Data sheet

HP Serviceguard Solutions for Linux

Protect your x86 mission-critical applications

Business disruptions happen. Whatever the cause may be, the ability to provide undisrupted 24x7 services is critical. Unfortunately, disaster recovery (DR) times from unplanned outages are increasing, and the vast majority of organizations find their planned recovery objectives vary significantly from actual recovery times. With more applications being classified as mission-critical, high availability (HA) is key. That's where HP Serviceguard Solutions for Linux can help.

What is HP Serviceguard for Linux?

HP Serviceguard for Linux is an HA and DR software solution. It packages a critical service—such as an application—together with its associated resources, and monitors the entire package for any faults related to hardware, software, OS, virtualization layer, virtual machine guests, network, or storage. When a failure is detected, HP Serviceguard for Linux gracefully shuts down the application, restarts it on an available server in the cluster, connects it to the appropriate storage device, and resumes normal operations—all in mere seconds, and with minimal impact on production environments (whether physical or virtual).

HP Serviceguard for Linux also includes enhanced package dependencies, which help you craft and control the dependencies between applications in a standardized way. This reduces complexity and provides a more realistic model of the environment, allowing you to manage multiple tiers of applications together in a controlled and well-defined way.
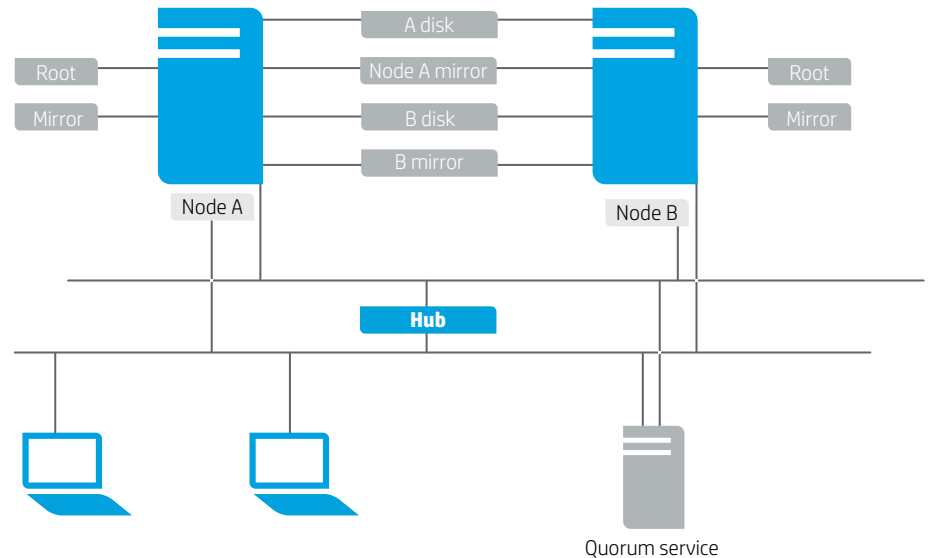
An HP Serviceguard for Linux cluster solution delivers HA using redundant hardware to remove single points of failure to survive multiple node failures.

Features and benefits
- Monitors the availability of critical resources and applications and provides fast failover in the event of a failure, in as little as four seconds[1]
- Prevents data corruption and loss with advanced cluster arbitration mechanisms: Lock LUN and Quorum Server (QS)
- Performs maintenance on a cluster or installs upgrades for applications and OS with zero planned downtime by utilizing Live Application Detach (LAD) and Rolling Upgrades[2]
- Fixes cluster configuration issues before they cause unplanned downtime with Cluster Verification

[1] Failover recovery observed in HP internal lab testing. System was based on an HP ProLiant DL380 Gen8 Server (two Intel® Xeon® processors, four computing cores each) with Red Hat® Enterprise Linux 6.5 running HP Serviceguard 12.00.00. Configuration-dependent excluding cluster reformation time.

[2] Based on HP Lab analysis while performing maintenance activities of the cluster including maintenance of heartbeat network, it used to be a common case where the application had to be brought down. However, with LAD application downtime has been reduced to none even if heartbeat network is maintained and the cluster is brought down.

Figure 1. A basic HP Serviceguard for Linux cluster

Quorum service

HP Serviceguard for Linux A.12.00.00 technical specifications

Cluster types	Active/active, active/standby, and rotating standby
QS support	Yes
Maximum nodes	Fibre Channel (FC): 32; single-path SCSI: 2; multipath SCSI: 32
Operating system	Red Hat Enterprise Linux (RHEL) and SUSE Linux Enterprise Server (SLES)
Supported nodes	HP ProLiant ML, DL, and BL G7 and Gen8 servers
Supported appliances	HP ConvergedSystem portfolio for SAP HANA
Fibre Channel storage	HP 3PAR 10000 Storage, F and T Class Storage, HP XP 9500 Storage, HP EVA P6000 Storage, HP StoreSure 2000 G3 Storage, EMC VMAX, and EMC VNX
iSCSI storage	HP LeftHand P4000 Storage (through software initiator)
File systems	ext3, ext4, NFS, XFS, VxFS, and btrfs
Volume managers	Logical Volume Manager (LVM) 2
Application integration toolkits and extensions	• HP Serviceguard Extension for SAP for Linux • HP Serviceguard Toolkit for Oracle Database for Linux • HP Serviceguard Toolkit for SAP Sybase ASE and SAP Sybase Replication Server for Linux • HP Serviceguard Toolkit for EnterpriseDB PPAS for Linux • HP Serviceguard Developer Toolbox for Linux • HP Serviceguard Contributed Toolkits for Linux (includes toolkits for Apache, NFS, MySQL, PostgreSQL, Samba, Tomcat, and Sendmail)
Interconnects	Gigabit Ethernet (GbE), FC
Management	HP Serviceguard Manager for Linux

Note: This is a list of supported configurations at the time of writing. Please refer to the HP Serviceguard for Linux Certification Matrix at hp.com/go/sglx for the most up-to-date list of supported configurations, important notes and caveats.

HP Serviceguard for Linux A.12.00 features and benefits

Features	Benefits
New **Scalability**	Support for 32 nodes to deploy large clusters for highly scalable workloads
New **VMware vMotion Support**	Avoid downtime with VMs on hypervisor through vMotion in conjunction with Live Application Detach
New **Cluster Analytics**	Collects vital cluster metrics (cluster events, configuration changes, administrative operations) and provides useful statistics so you can gain a better understanding of how your cluster is working over time
New **Cluster Simulation**	Evaluate the impact of administrative tasks on cluster configuration before executing them and make informed decisions regarding cluster maintenance
New **Package Online reconfiguration**	No downtime required to reconfigure packages, add/remove file-systems and IP addresses
New **Multi-cluster management**	Redesigned Serviceguard Manager provides single-pane management of HA clusters by auto-discovery of nodes and clusters
New **Load Sensitive Package placement**	Optimal placement of packages to evenly distribute load across cluster nodes based on configured weights and capacities
HP LeftHand P4000 Storage SAN support	Provide support for HP LeftHand P4000 Storage arrays with iSCSI connectivity through software initiator
Live application detach	Halt a node or the cluster without halting the packages that are currently running on those nodes to perform HP Serviceguard or online hardware changes, reducing planned downtime
Rolling upgrades	Reduce application downtime during system maintenance and upgrades
Cluster verification	Verify whether packages in the cluster are able to fail over and the cluster is configured correctly with a single, easy-to-use command that can also be automated to further reduce failures due to human errors
Advanced cluster arbitration mechanisms	Prevent data corruption and loss; configuration options include Lock LUN and Quorum Server (QS)
VMware VMs as cluster nodes	Configure VMware ESX and ESXi VMs as cluster nodes for enhanced HA in virtualized environments
Utility to migrate legacy style packages to modular packages	Enable easy migration from legacy to modular style packages and optionally consolidate CFS mount point/disk groups packages
Available on the most widely used Linux distributions	Obtain greater flexibility and choice with availability on both Red Hat Enterprise Linux (RHEL) and SUSE Linux Enterprise Server (SLES)
Parallel halt multi-node package performance improvement	Reduce the package halt time by up to 90 percent on a cluster by a parallel halt of packages[3]
Multi-node package start performance enhancements	Get 90 percent faster application startup by starting packages in parallel instead of sequence[4]
NFS file type support	Achieve more storage configuration flexibility with HP Package Manager enhancement, allowing support of NFS in a modular package as a file type required for certain applications
Centralized logging and advanced log-filtering	Enable a highly available log consolidation server
Integrated workload balancing capabilities for static resource environments	Make sure that servers don't become overloaded after a failure in fixed-resource environments by placing packages with fixed weights onto nodes with predefined capacities in the event of failure
IP-level network monitoring across routers and subnets	Achieve more comprehensive and faster recovery from network failures; very flexible networking configurations; robust and rapid network detection for a large variety of failure scenarios; restore network communications transparently with redundant interfaces

[3, 4] Based on a comparison with previous HP Serviceguard versions, Business Continuity Lab, May 2012.

HP Serviceguard Manager for Linux

This next-generation manageability tool is a modern, simple, and intuitive experience delivered via a Web-based tool. It provides a high level overview of multiple HP Serviceguard clusters across a data center, enabled with critical operations like run and halt clusters.

HP Serviceguard Manager for Linux provides a summary of the health and configuration of the cluster, including the status of each node and package. Operators see a color-coded summary and have the ability to manage the clusters, nodes, and packages that run applications.

Features and benefits
• Monitor and manage all your business-critical resources from a single console.

• Create an HP Serviceguard package in just two steps using HP Serviceguard Manager Automatic Deployments.

• Get the flexibility to define the scope of management from a single subnet to an entire enterprise network.

• Get alerts and notifications when failures are detected along with possible causes and recommendations for resolution.

• Visualize performance and analyze trends and patterns in resource behavior.

HP Serviceguard Manager for Linux B.12.00.00 technical specifications

Supported clusters	• HP Serviceguard for Linux 12.00.00 • HP Serviceguard Metrocluster for HP 3PAR Remote Copy B.12.00.00 • HP Serviceguard Extension for SAP for Linux A.06.00.20 • HP Serviceguard Toolkit for Oracle Database for Linux A.12.00.00 • HP Serviceguard Toolkit for SAP Sybase ASE and SAP Sybase Replication Server for Linux A.12.00.00 • HP Serviceguard Toolkit for EnterpriseDB PPAS for Linux A.12.00.00

Get protected fast with toolkits and extensions

HP Serviceguard Toolkits and Extensions for Linux enable plug-and-play application integration. It describes how HP Serviceguard for Linux should monitor a specific application or service, and what to do in the event of failure. Because of the unique way in which the solution is designed, our simple HP Serviceguard Toolkit for Linux framework presents a standardized, simple mechanism to integrate virtually any application or service into a cluster.

Features and benefits
• Common look and feel for each clustered application

• Pre-written, tested, and supported toolkits for error-proof clustering of key applications and databases

• Reduction in time and effort to integrate applications in an HP Serviceguard cluster

HP Serviceguard Extension for SAP for Linux
HP Serviceguard Extension for SAP for Linux (SGeSAP/LX) works with HP Serviceguard for Linux to automate and accelerate SAP application failover so transactions are not lost and data integrity is preserved. Backed by world-class support from HP and SAP, SGeSAP/LX extends the powerful failover capabilities of HP Serviceguard to SAP environments to protect the SAP central instance and database—business-critical pieces in an SAP environment—within an HP Serviceguard cluster.

SGeSAP/LX provides a single, uniform interface to clustered SAP NetWeaver systems and SAP applications based on Advanced Business Application Programming or Java stacks in a vast range of supported release versions. SGeSAP/LX also clusters underlying databases. SGeSAP/LX offers several capabilities that make the clustering of SAP instances very straightforward and simplifies ongoing administration and management of the clustered SAP environment.

For the HP ConvergedSystem portfolio for SAP HANA, HP Serviceguard Extension for SAP also enables unattended HA/DR database cluster failover capabilities based on SAP HANA system replication technology. This solution eliminates the need for complex manual recovery procedures and minimizes unplanned downtime in the case of a component outage within the HP ConvergedSystem portfolio for SAP HANA. Failback with full role-reversal is also supported. With additional storage in place, non-production ConvergedSystem for SAP HANA systems can be run on the replication server and will be handled automatically by the cluster according to SAP's recommendations for dual-purposing. They don't require any additional customer-specific certification from SAP.

HP Serviceguard Toolkit for SAP Sybase ASE and SAP Sybase Replication Server for Linux
Utilizing HP Serviceguard for Linux with the HA option for SAP Sybase ASE and SAP Sybase Replication Server allows you to achieve near continuous database access. Critical business applications and sensitive data transactions are maintained in the event of unexpected system failures and scheduled downtime. Client connections and database operations can instantly move from one server to the other without interruption to end users.

HP Serviceguard Toolkit for EnterpriseDB PPAS for Linux
Allows for easy integration of EnterpriseDB PPAS in an HP Serviceguard for Linux environment. It not only provides failover capability but also includes built-in monitoring capabilities to check system resources like network, volume groups, and file systems.

HP Serviceguard Toolkit for Oracle Database for Linux
The toolkit for Oracle Database for Linux enables an HP Serviceguard for Linux package to provide high availability for an Oracle single instance database server application.

HP Serviceguard for Linux Developer Toolbox
HP Serviceguard Developer Toolbox enables independent software vendors and customers to develop their own toolkits quickly. For more information, visit the HP Serviceguard for Linux Developer Toolbox webpage.

HP Serviceguard Contributed Toolkit Suite
HP Serviceguard for Linux Toolkit Suite includes the following seven toolkits that help simplify the integration, management, and monitoring of applications: Apache, MySQL, PostgreSQL, Samba, Sendmail, NFS, and Tomcat.

HP Serviceguard Disaster Recovery Solutions for Linux

HP Serviceguard Disaster Recovery Solutions for Linux utilize multiple data centers and multiple copies of your company's data so clusters are resistant to multiple points of failure and to singular, massive failures—regardless of the distance.

HP Serviceguard Extended Distance Cluster (XDC) for Linux
HP Serviceguard XDC is a host-based data-replication configuration that can span up to 100 kilometers/60 miles. With this configuration, a single HP Serviceguard cluster can be implemented across two or three data centers. Additionally, you can mix any HP Serviceguard supported storage with this solution. Each clustered server is directly connected to all storage in both data centers.

HP Serviceguard Metrocluster for Linux
This solution provides automatic, bidirectional failover and failback across data centers up to 300 kilometers/180 miles apart. Both data centers can be active, protected, and capable of providing application failover for each other. HP Serviceguard Metrocluster for Linux is integrated with storage array-based replication technologies to facilitate currency and integrity of data.

HP Serviceguard Continentalclusters for Linux
This option offers automated, push-button failover across unlimited distances, using multiple clusters to provide application recovery. Applications run in active or standby mode with data replicated between data centers with storage array-based replication technologies to facilitate currency and integrity of data.

HP Serviceguard Disaster Recovery Solutions for Linux technical specifications

	HP Serviceguard XDC for Linux	HP Serviceguard Metrocluster for Linux	HP Serviceguard Continentalclusters for Linux
Maximum distance	100 kilometers (60 miles)[5]	300 kilometers (180 miles)[6]	Unlimited
Maximum sites	2[7]	2[8]	4
Maximum clusters	1	1	4
Cluster size	Up to 32 nodes	Up to 32 nodes	Up to 64 nodes (four sites)
OS support	RHEL 5 and 6, SLES 11 (minimum SP2)	RHEL 5 and 6, SLES 11 (minimum SP2)	RHEL 5 and 6, SLES 11 (minimum SP2)
Interconnect	Ethernet	Dense Wavelength Division Multiplexer (DWDM) and Ethernet	DWDM and Ethernet
Failover type	Automatic	Automatic	Automated push-button recovery
Bidirectional failover	Yes	Yes	Yes
Data replications	Multiple disk mirroring software, RAID	HP Continuous Access EVA P6000, HP Continuous Access XP P9000, HP Remote Copy for HP 3PAR storage systems, and EMC SRDF	HP Continuous Access EVA P6000, HP Continuous Access XP P9000, HP Remote Copy for HP 3PAR storage systems, and EMC SRDF
Replication mode	Synchronous	HP Continuous Access EVA, XP, and EMC SRDF: synchronous and asynchronous	HP Continuous Access EVA, XP, and EMC SRDF: synchronous and asynchronous
		HP Remote Copy for HP 3PAR: synchronous and periodic asynchronous	HP Remote Copy for HP 3PAR: synchronous and periodic asynchronous
Cluster quorum	QS, arbitrator nodes, or dual cluster lock disks	Cluster QS or arbitrator nodes	Cluster QS or arbitrator nodes

[5, 6] Maximum distances listed are indicative numbers. The actual distance depends on the latency requirement of HP Serviceguard heartbeat (200 milliseconds) and the replication technology, whichever is smaller. Technically, higher distances are possible using networks with lower latency.

[7, 8] Two main data centers and a third location for QS or arbitrator nodes.

Solution bundles

Let HP help you keep your applications and services up and running. Choose from the following licensed Serviceguard product offerings to protect your data center from downtime today:

HP Serviceguard for Linux Basic—Cost effective solution
Protect applications from downtime in single cluster environments with the Serviceguard for Linux core product and Enhanced GUI tailored for single-cluster management. This is the foundation of our Serviceguard solution and provides high availability for all of your critical applications and services.

HP Serviceguard for Linux Advanced—Out-of-box protection
Our advanced package includes everything provided in our basic bundle with the addition of HP Serviceguard Toolkits and Extensions. Integrate applications like Oracle and SAP into an HP Serviceguard for Linux cluster with ease to reduce setup time. Enjoy single-pane-of-glass monitoring for these applications, coupled with multi-cluster capability for a one-stop HA cluster management solution for your data center.

HP Serviceguard for Linux Enterprise—Utmost availability
Protect applications against disasters and site outages with all the benefits of the Advanced package plus HP Serviceguard Disaster Recovery Solutions for Linux. The disaster recovery solutions portfolio consists of Extended Distance Cluster for Linux and Metrocluster for Linux with Continentalclusters for Linux offered as an add-on to any bundle. These products are seamlessly integrated with Serviceguard and can be configured and managed through the Serviceguard Enhanced GUI.

Solution bundles at a glance

	HP Serviceguard for Linux Basic[9]	HP Serviceguard for Linux Advanced	HP Serviceguard for Linux Enterprise
HP Serviceguard for Linux	X	X	X
HP Serviceguard Enhanced GUI (single-cluster management)	X	X	X
HP Serviceguard Enhanced GUI (multi-cluster management)		X	X
HP Serviceguard Toolkits and Extensions[10]		X	X
HP Serviceguard Extended Distance Cluster for Linux			X
HP Serviceguard Metrocluster for Linux			X
HP Serviceguard Continentalclusters for Linux	Offered as an add-on to the Enterprise bundle at an additional cost		

[9] Limited period offer for multi-cluster management capability with new redesigned Serviceguard Manager.

[10] Serviceguard Metrocluster EMC SRDF for Linux is currently offered as a standalone product.

HP Factory Express

HP Factory Express provides customization and deployment services along with your storage and server purchases. You can customize hardware to your exact specifications in the factory—helping speed deployment. hp.com/go/factoryexpress

Customer Technical Training

Gain the skills you need with technical training and certification from HP. With HP Serviceguard for Linux training, you will accelerate your technology transition and get the best return on your HP investment. Our training is available when and where you need it, through flexible delivery options and a global training capability. hp.com/education/courses/h4c12s

HP Support Services

Make the most of HP Serviceguard technology with careful planning and proper execution of critical design, installation, and startup activities to help you sustain the availability levels your users expect.

- **Mission-critical HP Serviceguard Implementation Services**—Utilizes processes to help deliver rapid, effective deployment

  - **Startup Service**—Choose this service if you are familiar with HA concepts and clustering, and need a standard deployment. HP experts provide seamless implementation, thereby helping to minimize downtime related to deployment.

  - **Implementation Packaged Service**—Choose this service if you are looking for HP to lead the implementation project and provide integration of more than one application package. This service includes analysis and planning, implementation, and a customer orientation session to help you with a seamless deployment and minimized complexity of your HA environment.

  - **SOW-based Implementation Service**—In situations where multiple clusters are being deployed with other custom requirements, the Statement of Work (SOW)-based custom Implementation Service is recommended. HP experts take your specific requirements into account to carry out customized deployment and ascertain the service is exactly tailored to address your particular needs.

- **Complete coverage of the IT environment (servers, storage, SAN, network, OSs, physical environment, and software)**—Reduces downtime and meets mission-critical service levels

  - **HP Proactive Care**—For organizations managing complex IT environments, Proactive Care features remote and onsite support and proactive scans, reports, and regular consultations with HP technology experts.

  - **HP Datacenter Care**—Highly flexible and customizable to your unique needs, HP Datacenter Care offers an array of support options, from proactive and reactive support plans to remote and onsite incident diagnosis and support, and dedicated support teams offering single point of contact and accountability.

Rely on the extensive track record of HP to help customers improve their ability to support the IT systems that support their ever-changing business needs. To learn more about HP Services visit: hp.com/services.

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