

Release Notes for 1.4.10 of Linuxha.net

7: Fix – LVM Command check in Post installation

A new check has been added to the post-installation script to check to see if the LVM commands are available. The results are added shown as part of the summary status.

70: Enhancement – Network Daemon handles “VERBOSE” message

The commands “VERBOSE ON=yes” and “VERBOSE OFF=yes” can be sent dynamically to the network daemon.

71: Enhancement – Heartbeat Daemon handles “VERBOSE” message

The commands “VERBOSE ON=yes” and “VERBOSE OFF=yes” can be sent dynamically to the heartbeat daemon.

72: Enhancement – Lock Daemon handles “VERBOSE” message

The commands “VERBOSE ON=yes” and “VERBOSE OFF=yes” can be sent dynamically to the lock daemon.

74: Fix – DRBD Compilation working again

Recent DRBD versions had a slightly different mechanism for performing a compilation which broke the existing post-install code. Now fixed.

75: Fix – XML::Simple Checked during pre-install

Previously XML::Parser was checked for, but XML::Simple is used more often and so this should also be checked for – now is.

Release Notes for 1.4.9 of Linuxha.net

This section covers the significant issues fixed and enhancements made up to 10th January 2011. The numbers referenced are the issue numbers as recorded on Google Code hosting at <http://code.google.com/p/linuxha-net/>.

Note many more minor fixes/enhancements were performed – see the link above for further details.

1: Fix – Update DRBD Version

The version of DRBD installed has been updated to 8.3.9 – this will be installed via the post-installation routines unless 8.3.7 or above is already available.

2: Fix – DRBD syntax fix in Cluster Application Build

A syntax error that could cause the synchronisation to fail during the “clbuildapp –sync” process has been fixed.

3: Enhancement – Heartbeat SSH Checks

The Heartbeat daemon now performs periodic SSH checks to ensure this backup functionality is working. It raises alerts/warnings if it is not.

4: Fix – SSH use in Heartbeat more Robust

The flags used for all SSH calls have been improved to reduce time-outs and make the usage more robust in event of certain failure scenarios.

5: Enhancement – Improved pre-install Checks

The pre-installation checks now include additional checks for some dependencies that were previously missing.

8: Enhancement – Ext4 File system Support

The “ext4” file system is fully supported as a file system to use with Linuxha.net.

10: Fix – Remove Perl warnings during Cluster Build

In certain conditions Perl warnings were produced during the initial cluster build due to missing files and thus uninitialised variables. This problem has been resolved.

11: Enhancement – Performance statistics gathered by Heartbeat Daemon

The heartbeat daemon now keep statistics on the performance of the heartbeats; for example how

often heartbeats have failed, longest/shortest and average duration and SSH performance.

12: Enhancement – the “clstat” commands reports Heartbeat Statistics

The “clstat” utility has a “--hb” argument to return details of the heartbeat statistics now.

13: Enhancement – “RESTART” message handled by Heartbeat Daemon

The heartbeat daemon will restart itself when sent a message “RESTART”. Mainly used to enhance support for online software upgrades (no cluster downtime).

14: Enhancement - “RESTART” (with full status) supported by Cluster Daemon

Finally the main cluster daemon also supports a “RESTART” message. In this case the existing state of the cluster and applications is kept between the process restarts. This completes all necessary work, and so all non-kernel affecting upgrades following 1.4.9 will not need any cluster downtime; just install and go!

15: Fix – correct “ping” message response in Heartbeat Daemon

Previously when sent a “ping” message to ascertain whether the daemon was functioning or not the heartbeat daemon would respond incorrectly – now fixed.

16: Enhancement – Support “--node” option on clhbdctl and clnetctl

It is possible to provide a “--node” option on “clhbdctl”, “cllockdctl” and “clnetctl” utilities to send messages to a particular node rather than the node on which the command is run.

17: Enhancement - The “clstat” utility shows daemon status

The “clstat” command has a “--daemons” option added to allow reporting of which daemons are currently functioning or not.

18: Enhancement - A “cllockdctl” facility has been added

A utility to send messages to the lock daemon has been added – this is called “cllockdctl” and works in the same manner as the “clnetctl” and “clhbdctl” utilities.

19: Enhancement - Lock daemon supports “RECONFIGURE” and “RESTART”

The locking daemon was the last daemon to be modified to fully support the “RECONFIGURE” and “RESTART” messages to fully support all aspects of cluster reconfiguration.

20: Fix – Move DRBD binaries during application builds

The checks to see whether the necessary versions of the DRBD binaries are in place have been improved; checks are now made during application builds as well as cluster builds to reduce the likelihood of these missing when DRBD is upgraded outside of Linuxha.net.

21: Fix – Application build Error Output Improvements

The “clbuildapp” process will also show an error message to the screen now if a failure occurs; and indicate the name of the log to view more detailed failure messages. In certain cases in the past it would fail silently; often appearing to the administrators that the function succeeded when indeed it had failed.

22: Fix – DRBD errors shown during sync removed

Depending on DRBD meta-data status it was possible for DRBD to show errors during the “clbuildapp –sync” process. This has now been fixed.

23: Fix – Sync percentage output corrected

The indication of percentage complete on the “clbuildapp –sync” process previously went down and not up! Now fixed.

24: Enhancement – Generate default “Lems” configuration

To make cluster usage easier a new application will be given an automatically generated “Lems” configuration file covering file system synchronisation. This provides an easy way of getting the application running prior to adding more details Lems functionality.

25: Fix – Remove ENBD references

Many years ago the earlier versions of Linuxha.net supported the ENBD block device. This functionality has not been available for some time and so all remaining references to ENBD in both the code and the documentation have finally been removed.

27: Fix – AUTOSTARTLIST Daemon message response

When a cluster was formed on the secondary node the process of using the “autostart” facility to start applications failed to work. This has not been fixed.

31: Fix – Find DRBD module after kernel upgrade

The facilities that check for the presence of a DRBD kernel module following upgrades now make use of “depmod” rather than explicit path checks to ensure the upgrade has worked or not. This makes the functionality compatible with almost all Linux distributions.

33: Fix – Lems restarted following application rebuild (if app running)

If an application is running and the “clbuildapp” is used to modify it in some way then the running Lems daemon for that application is now automatically restarted too. This makes sure that all possible impacts to Lems modules (such as process monitoring) match the currently running application.

35: Enhancement – Alerting supports log files as well as emails

The ability to send key alerts previously only supported email addresses. It is not possible to specify the full path to a file – and in this cases the alerts will be written to the named file instead.

36: Enhancement – Heartbeat Daemons Alerts now supported

The internal self-checks in the heartbeat daemon can now raise alerts if it deems that the checks have found something significant enough to affect (or potentially affect) the stability of the cluster.

39: Fix – Alert Handling ignores duplicate messages

40: Enhancement – SSH failures generate Alert entries

The newly added periodic SSH functionality checks added to the heartbeat daemon will also raise alerts if it deems the functionality is not working or responses too slowly.

48: Enhancement – Bonding support Tested/Verified

Linuxha.net will work with bonded network interfaces for hosting DRBD or application IP addresses. The documentation has been updated with an example too.

49: Fix – IP Migration works more Robustly

The functionality that migrates IP addresses from one interface to another for a particular network has been improved and works in a more robust manner.

55: Fix – Cluster joining from Secondary to Primary working

Previously the functionality for joining a single node cluster (where that single node was the primary) did not work too well and often failed. These failure scenarios have been removed making the operation reliable now.

58: Fix – optimize single node cluster formation to avoid time-outs

The formation functionality for single node clusters has been significantly improved. Previously it tended to suffer from time-out issues; this is no longer the case following changes that have been made.

59: Fix – Do not validate applications against Down node

The process of cluster formation includes steps to validate the configuration of the applications on both nodes in the cluster. Previously this node defined as primary attempted to contact the other node for validation even if that node was down. This has now been fixed.

61: Fix – Improved handling of cluster partitioning

Although very rare on well configured clusters, cluster partitioning is a very serious condition. Significant changes in how partitioning is handled have been introduced in an effect to greatly reduce any likelihood of data corruption or a split-brain scenario from occurring.

69: Fix – clbuild SSH IP Mapping Errors

In certain IP configurations running the “clbuild” function whilst the cluster is up and running with applications running might incur problems with not being able to ascertain IP addresses to use for SSH commands between the nodes. This problem has now been fixed.

Release Notes for 1.4.8 of Linuxha.net

Enhancement: Raw Logical Volume Support

Support has been added to allow the most flexible use of virtual machines. It also ensures the 2nd feature is not tied to particular clustered file systems...

Enhancement: Application Migration Support

A new “clmigrateapp” utility has been provided to support application migration. This is aimed at virtual machines which support live migration. With it the application can be moved between nodes without downtime.

Release Notes for 1.4.7 of Linuxha.net

Bug Fix: Path “net-gen” for Perl 5.10 support

A patch has been applied to this Perl module to allow it to install on platforms that user Perl 5.10.

Improvement: DRBD device down on reboot

For systems with the classic `/etc/rc.d/` directory structure a new entry has been added to ensure that all DRBD devices are downed if a reboot or shutdown takes place. This greatly reduces the risk of “split-brain” storage scenarios from taking place.

Improvement: Set-up `/etc/manpath.config` or `/etc/man.config`

The configuration file for manual pages is now automatically updated if necessary to ensure the directory where the manual pages are referenced is added, and the section “1m” is recognised.

Improvement: Include / test DRBD 8.3.2

The version of DRBD included has been changed to the latest available; 8.3.2.

Improvement: DRBD split-brain resynchronization refinement

Additional flags have been added to the `drbdsetup` commands to help reduce the work necessary by the “fsmon” file system monitor when working on data synchronization scenarios.

Release Notes for 1.4.6 of Linuxha.net

Improvement: Soft Failure Handling Functionality

A new cluster configuration option has been added – called “soft_failures”. It defaults to “true” meaning that if a software or network failure caused an application to switch nodes it would not fail-back to the original node until the condition was cleared using “clset” [which is what Linuxha.net has always done].

If this option is instead set to “false” then the applications will automatically fail back to the original node if the new node has problems. This is a dynamic option – it can be changed whilst the cluster is running using “clbuild”.

Bug Fix: DRBD network ping error

A minor bug was found and fixed in the heartbeat daemon when attempting to ping the IP addresses used for DRBD information.

Bug Fix: Negative % complete status on Resynchronization

A long-standing [if trivial] bug which showed the percentage complete of data synchronization the opposite of what it was has finally been fixed.

Improvement: Include support for DRBD 8.3.1

Although the included version of DRBD remains 8.2.7 this version of Linuxha.net will also work correctly with the recently released version 8.3.1 of DRBD.

Release Notes for 1.4.5 of Linuxha.net

Improvement: DRBD 8.2.7 Included

The version of DRBD shipped has been incremented to 8.2.7 to keep in line with latest version in the 8.2.x series.

Improvement: Time formatting in Alerting Emails

When email alerts are generated for various changes in cluster state the time given is no longer the UNIX time, but a human-readable one! This can be changed via the new “alert_date_format” global attribute.

Improvement: DRBD Forced resynchronization

When an application is brought up on a host and remote synchronization does not occur, it will force invalidate the remote copy if the remote copy refuses to synchronize.

Improvement: DRBD network ICMP optional ping checking

This will probably be of some use, but to a limited number of environments. If the network used for DRBD traffic is a general network and has hosts on it outside of the cluster one or more of these IP addresses, [if they respond to ICMP requests], can be specified. This will be used to work out whether local IP fail-over will occur on this network. This supplements physical link checking if available.

Release Notes for 1.4.4 of Linuxha.net

Improvement: DRBD version upgrade

The version of DRBD now used is 8.2.6 which is included in this release. Installation and configuration of this release will upgrade DRBD as necessary. No data resynchronization will be necessary. The behaviour of several commands has changed internally to support this but it has no affect on the user-visible command set.

Improvement: Heartbeat Daemon

This daemon now uses high resolution timers to ensure better handling of low-level system timeouts – improving the performance of certain network failure scenarios.

Bug Fix: Package Removal

If the software finds the cluster is still running the “preremove” script will return an error ensuring the software is not upgraded. This will affect the “upgrade” of the software when using certain package managers, such as “RPM” but was deemed the safest approach.

Release Notes for 1.4.3 of Linuxha.net

Improvement: Implementation of `-ignorenets` and `-force options`

The `clbuild` utility supports the above arguments, though they are typically not to be used unless certain conditions in the cluster configuration occur. See the administrator guide for details.

Release Notes for 1.4.2 of Linuxha.net

Improvement: Net Known Connections Validation

When the cluster configuration is built warnings are generated if any entries in the “net_known_connections” settings can not be pinged. Also every time a cluster is formed information on the number of valid hosts that can be contacted is shown.

Improvement: DRBD Authentication and Checksum Support

DRBD 8.2 can perform some initial authentication between the two nodes to greatly reduce the likelihood of a node being spoofed. This additional security feature can be supported with Linuxha.net 1.4.2.

The facility now also exists in DRBD to perform per-packet high level checksums. Of course this may have a performance impact on high IO throughputs [depending on the algorithm used], but reduces the possibility of data corruption that has occasionally been seen due to weak checksums at the Gigabit HBA level.

Fix: Application Build and Data Synchronization

DRBD 8.2 differences in the methods to initially synchronize data and then re-sync it later have been put in place. Similar changes to handling of online file system resizing is also present.

Improvement: “clbuild” error Output Improved

Previously there were certain conditions that could result in a failure but no evidence for the cause of the failure were presented to this screen. Additional error messages have been added to reduce the likelihood of this occurring.

Fix: Node removal from Cluster

The use of the “clhalt –node name” now works exactly as it should do.

Improvement: Online File system resize

When attempting to resize an “ext3” based file system, Linuxha.net will now attempt to use “resize2fs” or the newer “ext3online” if found.

Improvement: Log file Management

The software also includes a sample of a series of rules suitable for Skulker 2 to manage the log files generated by the software.

Improvement: Cluster Status Output

If the Lems daemon for a particular application fails it will now show as “Down” in the “clstat” output. Previously this was not often the case.

Fix: Application build safety Improvements

Previously it was possible to use the “clbuildapp –sync” option whilst the application was running which might potentially result in loss of data if run on the incorrect node, or force application unavailability since it would attempt to un-mount the application file systems! This is now detected and if the application is running, the “--sync” option will abort with a suitable error.

Fix: Application Rebuild Detection

Previously if the cluster was up and running and an application needed rebuilding the “clstat” output might not show it if the application was valid at the time of the last cluster formation. This has been fixed – as soon as an application requires a rebuild it is shown in the “clstat” command output.

Fix: Automatic DRBD Upgrade Feature

If later versions of DRBD 0.7.x are added to the correct directory then cluster formation will correctly find it, compile it and install it on the next cluster formation. Previously the pattern matching used meant this might appear to randomly work.

Improvement: More robust cluster formation for single node cluster

If just a single node is available occasionally cluster formation would fail in the past with time-out errors – this condition has been removed.

Improvement: Application IP Probing

If an application defines multiple IP addresses the probing for addresses use to fail; it now correctly works with patterns allowing detection of such applications when the software is restarted with applications currently running.

Release Notes for 1.4.1 of Linuxha.net

Improvement: Email Alerting Support

It is possible to specify an email address as part of the cluster configuration which is then used when events that are critical to the functioning of the cluster or the applications running occur.