

# White Paper FUJITSU Software ServerView<sup>®</sup> Suite Integration Packs

This white paper explains the technology behind three of the most important integration packs for the product families Microsoft System Center and VMware vSphere as well as Nagios Core systems in addition to how they work within the framework of ServerView<sup>®</sup>.

A COMPANY OF THE OWNER	100	Content			
Software View Home Lines FUSTSU Software Sortworkwe Solle Software Products Joa Period Manager Agenda Manager Remote Ma	ServerView Integration Description Descrip	Management Summary 1. Introduction: What is 2. ServerView® Integrat 3. ServerView® Integrat 3.1. ServerView® Integrat 3.1. ServerView® In 3.2. ServerView® In 3.2. ServerView® In 3.3. ServerView PRC 3.4. ServerView PRC 4.1. ServerView® Integrat 4.1. ServerView® Integrat 4.1. ServerView Plu 4.2. ServerView Inte 5. ServerView® Integrat 5. ServerView® Integrat 6. Serv	s EITM? tion Packs tion in Microsoft® System Co tegration in Microsoft Syste tegration Pack for System Co nd Update Management tegration Pack for System Co D Pack tegration for Microsoft AZU tion Pack for VMware vSphe g-in for VMware vCenter Se egration Pack for VMware vSphe g-in for VMware vCenter Se egration Pack for Nagios Core Sy tion Pack for Nagios Core Sy Coventad package Download package Download package Coventad package Coventad package Coventad package Coventad package	enter em Center Operations Manager (SCOM) Center Configuration Manager – Center Virtual Machine Manager – IRE Operations Management Suite (OMS) ere / vCenter and vRealize erver Realize ystems	2 3 4 4 5 6 6 7 7 8 8 9
	1 - 1 - 1 - 1 - 1 - 1				

#### **Management Summary**

"Consistent IT infrastructures on the basis of standardized hardware and software platforms are a rarity in everyday operations." This doctrine for frustrated CIOs and IT managers is also still valid today – five decades after computer systems made their entry into companies and 30 years after the client/server model asserted itself. IT departments are thus regularly faced by the task of attuning the heterogeneous components "of their" networks in such a way that these work without any problems. Unfortunately, this quickly results in overlapping, contradictions and errors, which for their part can cause the failure of important components, individual network segments or even entire data centers.

For this reason system integration is rightly seen as the blue ribbon of IT management; and the people responsible receive better marks the less end users notice any work they do. That is why just a few years ago special teams of administrators took care of the maintenance of the various platforms. This in turn caused operating costs and TCO to skyrocket – and thus contradicted all the efforts put into freezing or reducing IT budgets. Platform-neutral solutions, which can be used throughout the company and which enable coherent enterprise IT management (EITM) and efficient data center management, are a good way out of this dilemma. Fujitsu's ServerView® Suite resolves the problem with the help of so-called integration packs, which dock on to both the internal EITM solution ManageNow® and the platforms of other manufacturers.

This white paper explains the technology behind three of the most important integration packs for the product families Microsoft System Center and VMware vSphere as well as Nagios Core systems in addition to how they work within the framework of ServerView<sup>®</sup>.

#### 1. Introduction: What is EITM?

The desire for company-wide standardized, consistent IT management has existed since the digital revolution of the eighties put computers in the most remote corners of companies. The associated introduction of the client/server model can be regarded as an early attempt to prevent any proliferation and to streamline the emerging network architectures so as to minimize administration and maintenance effort. The concept spread quickly and comprehensively: Since the early 1990s authorities as well as small to medium-sized companies had made use of file, print and application servers, and the model also caught on with home users when online services and the Internet were introduced. Despite this success, however, the concept reached its limits time and again – above all in historically grown networks, i.e. in heterogeneous networks with their numerous, different server models and operating system platforms the required standardization was often enough left at the starting gate. So almost all server manufacturers launched management suites, which were specially optimized for their own devices and were only induced to cooperation with other products with considerable effort.

This was and is in particular a problem where operations and the administration of IT infrastructures are not classed as a direct core competence of a company, for example in the manufacturing industry, in retail, in the construction industry or public and private service providers. In this regard, IT has always ideally had a serving role to play, i.e. its aim is to help accelerate business and production processes and thus simplify them as much as possible. The fact that this does not always work as required, particularly in heterogeneous networks, is obvious. This is where EITM comes in, the ultimate aim of which is to set up business-oriented IT that provides its own value contribution to the company.

The development of autonomous EITM solutions gathered pace in 2009, as infrastructure providers developed fundamental concepts together with management software specialists and customers, which were governed by the requirements of lean management.<sup>1</sup> At that time Fujitsu was already classed as a pioneer. The core idea consists of restructuring IT processes according to the role model of industrial production processes in such a way that they can be designed and adapted to business processes in a more efficient, more reliable and more flexible way. In short, business objectives, and not information technology, should determine the work processes – also in the data center.

<sup>&</sup>lt;sup>1</sup> Compare the collection of interviews entitled "Masters of Lean IT: How 3 Visionary IT Executives Maximize Value and Minimize Waste". Published by CA Inc. 2009. <u>http://www.ca.com/us/~/media/files/brochures/masters-of-lean-it\_204013.aspx</u> (December 8, 2014)

# 2. ServerView<sup>®</sup> Integration Packs

This approach is always of particular benefit wherever it is vital to manage the heterogeneous infrastructures outlined above. The principal difficulty is to induce different hardware components and isolated software solutions to "speak" to each other. In this connection, integration packs fulfill two functions in particular: Firstly they facilitate the integration of Fujitsu PRIMERGY servers in existing environments as well as the connection of ServerView® to the EITM systems in use there. And secondly, as part of such a large solution Fujitsu's industry-standard servers profit from extended functions for network and application management as well as software distribution, which ServerView® itself does not offer. Fujitsu's own solution ManageNow® can on the one hand be used as a comprehensive platform; its interaction with ServerView® is described in a separate white paper. On the other hand, this text focuses on integration packs for third-party EITM systems, namely Microsoft (System Center), VMware (vSphere and vCenter) and Nagios/Icinga.

A common feature of all packs is that they use standardized protocols and interfaces in order to fit ServerView<sup>®</sup> into the higher-ranking platform. This results in the following benefits:

- All PRIMERGY servers appear with their own icons in the central management console. In this
  way, network administrators keep an eye on them at all times and can retrieve detailed
  status information and details about the "state of health" without any delay. They also
  have direct access to individual ServerView<sup>®</sup> modules, such as the System Monitor or
  the integrated Remote Management Controller (iRMC), in order for example to access
  information on CPU and memory utilization or energy consumption.
- PRIMERGY systems are automatically detected in network scans, which substantially reduces the configuration effort and as a result configuration times.
- Any alerts that are triggered due to malfunctions or workload peaks/threshold values are immediately recorded centrally; thanks to the access rights mentioned problems can be analyzed and remedied immediately.



Thus, the value of ServerView<sup>®</sup> Integration Packs is that they enable efficient use of all network resources, ensure reliable operation of PRIMERGY systems and sustainably reduce administration costs on the whole: In this way, the training and migration effort is kept to a minimum in the first place, the costs for implementing PRIMERGY systems can in comparison to conventional methods be reduced by up to 65%, and savings of up to 40% are possible in "pure" operating costs. Therefore, users receive a solution with optimal functionality with maximum investment protection and minimal expenditure – and come one big step closer to the goal of "economical IT".

A central role in this context – as in the overall ServerView<sup>®</sup> Suite – is played by virtualization, i.e. the option of processing certain workloads with the help of virtual machines (VM) instead of dedicated hardware. Unlike a few years ago, this technology is in the meantime an integral part of all leading server OS and forms the basis for the ongoing restructuring into cloud operating systems. This change can also be seen in the appropriate management solutions.

S ServerView					FUĴÎT	TSU
Home Links				E	nglish   <u>Deutsch</u>   <u>Japanes</u>	<u>se</u>
FUJITSU Software ServerView Suite	_		_			
Software Products	Serve	rView Integration				^
	ServerView Integration					
Agents and Providers	Server	Description /iew Integration Modules		File	Info	
Maintenance & Update	i	Overview of the ServerView Integration modules		Datasheet		
Operations Manager	Server	/iew Integration in Microsoft SCOM				
Remote Management	S	ServerView Windows Server Integration Pack for Microsoft System Center Operations Manager 2012 and 2016		Download package	1	
Resource Orchestrator VE	S	ServerView Linux Server Integration Pack for Microsoft System Center Operations Manager 2012 and 2016		Download package		
Virtual-IO Manager	S	ServerView ESXi Server Integration Pack for Microsoft System Center Operations Manager 2012 and 2016		Download package	i	
_	5	ServerView Out-of-Band Server Integration Pack for Microsoft System Center Operations Manager 2012 and 2016		Download package	1	
	Server	/iew Blade System Integration in Microsoft SCOM				

#### ServerView DVD - Integration

# 3. ServerView<sup>®</sup> Integration in Microsoft<sup>®</sup> System Center

The success of Microsoft's server operating systems has ensured that the appropriate management tools from the System Center product family have been rapidly distributed. According to a survey in the trade journal *InformationWeek* there is currently a version of Windows Server on 75% of all enterprise servers.<sup>2</sup> This in turn drives demand for suitable tools; according to official statistics Microsoft has for two years now achieved sales growth in double-digit percentage figures with products from the System Center family. In other words, the combination of Windows Server and System Center ranks as one of the most used solutions worldwide. The selection of ServerView<sup>®</sup> Integration Packs for the connection to System Center is accordingly large and varied. The ServerView<sup>®</sup> Integration Packs mainly dock onto the following modules of Microsoft's EITM solution (see Fig. 1):

- System Center Configuration Manager (SCCM)
- System Center Virtual Machine Manager (SCVMM)

• System Center Orchestrator / Service Managed Automation

- System Center Operations Manager (SCOM)
- Operations Management Suite (OMS)

•



Fig. 1: ServerView<sup>®</sup> Integration in Microsoft System Center

3.1. ServerView<sup>®</sup> Integration in Microsoft System Center Operations Manager (SCOM)

The ServerView integration in Microsoft SCOM enables Fujitsu PRIMERGY and PRIMEQUEST servers to be integrated into Microsoft SCOM. All major operating systems and full x86 server portfolio of FUJITSU is supported (see table below).



<sup>2</sup> Compare See Kurt Marko: "2015 Server OS Outlook" (InformationWeek Tech Digest). Published by InformationWeek, October 2014. <u>http://dc.ubm-us.com/i/395932</u> (December 8, 2014) ServerView Integration Packs contain management packs which basically provide similar predefined views taking care of different use cases like health status monitoring, alert event management as well as performance and power monitoring. The iRMC web interface can be accessed as well for more detailed analyses. All management packs are grouped within the Fujitsu systems core library which additionally includes a diagram view offering details on the monitored PRIMERGY infrastructure (see Fig. 2).



Fig. 2: Microsoft System Center Operations Manager – Diagram View with Fujitsu PRIMERGY servers

The **ServerView Windows Server Integration Pack** and the **ServerView Linux Server Integration Pack** uses native SCOM agents to process monitoring data provided by ServerView agents and providers and monitoring scripts. In case of ESXi based PRIMERGY servers ServerView CIM providers are used which are directly accessed by the **Server View ESXi Server Integration Pack**.

For customers preferring a solution without ServerView agents and providers running on their servers the **ServerView Out-of-Band Server Integration Pack** offers out-of-band monitoring via the integrated Remote Management Controller (iRMC) of the server system. The so called System Report XML structure will be exported out of the iRMC S4 and analyzed by the ServerView out-of-band management pack.

While Fujitsu PRIMERGY blade server nodes and PRIMEQUEST partitions are monitored via the corresponding Windows, Linux and ESXi management packs, their related chassis/enclosures need to be managed by separate management packs (ServerView Blade System Integration Pack and ServerView PRIMEQUEST Enclosure Integration Pack).

**3.2.** ServerView<sup>®</sup> Integration Pack for System Center Configuration Manager – Deployment and Update Management The deployment pack aims to help administrators configure and provide Fujitsu PRIMERGY servers with the aid of Microsoft SCCM. They can select one of two procedures – regular installation with the help of ready-to-use server images and driver packages, and bare-metal installation, in which administrators select the required software packages themselves.

With the first installation the module docks onto the ServerView<sup>®</sup> Deployment Pack, which is included on the ServerView<sup>®</sup>-DVD. This pack consists of two components, the ServerView<sup>®</sup> Installation Manager (SV IM) and the ServerView<sup>®</sup> Scripting Toolkit, and includes all the necessary scripts, tools and drivers. Similar to the regular procedure, the administrator can also choose between a dialog-driven and an unattended installation when deploying via SCCM. To do this, the administrator imports the required PRIMERGY drivers with the aid of the tools from the SV IM which are included in the deployment pack, and inserts them into the SCCM WinPE images. Alternatively, these

images and operating-system-specific driver packages and the ServerView® Scripting Toolkit can be integrated into SCCM as a complete package using the appropriate menu entries.

If the installation was successful, all PRIMERGY systems within the sphere of influence of the Microsoft tool are automatically displayed in the SCCM management console. In the next step, the administrator defines the distribution point, the software update point and the update server and distributes the scan program for recognizing the installed server components to the connected PRIMERGY machines. The PRIMERGY systems can then be managed with the help of additional management packs which are coordinated with the System Center tools. When used in productive environments, it is also advisable to set up an offline repository for software updates. The integration pack primarily serves to simplify and accelerate software distribution and update management via SCCM. With its help administration keeps an eye on the version of the BIOS, firmware and drivers and, if required, can update the individual software components quickly and without any problems. This is why the inventory data of the components installed on the PRIMERGY servers is made automatically available to the SCCM Resource Explorer. The System Center Update Publisher (SCUP) then ensures that SCCM can access the current software catalog. In order to keep systems "up to scratch", the administrator then only has to make regular comparisons of the target/actual status and, where necessary, install updates. In the current version the BIOS and firmware are updated by means of ASPs (Autonomous Support Packages) and the drivers by means of PSPs (PRIMERGY Support Packages).

In addition to integration into the SCCM, it is also possible to perform a bare-metal installation of PRIMERGY systems using the System Center Virtual Machine Manager. The required configuration is described in a <u>separate white paper</u>.

# 3.3. ServerView<sup>®</sup> Integration Pack for System Center Virtual Machine Manager – ServerView PRO Pack

SCVMM uses System Center Operations Manager functions to monitor the status and availability of virtual machines and servers that are administered with SCVMM. ServerView PRO Pack for MS System Center extends these functions to include performance and resource optimization features (Performance and Resource Optimization, PRO). Thus, administrators are given the option of analyzing the event messages of individual ServerView® agents and of the ServerView® RAID Manager and, if required, of introducing steps to recover and optimize the affected systems/VMs. If such a message indicates for example that the availability of a specific server is impaired, the VMs installed on said server can be immediately migrated to another fully functional server. This increases the availability of the VMs and the applications running on them, prevents inconvenient and costly "repairs", and thus contributes to optimization of the business processes.

ServerView PRO Pack also contains extended monitoring functions for monitoring the servers. If one of these modules detects an emergency which requires fast intervention, a so-called PROTipp is generated that proposes a specific action in order to optimize the affected VM. The SCVMM administrator can either accept or reject this proposal. As an alternative, the SCVMM can be configured in such a way that the action is carried out automatically.

The current ServerView PRO pack is available on the latest ServerView<sup>®</sup> Suite DVD or via our <u>Download-Server</u>. For more information and installation instructions please see the <u>manual</u>.

#### 3.4. ServerView<sup>®</sup> Integration for Microsoft AZURE Operations Management Suite (OMS)

Microsoft System Center is designed to manage private cloud and datacenter environments. Microsoft Operations Management Suite (OMS) is Microsoft's cloud-based Management Platform that complements a customer's System Center investment to enable new, cloud integrated management scenarios. OMS extends existing System Center capabilities to deliver a full hybrid management experience across any on premise datacenter or cloud.

FUJITSU Software ServerView OMS/Cloud Integration Pack offers customers an additional option to monitor their PRIMERGY servers in private clouds besides Microsoft System Center Operations Manager. To accomplish that, a management pack needs to be installed on the on premise System Center Operations Manager. A white paper included in the ServerView OMS/Cloud Integration Pack describes how to extend the available functionality of a Microsoft Azure Operations Management Suite Workspace by collecting performance and health state data for Fujitsu PRIMERGY servers that are monitored by the Microsoft System Center Operation Manager (SCOM) Management Group.

Predefined views and dashboards are provided and could be imported to the OMS workspace.

# 4. ServerView<sup>®</sup> Integration Pack for VMware vSphere / vCenter and vRealize

PRIMERGY and PRIMEQUEST servers from Fujitsu have for several generations provided native support for virtualization. The same applies for the ServerView<sup>®</sup> Suite. Based on this premise it is only consistent for Fujitsu to provide tools which simplify the integration of our industry-standard servers in landscapes that are based on the virtualization platforms VMware vSphere and vRealize (see Fig. 3).



Fig. 3: ServerView<sup>®</sup>-Integration in VMware vSphere and vRealize

# 4.1. ServerView Plug-in for VMware vCenter Server

Located in the Monitoring sub tab for clusters, vCenters and hosts, the ServerView plug-in provides you with detailed information about Fujitsu PRIMERGY servers (see Fig. 4). This information includes properties of the system, fans, temperature sensors, power supplies, system processors, memory modules and of the RAID subsystem. In case the managed system is a PRIMERGY blade server also information about management-, server-, storage- and connection blades is provided.

VMWare vSphere Web Client 🔒 🖉 👌 👌 Administrator@VSPHERE.LOCAL -   Hel									
(Home ) 🔊 I	Tx200s7-vsan.pct.local Actions -	=*							
	Summary Monitor Manage Related Objects								
🔫 🕝 vcsa-vsan		_							
	Issues Performance Storage Reports Tasks Events Hardware Status Log Browser FUJITSU PRIMERGY								
rx200s7-vsan.pct.local 🕻									
rx200s8-vsan.pct.local	IPMI LED IRMC AVR Monitor Test Export Refresh	FUJIISU							
rx300s7-vsan1.pct.local	Event								
rx300s7-vsan2.pct.local	44 System Information								
🗗 sles11	Information								

Fig. 4: VMware vSphere Web Client – "Monitor" view

Events of PRIMERGY systems are forwarded to the vSphere Event Manager. In addition, you can view the system event log including specialized cause and resolution information. To simplify service tasks the plug-in provides the ability to turn the system identification led of the PRIMERGY server on/off. Furthermore, the plug-in enables you to start a session with the onboard management controller (iRMC) of a managed PRIMERGY system via its web interface or to contact to a remote console. In case the managed system is a PRIMERGY blade server or PRIMEQUEST partition you can start the Configuration Web Application of its management board as well.

In the Manage sub tab for hosts, the ServerView plug-in helps you to check the system status and, if required, to run an eLCM offline update controlled by a VMware vRealize Orchestrator workflow. The prerequisites for an update are checked, and the history of previous workflow runs is shown. Bare metal systems with a BMC interface but no operating system installed are shown as customized objects (BMC systems). Once those are discovered and defined you can deploy ESXi by using ServerView profiles and add the systems as new hosts to a vCenter or cluster.

Users can select between two versions of the SV plug-in for Windows and Linux servers and either install these from the ServerView<sup>®</sup> DVD or download them from the Fujitsu web site. More information and installation instructions are provided in the <u>manual</u>.

#### 4.2. ServerView Integration Pack for VMware vRealize

VMware vRealize is a cloud management platform enabling the Software Defined Data Center (SDDC). Two major products within VMware vRealize are vRealize Orchestrator and vRealize Operations Manager. Fujitsu offers ServerView integrations in both products.

The integration in VMware vRealize Orchestrator enables customers to process automated or scripted operations by workflows offered within the ServerView vRealize Orchestrator integration. Customers are able to update systems offline by a workflow or deploy ESXi by remote media. Within the vRealize Operations integration customers can monitor health status and topology (server-chassis relation) of Fujitsu servers via health objects. Furthermore, PRIMERGY specific events are integrated.

#### 5. ServerView<sup>®</sup> Integration Pack for Nagios Core Systems

Created in 2002 from the Open Source tool NetSaint, Nagios developed during the following years to become the de facto standard tool for system, network and infrastructure monitoring in Linux and UNIX environments. Like NetSaint, Nagios is also free software, for which no license fees are incurred and which can be adapted to individual company requirements at any time. Its current main function is the monitoring of network services, which takes place at protocol level, and of hardware resources, which are addressed via special interfaces or software agents. Nagios is modular in design and consists of a core, the so-called Nagios Core, which implements the most important monitoring functions – among other things for protocols like SMTP, POP 3 and HTTP protocols, for the utilization of processors and hard disks, for heat development, etc. More functions can be added by means of plug-ins or self-developed modules. This principle is also used by other Open Source and commercial monitoring solutions like Icinga, Opsview Enterprise or SM-BOX, which are based on the core described and are therefore referred to as Nagios Core systems.

The integration of systems managed with ServerView<sup>®</sup> – i.e. the rack, tower and blade models of the Fujitsu PRIMERGY family, and the PRIMEQUEST servers – is also performed by means of a series of plug-ins and tools (see Fig. 5). They are namely the plug-ins check\_fujitsu\_server.pl and check\_fujitsu\_server\_CIM.pl as well as the tools tool\_fujitsu\_server.pl and tool\_fujitsu\_server.pl and tool\_fujitsu\_server\_CIM.pl. All modules are compatible both with Nagios and its derivates. Detailed information, for example about the following components can be accessed via the central Nagios management console:

- System and chassis;
- Processors;
- RAM;
- Hard disks / SSDs (also in the RAID array);
- I/O interfaces (switches, FC and SAS connections, KVM switches, etc.);
- Power supply;
- Fans.

The CPU and RAM load, temperature, operating voltage and power consumption are all collected. The dedicated control and administration of virtual machines is not planned for the Nagios core, but can be realized with the help of plug-ins or third-party software.

Current Windows, Linux and VMware servers, on which the agents for ServerView<sup>®</sup> and ServerView<sup>®</sup> RAID or suitable CIM providers run, can be managed with the help of the integration packs for Nagios Core systems. Information about the update status of the connected Windows und Linux systems can also be accessed via the CIM provider.

Out-of-band management is supported via SNMP and REST on servers equipped with an integrated Remote Management Controller (iRMC). More information and notes about the setup are available in the <u>manual</u>.



Fig 5: ServerView<sup>®</sup> Integration in Nagios Core (here: lcinga)

#### Conclusion

The integration of heterogeneous hardware and software systems was and still is quite rightly seen as the most prestigious discipline of IT management: IT departments, which ensure a smooth interaction of all the components, provide a considerable competitive advantage for their companies. However, the time and personnel effort required for the manual integration of all systems eats up a large part of these advantages; and additional error sources are also derived from this.

In contrast, Fujitsu's ServerView<sup>®</sup> Integration Packs rely on a connection with the help of standardized interfaces and protocols, which enable largely automated coordination and thus help optimize IT management processes, improve service quality, reduce operating costs, and protect investments that have already been made. Integration packs exist for all leading management platforms, and consequently enable Fujitsu PRIMERGY systems to be used without any problems in almost every data center landscape – a textbook example for flexibility and reliability.

# FUJITSU Software ServerView® Suite - Overview



#### Contact

FUJITSU Technology Solutions GmbH Mies-van-der-Rohe-Str. 8, 80807 Munich, Germany Website: www.fujitsu.com/fts/ 2017-01-11 WW-EN

#### Copyright 2017 FUJITSU LIMITED

All rights reserved, including intellectual property rights. Technical data subject to modifications and delivery subject to availability. Any liability that the data and illustrations are complete, actual or correct is excluded. Designations may be trademarks availability. Any liability that the data and illustrations are complete, actual or correct is excluded. Designations may be trademarks availability. Any liability that the data and illustrations are complete, actual or correct is excluded. Designations may be trademarks availability. Any liability that the data and illustrations are complete, actual or correct is excluded. Designations may be trademarks availability. Any liability that the data and illustrations are complete, actual or correct is excluded. Designations may be trademarks and/or copyrights of the respective manufacturer, the use of which by third parties for their own purposes may infringe the rights of such owner. For further information see www.fujitsu.com/fts/resources/navigation/terms-of-use.html