Cisco and Red Hat: Build a Foundation for a Successful Big Data Deployment

It is no secret that the volume of digital information is exploding. Big data promises to help thwart cybercrime, shrink health costs, and deliver optimized customer experiences. Cisco, Red Hat, and their partners can build the foundation for your big data deployment, helping you to rapidly translate big data into actionable insights.

**Big Data Challenges for IT**

As big data solutions become vital to decision-making, the need for enterprise-grade performance, availability, and security is a given. Ease of management is critical as ever greater numbers of servers and switches are deployed. Time to deployment and scalability are paramount. IT must quickly grow the environment with an eye to superior price/performance, operational efficiencies, and reduced power consumption.

**Deliver on the Big Data Promise with Cisco and Red Hat**

Cisco and Red Hat provide the end-to-end building blocks you need to meet the most demanding big data workload requirements, including compute, storage, network, middleware, operating environment, and unified management.

**Figure 1. Cisco and Red Hat Integrated Big Data Platform**
Cisco UCS® Integrated Infrastructure for Big Data offers a comprehensive infrastructure and management solution for Big Data. The solution has been widely adopted for agriculture, education, finance, healthcare, service provider, entertainment, insurance, and public-sector environments. The Cisco UCS Integrated Infrastructure solution helps improve performance and capacity. With complete, easy-to-order packages that include compute, storage, connectivity, and unified management features, Cisco UCS Integrated Infrastructure for Big Data can accelerate deployment, deliver predictable performance, and reduce total cost of ownership (TCO).

In addition, Red Hat’s portfolio helps you rapidly develop applications, integrate data sources, and process large volumes of real-time data on a secure, flexible, and scalable infrastructure. Each product addresses physical, virtual, and cloud deployments, offering significant flexibility. Unlike proprietary technology stacks, the portfolio lets you choose only the components that meet current challenges, building as you go forward.

In addition, together, Cisco and Red Hat have created validated reference architectures, bundles for all major big data software distributions. In concert with big data ecosystem partners and integrators, these validated designs help deliver valuable insights from a big data deployment.

Gaining a 360-Degree Customer View

Big Data solutions can be deployed successfully in several different industries, including financial services. One such organization wanted to gain a 360-degree view of its customers. As it serves its customers, the company collects and accumulates a massive amount of transactional data.

To help serve its customers more effectively and differentiate itself in its competitive market, the company deployed a Big Data infrastructure built on the Cisco Unified Computing System™ (Cisco UCS), Red Hat Enterprise Linux, and a leading Hadoop distribution. With this combination, queries now execute two orders of magnitude faster than before and 99% of all queries now execute in less than 15 minutes. In addition, data reload times are now 60 times faster than before.

The Big Data solution delivers timely insights, a 360-degree customer view, and it supports predictive analysis on structured and unstructured data sets in the same store, and at time of transaction. This Big Data solution helps the company in real time impact transactions in a way that promotes better conversions for its customers.

Delivering Market Research to the Retail Industry

A market research company, which serves consumer-packaged goods and retail companies, needed to keep technology costs as low as possible, while delivering state-of-the-art analytic and intelligence tools.

The team evaluated traditional warehouse technologies but found Hadoop by far the most cost-effective solution. In only six months, it built a fully functional production system, utilizing Cisco UCS, Red Hat Enterprise Linux, and a leading Hadoop distribution. The result was accelerated processing times, reduced mainframe load, and savings of more than $1.5 million annually.
Building a Superior Big Data Infrastructure
Cisco and Red Hat deliver the enterprise-grade performance, availability, and security that are critical to any enterprise big data deployment. The partners are focused on providing value—a major concern for CIOs who want to take advantage of data to increase revenue, improve operational efficiency, and reduce costs.

In this context, Cisco’s strategy revolves around creating the infrastructure to support Hadoop and its partner ecosystem, including:

- **Cisco UCS Integrated Infrastructure for Big Data**: A pretested, prevalidated configuration designed for high performance and availability
- **Cisco SingleConnect Technology**: A single, 10G unified fabric cable that supports LAN, SAN, and management traffic
- **Cisco UCS Manager**: which promotes robust management for superior programmability, scalability, and automation in big data deployments. For instance, **Cisco UCS service profiles** extend machine abstraction to physical servers, making rapid server provisioning and reduced TCO possible
- **Cisco UCS Director Express for Big Data**: A single management pane that allows users to easily deploy, adapt, and scale Hadoop big data infrastructure
- **Cisco Security Management Suite**: A framework of next-generation security management tools designed for management and policy administration of the Cisco Self-Defending Network

This service provider deployed its Hadoop distribution on three clusters, each composed of 160 Cisco UCS C-Series rack servers running Red Hat Enterprise Linux. These are connected to Cisco Nexus® 2232 Fabric Extenders and redundant Fabric Interconnects. The interconnects, meanwhile, connect with a 10 Gb link to the company’s Cisco Nexus 7000 Series switching infrastructure and onward to the existing data warehouse.

In addition to having a system that allows analysis of valuable unstructured data sets to create new calling plans and products, the service provider has achieved major capital and operational expenditure benefits by moving to this three-cluster solution. The capital expenditure benefits included the avoidance of around $1.2 million in costs, and those savings multiply as the provider grows its Big Data clusters.

Meanwhile, operational expenses have been reduced through tools such as Cisco UCS Manager, Cisco UCS Central Software, and the ability to control the infrastructure from a “single pane of glass.” As a result, new nodes can be deployed in minutes instead of hours or days.

Wireless Service Provider Gains Powerful Insights and Efficiencies
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In addition, Red Hat’s big data solution components include:

- **Red Hat Enterprise Linux (RHEL):** The world’s leading enterprise Linux platform gives you the tools you need to modernize your infrastructure and boost efficiency through standardization and virtualization.
- **OpenShift by Red Hat:** A platform-as-a-service (PaaS) solution that lets developers create analytics applications using the language, framework, and tools of their choice.
- **Red Hat JBoss Middleware:** A data virtualization solution that consolidates disparate data sources to create a virtualized data model that can be queried as a single source, allowing developers to focus on application development rather than data housekeeping.
- **Red Hat Storage:** A software-defined, agile storage platform that integrates file and object storage and Hadoop data services for petabyte-scale enterprise workloads.
- **Red Hat Enterprise Linux OpenStack Platform:** An infrastructure-as-a-service (IaaS) solution that allows administrators to quickly adopt and embrace new infrastructure components, service providers, and tools.

**Why Cisco and Red Hat for Big Data?**

Even if you begin with a relatively modest big data deployment, it is important to choose a solution that scales without straining your budget. You should be confident that your environment offers the performance and availability required to rapidly and consistently deliver data insights. You will want automated infrastructure management that helps reduce the risk of human error and increase IT productivity. And, ultimately, you will need to reduce cost of ownership through management efficiencies and simplified infrastructure.

At its core, a big data infrastructure from Cisco and Red Hat meets each of these challenges.

Cisco and Red Hat offer a wide range of additional resources designed to support your move to big data, including:

- [Cisco Big Data page](#)
- [Red Hat Big Data page](#)
- [Red Hat on Cisco UCS solutions page](#)
- [Cisco Design Zone for Big Data page](#)
- [Cisco UCS Director Express for Big Data link](#)
- [Red Hat Big Data Blog](#)

**Schedule an Appointment**

To learn more about how a joint Cisco and Red Hat big data solution can reduce your costs, help you scale your environment, and gain valuable insights into your data, contact your local Cisco account team or reseller to schedule an appointment today.