
Dell OpenStack Powered Cloud Solution and Case Sharing



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Agenda

- Introduction to OpenStack
 - Cloud Objectives and Business Drivers
- Dell OpenStack- Powered Cloud Solution
 - Crowbar Software Framework
- Dell OpenStack Customer Case Sharing
- Dell OpenStack Services Portfolio
- Dell Openstack Solution in China



Introduction to OpenStack



There can be many objectives for cloud



What our customers are telling us...

- “I need the ability to keep ahead of security threats quickly.”
- “My business requires me react faster to its changing needs”
- “I want to make my own design changes rather than waiting on vendors”
- “I have insufficient time to procure hardware and configure the software required”

Time to Value

- “My current IT infrastructure is becoming too difficult to manage”
- “I want my limited resources to work on value-add tasks, as opposed to maintenance”
- “I’m interested in cloud solutions for backup and DR”
- “I lack expertise around certain applications and emerging technologies”

Resource Limitations

- “I have budget constraints for traditional IT use cases and view cloud technology as an outsource mechanism”
- “My application has migrated to a cloud implementation”
- “I don’t want to purchase and manage hardware so cloud solutions are appealing”
- “I want to replace Capex with Opex”

IT Spend

Flexibility and Performance

- “I’d like a replicated site for improved disaster recovery”
- “I want to move ‘cold’ data to the cloud”
- “My datacenter has inconsistent demand requirements”
- “Escalating license costs limit the scalability I require to be profitable”



Why cloud computing?

- Short deadlines require fast access to resources
- Tight budgets mean more is needed from less hardware



Why open source?

FIGURE 2A: WHAT WAS THE PRIMARY REASON THAT YOUR ORGANIZATION DECIDED TO USE OPEN SOURCE SOFTWARE?

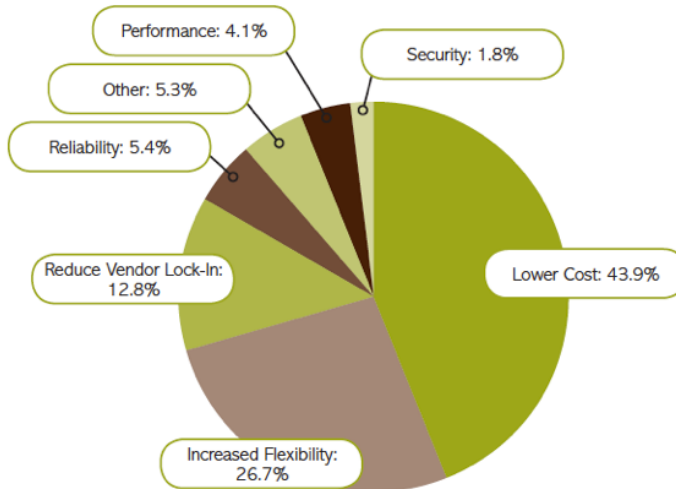


FIGURE 2B: AFTER YOUR ORGANIZATION ADOPTED OPEN SOURCE SOFTWARE, WHAT WAS THE PRIMARY BENEFIT OF ITS USE?

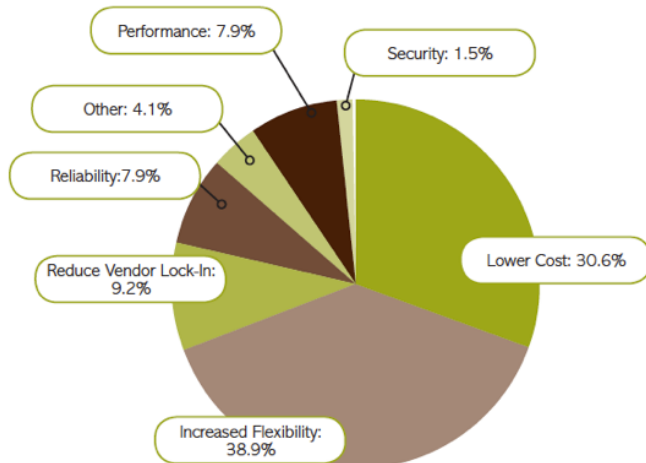


FIGURE 3: TO WHAT EXTENT WERE COST SAVINGS ACHIEVED THROUGH THE USE OF OPEN SOURCE SOFTWARE?



What is OpenStack?

- OpenStack is an open standards and open source software with a mission to provide scalable and elastic cloud operating system for both private and public clouds, large and small. It
 - Has support from major industry players
 - Is being collaboratively developed without a single owner
 - Has an API that is Service Provider license friendly
 - Has been demonstrated to run at scale
 - Has been built on open source components
 - Had global reach and support

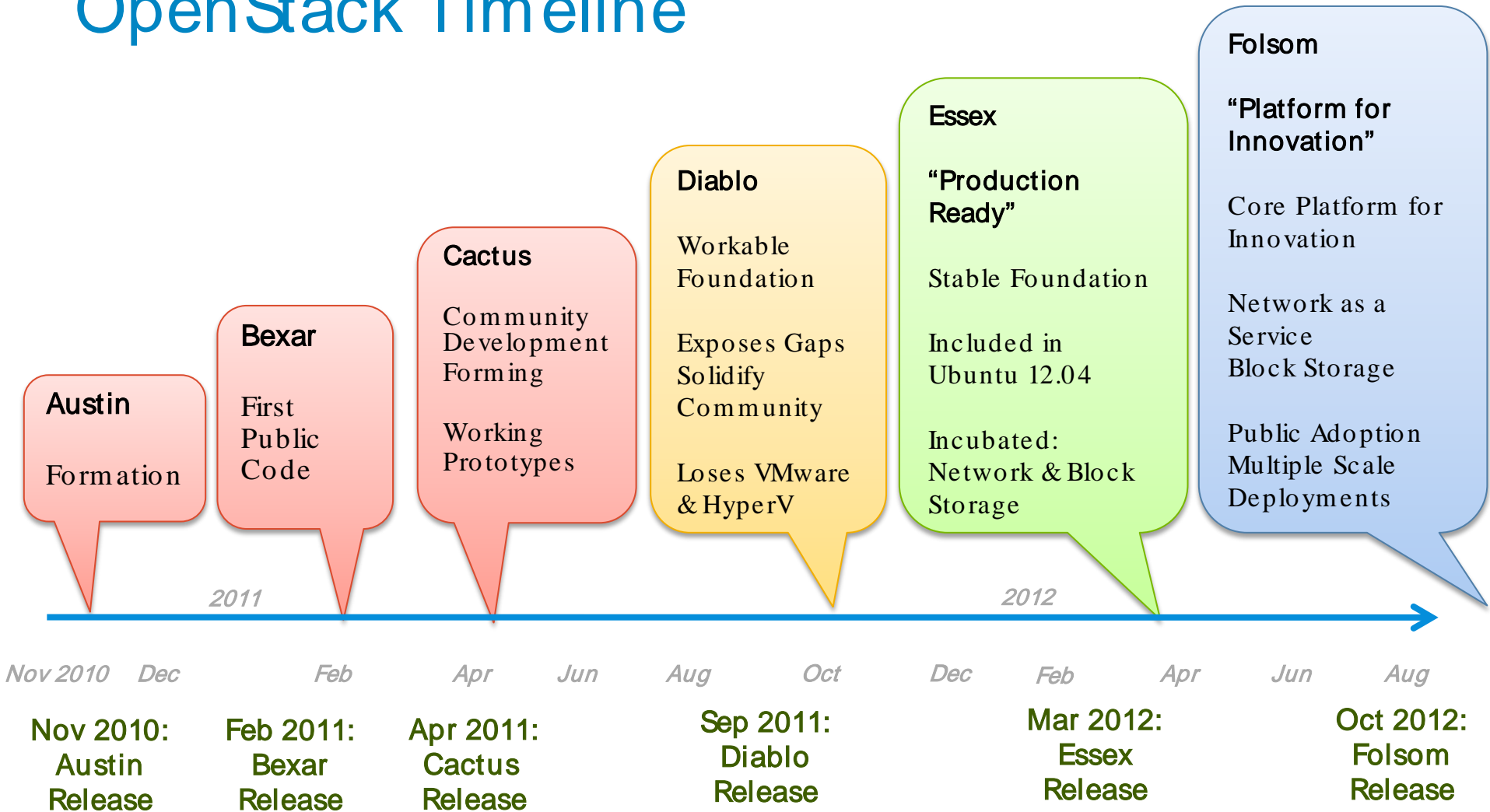


What is in OpenStack?

- OpenStack has a collection of projects that are developed and maintained collaboratively by an active and large community:
 - **Compute** (Nova)
 - **Storage** (Swift)
 - **Glance** (Imaging)
 - **Horizon** (Dashboard)
 - **Keystone** (Authentication)
 - **Quantum** (Network service)
- OpenStack's basic requirement:
“Clouds must be **simple to implement** and **massively scalable.**”



OpenStack Timeline



Wide-Ranging Community Support...3029 members, 168 companies and counting



Dell OpenStack- Powered Solution



Even the best technology won't necessarily solve the problems of cloud data centers

What you need:



**Proven
solutions**

built
with



**Proven
components**

Dell OpenStack-Powered Cloud Solution

Proven solutions

Elastic , vastly scalable and designed to handle massive data loads

- Rely on Dell's tested, validated, and innovative designs in infrastructure, software, and services
- Get what you need to develop, deploy, and deliver your cloud environment
- Enables you to quickly offer new cloud services, lower software licensing costs, and help mitigate the risks of cloud computing



“Dell’s commitment to OpenStack and their team with deep expertise in Data Center Solutions is the foundation for a great partnership.”

Ben Cherian, General Manager of Emerging Technologies, DreamHost

Proven components

OpenStack Cloud operating system

Dell-developed Crowbar Software

Dell PowerEdge C6100 /C6105/R720/R720xd servers

Force 10 S60 Switches

Reference Architecture

Deployment Guide

Dell Service and Support



Dell's Distinctive Competence

Proven solutions

- First OpenStack cloud solution provider
- Gold member of the OpenStack foundation
- Pioneer OpenStack partner (Only Tier 1 Day 1 hardware provider)
 - Most history with the OpenStack technology
 - Reference architectures that have been tested longer and fuller than newcomers
- Deep partnership ecosystem
 - Mirantis, Canonical, and enStratus
 - Single point of service and support
- ONLY company providing automated software to do **multi-node OpenStack provisioning: Crowbar**
 - Dell developed software
- **OpenStack experts** work at Dell: Rob Hirschfeld, Greg Althaus and others continually investing in the community



Proven components

“Dell ...was one of the first of the hardware vendors to grasp the fact that cloud is about provisioning services, **not about the hardware.**”

Maxwell Cooter, Cloud Pro

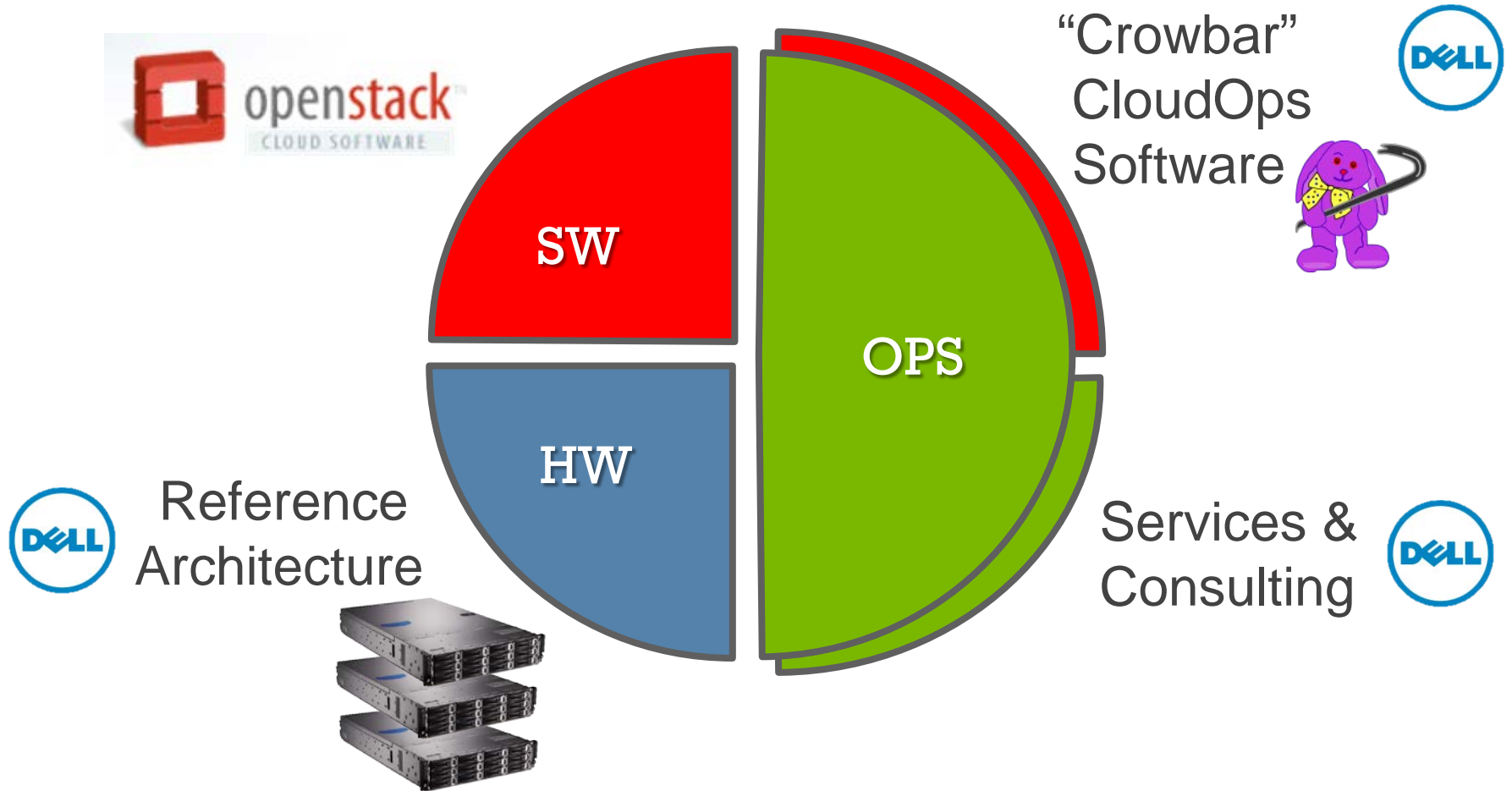
The screenshot shows a page from a Dell technical white paper. At the top right is the Dell logo with the tagline 'The power to do more'. The title of the paper is 'Bootstrapping OpenStack Clouds Platforms and Infrastructure for Hyperscale Environments', authored by Rob Hirschfeld and Greg Althaus. The page contains several sections of text and diagrams. A diagram shows a 'Core Network' connecting to server racks. Text sections include 'Design Guidelines' and 'Rule 1: Cost matters'. There are also three small diagrams illustrating network configurations: 'Reliable but Expensive', 'AVOID: unreliable', and 'Simple and Inexpensive'. The page number '8' is visible at the bottom left.

Dell OpenStack-Powered Cloud Solution

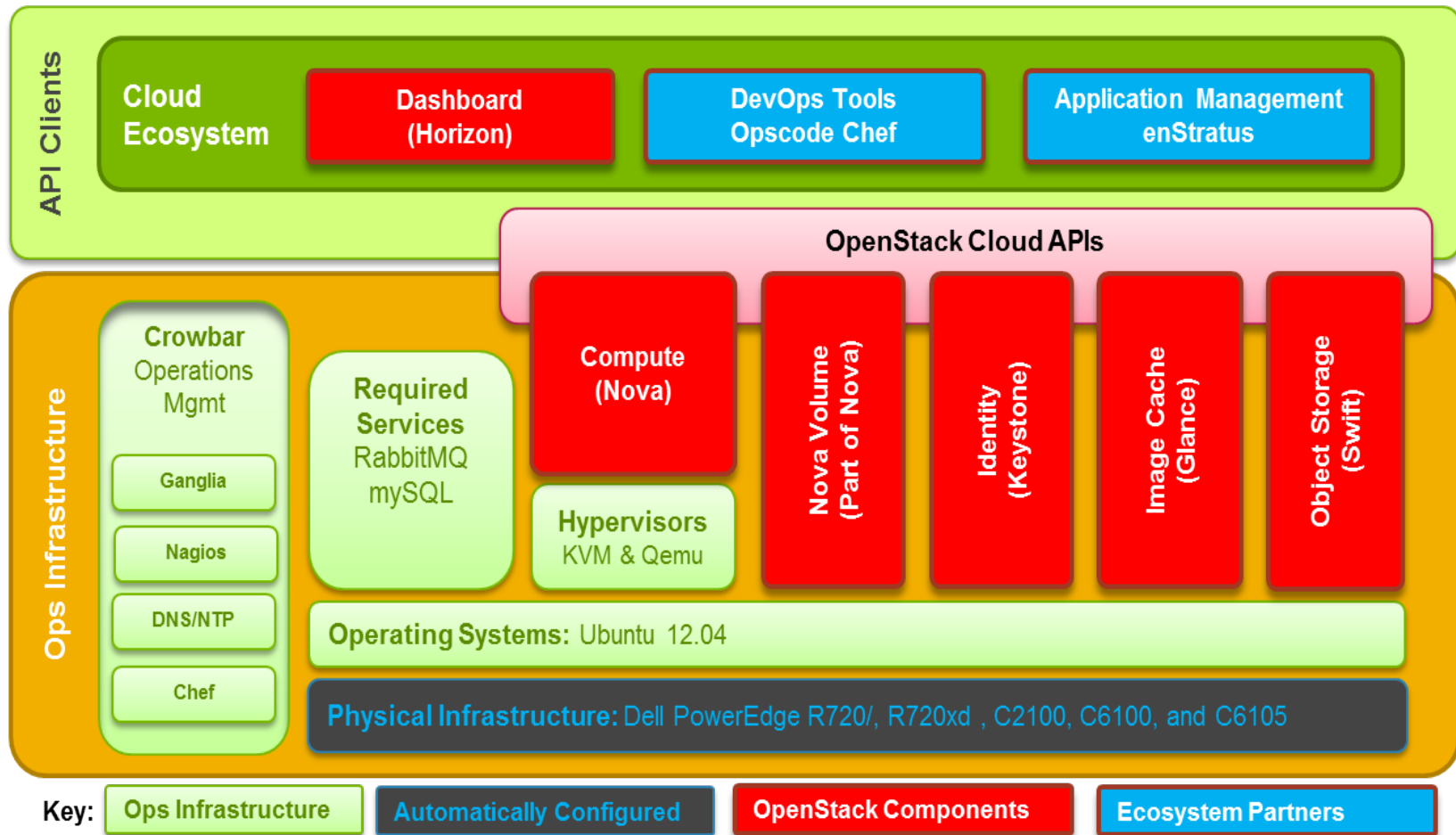
HW + SW + Services		
Hardware	HW Reference Architecture	<ul style="list-style-type: none"> • C6100, C6105, C2100, R720, R720XD Servers • Storage and compute • Force 10 S60 and PowerConnect
	Configuration	Min 6 nodes. Max 60 nodes
Software	Software	<ul style="list-style-type: none"> • OpenStack Installer and continuous integration (Crowbar) • OpenStack cloud SW • Other SW elements installed by Crowbar
	Operating System	<ul style="list-style-type: none"> • Ubuntu 12.04 (Host) • Windows (Guests) • Linux (Guests)
	Hypervisor	KVM
Services	Deployment & Consulting	<ul style="list-style-type: none"> • Hardware Integration – Onsite or Merge Center • Software Installation – Onsite • OpenStack Consulting Services <ul style="list-style-type: none"> • Assessment, Design and Installation • Delivered via partnerships with Mirantis & Canonical
	Support	<ul style="list-style-type: none"> • HW/Crowbar: Dell ProSupport • OpenStack support via Canonical (Coming Soon)



Dell OpenStack Cloud Solution



Dell Taxonomy as of the Essex release



Crowbar Software Framework

Proven solutions

A modular, open source framework that accelerates multi-node deployments, simplifies maintenance, and streamlines ongoing updates

- Deploy an OpenStack cloud or Hadoop cluster in hours instead of days
- Use or build barclamps to install and configure software modules
- Supports a cloud operations model to interact, modify, and build based on changing needs



“Dell solved a problem that we had. And when Dell solved that problem, our engineers thought, ‘We’re going to use this.’”

Ben Cherian, GM of Emerging Technologies, DreamHost

Proven components

Opscode Chef Server Capabilities

Download the open source software:
<https://github.com/dellcloudedge/crowbar>

Active community

<http://lists.us.dell.com/mailman/listinfo/crowbar>

Resources on the Wiki:

<https://github.com/dellcloudedge/crowbar/wiki>

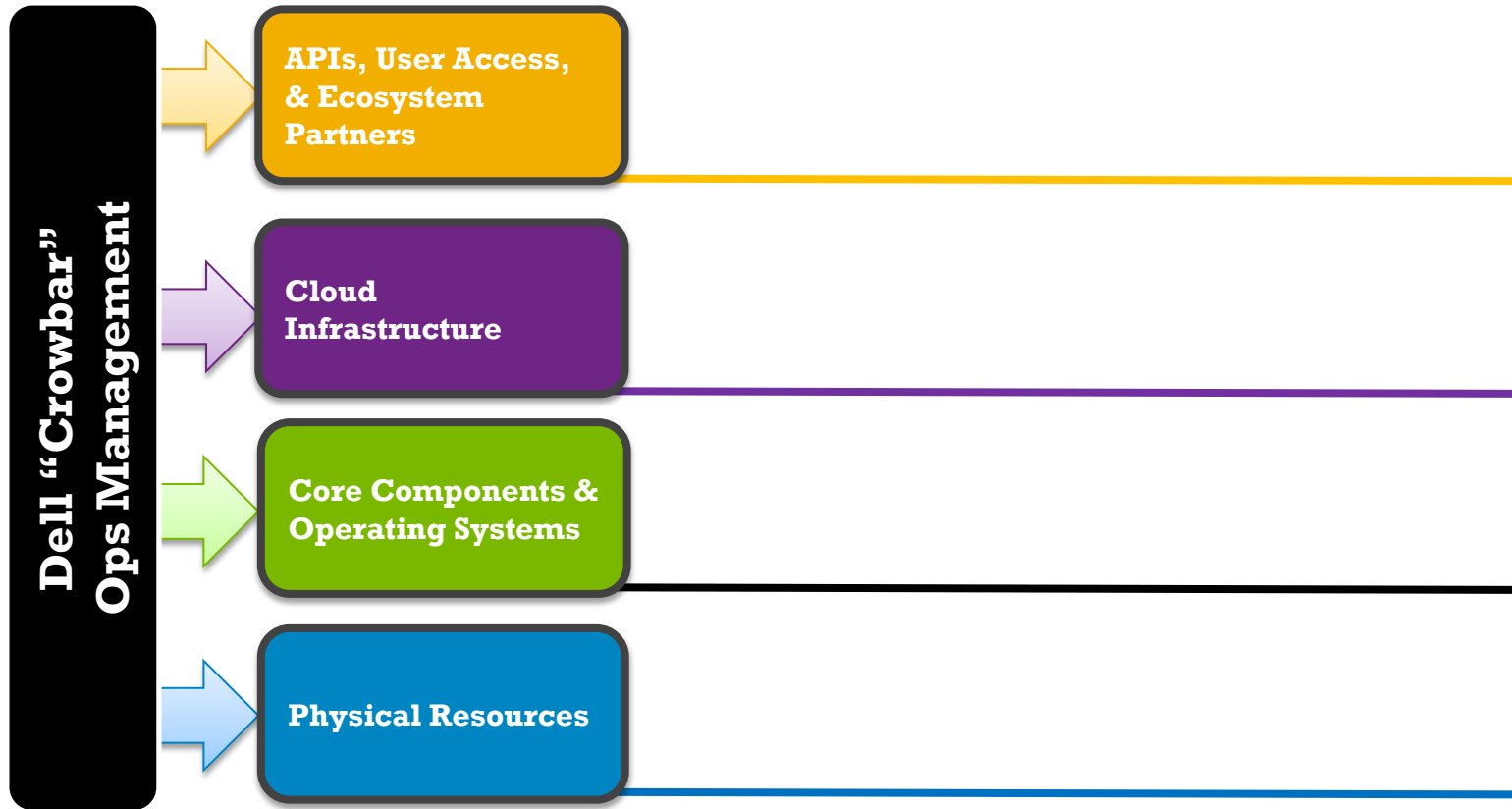
Rob Hirschfeld's blog

<http://robhirschfeld.com/2011/07/26/crowbar-source-released/>



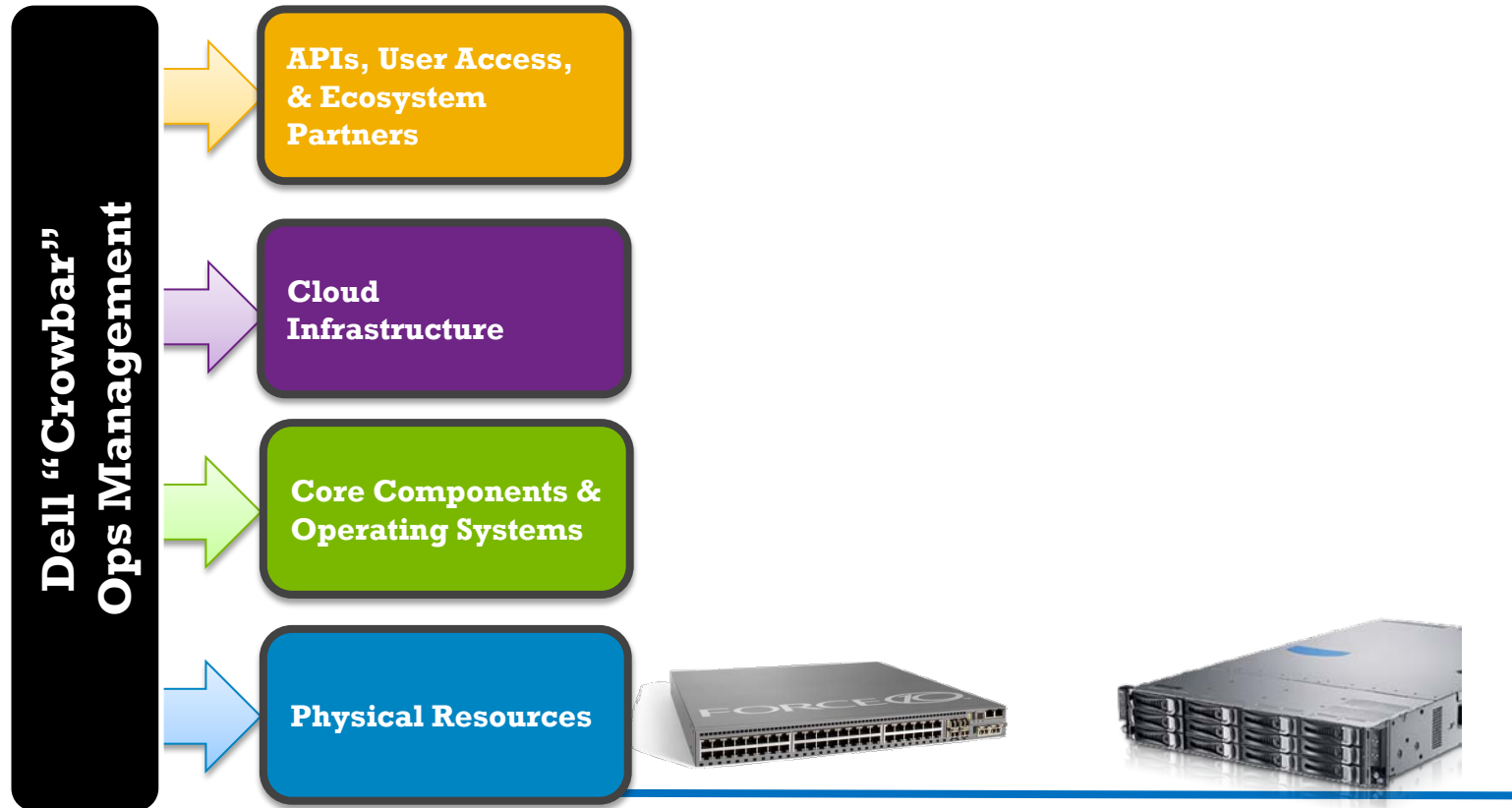
Crowbar Software Framework

To Builds Up Clouds



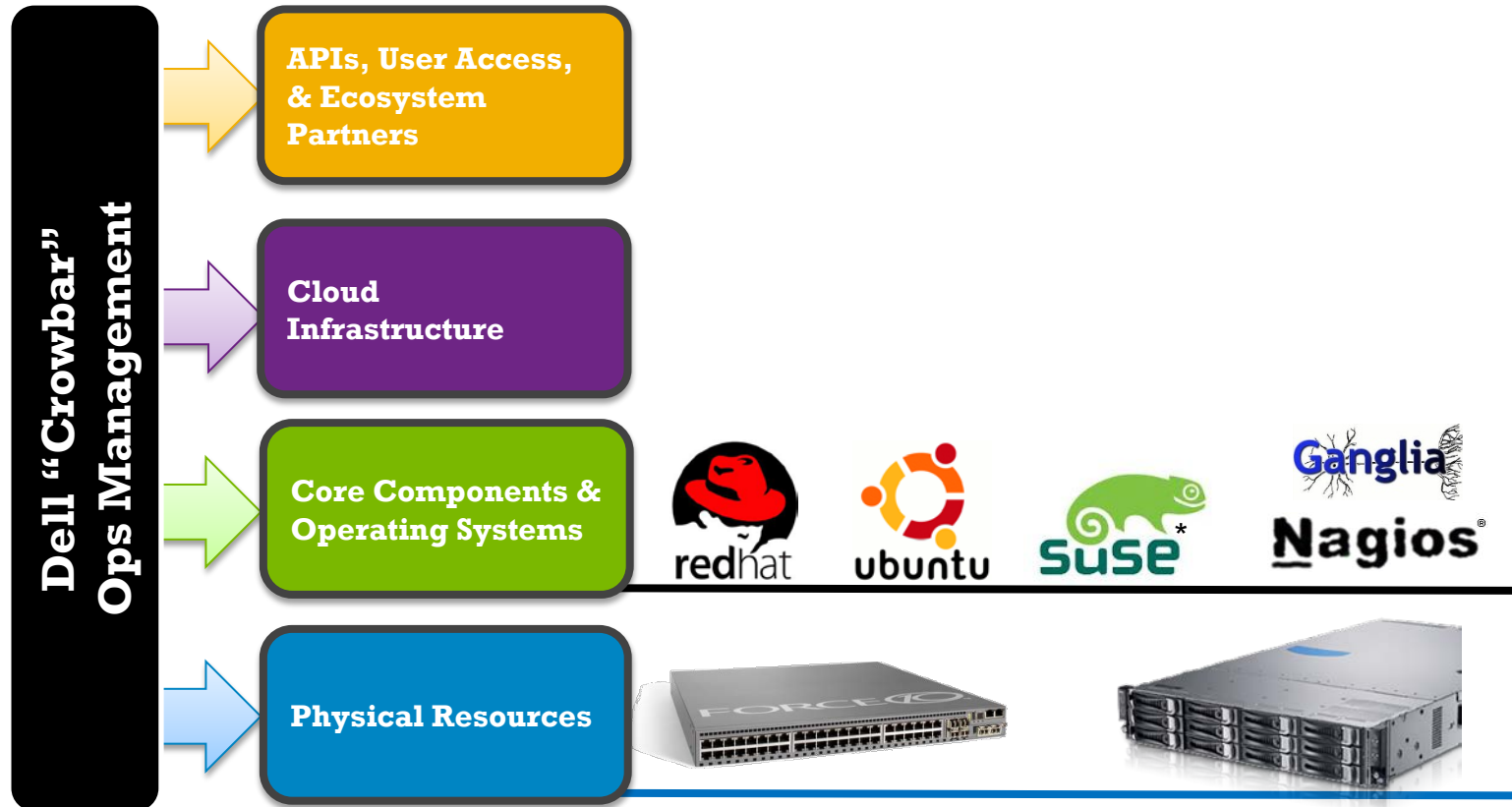
Crowbar Software Framework

1) Hardware Configuration



Crowbar Software Framework

2) OS and Ops Infrastructure

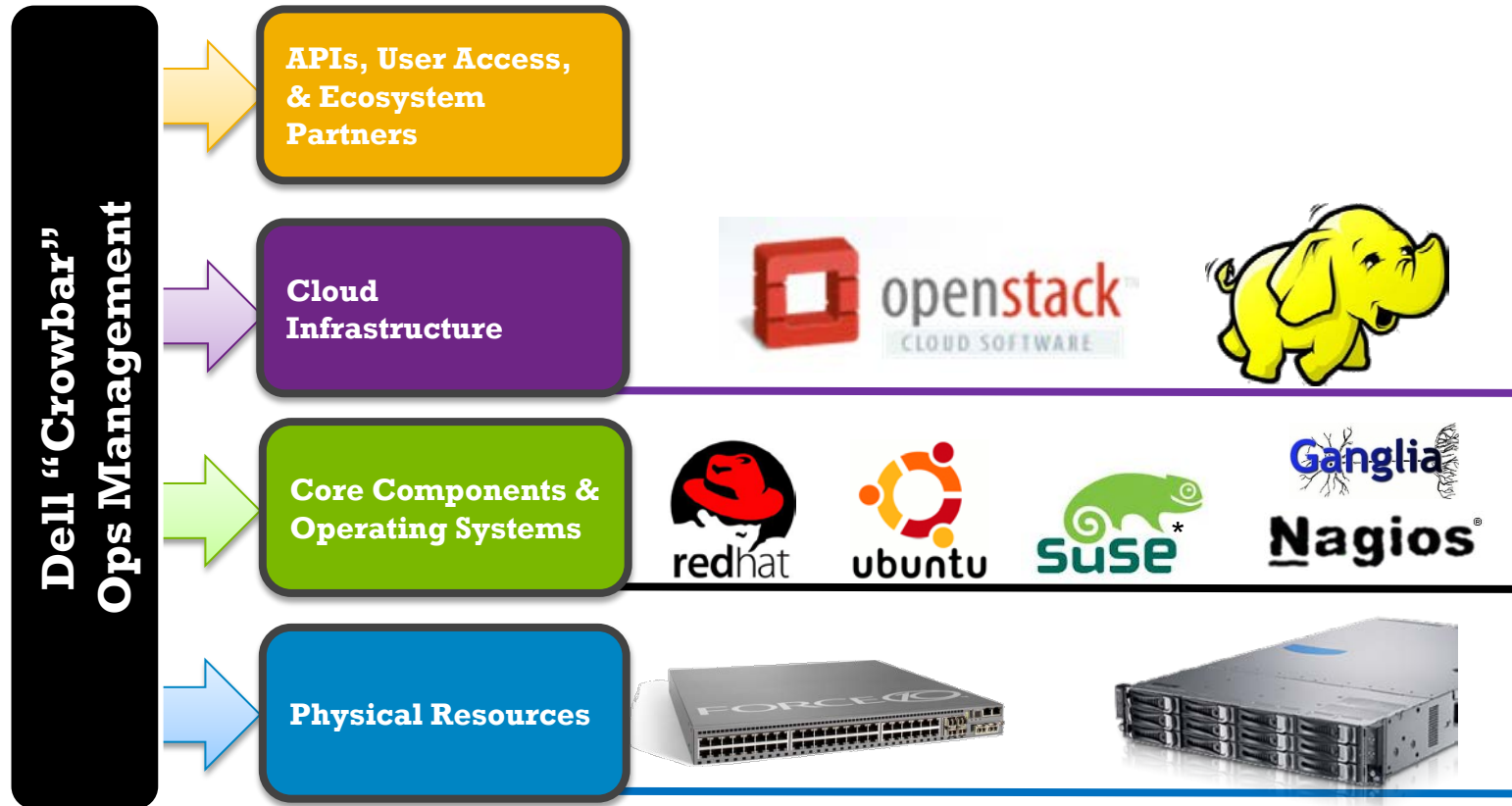


* Suse pending, based on open source activity
Revolutionary Cloud Solutions



Crowbar Software Framework

3) Cloud Platform Integration



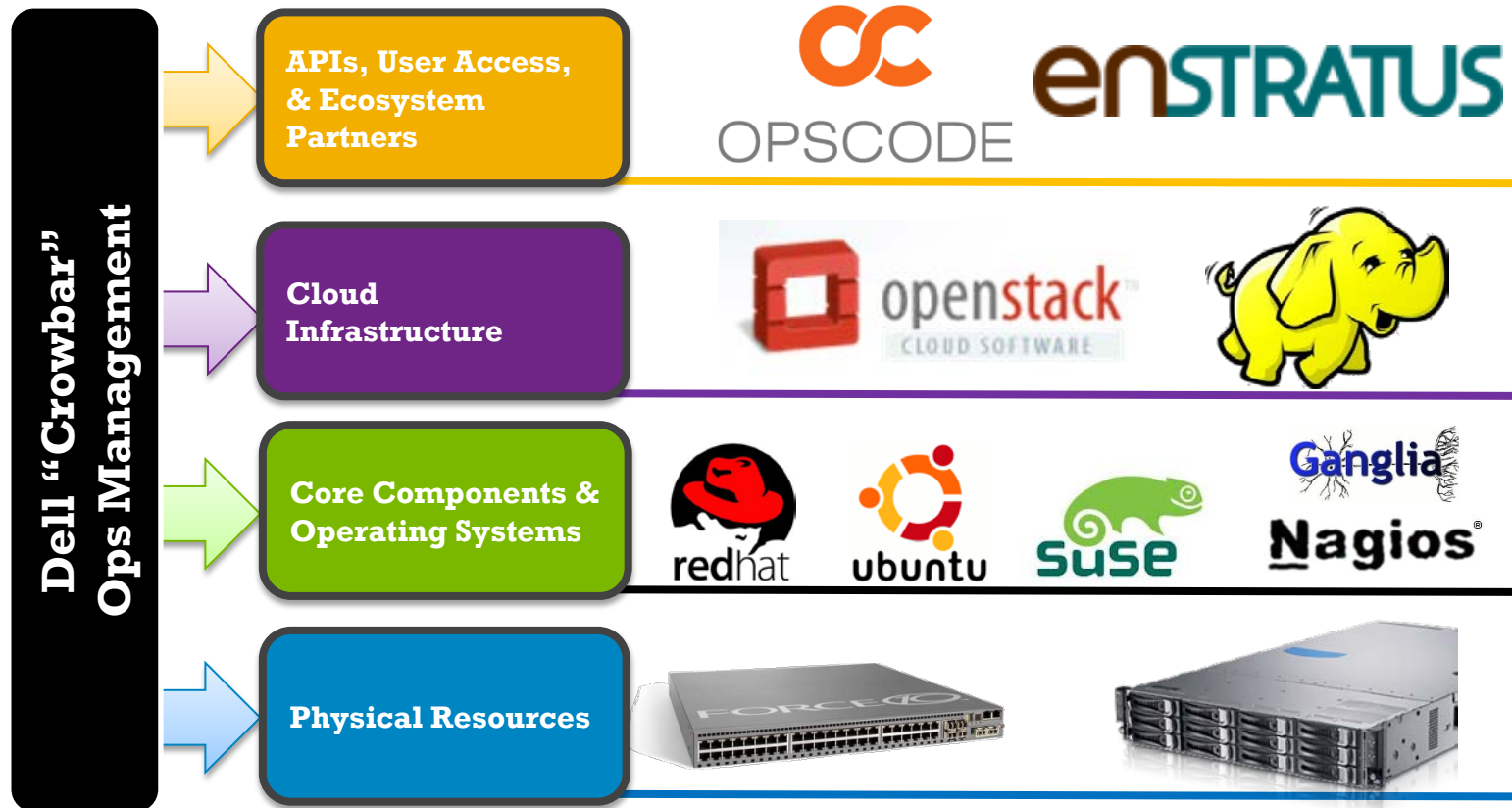
* Suse pending, based on open source activity

Revolutionary Cloud Solutions

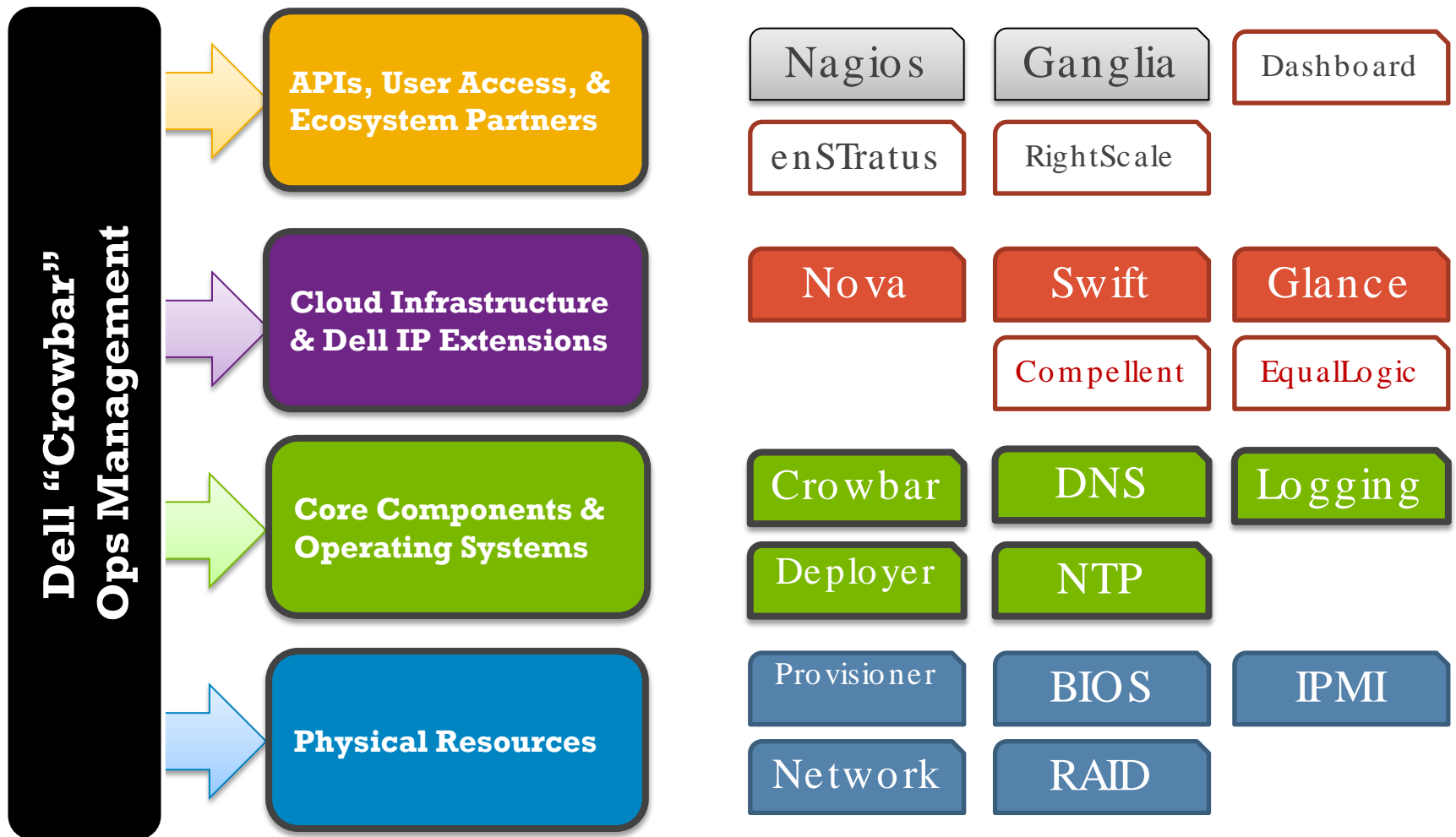


Crowbar Software Framework

4) Cloud App Management



Developing Dell IP: Crowbar



* Crowbar has potential to service other programs beyond OpenStack

Cloud Taxonomy

Software as a Service

IT as a Service

Platform as a Service

Infrastructure as a Service

Everything as a Service

Analytics

Reporting

Security

IPS

Firewall

Overarching
Systems

SSO

LDAP/AD

Legacy Management

Information Service Management

Admin Software

Web Services & APIs

Self Service Portal

Customer Management

Entitlement, rights

Billing

Metering

Infrastructure Software

Self Gov/Workflow Automation

Monitoring

Workload Lifecycle
Management

Orchestration

Intelligent Resource Manager

Platform Provisioning

Abstraction Software

OS

Data Store

Operating System
Virtualization

Application Run-Time
Virtualization

Hardware Virtualization

Physical

Compute

Switch

Storage

Network

HVAC

Power

Facility

Environmentals

Crowbar fits into Cloud Taxonomy

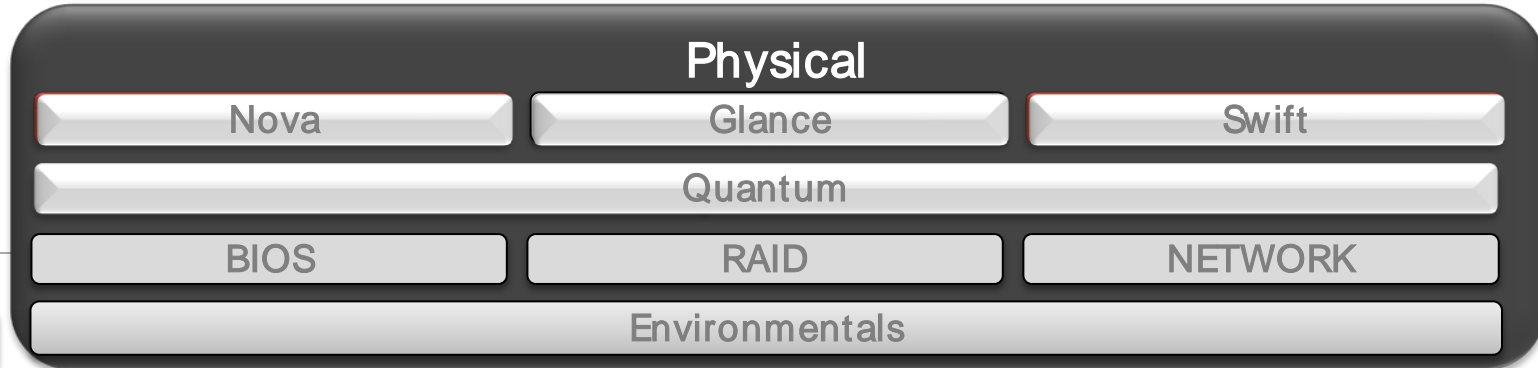
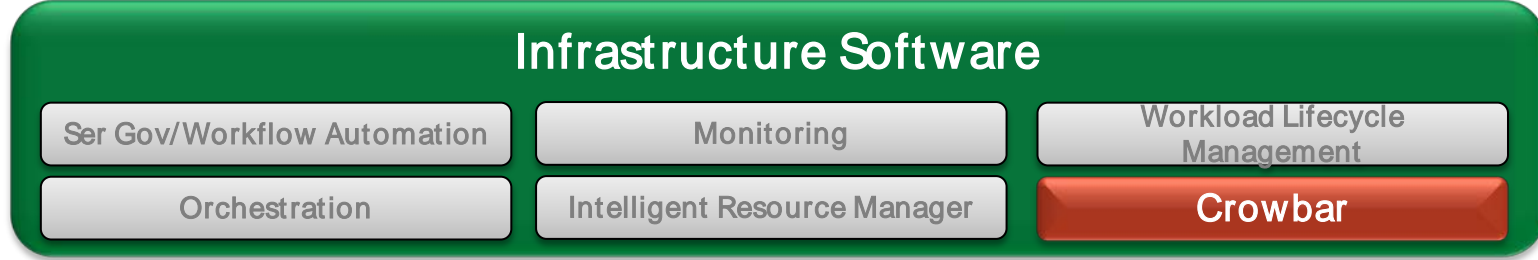
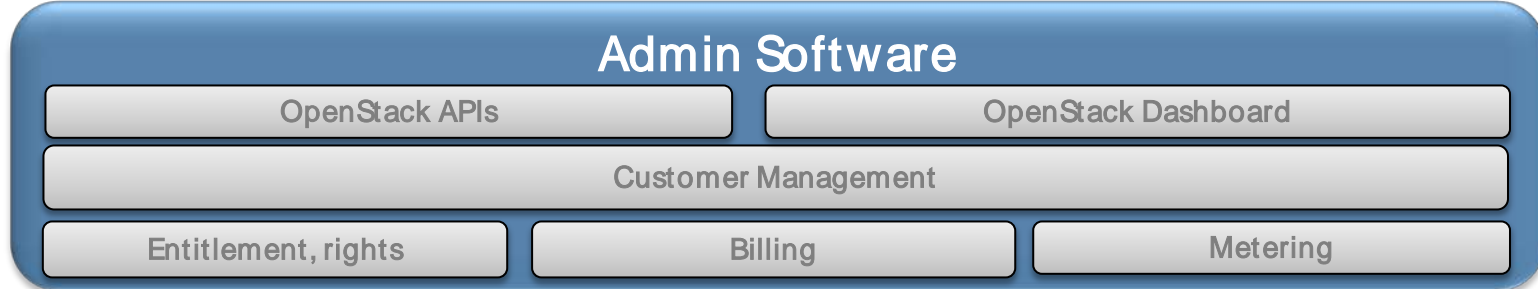
Software as a Service

IT as a Service

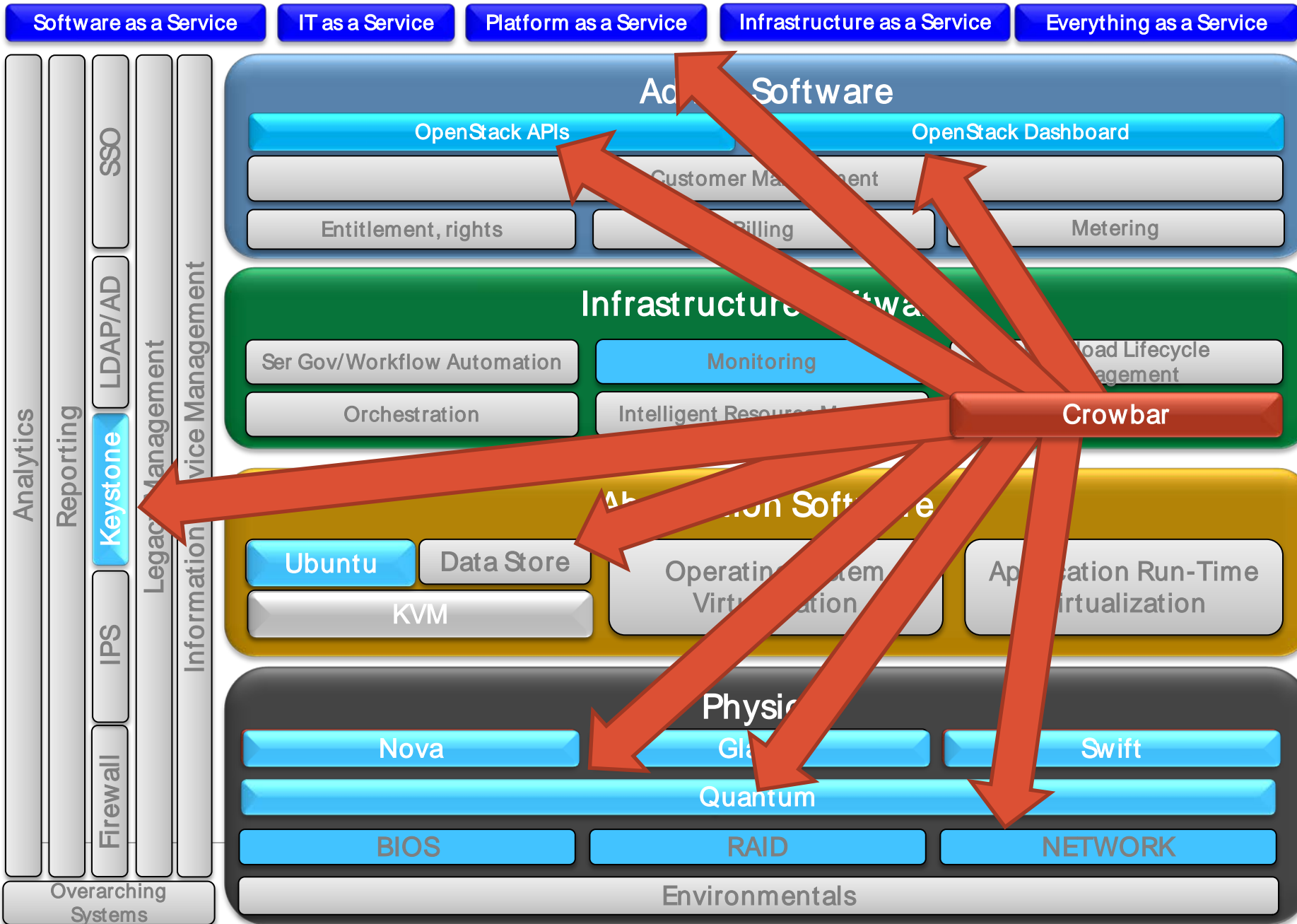
Platform as a Service

Infrastructure as a Service

Everything as a Service



Crowbar Builds the Cloud Taxonomy



Dell OpenStack Customer Case Sharing



Morphlabs Delivers Enterprise-grade OpenStack Converged Infrastructure



“We want to make sure we are ahead of the game in terms of innovation for the delivery of cloud computing, starting with ease of use and powered by performance and efficiency. We want to always be at the bleeding edge in terms of researching new technologies, new processing technologies, new storage technologies, new networking technologies, and then rapidly recombine them into a solution that brings end users the most efficient computing platform.”

Morphlabs CEO Winston Damarillo

Company

The company is a recognized leader in converged infrastructure solutions for the Enterprise. The SSD-powered mCloud Rack Enterprise Edition is the first OpenStack powered converged infrastructure solution for Enterprise deployment

Challenge

Morphlabs' challenge is to become the most widely deployed converged infrastructure solution in the world. The company works with G2000 and Telcos in emerging markets to make price performant on-premise and hosted private clouds available for the Enterprise.

Solution

Morphlabs' mCloud converged infrastructure solutions, built on SSD-powered PowerEdge C5220 and C2100 servers, provide a proven, easy to deploy, and secure cloud. Enterprises can rapidly deploy on premises, and telcos can use mCloud solutions to quickly generate revenue by delivering modular share-nothing hosted private clouds.

Benefits

- **SSD-powered OpenStack Enterprise-grade converged cloud infrastructure**
- **Open Source building blocks and Hyperscale hardware deliver revolutionary price and performance**
- **Global deployment and support**
- **Dramatically reduce cost of IT while accelerating time to market**
- **Focus on differentiating business, not IT procurement, integration, optimization and assembly**



OpenStack Used to Save Lives



“Deploying OpenStack is a competitive advantage for us. It provides freedom to innovate, reduces costs, and improves speed of deployment and management through massive automation”

Company

This company offers a cloud-based infrastructure to pharmas that enables them to host and manage clinical trials

Challenge

Large license costs for on-premise operating system and virtualization infrastructure, and labor costs for management and maintenance. Increasing costs in public clouds and want to bring workloads back in-house

Solution

Piloting Dell OpenStack – powered cloud solution and heavily leverage existing skills with Chef, opensource. Looking to create highly automated DevOps infrastructure.

Benefits

- Cost-effective open source cloud
- Compatibility with AWS
- Automated to reduce labor costs
- DevOps to ease and speed of deployment and management
- Freedom to modify to meet unique needs



DreamHost Expands Cloud and Storage Services with Dell OpenStack Cloud



“Without Crowbar, we’d be writing code, and that costs us money. Having a viable, open-source solution for deploying OpenStack and deploying Ceph are very important, very core, to our business.”

Bryan Bogensberger, VP Business Strategy,
DreamHost

Challenge

DreamHost was in need of a flexible, open source cloud platform for their public cloud compute

Solution

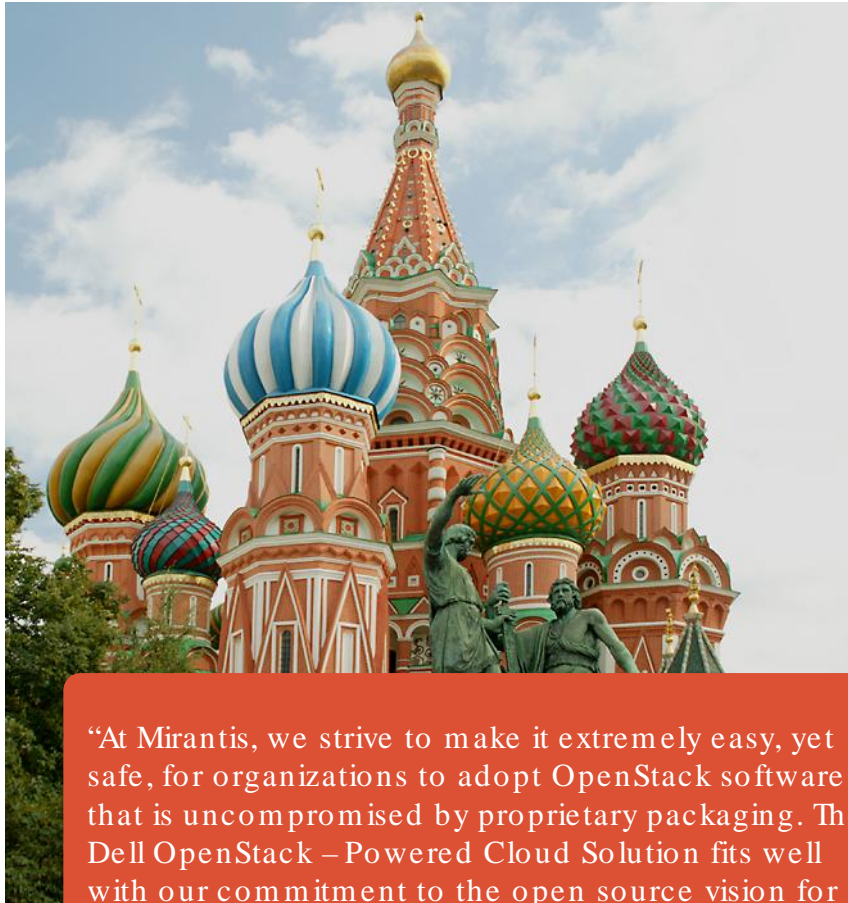
DreamHost uses Dell hardware for its core business—shared hosting, dedicated hosting and virtual private server hosting—as well as its emerging businesses.

For its OpenStack cloud, DreamHost is using the Crowbar barclamp for Nova. The company is writing its own barclamp for its Ceph storage solution.

Benefits

- Took advantage of Dell’s OpenStack reference architecture and deployment framework
- Saved 4-6 months of software development work
- Leveraged cloud and scale-out servers and reference architecture
- Realized business advantages of leasing with Dell Financial Services

Mirantis Speeds and Eases OpenStack Deployment



“At Mirantis, we strive to make it extremely easy, yet safe, for organizations to adopt OpenStack software that is uncompromised by proprietary packaging. The Dell OpenStack – Powered Cloud Solution fits well with our commitment to the open source vision for OpenStack.”

Boris Renski, co-founder and executive vice president at Mirantis

Company

With OpenStack engineering expertise, Mirantis helps service providers, SaaS vendors and enterprises build and run robust OpenStack cloud infrastructure

Challenge

As cloud computing enters the mainstream, more and more organizations are turning to Mirantis for help with OpenStack, including Dell Reference Architecture and hardware.

Solution

With the Crowbar software framework, the team can deploy an OpenStack cloud in hours instead of days. Crowbar also provides an easy, modular way for ongoing cloud evolution and maintenance

Benefits

- **Faster time to cloud**
- **Open source freedom and flexibility**
- **Ease of migration and integration**
- **Engineering collaboration**



Dell OpenStack Services Portfolio



Dell Cloud Consulting

IT Consulting

Config and Deploy

Support



- Limited duration, high impact engagements
- Delivered by OpenStack experts
- Clear phases and decision points
- Validated repeatable process
- Knowledge share at each step

***Understand
the Potential***

***Make Informed
Decisions***

***Lay the Path
for Success***

Capture the Value

Ongoing Success



Workshop



Assessment



Design



Implementation



Manage/Support



OpenStack Solution Installation and Implementation

IT Consulting

Config and Deploy

Support

A turnkey solution
deployment service



- Project management from order drop to customer acceptance
- Based on Dell-validated reference architectures
- Onsite hardware and software installation
- Optional Rack Integration at a Dell facility
- Validation of the installed solution
- Knowledge transfer on Crowbar software

Save money, minimize
disruption and optimize
performance.



Performed according
to Dell's best
practices



Rapid time-to-live



Premium hardware and software support available around the clock, 24x7x365

- Single point of accountability from experts with solution-specific training
- Support for Crowbar
- Collaborative Support with Solution Partners
- Next Business Day onsite service with four and eight hour parts & labor response options
- Escalation management with customer-set severity level options

Dell Services ranked # 1 for onsite support response time¹



Leverage our global scale and skill



Shift downtime into uptime & escalations to satisfaction



Conquer complexity so you can focus on innovation

¹Technology Business Review, "Service & Support Customer Satisfaction | Fourth Calendar Quarter 2010" March 2011, Julie Perron. Availability and terms of Dell Services vary by region. For more information, visit www.dell.com/servicesdescriptions.



Dell Openstack Solution in China



Dell Openstack solution in China

- **Milestone:**

- **2011/07/27** – Dell Openstack solution launched in **US**
- **2012/07/12** – Dell Openstack solution launched in **China**

How to Bring OpenStack into Application Environments

Use Case Discovery

- Assess the appropriateness and value of OpenStack for their organization

Proof of Concept

- Verify the prototype functionality and project feasibility for a new OpenStack deployment

Process and Team

- Development-define the requirements and processes for creating a new OpenStack team

Production Pilot

- Deploy their first production-level pilot project using OpenStack

Production

- Perform a periodic health checks and tune up existing OpenStack deployment

Available Resources

- Dell OpenStack Reference Architecture:
 - Overall architecture, BOM's, SKU's
- Dell OpenStack Deployment Guide
 - Site Prep, Hardware Setup, Network/Switch configuration, Admin Node, Crowbar, and OpenStack installation
- Dell Crowbar Users Guide
 - Architecture description, User Interface details, Barclamp details
- OpenStack has much improved documentation on Essex
 - More doc improvements expected in Folsom

Thanks!

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