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1. OVERVIEW

Intel(R) Cluster Checker verifies the configuration and performance of Linux*-based clusters and checks the cluster's compliance with the Intel(R) Scalable System Framework (SSF).

1.1. RELATED PRODUCTS AND SERVICES

Information about Intel(R) software development products is available at <http://www.intel.com/software/products>.

These are some of the products related to Intel(R) Cluster Checker:

- o Intel(R) SSF is an architectural design foundation that enables development and deployment of a wide variety of high-performance, balanced solutions to support compute- and data-intensive workloads. Its standards-based programmability allows engineers to run diverse workloads on a broadly available, common infrastructure, making the power of high-performance computing accessible to businesses of all sizes.

<http://www.intel.com/ssf>

- o The Intel(R) C++ and Fortran Compilers include advanced optimization and multithreading capabilities, highly optimized performance libraries, and analysis tools for creating fast reliable multithreaded applications.

<http://www.intel.com/software/products/compilers>

- o The Intel(R) MPI Library for Linux*, the Intel(R) Trace Analyzer and Collector for Linux, and the Intel(R) Math Kernel Library Cluster Edition for Linux* are the most awarded development tools. They create, analyze, and optimize high-performance applications on clusters of Intel(R) processor-based systems.

<http://www.intel.com/software/products>

2. NEW FEATURES

2.1 WHAT'S NEW IN VERSION 2017 Update 2

- Additional support for Intel(R) Xeon Phi(TM) Product Family x200 processors.
 - Additional support for Intel(R) Omni-Path Architecture.
 - Bug fixes.
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2.2 OLDER VERSIONS

2.2.1 Version 2017 Update 1

- Added Intel(R) Scalable System Framework support.
 - Deprecated support for Intel(R) Cluster Ready.
 - Added additional support for Intel(R) Xeon Phi(TM) Product Family x200 processors.
 - Removed heartbeat functionality.
 - Bug fixes.
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2.2.2 Version 2017

- Added support for Intel(R) Xeon Phi(TM) Product Family x200 processors.
 - Added support for the Lustre* file system.
 - Significantly improved analysis performance for large databases.
 - Extended the API to provide the ability to collect data.
 - The separate analyzer (clck.xml) and data collection (clckd.xml) configuration files were merged into a single file (clck.xml). Previous configuration files are not compatible.
 - Allows more granular suppressions. See the section on suppressions in the User's Guide for more information.
 - The asynchronous data collection daemons, clckd and clck-serverd, have been replaced by a plugin to the Open Resilient Cluster Manager* (ORCM). See orcm/README for more information. The ORCM plugin is a technical preview feature; please see the Known Limitation section for its current limitations.
 - Databases from previous versions of the product are incompatible with version 2017 due to database schema changes.
 - The samples have been moved online and are no longer distributed as part of the product. They are now available at the URL below:
<https://software.intel.com/en-us/product-code-samples?topic=20903>
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3. SYSTEM REQUIREMENTS

The following sections describe hardware and software requirements.

3.1. HARDWARE

- Intel(R) Xeon(R) processor (Intel(R) 64 architecture)
- 1 GB of RAM recommended
- 160 MB of free hard disk space required for installation

3.2. SOFTWARE

Operating Systems:

- Red Hat* Enterprise Linux* 6 and 7
- SUSE* Linux* Enterprise Server 11 and 12
- CentOS 6 and 7

Runtimes:

- Intel(R) MPI Library

Note: while the full SDK versions of these components fulfill the requirement, only the runtime is required.

4. INSTALLATION NOTES

Intel(R) Cluster Checker is distributed as part of Intel(R) Parallel Studio XE 2017 Cluster Edition and also as a standalone package.

To install Intel(R) Cluster Checker as part of Intel(R) Parallel Studio XE 2017 Cluster Edition, please refer to the Intel(R) Parallel Studio XE 2017 Cluster Edition documentation.

To install the standalone package, run the following commands:

```
% tar -xzf l_clck_p_2017.2.<package#>.tgz -C /tmp
% cd /tmp/l_clck_p_2017.2.<package#>
% ./install.sh
```

Notes:

- The default Intel(R) Cluster Checker install path is /opt/intel/clck/2017.2.<package#>.
- Intel(R) Cluster Checker needs to be installed on all nodes. This can either be accomplished either by installing into a shared directory or by installing a local copy on each node. Both options are supported by the installer.

5. DOCUMENTATION

This release of Intel(R) Cluster Checker includes the following documentation:

The Getting Started Guide walks through using Intel(R) Cluster Checker

for the first time.

The Intel(R) Cluster Checker User's Guide contains information on how to use Intel(R) Cluster Checker. It describes the basic usage models and the basic steps using the tool.

The Intel(R) Cluster Checker Developer's Guide contains information on how to extend Intel(R) Cluster Checker. It describes how to embed Intel(R) Cluster Checker functionality into other applications and how to add new checks to the tool or modify existing checks.

The Intel(R) Cluster Checker Reference Manual contains information on specific configuration options. It describes environment variables and configuration options that influence checking behavior.

The Intel(R) Cluster Checker API reference describes the API that may be used to embed Intel(R) Cluster Checker functionality into other software programs.

The documentation can be found in the doc subdirectory.

6. KNOWN LIMITATIONS AND TROUBLESHOOTING

The following is a list of known issues in this release.

- Data collection behavior and functionality

- o If the temporary directory used during collection is located on a shared file system, the directory will not be deleted.
- o The ORCM plugin is a technical preview feature.
- o Databases located on NFS file systems mounted with the "nolock" option are not supported. Not all data from concurrent data collection instances per database will be written to the database and the database may become corrupted. A single data collector instance per database can usually be used successfully in this case.
- o The error "Error: disk I/O error" may be generated when accessing a database located on a Lustre file system. The Lustre file system must be mounted with the "-o flock" option.
- o The 'iozone' data provider does not execute correctly on diskless clusters.
- o If collecting data as root, the value of the CLCK_SHARED_TEMP_DIR environment variable must be set to the fully-qualified path of a directory accessible on all nodes.

- Analysis behavior and functionality

- o Clusters containing dual port InfiniBand* adapters where the second port is unused should suppress the 'infiniband-port-physical-state-not-linkup' and

'infiniband-port-state-not-active' signs. See Chapter 4 of the User's Guide for more information on how to suppress signs.

- o When using the Linux boot parameter `isolcpus` with an Intel(R) Xeon Phi(TM) processor using default MPI settings, MPI based applications may fail. If possible, change or remove the `isolcpus` Linux boot parameter. If this is not possible and you are using the Intel(R) MPI Library, you can try setting `I_MPI_PIN` to off. Refer to the Intel(R) Cluster Checker reference manual for details on specifying environment variables for tests.
- o In Intel(R) Cluster Checker 2017 Update 2 executing `clck-analyze` in validation mode for Intel(R) Scalable System Framework is restricted to 2000 compute nodes (on a machine with 64 GB RAM).

7. TECHNICAL SUPPORT

If you did not register Intel(R) Cluster Checker during installation, please do so at the Intel(R) Software Development Products Registration Center at <http://registrationcenter.intel.com>. Registration entitles you to free technical support, product updates and upgrades for the duration of the support term.

For information about how to find Technical Support, Product Updates, User Forums, FAQs, tips and tricks, and other support information, please visit: <http://www.intel.com/software/products/support/>

Note: If your distributor provides technical support for this product, please contact them for support rather than Intel.

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Notice revision #20110804