VMWare to SUSE Openstack
Cloud Migration
- Infosys Success story

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Bina Naidu
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SUSE Global System Integrators Alliance
NAVIGATE YOUR NEXT
US$11.5 billion in revenues
Clients in over 45 countries
96.6% of our business is repeat business
168,000+ employees trained in Design Thinking
25,500 engineers trained in 3+ programming languages
60,000 employees trained in new technology areas
US$500 million innovation fund
4,740,000+ students trained in Computer Science by Infosys Foundation USA
Establishing US Education Center in Indianapolis
Key market drivers for digital adoption

01: Drive Business Outcome not just technology

02: End User Experience

03: Cost Optimization

04: Business Agility and Service Resilience
Our Point of View on enabling Enterprise Digital Transformation...

**Operations Tranquility**
- Business Aligned ITIL Operations
- Elimination, Automation & Shift left driven by AI
- Focus on Customer Satisfaction

**Faster ROI**
- Improve Utilization of Infrastructure
- License optimization by reduction / elimination of SW tools
- Reduce operations costs

**Journey to Digital**
- Workload Centric/App Centric Migration
- Not Just IaaS but also SaaS/PaaS
- Business Value, Speed & Agility,

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**Enterprise Security Services**

**User Interface/User Experience**
Navigate Digital transformation – Our approach

- ESM SERVICE
- NOW CAFE
- IMSS POWERED
- AUTOMATION
- CYBER THREAT
- PROTECTION
- PLATFORM
- HYPERVISOR RATIONALIZATION
- STORAGE OPTIMIZATION
- MIPS OPTIMIZATION
- LEGACY MODERNIZATION
- SDDC
- NAAS
- SDWAN
- PURPOSE FIT
- CLOUD
- SAP ON CLOUD
Infosys SDDC Framework

**Private & Dedicated Cloud**

- Architect
- Deploy
- Migrate
- Manage
- Optimize

**On-premises or Hosted**

- Provision
- Assure
- Operate
- Report

**Custom built for Business Apps**

**As-A-Service**

**Automate, Orchestrate, Operate & Manage**

- ITSM
- Infosys NIA

**Software Defined - Virtualize & Capitalize**

- Compute
- Storage
- Network & Security

**Infrastructure - Hardware**

- Security
- Network
- Compute
- Storage
- Backup

- Partner DC
- Client DC
- Cloud

**Workloads**

- Workloads - Systems of Records
- Workloads - Systems of Engagement
- Workloads - Systems of Insight
- Workloads - Custom systems

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Recommended SDDC Adoption Roadmap

- Inception
  - Focus on Compute & Storage layer virtualization
  - Align Infrastructure specific to Application workloads

- Functional
  - Implement SDN
  - Automate provisioning based on pre-defined template
  - Independent virtualization categories
  - Pro-active availability and performance monitoring

- Optimized
  - Complete stack integration through processes and technologies
  - Configurations driven and provisioned directly from Business requirements and SLAs
  - Well defined service catalogues and self service ability

- SDDC adoption is multi phased approach which needs to be carefully planned and executed to safeguard investments and optimum results.

- Our recommendation is to begin this journey with careful selection of virtualization technologies and implementing / integrating them in a phase wise manner to get maximum benefits
Why OpenStack

“OpenStack has grown into a de facto standard platform for the private cloud market.” *

- Forecast to be $5bn market by 2020 **
- Growing at 35% CAGR **
- 71% of deployments in full production
- Containers being adopted 3x faster on OpenStack **
  - Forrester

** 451 Research

- It’s your Cloud
- Control & Visibility
- Hardware agnostic
- Freedom from lock-in to OEMs/Hardware
- Time to market
- Agility
Why SUSE OpenStack

Why SUSE for Openstack?

- 25 years experience in delivering Open Source Software
- Founding member and Platinum sponsor of Openstack Foundation
- First to launch a commercially supported OpenStack distribution
- Widest hypervisor support
- Full Stack support (OS, Hypervisor, cloud component)
- Open APIs for integration with other solutions like CMP

SUSE OpenStack Cloud gives;

- A pre-built solution you can start driving now
- Quality, reliability and performance
- Top class service, maintenance & support
- Excellent value
Hypervisor Rationalization

• Compute virtualization is an essential component in the journey towards SDDC / SDI

• Our experience shows that the market is rapidly moving towards micro services such as container based solutions

• Traditional VM based solution approach will gradually phase out as technology disruption is demanding for more granularity when it comes to compute virtualization

• We have seen more adoptability of open source based compute virtualization solutions which provide more flexibility, hybrid cloud extensibility, micro service friendly and low implementation and management costs

• We have evaluated multiple options such as proprietary hypervisor platforms to open source KVM hypervisor and found KVM (bundled with SUSE Linux enterprise) as the most flexible and quick ROI option
### Reasons and Approach for KVM and SUSE OpenStack Adoption

1. Our state-of-the-art Lab / R&D facilities at our DCs will act as incubation centers for many cutting edge solutions for our clients.

2. In order to cater to various requirements in the SDI / Hybrid Cloud solutions and micro-services space, we needed a stable future ready platform.

3. SUSE OpenStack solution combined with KVM at compute virtualization layer was the best fit for our requirements.

4. At our facility, we implemented SUSE OpenStack private cloud and gradually increased the footprint that is now hosting nearly 2000+ VMs (migrated workloads from VMware hypervisor platform).

5. Leveraged existing hardware as SUSE OpenStack provided a seamless expansion capability to work on multiple OEM infrastructure components (Dell, HPE, Cisco).

6. Providing support to 50+ accounts at present for various internal solution development activities from our Lab.
Major Advantages of moving to KVM & SUSE OpenStack

1. KVM Comes as part SUSE Linux Enterprise OS

2. Seamless integration into larger OpenStack solution

3. Large open source community for support in addition to ISVs

4. Major cost advantages (TCO) as the cost to acquire and cost to manage are low. OpEx savings of ~60% achieved by moving to SUSE Open Stack

5. Non disruptive upgrade / technology updates ensuring service availability

6. Certified to run mission critical SAP HANA workloads. This is a critical factor which many of our clients intend to adopt
Infosys SUSE OpenStack Private Cloud on KVM for Internal IT consists of following SUSE products.

- SUSE Linux Enterprise server 12 Sp3
- SUSE Openstack Cloud 8
- SUSE High Availability Extensions 12 Sp3
- SUSE Manager 3.1
- SUSE Enterprise Storage 5
Hardware Details (Foundation Stack)

Following are underlying hardware infrastructure used for SUSE Openstack Cloud

- 1 X Admin node with inbuilt SMT server for repo sync and patch updates.
- 3 X Controller nodes hosting Openstack services in a Highly available mode.
- 5 X KVM Compute nodes.
- NFS for Cinder backend and iSCSI shared storage.
Cisco Nexus 3000 series is used for this lab with following VLANS configured,

- **VLAN 1001** – Untagged Native VLAN for Admin infrastructure management
- **VLAN 1002** – Fixed / Private network
- **VLAN 1003** – Software Defined Network (SDN)
- **VLAN 1004** – Reserved for Software defined storage
- **VLAN 1005** – Floating / Public network

Note: above network parameters are for descriptions only. Not actual values.
How it's all connected?

- Admin / Deployer server orchestrates the entire cloud setup ie, controller and compute nodes.
- Management network is connected to 1GbE network and Cloud and storage networks are connected to 10GbE network.
- For redundancy bonding (teaming) is used on Ethernet card level and switch level.
- Storage is provided via internal NFS shares and iSCSI SANs.
- SUSE Openstack cloud is built in such a way that additional compute / controller / monitoring nodes can be added / removed without disturbing the existing environment and on live.
Use-case: Purpose Fit Private Cloud

The proposed use case for SUSE Openstack Cloud is Purpose Fit Private Cloud

- Basic use case for SUSE Openstack Cloud
- Demonstration of Multiple Domains and projects for customers.
- Demonstration of quota and image shares with custom t-shirt sizes.
- Heat scripts are used for automated deployment of virtual instances with a single mouse click.
- Demonstration of launching multiple Docker instances using Heat scripts for testing purpose.