

Implementing the SUSE Linux Enterprise High Availability Extension on System z

Mike Friesenegger (mikef@novell.com)
Novell

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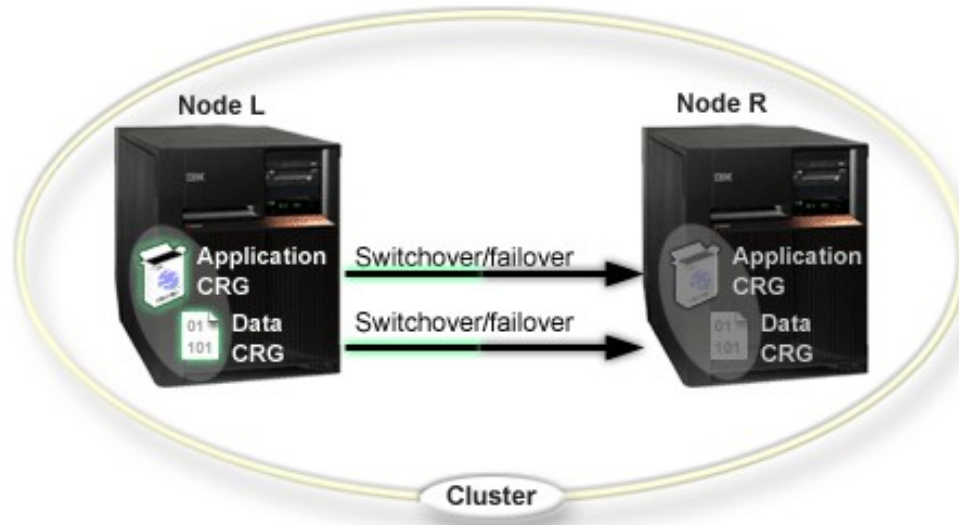
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Agenda

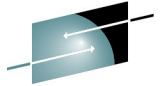
- What is a high availability (HA) cluster?
- What is required to build an HA cluster on SLES?
- Building an HA cluster on SLES
- Wrap-up/Questions

Introduction to clustering

- Using redundancy to increase system reliability



- Implemented in hardware and/or software



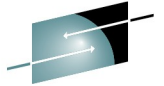
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Let's take a look at a HA cluster in action



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What is required to build a HA cluster on SUSE Linux Enterprise Server?



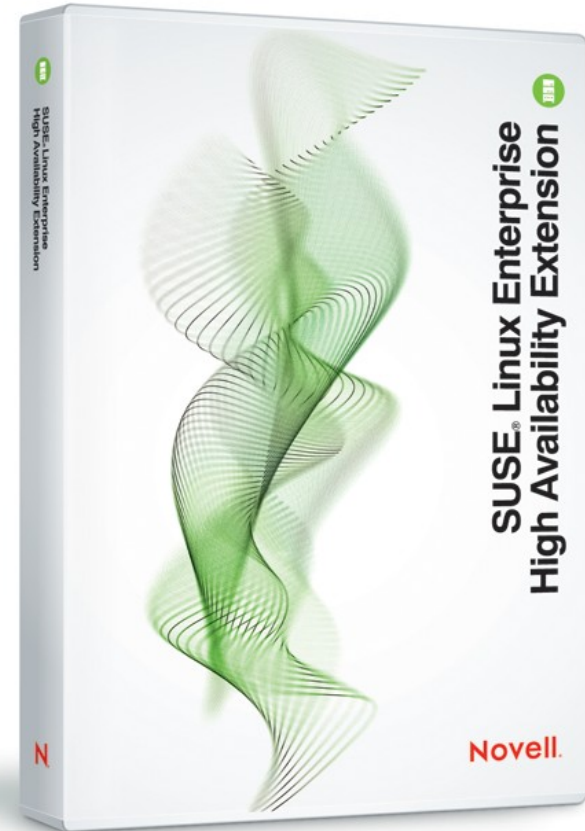
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SUSE® Linux Enterprise High Availability Extension



An affordable, integrated suite of robust open source clustering technologies that enables you to implement highly available physical and virtual Linux clusters.

Used with SUSE Linux Enterprise Server, it helps you maintain business continuity, protect data integrity, and reduce unplanned downtime for your mission critical Linux workloads



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Features

Flexible, policy-driven clustering solution

–OpenAIS

- » *Open Source initiative's certified implementation of the Service Availability Forum Application Interface Specification*
- » *Leading standards-based communication protocol for server and storage clustering*
- » *Messaging and membership layer*

–Pacemaker

- » *Cluster resource manager to continuously monitor resource health, manage dependencies, and automatically stop and start services*
- » *Configurable engine that uses rules and policies*
- » *Metro Area Cluster up to 20 miles*
- » *Clustered SAMBA (CIFS)*

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Features cont.

Resource Agents

- For popular third-party applications included at no extra charge
 - » *SAP Instance and Database, IBM WebSphere Application Server, DB2, and Informix, Oracle and VMware*
- For popular open source applications included at no extra charge
 - » *Apache, Ipv4 and IPv6, LVM, RAID, Pure-FTPd, Route, ServeRAID, Squid, VIPArip, Xen, Xinted, DRBD, Novell eDirectory™, iscsi, mysql, nfsserver, and postgres, sfex, tomcat, filesystems*
- For the most up to date list of resource agents, visit:
www.novell.com/products/highavailability

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Features cont.

Cluster aware file system and volume manager

- OCFS2 (Oracle Cluster File System)
 - » *Shared-disk POSIX-compliant generic cluster file system*
 - » *Cluster-aware POSIX locking*
 - » *Parallel I/O*
 - » *Dual node use with DRBD*
- CLVM2 (Clustered Logical Volume Manager)
 - » *Convenient, single, cluster-wide view of storage*
 - » *Clustering extensions to the standard LVM2 toolset*
 - » *Eliminates need to learn a new set of tools*

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Features cont.

Host Based Continuous data replication

- DRBD8 (Distributed Replicated Block Device)
 - » *Leading open source networked disk management tool*
 - » *Build single partitions from multiple disks that mirror each other*
 - » *Fast data resynchronization capabilities*
 - » *Supports both synchronous and asynchronous mirroring*
 - » *Provides replicated storage area network (SAN) semantics, allowing cluster-aware file systems to be used without additional SANs*



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Features cont.

User-friendly tools

-Unified command line interface

- » *Powerful tool for installing, configuring and managing Linux clusters*
- » *For more experienced IT professionals*

-Graphical user interface

- » *Simple tool for monitoring and administering clustered environment*
- » *Does not require in-depth knowledge*
- » *Web Interface included*

-YaST modules

- » *DRBD*
- » *OpenAIS*
- » *Multipath*
- » *IP load balancer*

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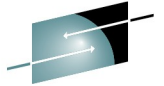


x86 and x86_64

- Additional cost per year, per server
- Support level inherited by base SUSE Linux Enterprise Server

System z, Power, Itanium

- Bundled with base SUSE Linux Enterprise Server at no additional charge
- Support level inherited by base SUSE Linux Enterprise Server



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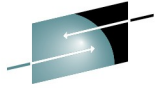
Building and HA Cluster on SUSE Linux Enterprise Server?



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Basic Terminology

- Node – a server in the cluster
- Resource – services managed by the cluster
- Resource Group – grouping of services
- STONITH (Shoot The Other Node In The Head) – Method of fencing a misbehaving node
- Constraints – Policies that define resource location, start order and co-location with other resource



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Wrap-up/Questions



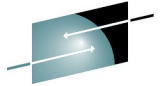
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For More Information

- SUSE Linux Enterprise High Availability Extension
 - <http://www.novell.com/products/highavailability>
- Open Source High Availability Resources
 - <http://www.clusterlabs.org>
 - <http://www.linux-ha.org>
 - <http://www.openais.org>

Review

- What is a highly available cluster?
- What is the SUSE Linux Enterprise High Availability Extension?
- Is the SLE HAE included with SLES for System z?
- Contact me for step-by-step installation and configuration instructions if you are interested in trying out SLE HAE.



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Questions?

THANK YOU FOR ATTENDING



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