FOR A JOURNEY

Building a data-driven organization using data analytics to create insights is a journey. Before you begin your journey, it is essential that you gain a clear view, with a plan of action for what you want to accomplish with data.

To fully empower a data analytics journey, organizations must align business and IT to tie data projects to business goals and measurable performance metrics. It's essential to define objectives, prioritize use cases for operational efficiency, innovation, or organizational transformation, as well as to assess unique environments and discuss how to strategically enable data solutions.

Based on customer priorities, data analytics use cases can be focused on driving operational efficiencies, or driving transformation with use cases like innovating to drive competitive advantages, or building 360 views of customers. Operational efficiency use cases center on more tactical goals that improve current productivity, such as accelerating reporting or improving service levels. Transformation use cases are concerned with more strategic goals, such as driving innovations that allow organizations to stand out from the competition, or optimizing customer 360 to enhance customer experience. All are based on gleaning deeper insights from data.

To unlock the value of data, organizations must drive to reach strategic phases in the data analytics journey:

- Consolidate data with Dell EMC solutions for Hadoop and/or Dell EMC Isilon
- Analyze data to drive insights that can power and transform your organization
- Act on data by building Cloud Native Applications with Dell EMC Native Hybrid Cloud (NHC) and Pivotal Cloud Foundry®

Reaching points in each of these phases puts your organization on a faster, simplified path to building a data-driven organization.

BEGINNING THE JOURNEY

For organizations working to consolidate data to extract value from mountains of structured, semi-structured, and unstructured data, the Hadoop ready bundles for data storage and processing system offer compelling benefits. Unlike earlier platforms, Hadoop can store any kind of data in its native format, from any source, cost effectively, and at very large scale, and it can do sophisticated analysis and transformations of that data easily and quickly. Additionally, the Isilon scale-out NAS is an ideal foundation for data consolidation that requires the ability to scale out while supporting traditional and next-generation applications and workloads. Project Nautilus previews a software-defined solution for storing and analyzing high volumes of streaming IoT and machine-generated data. Based on use cases, preferences, and amount of data, we can work with you to take the next step in your journey.

CONSOLIDATING DATA FOR ANALYTICS

Digital transformation is causing churn, uncertainty, and disruption for many business leaders who need to act quickly as pressure increases from all directions. Data and analytics are at the core of this transformation with Apache Hadoop as a foundational component of the data analytics solution stack. Unlike traditional systems, Hadoop enables multiple types of analytic workloads to run — on the same data, at the same time, at massive scale — on industry-standard hardware.

Despite these tantalizing benefits, many organizations struggle — either to begin their data analytics journey or to make Hadoop projects successful once they've begun. They are often impeded by a lack of Hadoop expertise, and end up spending too much time and effort on the front-end work before they can get to the results of a fully operational solution.

Expertise and infrastructure matter when building a Hadoop environment. That's why Dell EMC has teamed up with industry leaders — such as Intel, Hortonworks, Cloudera, and Syncsort — to remove the uncertainty and barriers that may dissuade you from deploying Hadoop.

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Cost-effective, future-ready Dell EMC Ready Bundles for Hadoop are easy-to-implement solutions that help you efficiently harness the Hadoop platform and the power of data analytics to drive competitive advantage.

Dell EMC ready bundles support both Cloudera Enterprise and the Hortonworks Data Platform (HDP), so you can choose the right Hadoop solution for your needs.

DELL EMC READY BUNDLE FOR CLOUDERA HADOOP

Powered by Apache Hadoop, Cloudera Enterprise is a fast, easy and secure modern data platform.

- Fast for business: From analytics to data science and everything in between, Cloudera delivers the performance you need to unlock the potential of unlimited data.
- Easy to manage: Focus on results, not fighting fires. Cloudera provides the operations that keep mission-critical applications up and running — especially at scale.
- Secure without compromise: Meet your most stringent data security and compliance needs without sacrificing business agility and innovation. Cloudera provides an integrated approach to data security and governance.

DELL EMC READY BUNDLE FOR HORTONWORKS HADOOP

The Hortonworks Data Platform provides an open and stable foundation for enterprises, and a growing ecosystem to build and deploy big data solutions.

- **Open**: Hortonworks is committed to a 100% open approach to software development that spurs innovation.
- **Central**: YARN (Yet Another Resource Negotiator) is the architectural center of enterprise Hadoop, allocating resources among data processing applications.
- **Interoperable**: Its 100% open source architecture enables HDP to interoperate with a broad range of business intelligence and other applications.
- **Enterprise ready**: Hortonworks is built for enterprises, providing consistent operations with centralized management and monitoring of clusters through a single pane of glass.

DELL EMC ISILON SCALE-OUT NAS

Data analytics environments require large, scalable, reliable and efficient storage systems. With support for multiple workloads and enterprise-grade data and file management capabilities out of the box, for scale-out NAS, Dell EMC Isilon is the leader for data analytics. Isilon is ideal for customers who need to consolidate all types of data, and where storage must scale faster than compute. Independent scaling becomes increasingly important as companies must manage growing volumes of older data securely and efficiently, yet require higher performance on newer data, while making all the data readily available to enable in-place analytics.

Additionally, the Isilon product family can address analytics and storage challenges with the Dell EMC Ready Bundle for Hortonworks Hadoop with Isilon shared storage. Dell EMC Isilon is the first and only scale-out NAS with native integration of the Hadoop Distributed File System (HDFS). When you use Hadoop with Dell EMC Isilon scale-out NAS, there is no need for data ingestion. You can run data analytics in place, without moving data to siloed analytics infrastructure.

PRAVEGA STREAMS

The proliferation of connected devices and sensors is leading to a deluge of streaming data that needs to be ingested at high speeds and analyzed quickly. Driven by the desire to shrink to zero the time it takes to turn these massive data volumes into actionable insights, streaming is deceptively simple: just process and act on data as it arrives, quickly, continuously and in an infinite fashion. But as we build new applications for use cases — from industrial IoT to connected cars to real-time fraud detection — the reality is most of us don't yet have the tools to do this with production level data volumes, ingestion rates and fault resiliency.

Here's the good news: Streaming is forcing systems designers to rethink fundamental computational and storage principles. Dell EMC designed a new storage primitive, called a stream, which now allows you to treat data as infinite and continuous. This is purpose-built for IoT and streaming architectures, and implemented in a new open source project named Pravega. Praveaga streams delivers the storage foundation for reliable streaming systems: a high-performance, durable, elastic, and infinite append-only byte stream with strict ordering and consistency to deliver accurate real-time results. By combining Pravega streams with a stateful stream processor like Apache Flink or Spark Streaming, you can realize a system that dynamically scales in coordination with the volume of data arriving, enabling you to build the streaming apps you could not before, and to seamlessly scale them from prototype to production.

Pravega's disruptive innovation will make the benefits of streaming easily accessible to anyone.

DELL EMC CLOUD SOLUTIONS FOR DATA ANALYTICS

Data analytics use cases drive both operational efficiencies and digital transformation. These use cases often require approaches that leverage cloud-based solutions to achieve business outcomes required by customers. Dell EMC enables faster and simpler paths to cloud that deliver on the requirements of data analytics use cases.

Key Dell EMC cloud-based solutions include:

- **Dell EMC Enterprise Hybrid Cloud**: Delivers always-on infrastructure as a service (IaaS) to enable on-demand access to your existing enterprise applications, such as Microsoft, Oracle and SAP.
- **Dell EMC Native Hybrid Cloud**: Accelerates development and IT operations with a fully turnkey Pivotal Cloud Foundry development and deployment platform for cloud-native applications.
- **Virtustream**: Provides enterprise-class IaaS for mission critical applications. Dell EMC simplifies IT and modernizes the data center with a robust converged infrastructure portfolio.

KEY CONVERGED AND HYPER-CONVERGED SYSTEMS

- **Dell EMC VxRail**: Provides a simple, cost–effective, hyper-converged solution that solves virtualization infrastructure challenges and supports a wide range of applications and workloads.
- **Dell EMC VxRack**: Consists of hyper-converged, rack-scale engineered systems, with integrated networking, to achieve the scalability and management requirements of traditional and cloud native workloads.
- **Dell EMC VxBlock**: Integrates enterprise-class technologies — including compute, network, storage, virtualization, and management — into one engineered system that is engineered, manufactured, managed, supported, and sustained as one.

ENABLING AND ACCELERATING YOUR JOURNEY

Adding to the Dell EMC data analytics solutions, Dell EMC enables and accelerates the data analytics journey with additional tested and validated solutions that complete the Dell EMC data analytics portfolio.

For customers who require alternate or traditional database technologies to enable their data analytics projects, Dell EMC has a variety of solutions to enable data analytics journeys.

DELL EMC SPLUNK ENTERPRISE ON VXRACK FLEX FOR MACHINE DATA ANALYTICS

Dell EMC delivers a modular, rack-scale, hyper-converged infrastructure validated by Splunk and Dell EMC. This jointly tested and validated VxRack FLEX hyper-converged infrastructure with Isilon meets or exceeds the performance required for a virtualized Splunk Enterprise environment.

DELL EMC READY BUNDLE FOR SPLUNK ON VXRAIL ALL FLASH

Architected, integrated and tested by Dell EMC, this Splunk-validated solution optimizes machine data analytics in a high performance, small to medium Splunk environment. The validated configuration combines rapid time to value with reduced risk in a cost-effective, flexible, scale-out design. All flash storage is used for hot and warm tiers, with a long-term data retention option using Dell EMC Isilon scale-out NAS.

DELL EMC READY BUNDLE FOR SPLUNK ON VBLOCK 540

Architected, integrated and tested by Dell EMC, this Splunk-validated solution optimizes machine data analytics in a high performance Splunk environment that scales to support a deployment of up to 3TB a day. The validated configuration combines rapid time to value with reduced risk in a cost-effective, flexible, scale-out design. The Vblock 540 uses Dell EMC XtremIO all-flash storage for hot and warm tiers, with a long-term data retention option using Dell EMC Isilon scale-out NAS.

DELL EMC READY BUNDLE FOR MICROSOFT SQL SERVER

Dell EMC delivers an integrated system for SQL, designed for performance, cost savings, and future ready scalability. This pre-architected and validated solution implements a virtualized infrastructure for SQL Server 2016. This end-to-end solution based on best practices recommended by Microsoft and Dell EMC, provides exceptional performance and scalability, delivers faster time to value and increases return on investment.

DELL EMC READY SYSTEMS FOR ORACLE

Dell EMC is a global leader in helping Oracle customers solve today's efficiency challenges to increase DBA productivity and pave the way for DBaaS in the cloud. Dell EMC offers tested and validated solutions for Oracle environments, with complete guidance for deployment and configuration. These qualifications provide reassurance to customers that their configuration has been tested and is enterprise-ready.

DELL EMC SAP HANA EDGE READY NODES

This turnkey solution provides blazingly fast, near real-time predictive analytics for small to mid-sized organizations. Standardized, consolidated reports reduce costs and enable use by the non-technical departmental user. Delivers self-service reporting and analytics directly to business users in a simple, integrated appliance, pulling data from multiple sources, processing it in-memory and enabling near real-time predictive analytics for direct use. Dell EMC Accelerator Services help you get the solution up and running quickly, and it's upgradeable to full SAP HANA, Enterprise Edition.

DELL EMC SAP HANA READY NODES

This entry-point solution is available in multiple configurations tuned to use case and certified by SAP. Optional virtualization of the platform allows customers to spin up multiple smaller instances, either for production or for development, making it easier to maximize the single-server environment. Fully contained in a Dell EMC PowerEdge server, this scale up solution speeds time to value and simplifies performance management and system operations.

DELL EMC READY BUNDLE FOR SAP HANA SCALE OUT

Offers an optimized analytics solution that includes a hardware appliance, pre-loaded software and a full range of services. Pairing Dell EMC's enterprise-class products and expert services with SAP HANA allows customers to execute business analytics, performance management and operations in a single system. With performance benchmarked and certified by SAP for predictable results, this is an ideal solution for real-time business intelligence.

DELL EMC READY SYSTEM FOR SAP HANA ON VXBLOCK

Offers the flexibility customers need to accelerate implementations. Whether deploying SAP HANA or other applications on a single converged system or on separate systems, Dell EMC solutions support SAP versions running on many leading operating systems, as well as multiple types of databases. Powered by market-leading innovations from Cisco, Intel and VMware, VxBlock uses the most recent technologies for scale-up applications. These innovations let customers scale to millions of IOPS and petabytes of data.

SAP HANA TAILORED DATA CENTER INTEGRATION

This custom approach to SAP HANA is built with certified components for organizations wanting maximum flexibility in solution design, Dell EMC offers SAP HANA Tailored Data Center Integration (TDI). This option allows customers to choose server, storage and networking from a list of SAP certified components. TDI also allows reuse of existing certified components and systems. Leverage known and trusted components. Choice and flexibility are at the heart of all TDI solutions. Customers can mix and match any certified server, storage or network components from any vendor, including Dell EMC.

Streaming data and real-time analytics are forcing systems designers to rethink fundamental computational and storage principles.

DELL EMC SOLUTION INSTALLATION AND IMPLEMENTATION

Dell EMC offers a broad menu of installation and implementation services for data analytics, ranging from the initial steps into Hadoop to services that include onsite hardware and software installation, optional rack integration at a Dell EMC facility, and validation of the installed solution. In all the Dell EMC data analytics solutions, Dell EMC takes care of the complete project management, from order drop to customer acceptance.

DELL EMC CONSULTING SERVICES FOR DATA ANALYTICS

DELL EMC SERVICES FOR DATA ANALYTICS

Dell EMC Services offerings start with strategic consulting and deployment services to help business leaders prioritize where and how to apply data and analytics to drive their business initiatives, and to help technology leaders understand how to build big data and analytics capabilities into their IT architectures and processes.

DELL EMC HADOOP CONSULTING

Dell EMC Hadoop Consulting is a best-in-class service delivered by certified Apache Hadoop experts to help organizations fully exploit the business value of big data using Hadoop. The services may include a big data assessment, workshop, proof-of-concept, or production implementation. Hadoop experts help determine where Hadoop is a good fit for an organization. They also help Dell EMC customers build their own teams of Hadoop experts through knowledge transfer at each step.

BIG DATA VISION WORKSHOP

The Big Data Vision Workshop employs a unique methodology to identify and prioritize a single analytics use case with the best combination of implementation feasibility and business value. It's a three-week engagement that applies research, interviews, data science expertise, and techniques to your organization — culminating in a one-day workshop to identify and agree on the best data analytics use case and path forward to solving a business problem. From here, customers move on to a Proof of Value service, to prove out the potential ROI of a proposed analytics solution.

BIG DATA TECHNOLOGY ADVISORY SERVICE

Technology leaders who seek to expand analytics capabilities to meet growing demands for better/faster data and analytics, can start with the Big Data Technology Advisory service, a three-week engagement to identify strategic capabilities for data, determine future-state architecture, perform a gap analysis, and build a deployment roadmap. They can then opt for a Proof of Technology service to pilot their solution and confirm the desired capabilities before moving into production. At this point, the customer can choose to deploy a use case as a custom solution that is designed to support that one use case, or deploy a solution-based platform that can support additional use cases. This is the Big Data Technical Implementation.

Dell EMC Services offers comprehensive consulting engagements to develop and implement an analytics use case into production, including solution architecture, data ingestion, data science services, and application integration.

DELL EMC CUSTOMER SOLUTION CENTERS

To reduce the risk associated with new technology investments and improve speed of implementation, we invite customers to experience Dell Technologies solutions in the global network of 21 dedicated facilities. The Dell EMC Customer Solution Centers are trusted environments where world-class IT experts collaborate to share best practices, facilitate in-depth discussions of effective business strategies using briefings, workshops, or fully-supported proofs-of-concept, and help customers become more successful and competitive.

DELL EMC PROSUPPORT

Dell EMC ProSupport offers a single point of accountability from experts with solution-specific training, along with premium hardware and software support available 24x7x365. ProSupport also includes collaborative support for Cloudera Enterprise software.

Additionally, ProSupport includes next-business-day onsite service with four- and eight-hour parts and labor response options, and escalation management with customer-set severity level options

ACCELERATING YOUR DIGITAL TRANSFORMATION WITH DELL EMC

Dell EMC has what it takes to help you gain hands-on experience across many solutions, from initial briefings, through proofs-of-concept, and into full production environments. The Dell EMC approach is guided by proven architectures, Ready Solutions, data lake solutions, to self-service analytics, and applications, all fully supported by the Dell EMC Global Services organization.

Data analytics is a journey. Beginning with a partner who encourages collaboration, has a depth of understanding in data analytics, a wide breadth of solutions, and who drives to success through secure and supported growth, can lead organizations to success at every step of the journey.

HOW DO DATA ANALYTICS USE CASES ENABLE DIGITAL TRANSFORMATION?

There are two primary categories of use cases for customers on a data analytics journey: To improve operational efficiency and to transform using data to drive innovation. Here are a few examples of the many common use cases for data analytics, as well as questions the use cases can help organizations answer:

OPERATIONAL EFFICIENCY USE CASES

Data warehouse optimization using ETL Offload How can we build faster, cost-effective access to data to improve service levels for better forecasting and increased automation? How can I reduce licensing costs?	**Data repository** What can we do with new data? How can we consolidate data?	**Data exploration and analytics** How can we securely extend data access across an organization to enable users to combine, compose, and explore data to gain new insights?	**Active archive** How can we cost-effectively archive low-value data and move easily between storage tiers?
Network failure analytics How do we use machine-generated data to avoid IT outages?	**System performance monitoring** How do we proactively detect issues to prevent an occurrence?	**Automate** How can we increase automation across our environment? Is it possible to automate for compliance and reporting?	**Threat analysis** How do we detect threats and fraudulent activity?

TRANSFORMATION USE CASES

Risk modeling How do we better understand and talk with our customers and markets?	**Product improvements** How do we learn from our customers?	**Customer attrition analysis** Why do we lose customers?	**Customer loyalty analysis** Why do we attract and retain customers?
Recommendation engine How do we predict customer preferences?	**Ad targeting** How do we increase the efficiency of ad campaigns?	**Point-of-sale transaction analysis** How do we target promotions to create the imperative to buy?	**Trade surveillance** How do we target promotions to create the imperative to buy?

To learn more, visit: DellEMC.com/BigData or contact your Dell EMC representative for a one-on-one conversation about your needs and goals.