FUJITSU

Data Sheet
FUJITSU Software HPC Cluster Suite V2.0

Enabling easy operation and management of your Fujitsu PRIMERGY HPC clusters.
Ready to use in your environment, helping to deliver innovation for your business.

The FUJITSU Software HPC Cluster Suite (HCS) is a purpose built software stack that includes a set of fully validated HPC software components. The software stack combines the best-of-breed HPC Open Source Software components with a set of proprietary software products and tools that ensure optimal usage of the Fujitsu PRIMERGY x86 hardware platforms. The offering is completed with a selection of market leading and popular ISV software products specifically focused on HPC usage.
Fujitsu has incorporated innovative technologies into their offering, including selected components originally developed for one of the world's largest HPC systems, the K computer (10 PetaFLOPS). The HPC Cluster Suite offers a very cost effective solution for HPC clusters of all sizes and is backed by a complete support Service Pack.
Whether you belong to a Small Medium Enterprise looking for a ready to use out of the box solution or a large organization requiring a scalable flexible clustering solution, the HPC Cluster Suite has the features and capabilities to meet your needs.

Comprehensive and flexible
The HPC Cluster Suite is a comprehensive software stack for x86 HPC clusters which combines an easy-to-use cluster management tool with a choice of workload managers and general HPC Open Source Software.
Large data storage and I/O throughput requirements, commonly associated with HPC application usage, are easily addressed using the highly scalable parallel file system (FUJITSU Software FEFS). A Graphical interface simplifies usage and promotes accessibility to HPC resources even from remote locations (HPC Gateway).

Clear benefits from a "Standardized" HPC solution
The HPC Cluster Suite is an essential component of the "Standardized" philosophy that encompasses all HPC solutions from Fujitsu. Clusters built using the Standardized process benefit from an optimal application configuration, immediate system readiness and faster deployment. The integrated HPC Cluster Suite simplifies HPC usage and management for both current and potential users of HPC.
Fujitsu HPC systems, being delivered with standards-based Intel® Cluster Ready, can dramatically reduce cluster purchasing complexity, accelerate your cluster deployment timeline and simplify your cluster management through the use of the Intel® Cluster Checker diagnostic tool. Intel® Cluster Ready becomes the "quality assurance" standard for your cluster purchase.


Benefits of the FUJITSU Software HPC Cluster Suite

HPC Gateway delivers immediate productivity
The inclusion of an intuitive Graphical end-user interface customized for HPC usage and supplied with an Application catalogue that includes templates for running highly used HPC applications (both ISV and Open Source Software) simplifies the usage of the HPC resources. New and occasional users as well as seasoned HPC users will find the interface used for preparing, launching and monitoring their work intuitive and simple to work with enabling them to immediately experience productivity gains in the way they manage their HPC workloads. The ability to share and exchange documents, access user guides, collaborate with other team members through the use of Forums, Wikis and Knowledge bases are some of the mechanisms used to promote HPC application and results sharing.

The FUJITSU Software HPC Cluster Suite components and available editions
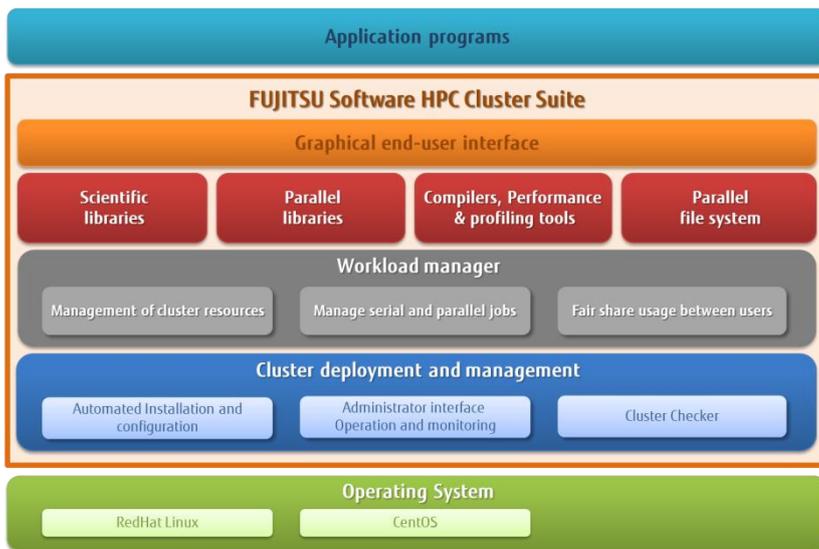
Open Edition [*1]
The Open Edition comprises Open Source Software components which are fully validated [*2] on the Fujitsu Server PRIMERGY. This edition provides an economical solution for users that do not require a supported offering. A demonstration version of the HPC Gateway is included.

Basic Edition [*1]
The Basic Edition uses the same software stack as the Open Edition but includes support and maintenance for CDM and the HPC Gateway. Installation support is provided for the Open Source Software and optional ISV products.

Advanced Edition [*1]
The Advanced Edition includes extended features, such as large cluster support and HA, as well as including the leading HPC workload manager, Altair's PBS Professional. The HPC Gateway advanced Edition supports multiple clusters on the same site. Support and maintenance of CDM, HPC Gateway and PBS Professional is included along with installation support for Open Source Software and optional ISV products.

Main components and features

CDM - Easy-to-use cluster management
The Cluster Deployment Manager (CDM) is a powerful cluster deployment tool used to improve the productivity of HPC administrators by reducing the cluster management TCO. CDM automates not only the deployment of the operating system but each software component and related configuration environment. A graphical user interface is planned for Q3 of 2013.

Variety of workload managers
The Open and Basic Editions include a choice of cost effective Open Source Software based workload managers, with TORQUE, SGE and SLURM being offered.
The Advanced Edition includes one of the most powerful and widely implemented workload managers in the HPC market today, the commercial-grade PBS Professional workload manager from Altair Engineering.

FUJITSU Software FEFS - Scalable parallel file system (optional)
FEFS enables high-speed parallel processing of very large amounts of read/write I/O from the compute nodes. Very large-scale file systems with up to 8 Exabyte (8000PB) capacity and 1TB/s are supported. The FEFS boasts features such as built-in high availability of all components, fair share I/O management and directory level quotas, to name a few.

General HPC Open Source Software
The HPC Cluster Suite contains many of the leading Open Source Software tools used in HPC environments. Commonly used Scientific libraries, Parallel libraries, compilers, performance & profiling tools and BMT tools are bundled as standard. This dramatically reduces the time and effort to bring a new HPC cluster to operational status.

High Availability (HA) (Advanced Edition)
Mission critical operational environments benefit from the Advanced Edition's HA capability. Avoiding downtime due to a failed head node improves system availability and ensures constant operations even after failure.

HPC Gateway - intuitive Graphical end-user interface with application catalogue
The HPC Gateway simplifies all aspects of HPC work management with integrated file management, application execution and monitoring as well as batch and system status. The ability to share and exchange documents, access user guides, collaborate with other team members through the use of Forums, Wikis and Knowledge base are some of the mechanisms used to promote HPC application and results sharing.
The application catalogue is supplied with a pre-defined catalogue of common ISV and Open Source Software application templates. Additional templates can easily be added to the cluster, either being developed using the workflow editor or via the application on-boarding mechanism.
The data workflow feature enables any type of HPC business application process to be easily automated. Best-practice processes make individuals more effective in their domain of expertise since they are using HPC in terms of the business purpose.

Complemented with leading ISV products
Fujitsu's strong relationship with leading HPC ISVs ensures the best selection of ISV products. Certified ISVs are validated on the HPC Cluster Suite environment with Fujitsu Server PRIMERGY.

Based on K computer technology
The HPC Cluster Suite inherits leading technologies originally developed for the PetaFLOPS class K computer such as CDM and FEFS. These cutting edge products help improve the innovation obtained from your cluster.

Fully validated solution [*2]
Assured operational stability comes from knowing the combinations of each software component are fully validated and tested with the Fujitsu Server PRIMERGY.

*1: optional ISV products can also be used.
*2: The Open Source Software and ISV products have been verified for installation as part of the HPC Cluster Suite but not for their functional capabilities. They are provided as is.

Choice for optimal usage: Open / Basic / Advanced Editions

Main features	Open Edition	Basic Edition	Advanced Edition
■ Easy-to-use and scalable cluster deployment and management	CDM	CDM	CDM
■ Flexible workload manager	TORQUE SGE and SLURM Supported from Q1 2014	TORQUE SGE and SLURM Supported from Q1 2014	PBS Professional
■ Parallel file system	No	FEFS [1] Supported from Q1 2014	FEFS [1] Supported from Q1 2014
■ General HPC Open Source Software components Scientific libraries, parallel libraries, compilers,	Yes	Yes	Yes
■ Graphical end-user interface - HPC Gateway with various ISV application catalogues	HPC Gateway Demo	HPC Gateway Basic	HPC Gateway Advanced incl. Application Catalogue
■ Graphical administrator interface Operation and monitoring	Ganglia Supported with HCSv2,0	Ganglia Supported with HCSv2,0	Ganglia Supported with HCSv2,0
■ ISV partners easy installation and validated on Fujitsu Server PRIMERGY (no prepackaging / no license included)	Intel® Cluster Studio XE	Intel® Cluster Studio XE	Intel® Cluster Studio XE
■ Intel® Cluster Ready	Yes	Yes	Yes
■ Recommended cluster size	Up to 128 nodes	Up to 128 nodes	Up to 1024nodes [2]
■ High Availability (HA)	No	No	Yes
■ Support and Maintenance and upgrade	No	Yes [3]	Yes [3]

*1: FEFS is based on Lustre
*2: Support for larger clusters available on request
*3: For Open Source Software only installation support is provided

Supported platforms

	Head node	Compute node	V1.0	V2.0
Hardware platforms	PRIMERGY RX300 S7 PRIMERGY RX350 S7	PRIMERGY RX200 S7 PRIMERGY CX250 S1	May 2013	-
	PRIMERGY RX300 S8 PRIMERGY RX350 S8 **PRIMERGY RX200 S8** **PRIMERGY BX924 S4**	PRIMERGY RX200 S8, PRIMERGY CX250 S8, **PRIMERGY RX300 S8, PRIMERGY RX350 S8** **PRIMERGY CX270S2, PRIMERGY BX924S4**	-	Oct 2013 Q1/2014
		Intel® Xeon Phi™ (5110P / 7120P / 3120P) *GPGPU NVIDIA Tesla K20/ K20X*		Q1/2014 Q2/2014
Operating Systems	Red Hat Enterprise Linux 6.3	Red Hat Enterprise Linux 6.3 Cent OS 6.3	May 2013	-
	Red Hat Enterprise Linux 6.4	Red Hat Enterprise Linux Server 6.4 Cent OS 6.4 Red Hat Enterprise Linux HPC Compute Node 6.4	-	Oct 2013

Partners

Altair Engineering   **Intel Corporation**

More information

Fujitsu platform solutions

In addition to HPC Cluster Suite (HCS), Fujitsu provides a range of platform solutions. They combine reliable Fujitsu products with the best in services, know-how and worldwide partnerships.

Fujitsu Portfolio

Build on industry standards, Fujitsu offers a full portfolio of IT hardware and software products, services, solutions and cloud offering, ranging from clients to datacenter solutions and includes the broad stack of Business Solutions, as well as the full stack of Cloud offering. This allows customers to leverage from alternative sourcing and delivery models to increase their business agility and to improve their IT operation's reliability.

Computing products
www.fujitsu.com/global/services/computing/

Software
www.fujitsu.com/software/

More information

Learn more about the HPC Cluster Suite (HCS), please contact your Fujitsu sales representative, Fujitsu business partner, or visit our website.
http://www.fujitsu.com/fts/hpc

Fujitsu green policy innovation

Fujitsu Green Policy Innovation is our worldwide project for reducing burdens on the environment.
Using our global know-how, we aim to contribute to the creation of a sustainable environment for future generations through IT. Please find further information at
www.fujitsu.com/global/about/environment/

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