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# Data Center Automation und Orchestration

Nutanix - State-of-the-Art Enterprise Cloud Platform

Lucerne University of  
Applied Sciences and Arts

**HOCHSCHULE  
LUZERN**

**Samuel Rothenbühler**

Lead Architect Enterprise Cloud  
Nutanix Platform Expert - NPX #11

# Nutanix: The Enterprise Cloud Company



Make datacenter infrastructure invisible, elevating  
IT to focus on applications and services



Founded in 2009



2800+ employees  
(10 CH employees)

You needed VMware.  
You want Amazon Web Services.  
**YOU'LL LOVE  
NUTANIX.**



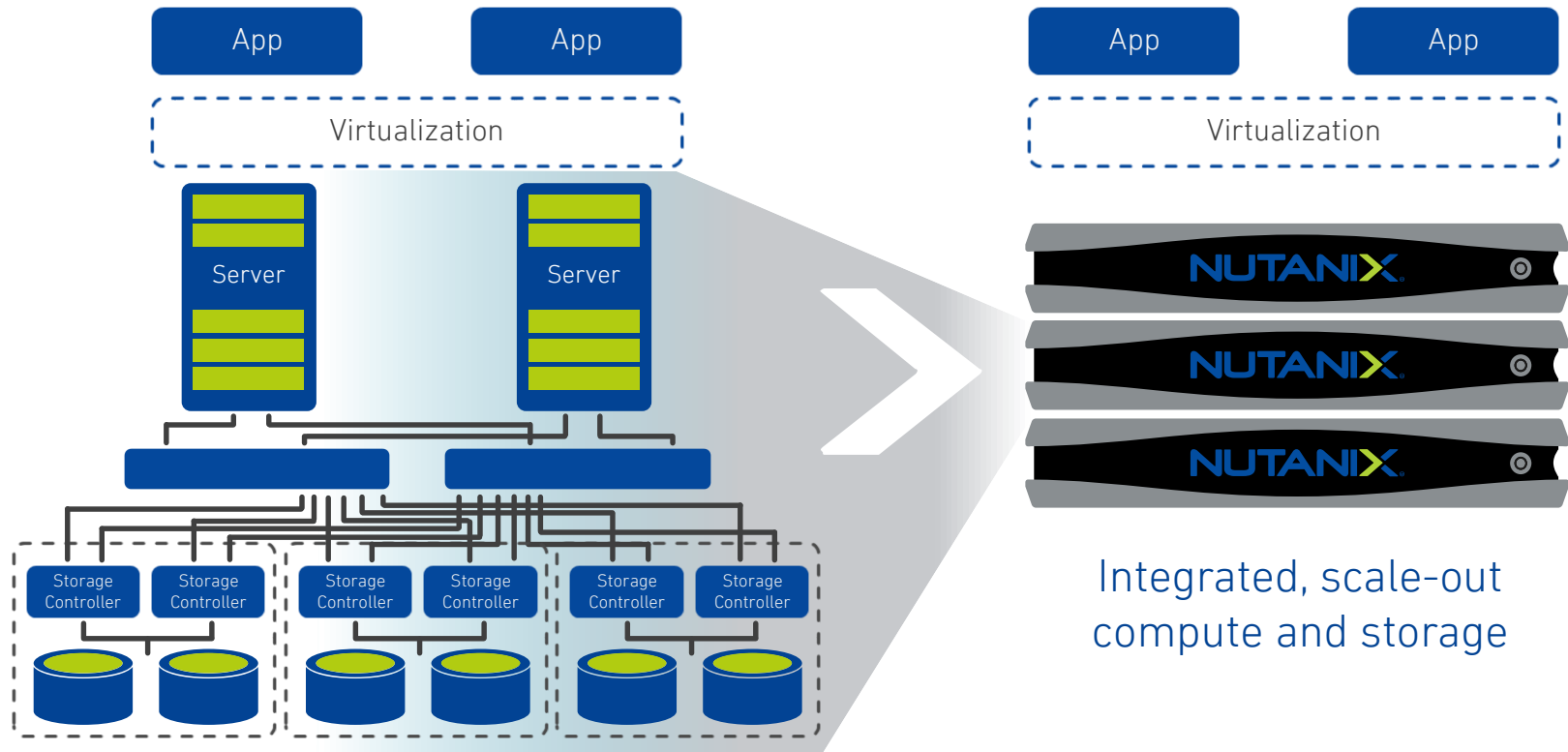
The Enterprise Cloud Company  
[nutanix.com/love](http://nutanix.com/love)



# Hyperconverged Infrastructure

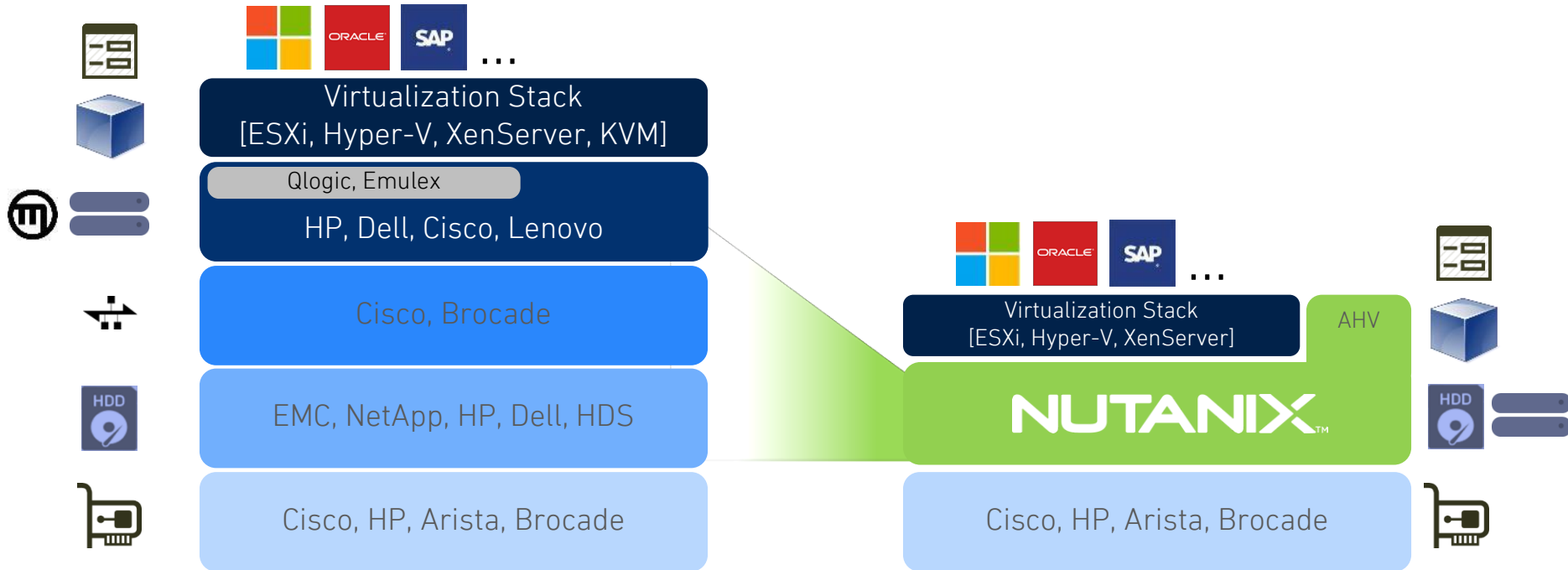


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Integrated, scale-out  
compute and storage

# Hyperconvergence: A Simplified IT Stack



Which Stack Would You Want To Manage?

# Infrastructure Lifecycle Benefits

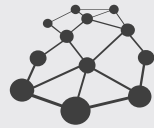


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BUY

**Pay as You Grow** - buy only what you need, and stop expensive overprovisioning



DEPLOY

**Rapid Deployment** - set up in minutes for fast time to value



MANAGE

**Simplified Management** - single pane of glass to manage all infrastructure



SCALE

**Incremental Scalability** - scale on demand in minutes, with zero downtime

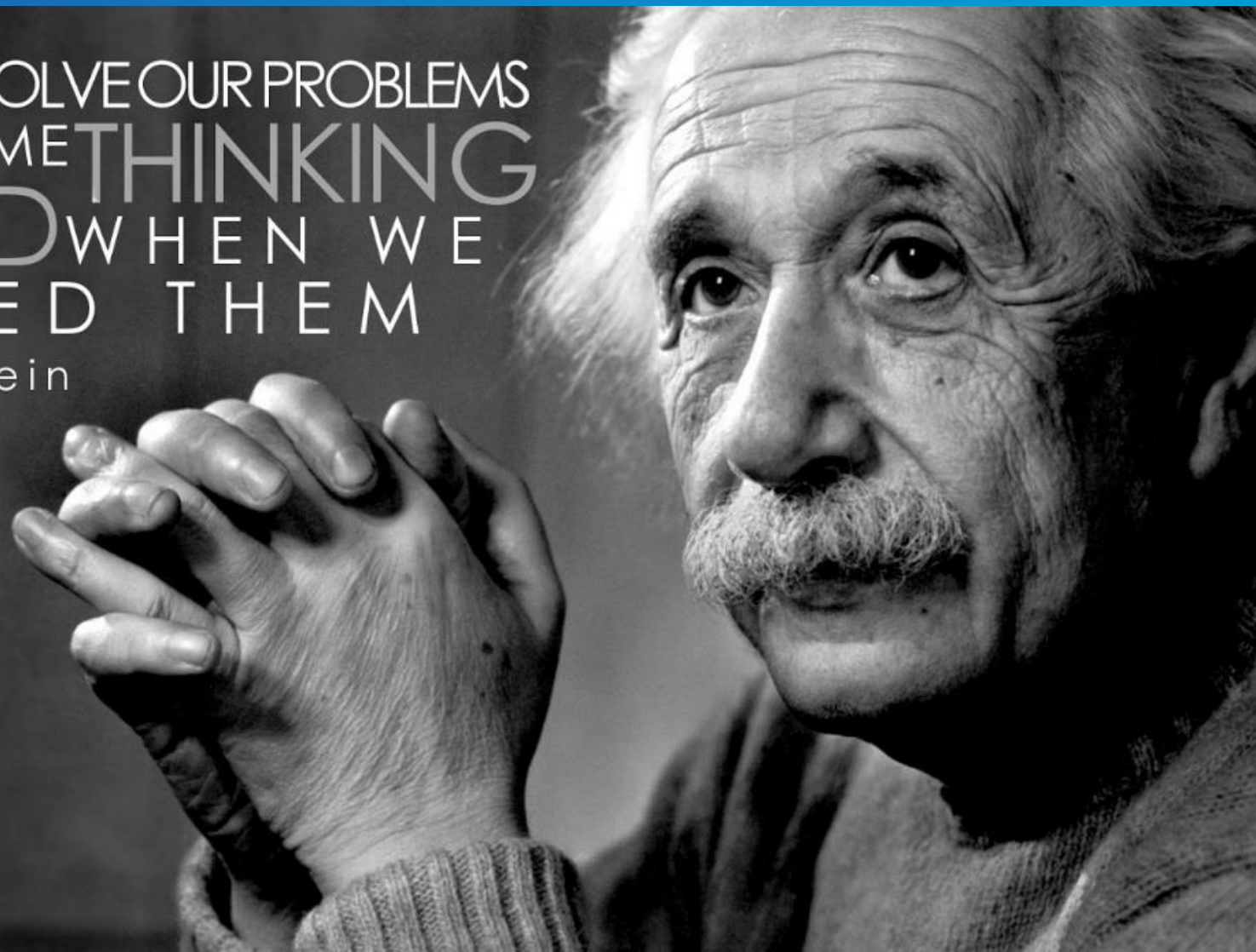


SUPPORT

**One-stop Support** - expert support for complete infrastructure stack

WE CANNOT SOLVE OUR PROBLEMS  
WITH THE SAME THINKING  
WE USED WHEN WE  
CREATED THEM

-Albert Einstein



Think differently to get a different outcome.

# The Platform Components



## Prism

### Calm

App Lifecycle Management

Self Service and Governance

Hybrid Cloud Management

One-click  
Infrastructure  
Management

One-click Operational  
Insights

One-Click Planning



## Acropolis

App Mobility Fabric

Distributed Storage Fabric

AHV (Built-in Virtualization)



# The Platform Components



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# Nutanix uses a Web Scale architecture



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Off-the-shelf x86 servers



All intelligence in software



Scale-out architecture



Self-healing systems



Rich automation and analytics



# Nutanix uses a Web Scale architecture ...but what does it mean?



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Off-the-shelf x86 servers



All intelligence in software



Scale-out architecture



Self-healing systems



Rich automation and analytics

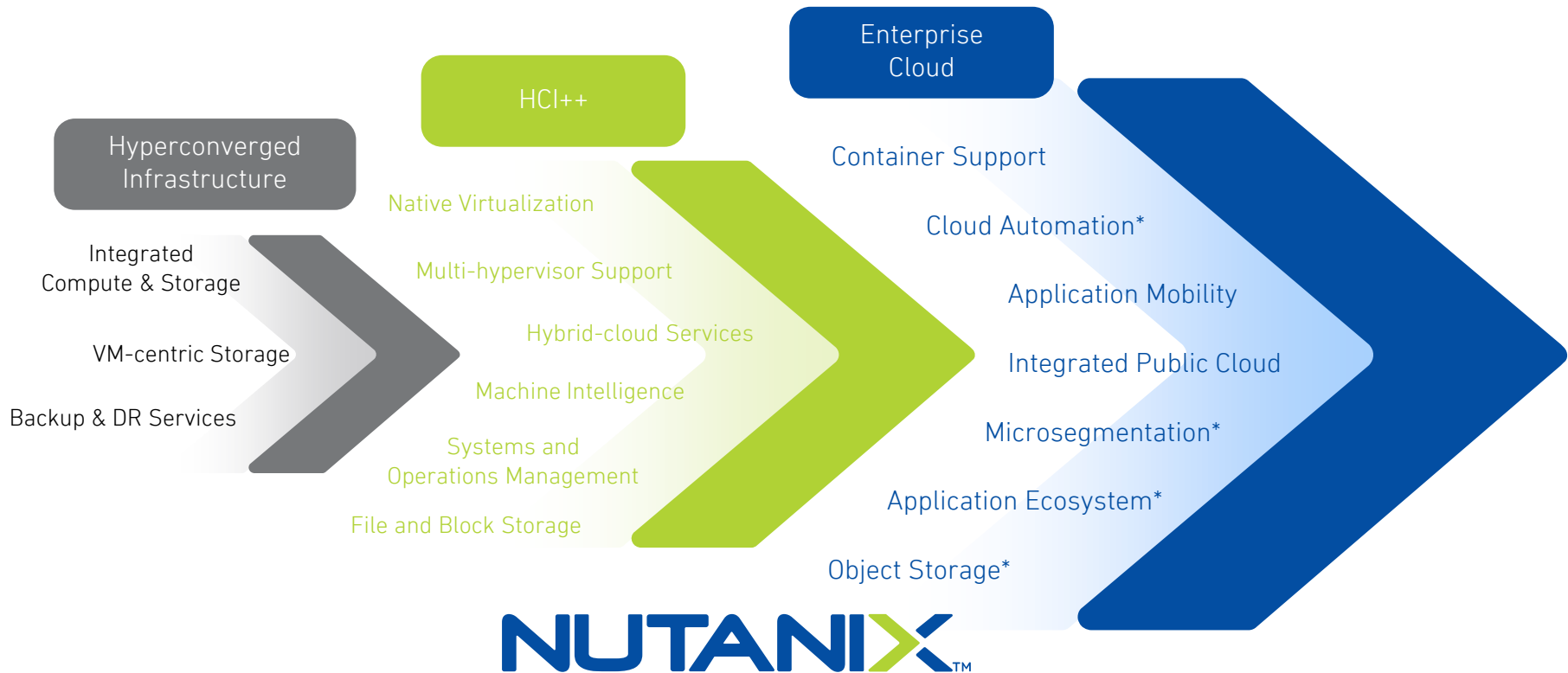
- Software Defined
- Extensibility
- Linear Scale Out
- Efficient Self Healing
- Granular, Big Data analytics
- Automation, load balancing

...is at the core of the architecture

# Pioneering the Enterprise Cloud OS



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\* to be released soon

# The Platform Components



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## Acropolis

App Mobility Fabric

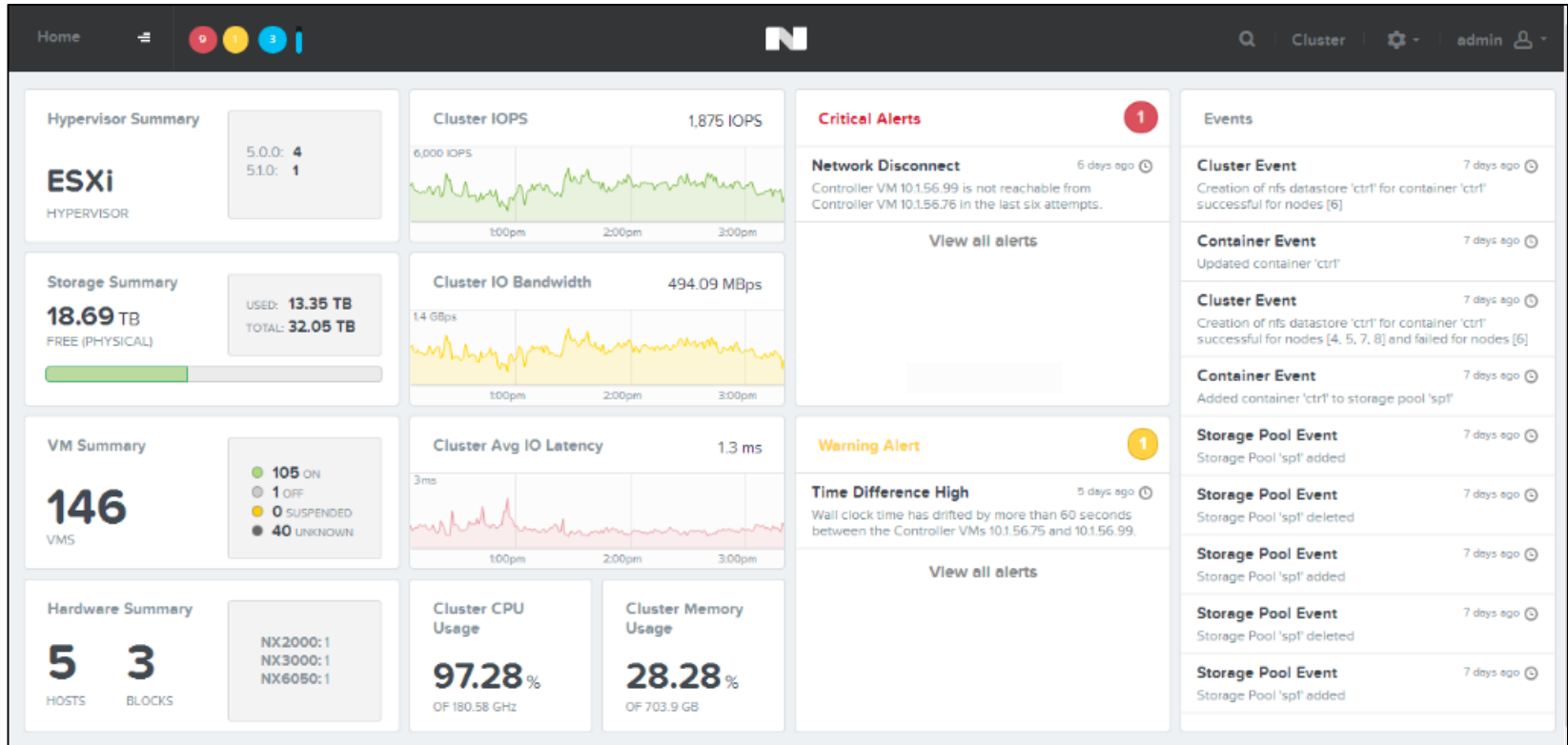
Distributed Storage Fabric

AHV (Built-in Virtualization)

# Prism: User-centered Design



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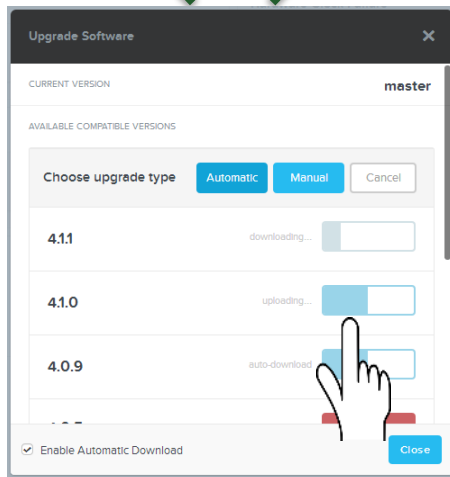
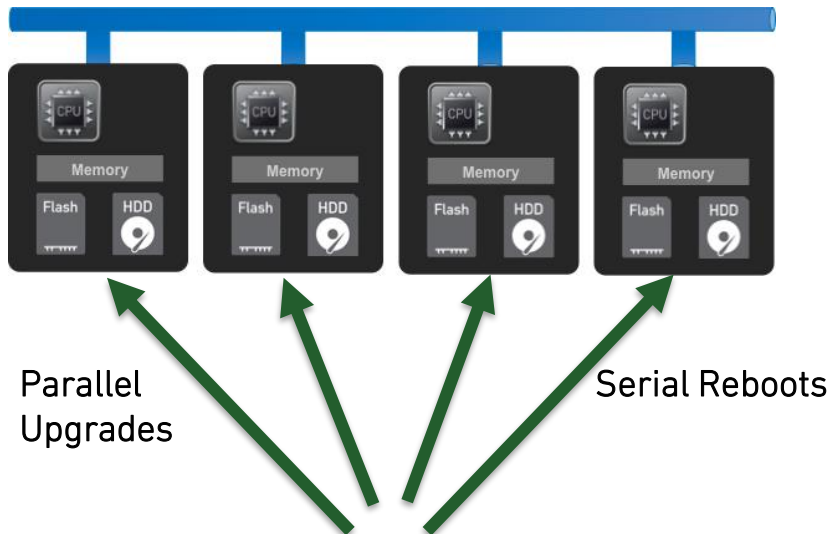


Intuitive.

Beautiful.

Insightful.

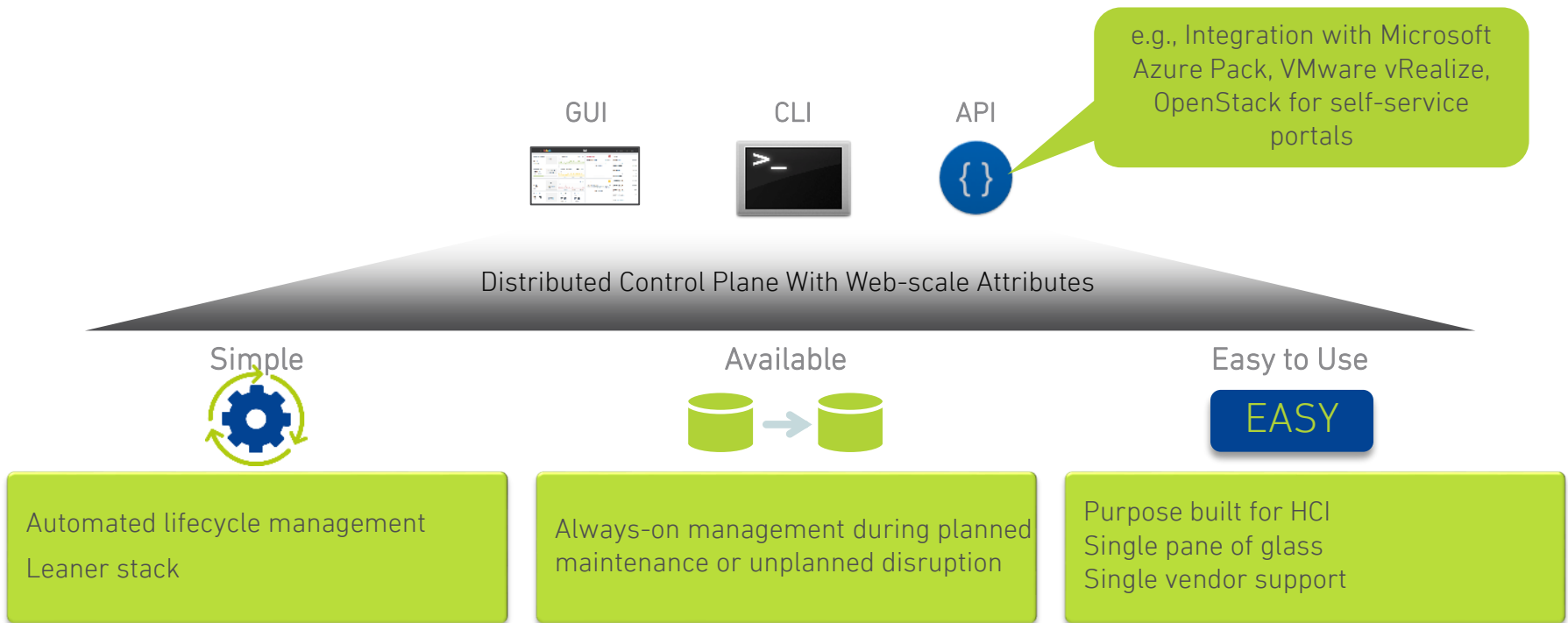
# One-click AOS, Hypervisor, HW Firmware Upgrade



Automatically upgrade NOS on Nutanix clusters non-disruptively with no manual intervention

- ✓ Zero touch after initiation
- ✓ No downtime while upgrade happens
- ✓ Rolling upgrades
- ✓ Independent upgrade of hypervisor and infrastructure OS (NOS)
- ✓ Works with ESXi, Hyper-V, AHV

# Integrated Management for Storage and Virtualization





# App Aware Policies for Enforcement and Visibility



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Home Explore Analysis Alerts 7

Entities

- VMs 19
- Clusters 4
- Hosts 4
- Disks 4
- Categories 4
- Security Policies 3**

+ Create Security Policy

Type name to filter by

### 3 Total Security Policies

| NAME  | PURPOSE            | POLICY TYPE | STATUS  | LAST MODIFIED                       |
|---|--------------------|-------------|---|-------------------------------------|
| <input type="checkbox"/> Exchange Security    | Secure Exchange    |             | <span style="color: red;">!</span> Applied    | 01/02/17, 11:34:23 am by J. Daniels |
| <input type="checkbox"/> New Isolation Policy | Isolate prod & dev |             | <span style="color: yellow;">!</span> Monitor | a few seconds ago by J. Daniels     |
| <input type="checkbox"/> Quarantine (Default) | Isolate threats    |             | Applied                                       | 01/02/17, 11:34:23 am by J. Daniels |

There are 10 uncaptured traffic flows.

# Flexible Application and Rule Definition



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Create App Security Policy



< Back

✓ Define Policy

2 Set Rules

3 Review

Securing an app

Next >

Inter-App

Intra-App

Inbound Traffic

Whitelist Only

Department HR and

Location San Jose

Allow All

Whitelist Only ✓

IP 10.1.2.3

Subnet 10.1.2.3/22

Tier Other App Tier name

+ Add Source

App Type: Microsoft Exchange and Environment: Prod

Tier Edge Transport

Intra-tier communication allowed

Tier Mailbox

Intra-tier communication allowed

Outbound Traffic

Allow All

All Destinations

# Easily Integrate Services in App Policies



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Create App Security Policy

< Back

Define Policy

2 Set Rules

3 Review

Securing an app

Next >

Inter-App Intra-App

Create Inbound Rule

Department HR and

Location San Jose

Tier Edge Transport

Specify the protocol details for this rule

+ Add Protocol/Port

| PROTOCOL | PORT | TYPE | CODE | ACTIONS |
|----------|------|------|------|---------|
| TCP      | 25   | N/A  | N/A  | / X     |
| ICMP     | N/A  | 1    | 3    | / X     |

Redirect through service chain

East West Firewall

Cancel

Save

Inbound Traffic

Whitelist Only

Deny all incoming traffic.

Allow your app type to receive connections from specific sources by adding them here.

Department HR and

8 VMs

Location San Jose

+ Add Source

Outbound Traffic

Allow All

All Destinations

# Calm Overview



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Calm

Application Lifecycle Automation

Self Service and Governance

Hybrid Cloud Management

# Application Lifecycle Automation



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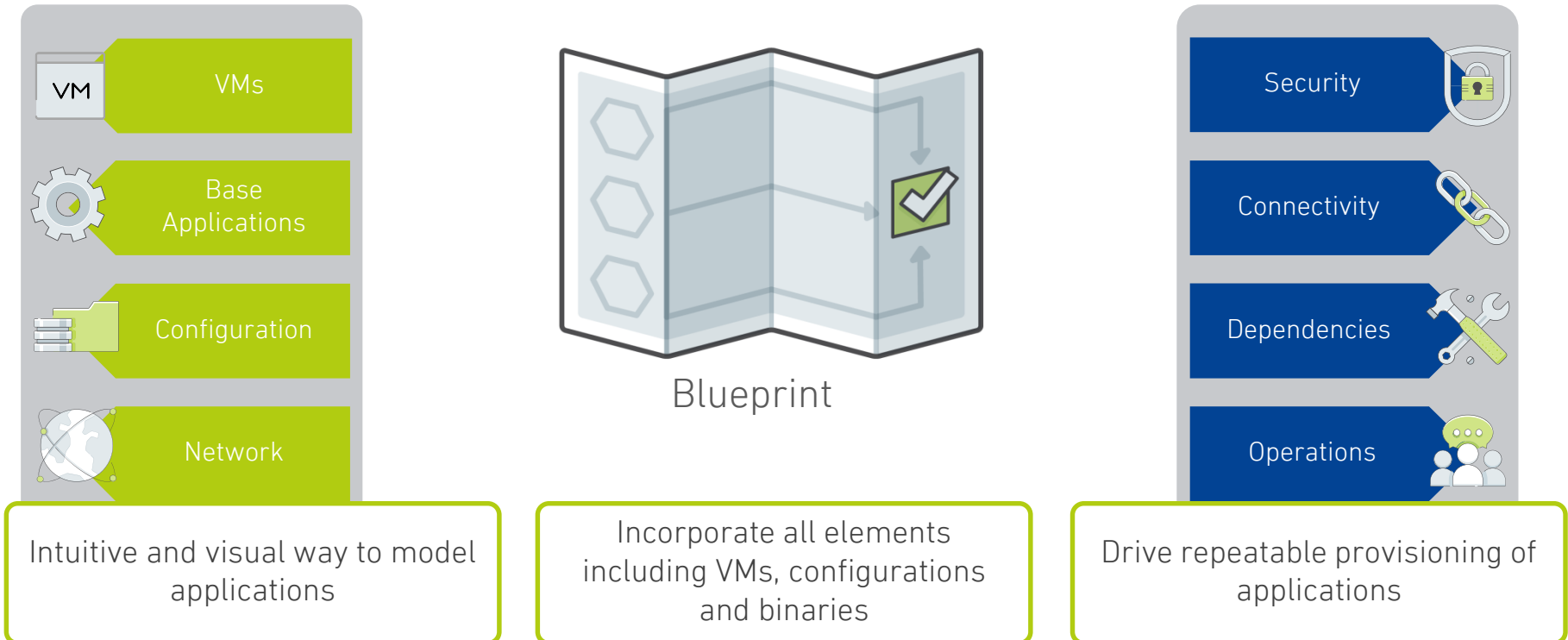
Calm

Application Lifecycle Automation

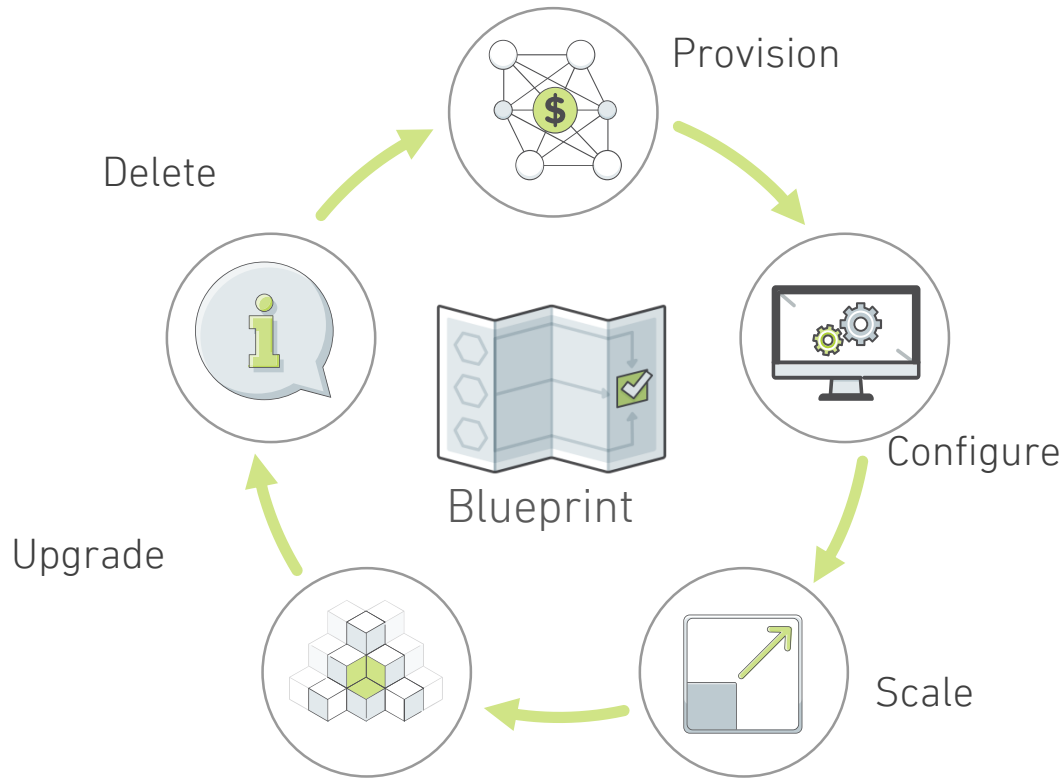
Self Service and Governance

Hybrid Cloud Management

# Blueprints Capture All Elements Of The Application



# Blueprints Are Used For Lifecycle Management



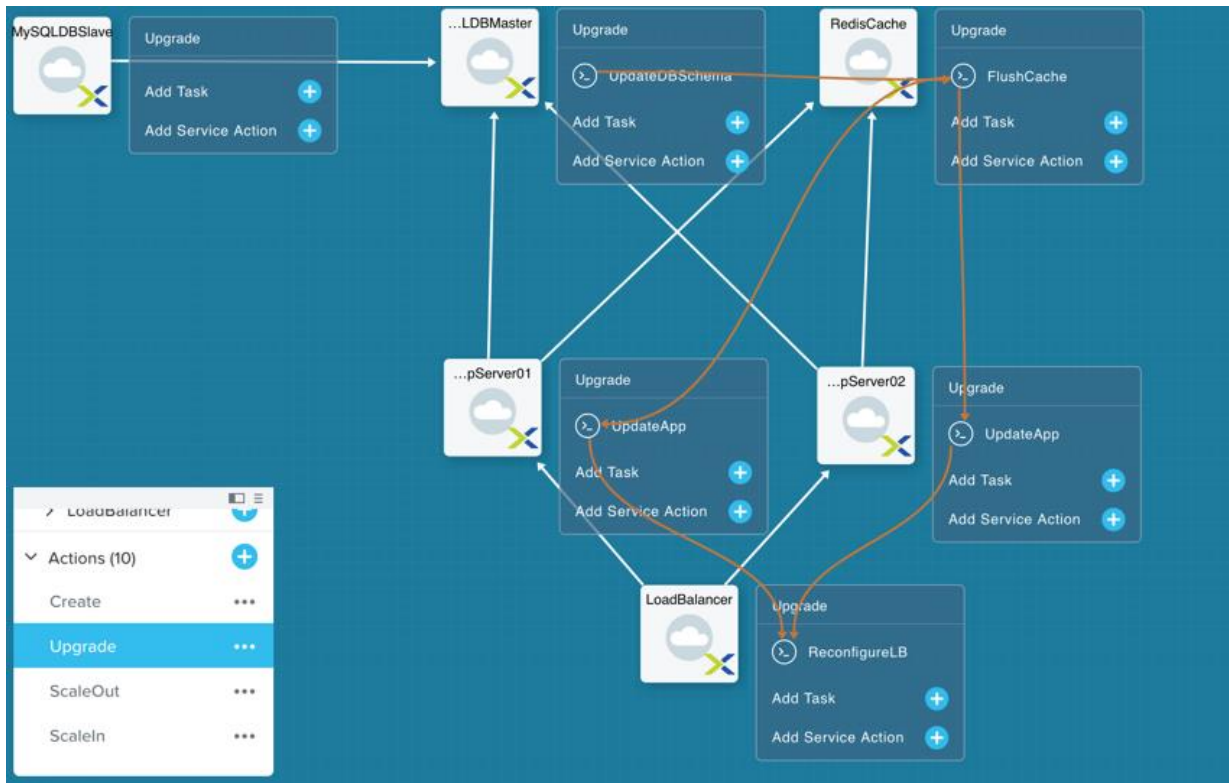
Automate **routine** application management operations

Reduce errors, delays and downtime

# Make Sense of Complexity



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Capture organizational knowledge

Streamline complex provisioning and lifecycle tasks

Easy to understand dependencies



# Self Service and Governance



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Application Lifecycle Automation

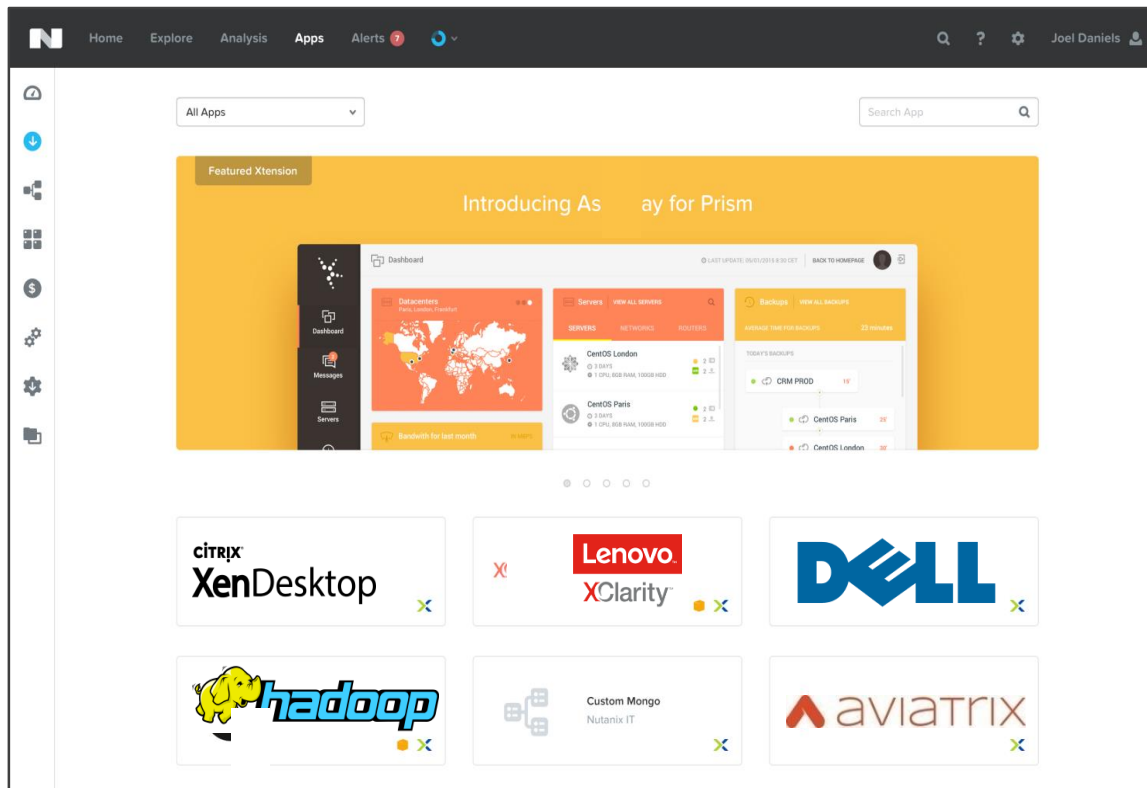
Self Service and Governance

Hybrid Cloud Management

# Nutanix Marketplace Empowers Self-Service



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Consume pre-integrated blueprints

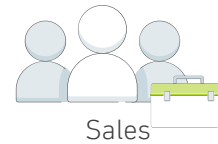
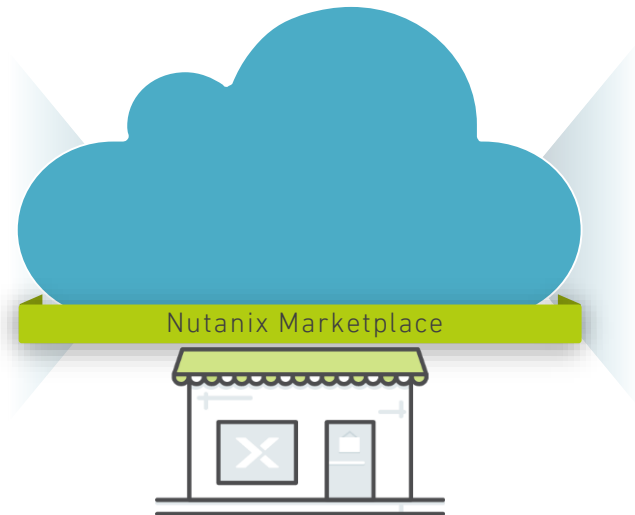
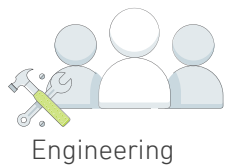
Publish blueprints to enable self-service

One-Click App Provisioning

Pre-integrated blueprints

Self-service based on user role and group

# Governance and Control



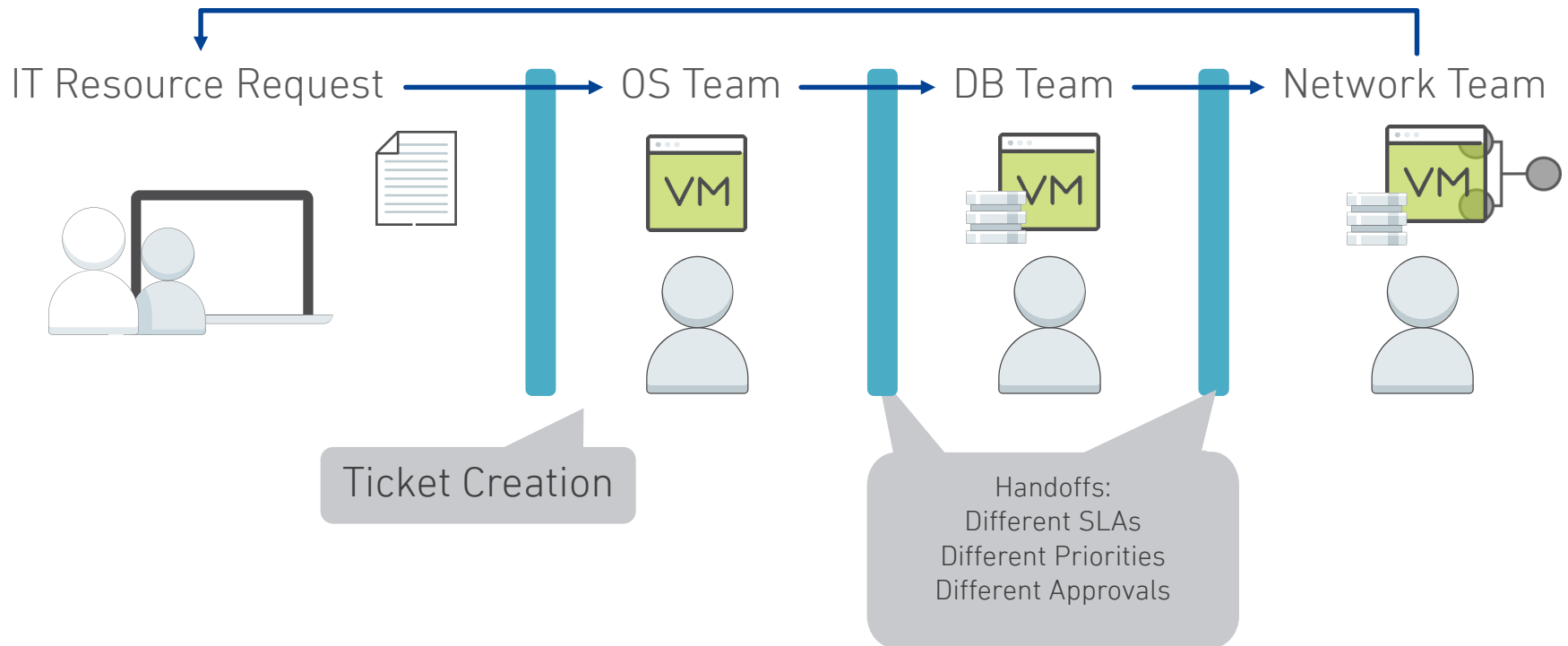
Granular Access Controls and Budgets

Frictionless Service Delivery

# Transitioning From Friction And Handoffs..



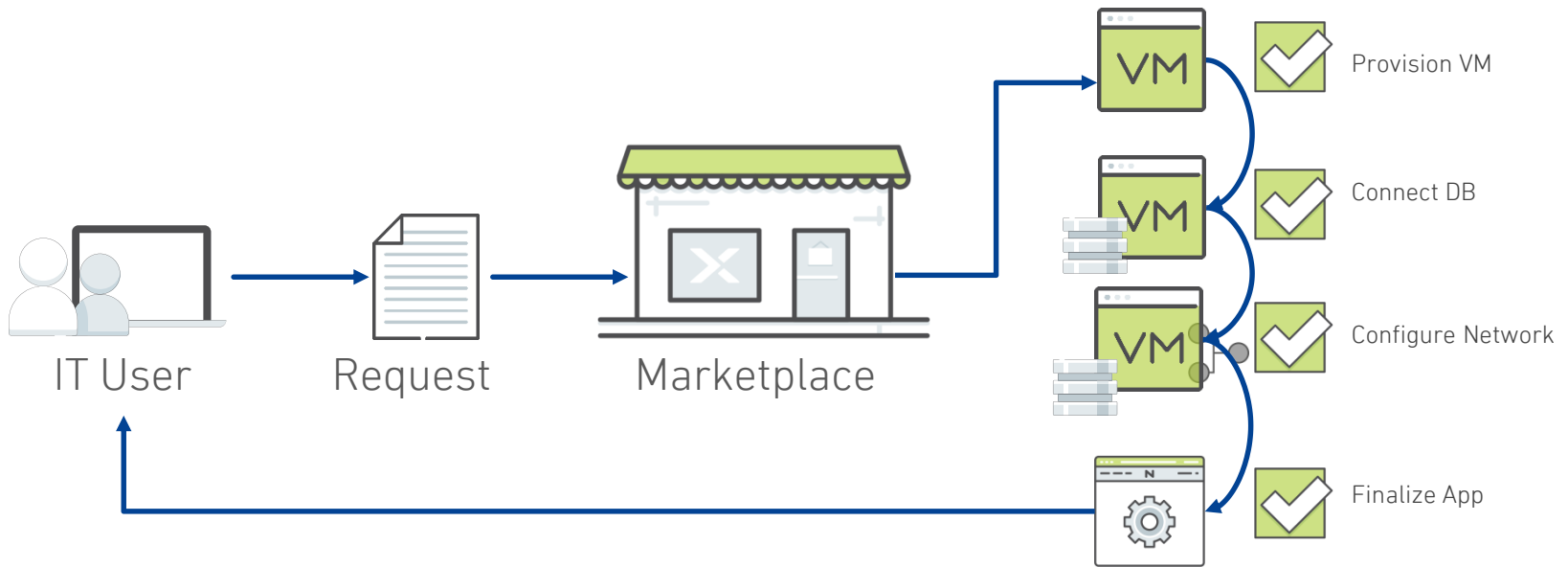
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# ..To One Click Automation



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# Hybrid Cloud Management



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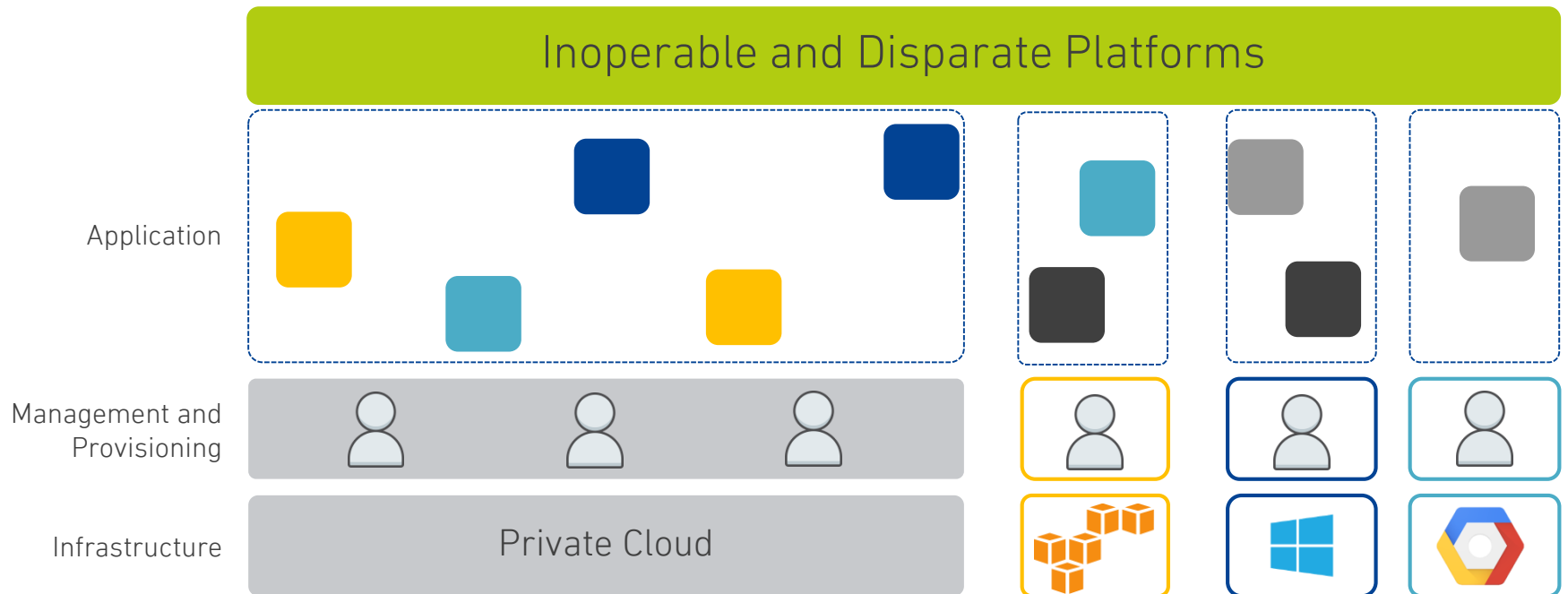
Calm

Application Lifecycle Automation

Self Service and Governance

Hybrid Cloud Management

# Hybrid Clouds Add Another Layer of Challenges



# Introducing Calm



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Application

## Nutanix Calm

Management and  
Provisioning

Infrastructure





# Nutanix Tech Bootcamp



Erfahren Sie mehr über Nutnaix inkl. Hands On Lab Übungen an einem Tech Bootcamp:

- Wann: 25. Oktober (weitere Bootcamps in Planung)
- Wo: Bern
- Dauer: 08:30 – 16:00
- Registration: <http://www.amanox.ch/de/allgemein/events>

# Try Nutanix for Free – Join the Community



- The community edition is an (almost) full featured, AHV based Nutanix cluster which can be installed on any hardware. The software is available using the following link:

<http://www.nutanix.com/products/community-edition/>

- It is important to note that Nutanix doesn't sell support for the community edition thus the name. Support is strictly community only and can be access here:

<http://next.nutanix.com/> (official Nutanix community forum)





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