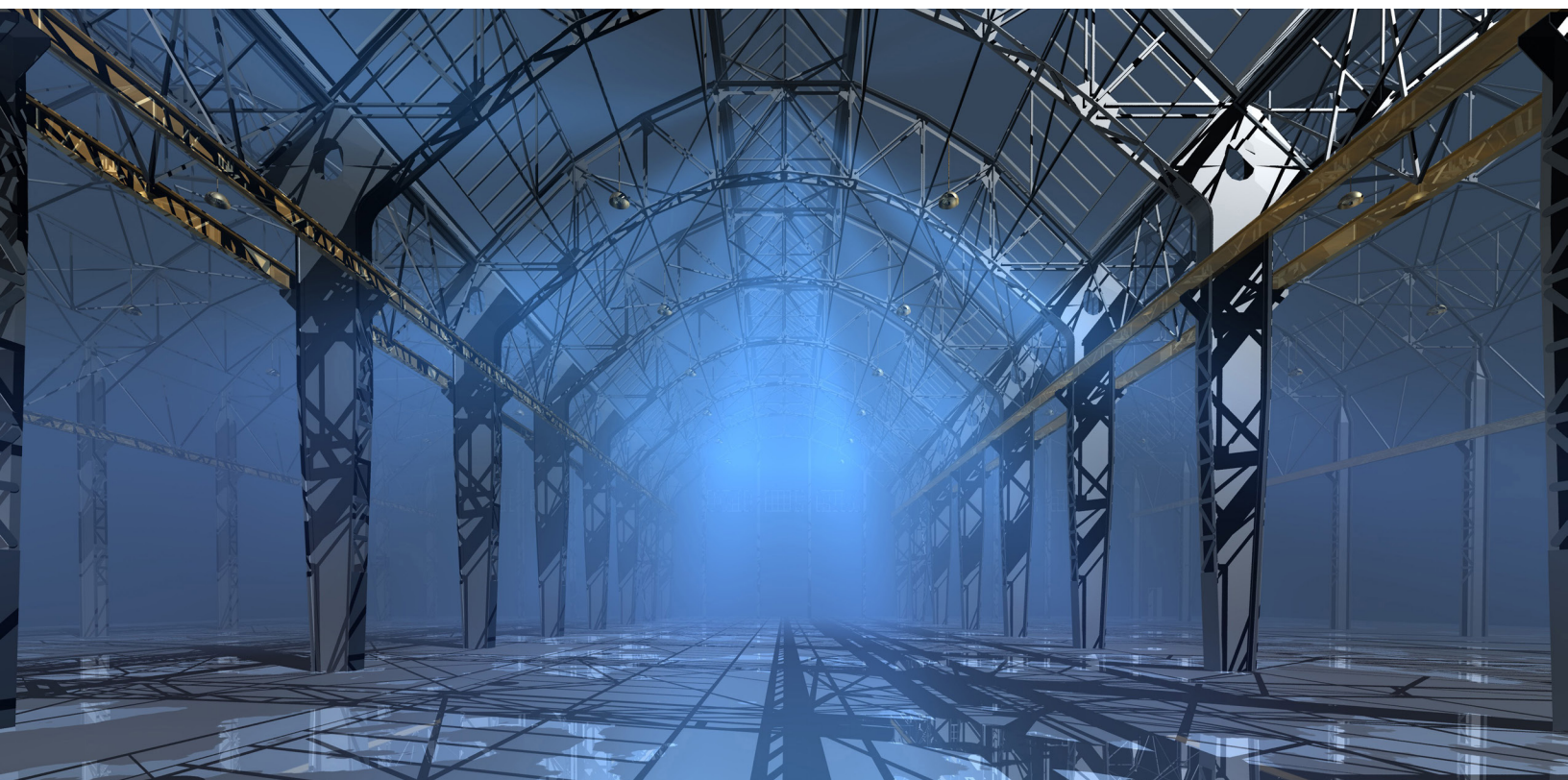# BUILD MODERN INFRASTRUCTURE FOR THE DIGITAL ECONOMY

Digital disruption is changing nearly every industry. To profit in this new digital economy, organizations must adopt new business and service delivery models, agile development processes, and modern IT infrastructure to become more agile, efficient, and innovative. OpenStack® provides an open foundation for digital transformation, but choosing the right solution is critical. Dell EMC, Red Hat, and Intel have the experience and expertise to help you transform successfully.

New technology is having a profound, disruptive effect across industries. 52% of business leaders have already experienced significant disruption to their industry. 48% don't know what their industry will look like in three years. And 45% fear their company may become obsolete in the next three to five years.[1]

THE EFFECTS OF DIGITAL DISRUPTION

Nearly every industry is experiencing some amount of digital disruption from new technologies and business models. A survey of 4,000 business leaders showed that:

- **52%** have already experienced significant digital disruption in their industry.

- **48%** don't know what their industry will look like in three years.

- **45%** fear that their company may become obsolete in the next three to five years.[1]

Even so, this disruption presents opportunities for businesses that can adapt and embrace digital transformation, including new, technology-enabled business and delivery models, agile development processes, and IT modernization. These organizations can create new and better user experiences to gain market share and improve customer satisfaction and retention. They can cultivate opportunistic revenue streams by quickly developing and launching new products and services. They can also deliver more customer value to access adjacent market segments and expand their total addressable market (TAM).

Digital transformation helps you derive more value and growth from your IT. Companies in nearly every industry are reshaping their business and IT to take advantage of these opportunities. To remain successful and grow in this digital economy, you must transform your organization to be more agile, innovative, and responsive.

Prepare your business for the digital economy

Legacy datacenter infrastructure can't keep up with digital demands. Complexity hinders business flexibility and agility. Outdated on-premises-only tools and services promote the use off-premises public resources that are beyond IT's control. Inefficient architecture, management, and operations increase costs and keep IT from focusing on innovation and effectively supporting their business.

Winning in the digital economy requires a modern, software-defined infrastructure. Software-defined solutions incorporate openness, choice, and agility—providing you and your users with more control, self-service, and automation to respond rapidly to changing organizational demands. A software-defined architecture can help you:

- Increase efficiency to deliver and scale services faster.

- Adopt agile application development techniques to build and improve applications more quickly.

- Gain visibility into business operations and a better understanding of customers.

- Embrace the Internet of Things (IoT) to improve the customer experience and internal processes.

- Take advantage of vibrant open source software communities and the technologies they produce, many of which are now production-quality.

- Strengthen security and compliance throughout your business.

1 Vanson Bourne and Dell Technologies, "Embracing a Digital Future," 2016.

100% of Fortune 100 companies will have adopted OpenStack within the next three years.[2]

BUSINESS DRIVERS FOR OPENSTACK ADOPTION

According to OpenStack.org's OpenStack User Survey, the top business drivers for choosing OpenStack are:[3]

- Standardize on the same open platform and APIs that power a global network of clouds (97%).

- Avoid vendor lock-in (92%).

- Innovate and deploy applications faster (79%).

- Increase operational efficiency (75%).

- Reduce infrastructure costs (66%).

Innovate with the OpenStack cloud platform.

OpenStack has emerged as the cloud platform of choice for modern, software-defined infrastructure. 100% of Fortune 100 companies are expected to adopt OpenStack within the next 3 years and more than 50% already have.[2] Organizations choose OpenStack to:

- Standardize on the open platform that powers a global network of clouds.

- Avoid vendor lock-in with an open, flexible platform.

- Innovate and deploy applications faster.

- Increase operational efficiency.

- Reduce infrastructure costs.[3]

Choose the right solution.

Many OpenStack solutions are available, from do-it-yourself implementations to complete platforms. Building a production-grade OpenStack environment typically requires significant staff resources with extensive OpenStack expertise to understand and mitigate the many interdependent projects—something many organizations don't have. In fact, 32% of organizations cite lack of resources and expertise to be the top challenge of cloud adoption.[4] Moor Insights and Strategy recommends partnering with OpenStack technology vendors and system integrators to help you succeed.

> "While there are some notable customers who have taken the 'roll your own' approach using 'upstream' code, MI&S believes many enterprise IT organizations will have a higher likelihood of success by leveraging partners for distributions, software tools, services, and support. The proper partner strategy can translate to faster deployments, access to a richer set of features, avoidance of common pitfalls, and easier staffing."

Moor Insights and Strategy
"OpenStack is Now Ready for the Enterprise"
April 2016.

Choosing the right OpenStack solution is critical for successful digital transformation. When considering your options, look for solutions that integrate open, industry-standard components into a production-ready, secure, efficient, and high-performance environment. The following sections detail the benefits of solutions with these features.

2 ComputerWeekly.com, "OpenStack set for 100% adoption by Fortune 100 firms within three years," April 27, 2016, located at http://www.computerweekly.com/news/450294172/OpenStack-set-for-100-adoption-by-Fortune-100-firms-within-three-years.
3 OpenStack.org, "April 2016 OpenStack User Survey," April 2016.
4 RightScale, "RightScale 2016 State of the Cloud Report," January 2016.

Complete integration

Building an OpenStack environment yourself can be a complex and time-consuming process. Simplify this process with a prebuilt, customizable OpenStack solution that eliminates the need for internal research, testing, and integration work. You'll speed deployment, increase interoperability, and improve your chances of success.

Open, industry-standard components

Technology advances fastest in open communities. Innovate while ensuring interoperability and flexibility for the future by using open, industry-standard components.

Production-readiness

Deploying new technology into a production environment can be a perilous process. Reduce transformation risk by choosing an OpenStack solution that is proven to be reliable, stable, and focused on business needs.

Security

Security and compliance remain key concerns for cloud adopters.[5] Protect your business with an OpenStack solution that integrates security throughout your environment and keeps that security up-to-date against emerging threats.

Efficiency and performance

Traditional infrastructure often requires IT staff to spend the majority of their resources simply maintaining current investments, leaving little time and budget for innovation. Make sure that your new environment doesn't fall into the same pattern. Streamline operations with unified management and automation so you can deliver services faster, increase resource utilization, and cut operational costs. Further increase utilization and density by choosing high-performance platforms that reduce both capital and energy expenses. The overall result is lower total cost of ownership (TCO) and more time and money for supporting your business.

Partner with industry leaders dedicated to your success.

Through trusted partnership, industry leadership, and customer-focused development, Dell EMC, Red Hat, and Intel provide complete, production-ready OpenStack solutions that deliver the innovation, efficiency, performance, agility, and security you need to succeed in the digital economy.

Trusted partnership

Your business depends on your IT infrastructure. Building that infrastructure with solutions from established, stable vendors reduces IT risks. Dell EMC, Red Hat, and Intel are global companies that are trusted by businesses across industries worldwide. Working together, the companies commit to deliver the best results for your organization.

Long-standing collaboration

Dell EMC, Red Hat, and Intel share a long-standing relationship that includes collaboration from the engineering to executive levels. Modernize with solutions from three leaders who are aligned and focused on your business goals.

32% of organizations cite lack of resources and expertise to be the top challenge of cloud adoption.[5]

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5   RightScale, "RightScale 2016 State of the Cloud Report," January 2016.

Co-engineering

Dell EMC and Red Hat engineers collaborate extensively on their joint OpenStack solutions. Both companies have made significant investments in facilities where engineers design solutions, agree on product roadmaps, and jointly develop and contribute code. Working closely with Intel also ensures that the latest processor technology is incorporated and exposed throughout the solution stack. As a result, you can trust that Intel-based Dell EMC and Red Hat OpenStack solutions will be reliable, interoperable, and performance-optimized.

Customer focus

All three companies are dedicated to solving real customer problems through technology—including co-engineered, validated solutions and coordinated consulting, deployment, and support services. Industry vertical expertise allows Dell EMC, Red Hat, and Intel to deliver solutions that are tailored to your unique business needs, helping you compete more effectively.

Industry leadership

To succeed in the digital economy, you need to take advantage of the latest technology. At the same time, you need to minimize the risk associated with change. Dell EMC, Red Hat, and Intel are technology leaders that guide innovation and make new advances ready and available for production use, so you can adopt modern technology with confidence.

Upstream contributions

Across industries, organizations are adopting open source technologies to modernize their infrastructure and reduce costs. Dell EMC, Red Hat, and Intel believe in and are committed to open source innovation. All three companies contribute additions and enhancements to the open source codebase back to the upstream project to ensure interoperability with community distributions and to further improve the community projects. Some of these contributions have helped to advance OpenStack management with easier life-cycle administration and operations, upgrades, updates, deployment, and provisioning. Together, the companies have contributed 17.2% of code commits to all versions of the OpenStack project, and 22.7% of commits to the Ocata release.[6] Deploy OpenStack solutions from Dell EMC, Red Hat, and Intel without reservation knowing that open source experts back them.

Proven customer success

Change is imperative but also carries real risks for your business. Dell EMC, Red Hat, and Intel are stable, world-class companies that have been delivering trusted, enterprise-grade solutions for decades and will continue to do so for many to come. All three companies have extensive industry vertical experience and demonstrated success with industry-specific solutions, including finance, energy, government, healthcare, telecommunications, and education. Move your business forward with an environment that effectively takes into account the nuances of your organization and industry.

OpenStack ecosystem development

Every business is different and your needs will inevitably evolve over time. Dell EMC, Red Hat, and Intel foster large partner ecosystems for certified third-party components and services, including those with OpenStack expertise. Customize your OpenStack environment using the tools, components, and service providers you want and gain more stability and flexibility for the future.

Together, Dell EMC, Red Hat, and Intel have contributed **17.2%** of all code commits to all versions of the OpenStack project, and **22.7%** of commits to the Ocata release.[7]

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6   Data from stackalytics.com as of March 30, 2017.

THE DELL EMC READY BUNDLE FOR RED HAT OPENSTACK PLATFORM

Transform your infrastructure quickly and easily with the Dell EMC Ready Bundle for Red Hat OpenStack Platform, powered by Intel.

This complete, open, proven solution automates and speeds deployment, simplifies management, and increases operational reliability for faster benefit and lower risk.

Validation and integration delivers the agility, efficiency, and innovation inherent in OpenStack to provide a tailored environment that is:

- Flexible

- Extendible

- Secure

- Stable

- Scalable

- Interoperable

- Production-ready

- Expertly supported

Customer-focused solutions

To be effective, your IT infrastructure must support your business requirements. Dell EMC, Red Hat, and Intel offer OpenStack solutions that are tailored to your industry and organizational needs to help you get more value from your IT.

Complete, validated, repeatable solutions

Dell EMC and Red Hat OpenStack solutions, powered by Intel, are jointly developed, tested, and certified to deliver a complete, stable infrastructure. Deploy quickly for faster benefits and operate with the knowledge that your OpenStack environment is validated to be reliable.

Open industry standards and best practices

These solutions are built on open industry standards and best practices. Take advantage of open, community-based innovation on a certified, dependable, and easily upgradeable platform.

Built-in security and compliance

Intel-based Dell EMC and Red Hat OpenStack solutions meet the highest security standards. Guard your IT infrastructure with protection that is integrated throughout every level of the solution. Easily operate your environment safely and in compliance with government, industry, and corporate regulations with comprehensive security capabilities. Protect your business from emerging threats with a dedicated security response team for Red Hat products that provides patches for most security issues within one day.[7]

Automation and tooling

Unique management and automation tooling helps you install, deploy, manage, update, and upgrade these solutions quickly and easily while reducing the risk from manual errors. Streamline operations and focus on delivering more benefits to end customers, rather than managing infrastructure and data.

Innovation

Dell EMC, Red Hat, and Intel co-engineer their OpenStack solutions to give you access to the latest advances included in each component. Gain a competitive advantage with innovation that is validated, optimized, and documented for production operations.

Performance

Powered by Intel, Dell EMC and Red Hat OpenStack solutions use advanced technologies to deliver the best performance. Significantly reduce TCO with the increased user, virtual machine, and storage density that come with high-performance solutions.

Flexibility and extensibility

The flexible, modular architecture of these solutions extends your cloud environment with standards-based technologies, open application programming interfaces (APIs), and validated options from a large ecosystem of partners. Equip your environment with the tools and products your business requires now and in the future.

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7   See redhat.com/security/data/metrics/ for detailed reports.

The Intel-based Dell EMC Ready Bundle for Red Hat OpenStack Platform prepares you for hybrid cloud management and cloud-native development and operations through validated, documented extensions for Red Hat CloudForms and Red Hat OpenShift Container Platform.

Learn more at dell.com/openstack.

FOR MORE INFORMATION

Learn more about Dell EMC, Red Hat, and Intel OpenStack collaboration and products at:

- Dell.com/openstack

- Redhat.com/openstack

- Cloudbuilders.intel.com

Single point of purchase and support
Intel-based Dell EMC and Red Hat OpenStack solutions are offered in a comprehensive package, simplifying purchasing. Dell EMC and Red Hat collaboratively support these solutions. Resolve problems faster and with less hassle using a convenient single point of contact for all issues. Increase IT stability and continuity with extended product life-cycle support.

Documentation
These OpenStack solutions are fully documented. Deploy faster, operate efficiently, and expand your environment as your business requirements evolve using reference architectures, technical and deployment guides, and release notes.

Dell EMC, Red Hat, and Intel have the expertise and solutions to help you digitally transform your business and derive more value from your IT. With these OpenStack solutions, you can innovate to produce real business results, accomplish more, faster, and secure and control your environment, all while reducing costs.

Transform your business today.
Today's digital economy requires organizations to become more agile, efficient, and innovative than ever before. Across every industry, companies are adopting modern, software-defined infrastructure to succeed in this new business landscape. With complete, production-ready OpenStack solutions, Dell EMC, Red Hat, and Intel can help you digitally transform to stay ahead of your competition.

Learn how to turn your organization into a digital business at DellCloudBuilders.com.

Learn more about
Dell EMC
OpenStack solutions

Contact a Dell EMC Expert

View more resources at
DellCloudBuilders.com

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