Suse Linux Enterprise Server

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Today's Agenda

- Why SUSE Linux Enterprise?
- SUSE Linux Enterprise 11 Service Pack 1
- Build & Deploy
- Secure
- Manage
- Availability & Disaster Recovery

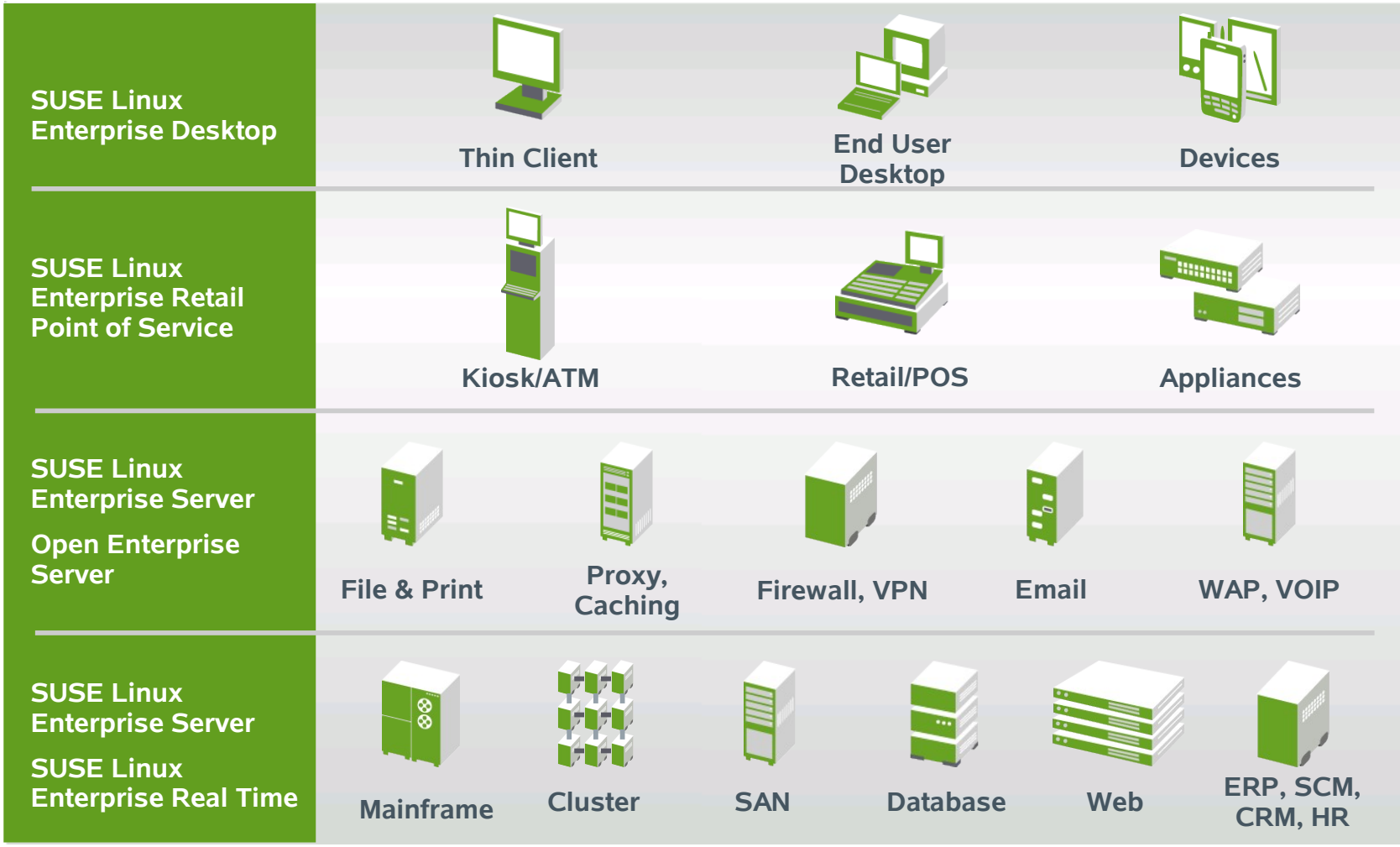
What is SUSE Linux Enterprise?

Intelligent Workload Management

Intelligent Workload Management enables IT organizations to manage and optimize computing resources in a **policy-driven**, **secure** and **compliant** manner across physical, virtual and cloud environments to deliver business services for end customers.

Intelligent
WORKLOAD
Management

A Desktop to Data Center Platform

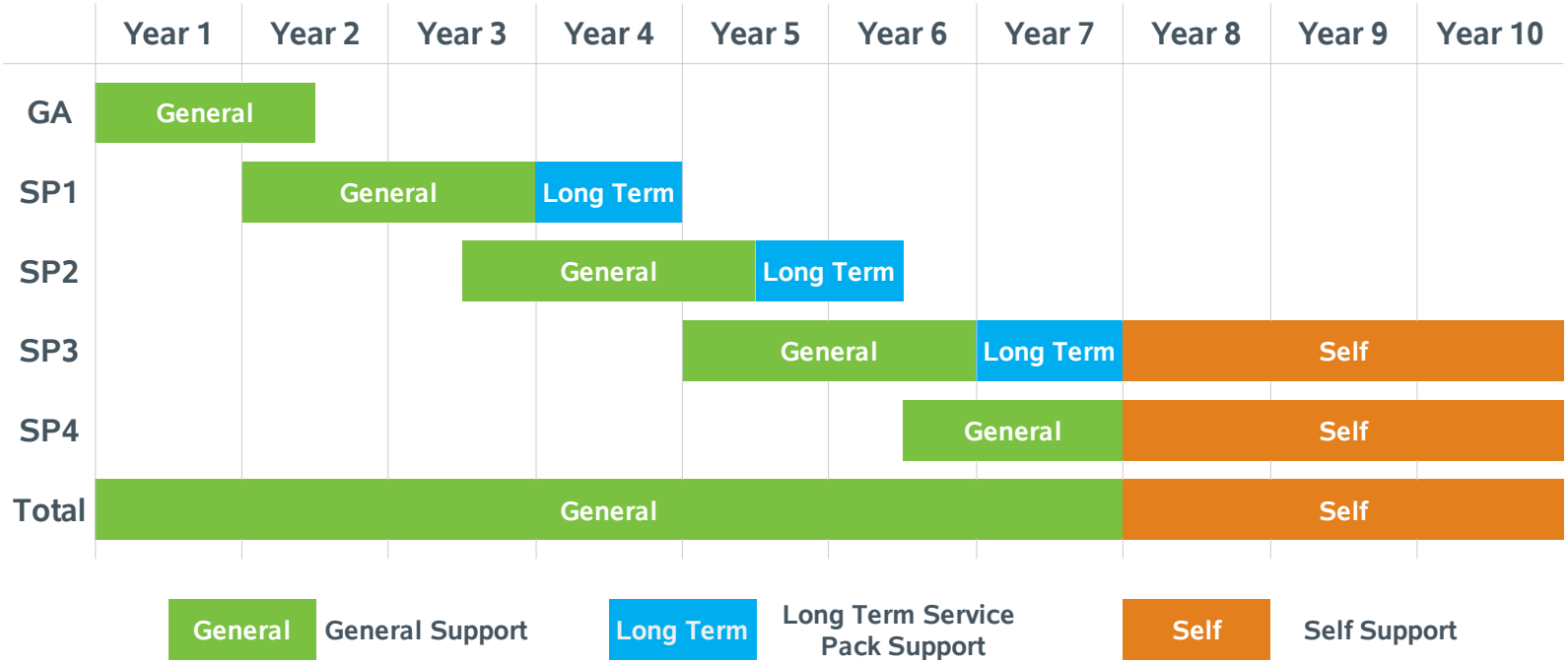


Support Overview

Novell® is the only Linux software company worldwide that offers comprehensive enterprise level support for your entire Linux environment – from the desktop to the data center.

- Priority access to expert resources, 24x7x365
- Fast and predictable response times
- Full-service support offering
- Dedicated resources for personalized support
- Relationship management
- Field-based technical resources
- Support packages for every size customer
- World-wide breadth (11 Global Support Centers)
- Award-winning support and service

Standard Platform Life-cycle



- 10-year life-cycle (7 years general support, 3 years self support)
- Service packs every 16-18 months, major releases every 3-4 years
- Six month upgrade window
- Long-term service pack support option available

SUSE Linux Enterprise Service Pack 1

SLES 11 - Reliability

Reliability – Availability – Serviceability (RAS)

- Strong cooperation with IBM on providing a Linux OS optimized for mission critical workloads on System z
- Large blade centers benefit from swap over NFS capabilities to centralize swap space and improve availability of the datacenter
- Cost savings by using built-in device-mapper MultiPath I/O (MPIO) replacing expensive commercial solutions. MPIO connects systems to a Storage Area Network (SAN) via multiple routes – increases availability, reliability and performance

SLES 11 SP1 - Reliability

- Support hardware RAS features bringing AMD64/Intel64 systems on par with traditional RISC systems
- Improved MPIO hardware-support expands multi-path options, reliability and performance
- Increased redundancy through support of RAID 6, RAID 10
- Scheduler optimizations and support for new floating point features improve performance and save costs
  - More efficient scheduler, optimized defaults
  - Extended hardware floating point capabilities improve algorithm efficiency

SLES 11 SP1 - Scalability

- Exploit most recent hardware by scaling up to 4096 CPUs on AMD64/Intel64
- Compute huge amounts of data in memory, e.g. in data-warehouse and ERP systems, by supporting 16TiB RAM (and beyond) on certified hardware
- Improve inter-system connectivity and performance, reduce latency by enabling 10G ethernet hardware and Infiniband via the Open Fabrics Enterprise Distribution (OFED).
- Choose the right architecture for your workload:
  - Intel Nehalem-EX CPUs and specifically the new AES instruction set (AES-NI), to improve crypto operations
  - All recent and upcoming AMD CPUs and Chipsets
  - SGI Altix UV scales Intel64 to 4096 CPUs & 16TiB RAM
  - IBM System z machines including extended floating point capabilities
  - IBM POWER7
  - Intel Itanium

SLES 11 - Systems Management

- YaST – unique, highly integrated local management tool
  - Ease of use, effective learning curve
  - Reduces training efforts
  - Automation via AutoYaST datacenter mass deployments
- Fastest Open Source update stack (ZYPP)
  - Reduce management time, effort and costs
  - Improve reliability and availability by reducing downtimes
- Cost free Subscription Management Tool and Proxy
  - Ensure security perimeters
  - Manage and control compliance of subscriptions
- CIM instrumentation
  - Remote administration standard:datacenter integration

SLES 11 SP1 - Systems Management

- New web-based systems management tool
  - WebYaST delivers administrative functionality via remote hosts, simplifying configuration
  - Remote administration of software appliances now possible
- Update stack and CIM improvements simplify management
  - ZYPP now handles multiple installed kernels: improve reliability
  - CIM infrastructure available by default – ease of installation
- Enhanced subscription and patch management tools
  - New NCC interface allows pushing and reviewing of applied updates, improving usability
- New maintenance model: more flexibility for customers while retaining full control and stability

SLES 11 - Virtualization

- Virtualization host – technology leadership
  - First Enterprise Linux OS to include and support Xen hypervisor technology; first to ship KVM
  - Manageability: leverage mixed-source for maximum customer satisfaction and success
  - Interoperability: full support for Windows guest operating systems (Windows 2003, Windows 2008,...)
- Perfect guest
  - supported on MSFT Hyper-V, VMware ESX, Citrix XenServer, and SLES+Xen hypervisors
  - flexibility and choice in the datacenter
- Unique cost efficiency – unlimited number of virtual machines per physical server with one subscription

SLES 11 SP1 - Virtualization

- Virtualization host – more deployment options
  - Updated Xen 4.0 improves I/O performance and flexibility; Technologies: SR-IOV, OVF 1.0
  - Improved Xen Scalability for higher consolidation ratio in the datacenter and cost savings
  - Support for KVM hypervisor helps customers exploit virtualization capabilities of their recent Intel and AMD CPUs.
- Virtualization guest – integration and performance
  - easier deployment due to perfect Interoperability with all hypervisors
  - Improved virtual guest performance
  - Highlight: Open Source guest drivers for VMware ESX and Microsoft Hyper-V (“Linux Integration Components”)

SLES 11 - Security & Certifications

- System architecture with security in mind: customers are guided to install in a secure way:
  - Minimize number of running daemons (services)
  - Firewall installed in default pattern
- System is hardened by default, hardening can be validated and tuned using YaST Security Center.
- Built-in audit capabilities: security analysis/compliance
- Security team/response team/code reviews
  - Active participation of the Novell® SUSE Team: improve overall code quality and security
- Application confinement with AppArmor
  - Prevent local and remote attacks
  - Improves security also towards external networks

SLES 11 - Security & Certifications

- Help customers improve network security by:
  - Using the enhanced authentication capabilities of NFSv4 (Kerberos)
  - Installing Virtual Private Networks (VPNs) across architectures and operating systems without additional software (using openVPN or IPSec)
- Check integrity of systems on file level with Advanced Intrusion Detection Environment (AIDE)
- Protect systems and data using encryption on several levels:
  - “Full Disk” encryption (device mapper layer)
  - Volume encryption (device mapper layer)
  - Filesystem encryption (eCryptFS)

- Filesystem POSIX capabilities allow administrators to allow access to files and running executables in a standardized way

SLES 11 SP1 - Security & Certifications

- Trusted computing enablement
  - Trusted Platform Modules (TPM) provide a cryptographically signed statement about the state of the system when it has booted;
  - Allow for a remote attestation that can be used for access control and for “identity management” of systems
- Certifications
  - CGL 4.0 / Carrier Grade Linux 4.0 registration: System is validated for telecommunication environments
  - IPv6 (refresh)

SUSE® Linux Enterprise Server 11 Service Pack 1
Reliability Enhancements on INTEL64

- Detect physical memory and the specific DIMM where errors happen – improve hardware service and increase uptimes
- MCELOG (the userspace tool to process MCEs) moves from a cronjob to a real service, improving response time – improve reliability
- Predictive failure analysis
- Storage related
  - Support for ISW/IMSM RAID arrays during installation, and full integration into the Systems Management Stack (YaST) – leverage latest HW technology and reduce costs

Build & Deploy

Server Deployment Paths

- Server (physical)
- Virtual Host
- Perfect Guest
- Appliance
  - minimal packaging
  - created using imaging tools

Keeping the Momentum

SUSE Studio
"a product of the year"
eWeek

SUSE Studio
"The 10 Coolest Open-Source Products Of 2009" ChannelWeb

SUSE Studio
2010 Codie Award Finalist

54,280 Registered users are using SUSE Studio Online

250,364 Appliances have been built

4,405 ISVs are using SUSE Studio Online

The SUSE® Appliance Toolkit

+ Streamline the OS
+ Simplify Deployments
+ Simplify Maintenance

Build
Manage
Maintain

The SUSE Appliance Toolkit is a collection of tools designed to improve the efficiency of building, managing and maintaining software appliances.

The SUSE® Appliance Toolkit

Components

SUSE Studio Onsite

WebYaST

SUSE Lifecycle Management Server

Build
Manage
Maintain

SUSE® Studio Onsite

Stand-alone version of SUSE Studio behind your firewall

Build appliances based on:

- SUSE Linux Enterprise JeOS
- SUSE Linux Enterprise or openSUSE

Supported formats:

- USB Stick/ hard disk image
- Live CD (.iso)
- VMware/Virtual Box (.vmdk)
- Xen Virtual Machine
- Soon: Hyper-V, OVF, EC2

SUSE Studio
2010 Codie Award Finalist

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SUSE Studio
"The 10 Coolest Open-Source Products Of 2009" **ChannelWeb**

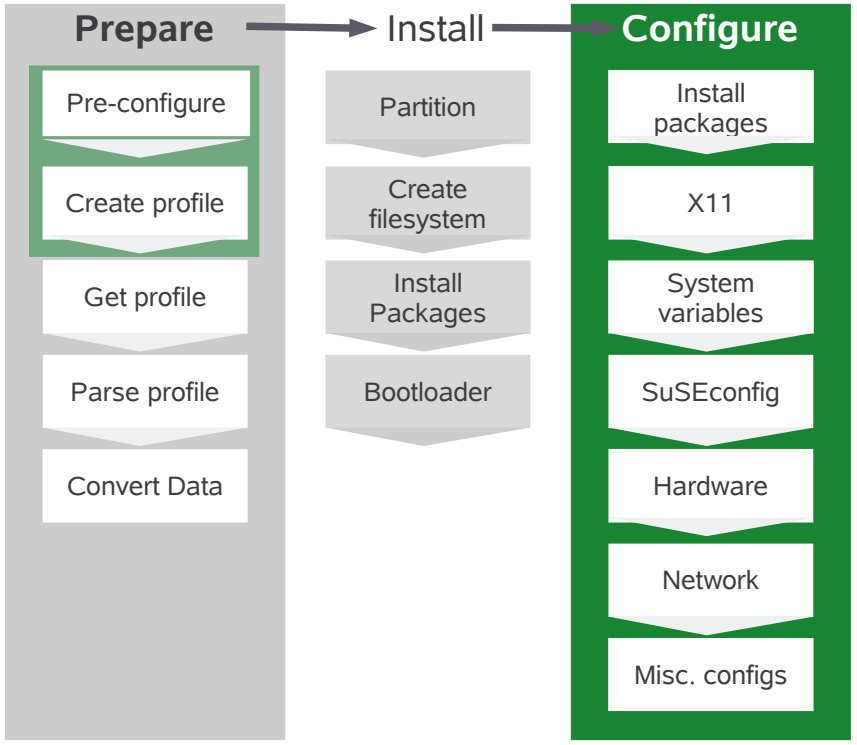
Manage

SLES Management Options

- YaST / AutoYaST / WebYaST
- SUSE Lifecycle Management Server
- Subscription Management Tool
- Novell Support Link
- ZENworks® Linux Management
  - Push Applications and Data, Policy-Driven Configuration, Inventory, Reporting, Remote Control, Web-based Admin
- Use existing tools
  - Create images with SUSE® Studio that integrate with your existing management environment by baking the management client into the build

YaST & AutoYaST

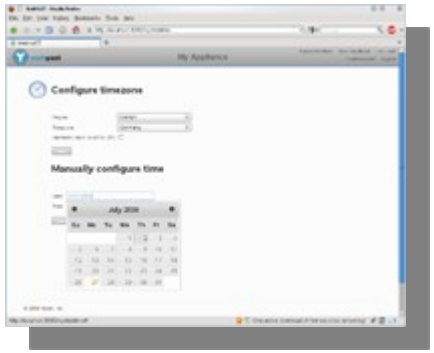
- YaST installation and configuration management framework
  - Unified and consistent single interface to all systems management tasks via modules
  - Configure every aspect of the server
  - Enhanced YaST Partitioner
  - CIM Standard adopted
- AutoYaST auto-installation
  - A tool for installing SUSE® Linux Enterprise on systems with as much (or little) automation as you want
  - Works in networked and non-networked environments
  - Very flexible, very scalable, easy to use



Quickly install, configure, and manage systems a rapidly set up popular services, both locally and remotely

WebYaST
Overview

WebYaST is a framework and a collection of modules providing a stylish, easy-to-use, and low-cost approach to packaging an Appliance with the minimal configuration interface necessary for its set up.



WebYaST
Modules

Initial configuration wizard

Time, Timezone, NTP

Status, soft-shutdown, reboot

Monitoring (configurable)

Update

Network

License/EULA and Registration

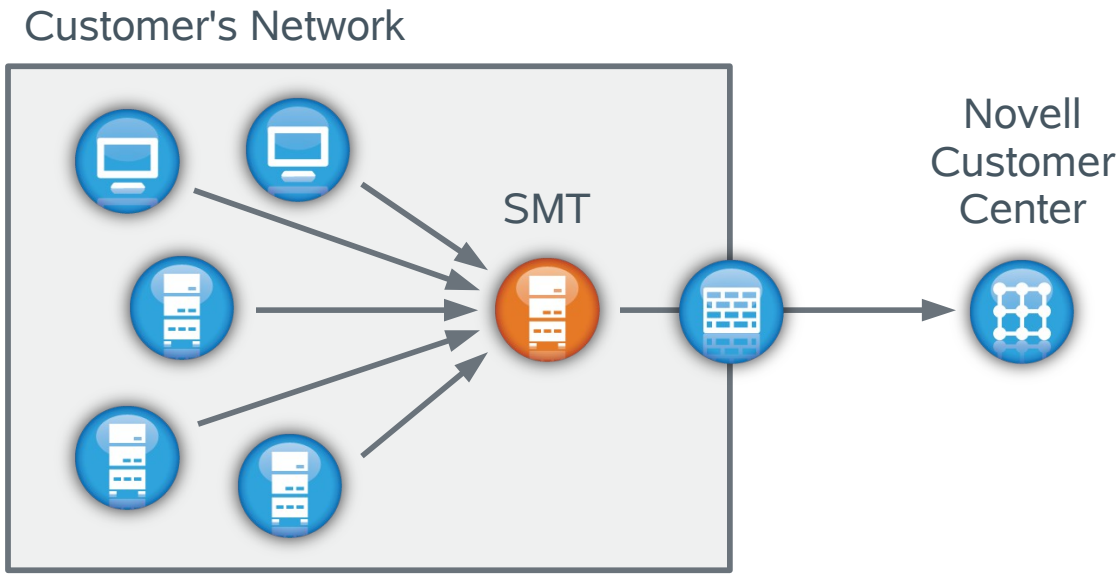
Users

Service start/stop/status

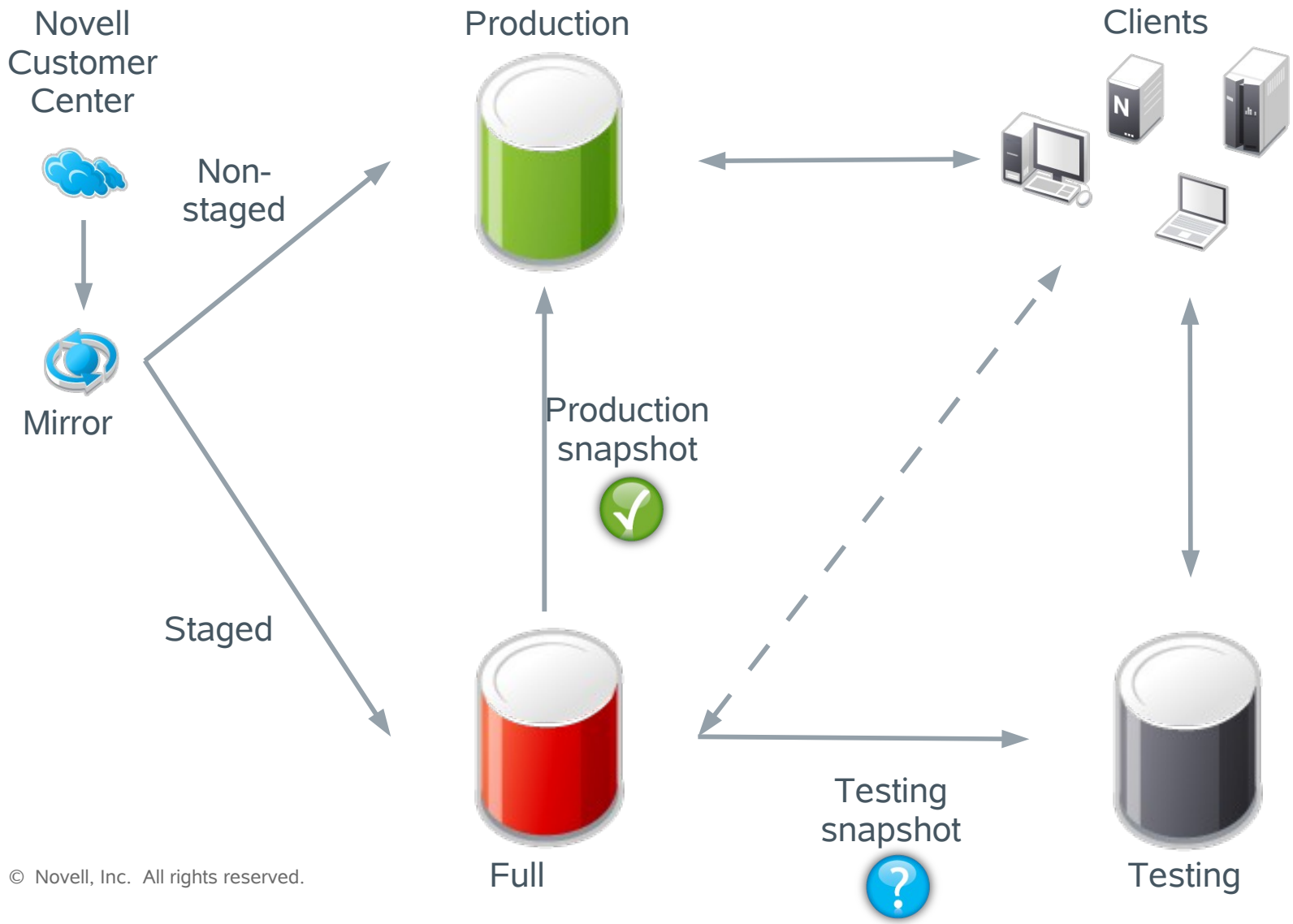
Log visualization

Subscription Management Tool

SMT is a proxy and auditing tool that mirrors the Novell® Customer Center and tightly integrates with it. It allows you to accurately register and manage an entire SUSE® Linux Enterprise deployment, guaranteeing the subscription compliance and secure IT process flow organizations require.



Subscription Management Tool



Novell Support Link

- Provides SUSE® Linux Enterprise platform-integrated way to submit support requests to Novell Technical Services℠
- Interface is a Yast module, which provides access to a simple wizard enabling quick reporting of an incident
- *supportconfig* used underneath
- Customer can review any and all data before submitting, and discard any bit considered sensitive
- Enables diagnostics performed by the Novell Support Advisor
- Organizations can leverage infrastructure for internal or OEM use

Accelerate support communications, get faster issue resolution

High Availability & Disaster Recovery

SLES - High Availability Extension

- An affordable, integrated suite of robust open source clustering technologies that you can use to implement highly available physical and virtual Linux services.
- Used with SUSE Linux Enterprise Server, it helps you maintain business continuity, protect your data, and reduce unplanned downtime for your mission critical Linux workloads.
- Benefits
  - Cost effectively meet your service-level agreements
  - Ensure continuous access to your mission-critical systems and data
  - Maintain data integrity
  - Increase resource utilization

SLES 11 - Key HA Capabilities

- **Service Availability 24/7**
  - Policy driven clustering
    - OpenAIS messaging and membership layer
    - Pacemaker cluster resource manager
- **Sharing and Scaling Data-access by Multiple Nodes**
  - OCFS2 Clusterfile system
  - Clustered logical volume manager
- **Disaster Tolerance**
  - Continuous data replication via IP
  - Distributed replicated block device
- **Scale Network Services**
  - IP load-balancing
- **User-friendly Tools**
  - Graphical user interface
  - Unified command line interface

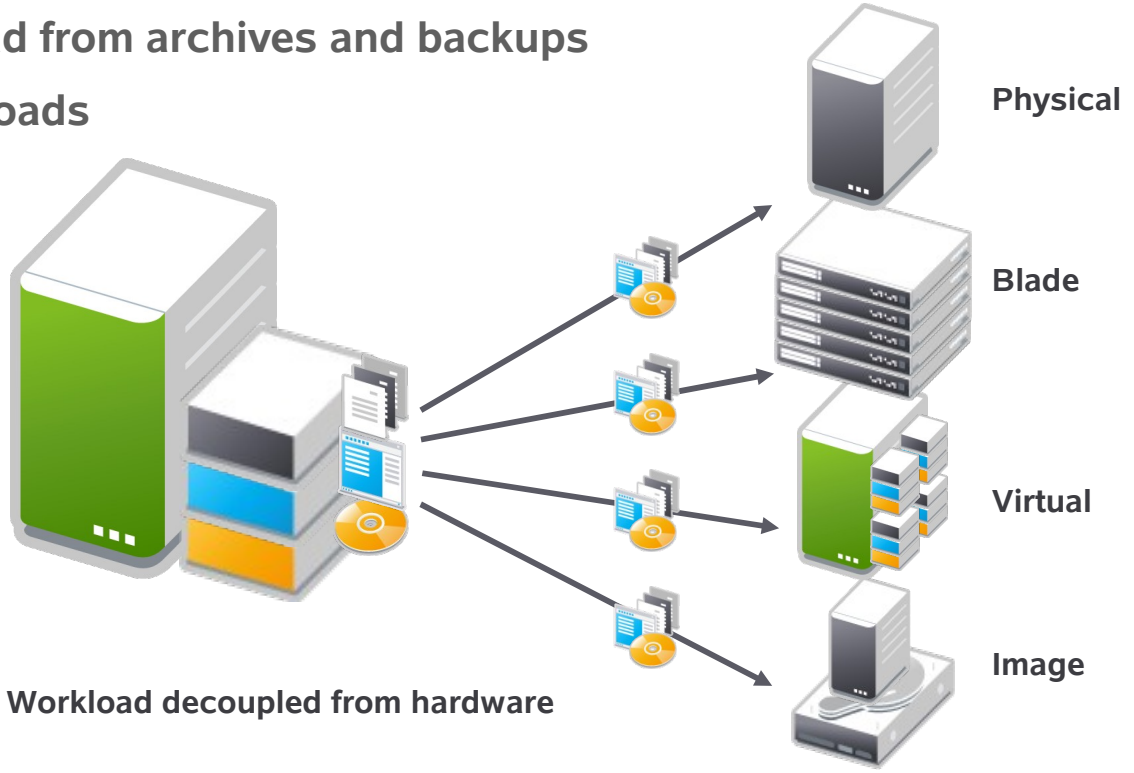
SLES 11 SP1 - Key HA Capabilities

- **Storage Based Quorum**
  - Enabling the use of a storage device as a quorum instance to match traditional Unix setups and to prevent split brain scenarios
- **Integrated Samba Clustering**
  - Integration of Samba with OCFS2 for higher throughput and scale out of SMB access
- **Metro-Area Clusters**
  - Supporting clustering between different data center locations
- **Multilevel Administration Rights**
  - More fine-grained control of cluster operation and administration
- **Enhance Data Replication**
  - Improved DRBD capabilities
- **DR Framework**
  - A tool set (ReaR) for node recovery

PlateSpin Migrate & Protect

Technology that automates the streaming workloads across infrastructures.

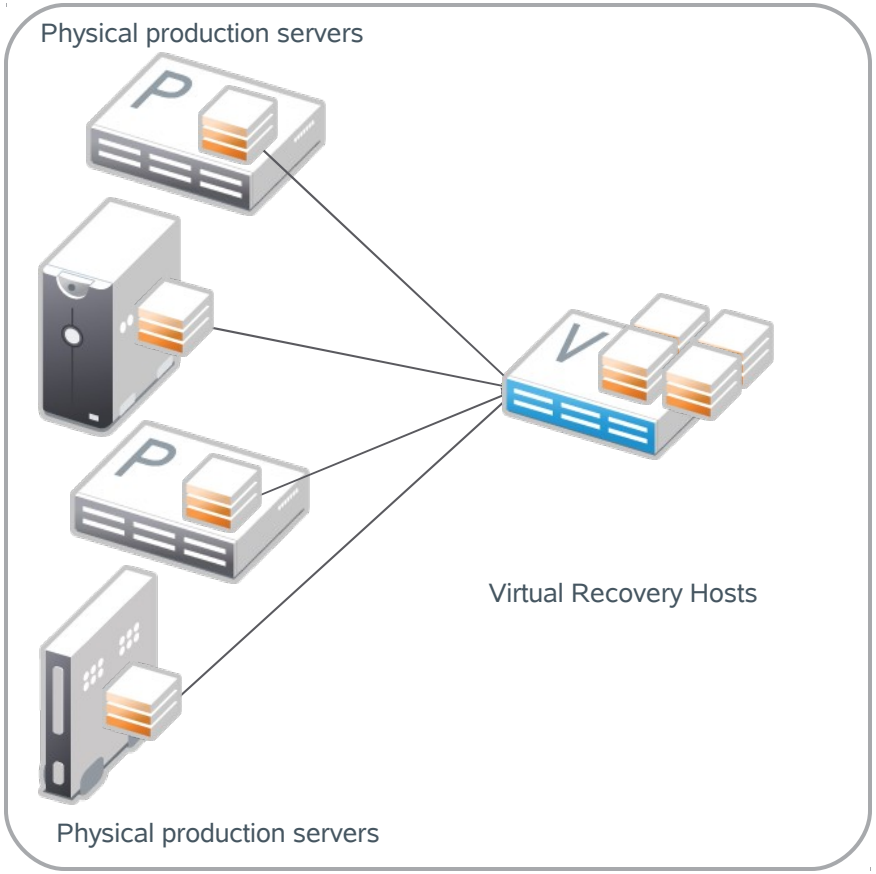
- Decouple workload from host infrastructure
- Live peer-to-peer workload movement
- Deploy or recover workload from archives and backups
- Protect and recover workloads



Workload decoupled from hardware

Consolidated Recovery

Leveraging Virtual Infrastructure for Protection of Physical servers



Solution

- **Replication** of workload into an off-line virtual machine
- One click **failover**
- One click **test restore**
- Flexible **failback**

Benefits

- Drastically reduce TCO and RTO while achieving whole workload protection
- Improving RPO through incremental synchronization
- Simplify testing with bootable backups

PlateSpin Forge

World's first disaster recovery hardware appliance with embedded virtualization

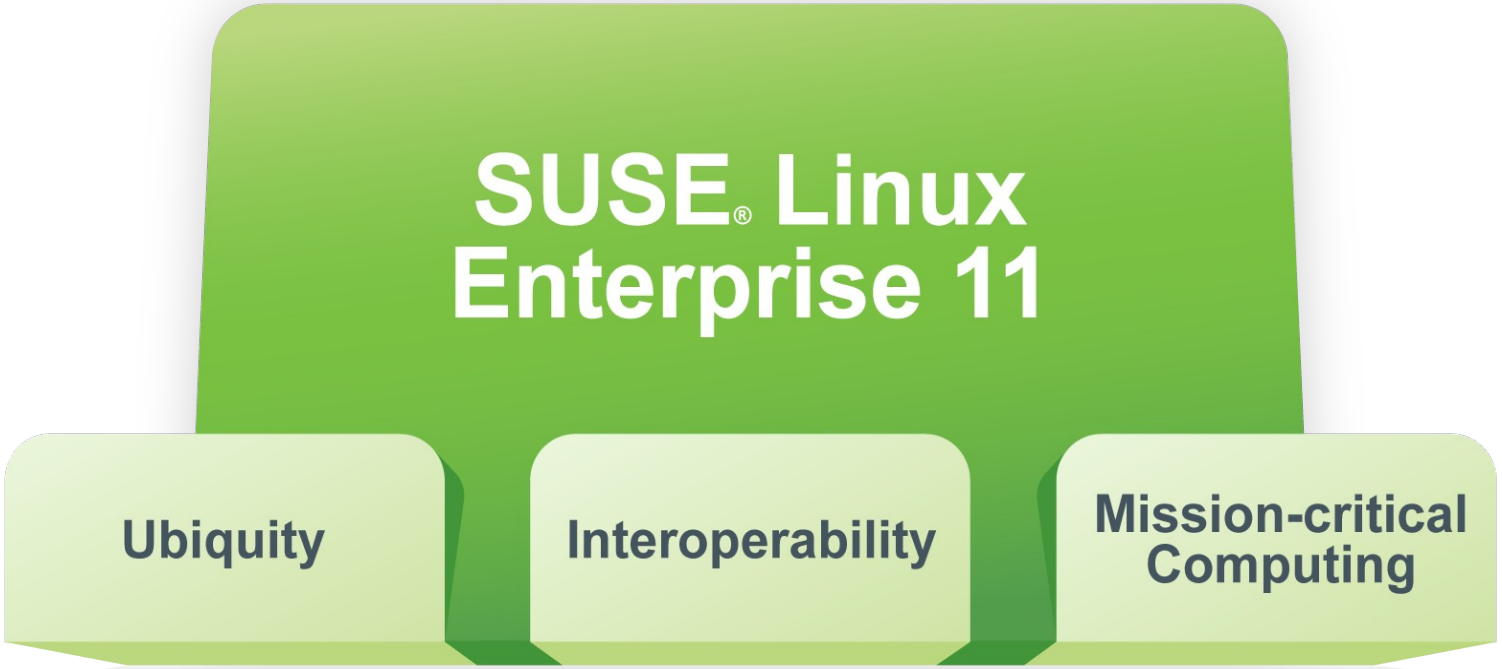
Protects up to 25 workloads out of the box

Plug In and Protect DR Solution for :
- Medium enterprises
- Branch or field use for large enterprises
- Hosted recovery

PlateSpin Forge Includes:
- Storage
- Replication Software
- Remote Management Interface
- Hypervisor

Summary

SUSE Linux Enterprise



The most interoperable platform for mission-critical computing, both physical and virtual—from the desktop to the data center

SUSE® Linux Enterprise Server
Best Choice for Your Business (1)

- Highly reliable, scalable and secure enterprise-class operating system
- Built to power mission-critical workloads in physical and virtual environments
- Affordable, interoperable and manageable open source foundation
- Cost effectively helps
  - Deliver high-performance, mission-critical business services
  - Enable secure network infrastructure
  - Provide essential Web infrastructure
  - Simplify management of heterogeneous IT infrastructure

SUSE® Linux Enterprise Server
Best Choice for Your Business (2)

- Only enterprise Linux recommended by Microsoft and SAP, designed for Interoperability
  - Supports open standard CIM interfaces and can be managed by any management solution utilizing CIM
- Perfect guest for virtual computing
  - Optimized to run as a high performance guest on leading hypervisors
  - Supports an unlimited number of virtual machines per physical system with a single subscription
- Modular, general purpose operating system
  - Runs on five processor architectures
  - Optional extensions that provide advanced capabilities
- Backed by award-winning technical services from Novell®

Next Steps

Try SUSE® Studio Online

Build an appliance with a few mouse clicks. Customize it to your heart's content, and share it with the world!

http://susestudio.com/

SUSE Appliance Toolkit

Learn about the fastest way to Build, Manage and Maintain new workloads! www.novell.com/toolkit

Demos

Check out recorded product demos

http://www.novell.com/media/

Reach out to your Novell sales contact to learn more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