FUJITSU

Data Sheet FUJITSU Software ServerView® Suite integrated Remote Management Controller - iRMC S6

Comprehensive remote control of Fujitsu PRIMERGY servers

The ServerView integrated Remote Management Controller iRMC S6 enables customers ensure a secure and safe IT environment. iRMC S6 helps in increasing security and system administrator's productivity with the industry standard Redfish API and REST API as well as secure user interface with handheld device support (tablets).

The remote management provides monitoring and management of Fujitsu PRIMERGY servers regardless of their system status – even in out-of-band operation. Implemented in a chip on the system board it integrates essential system management functions with extensive remote management functionality.

As an autonomous system on the system board of Fujitsu PRIMERGY servers, the iRMC S6 has its own operating system, its own web server, separate user management and independent alert management. The iRMC remains powered up even when the server is in stand-by mode.

Communication is carried out via a LAN connection, which can be shared with the Fujitsu PRIMERGY server or used exclusively for system management.

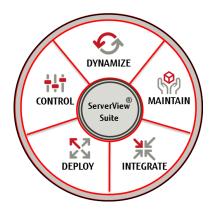
iRMC S6 gives administrators or service technicians access to the server for extensive control, even in decentralized, heterogenous environment. In the event of server problems, routine tasks and maintenance can be carried out efficiently. In addition to the free embedded functions, an iRMC S6 advanced pack can be purchased to enable graphical console re-direction - Advanced Video Redirection (AVR) via HTML5, Java and VNC and the use of multiple remote storage connections. With an separate license the embedded Lifecycle Manager (eLCM) feature provides a rich set of lifecycle options

iRMC S6 combines long-term expertise and practical experience gained with its successful predecessors. On top of the proven technology the iRMC S6 features additional functionality including:

- Monitoring of server-internal HDDs, PCIe SSDs and RAID configurations also in agentless out-of-band operation,
- Video capturing as a useful tool for remote troubleshooting,
- Virtual Media for remotely connecting multiple CD/DVD, HDD or images or physical drives

Beyond making it possible to manage a server out-of-band, the enhanced functionality of the iRMC S6 - which comes with an integrated SD card - allows for comprehensive lifecycle management of a Fujitsu PRIMERGY server. As life cycle management is integrated ("embedded") in and entirely controlled by the iRMC, it is called "embedded Life Cycle Management (eLCM)". Reduce vulnerability and ensure chain of trust for provisioning having eLCM preloaded on server with HTTPS support.

Some eLCM functions require the iRMC to communicate and cooperate with the ServerView Agentless Service running on the managed server. Communicating with the ServerView Agentless Service also provides the iRMC S6 with additional host OS information.





Fehler! Unbekannter Name für

Dokument-Eigenschaft. provides all the necessary elements for professionally managing server systems during its lifecycle. For information on other ServerView products please visit https://www.fujitsu.com/global/products/computing/

nttps://www.rujitsu.com/global/products/computing/ servers/server-management/



Features and Benefits

Main features	Benefits
 Universal system management solution for all Fujitsu PRIMERGY servers 	Uniform user interface and operational behavior
Modern, interactive web user interface based on HTML5	New web UI provides a secure and intuitive user interface enabling ease of management
■ Comprehensive control and analysis of Fujitsu PRIMERGY servers	Around-the-clock control, independent of the server status
Secure data connections via HTTPS	Enhanced communication security based on HTTPS / SSH.
IRMC S6 conforms to DMTF SPMF Redfish industry standard	Support for unified API enables customer to increase productivity and provides a secure management approach
 Extensive power management inclusive pre-defined profiles and a scheduled mode to switch between profiles automatically 	Simplified power management that adjusts power consumption according to the current usage or to the given power policy
Monitoring of server internal and external storage components	Check of server-internal HDDs, PCIe SSDs and certain RAID configurations also in out-of-band operation
 Efficient graphical console redirection (AVR) via HTML5, Java and VNC 	No need for expensive external KVM switches
Video Capturing and Virtual Media support	Provides a useful tool for remote troubleshooting with video capturing and video media Supports remote connection of multiple CD/DVD or HDD images or physical drives located elsewhere in the network
embedded Lifecycle Management (eLCM) with preload on SD option*	 Supports routine management of system administrators with simplified, highly integrated and automated server management processes
Customer Self Service (CSS) concept	Avoid time-consuming and cost-intensive call-outs
Profile Management via RESTful or Redfish API	Server profile deployment over many servers
Note: Depending on the server model or operating system used certain manageme *eLCM preload option is only available when shipped from the factory.	ent functions may differ or may not be available.

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FUJITSU Software ServerView[®] Suite - integrated Remote Management Controller - iRMC S5

iRMC S6 - Hardware for Remote Management

Remote configuration and maintenance minimize time-consuming and cost-intensive call-outs.

iRMC S6 permits system control, diagnosis, configuration and server restarting by remote access via the integrated web interface – even if the operating system or hardware fails. iRMC S6 communicates directly with the hardware sensors, such as in fans. Errors can be analyzed and often also fixed right away. The system administrator is notified by email or SMS.

iRMC S6 allows for remote monitoring of server-internal HDDs, PCIe SSDs and RAID configurations also in agentless out-of-band operation, it enables video capturing as useful tool for remote troubleshooting and offers Virtual Media for remotely connecting multiple CD/DVD or HDD images or physical drives. Genuine headless system operation without a local mouse and keyboard is also possible.

Ensuring maximum security, the iRMC S6 offers enhanced security functions, including high encryption and efficient user authentication. e.g. PFR (Platform Firmware Resilience)

iRMC S6 also performs the functions of a Baseboard Management Controller (BMC). It is thus able to take over functions such as power management or reading the System Error and Event Log (SEL) regardless of the system status.

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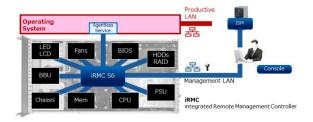
Notes:

There may be import restrictions for some countries due to the high encryption. Depending on the server model or operating system used certain management functions may differ or may not be available.



iRMC S6 – integrated Remote Management Controller

Implementation of connections from iRMC S6 to HDDs, PCIe SSDs and RAID depends on the individual Fujitsu PRIMERGY server models.



iRMC S6 -	System	Requirements

1	•
Managed Server	
Software	Windows Server 2016, 2019, 2022 CentOS 7.9 Rocky Linux 8.5 ~ 8.6 Rocky Linux 9.0 ~ 9.1 RHEL 8.4 ~ 8.9 RHEL 9 GA ~ 9.3 SLES15 SP3 ~ 5 ESXi 7.0 Update 3 ESXi 8.0 ~ 8.0 Update 2
Hardware Fujitsu PRIMERTY Server models	TX13x0 M5, TX2550M7, RX1330 M5, RX25x0 M7, CX25x0M7, RX8770M7, RX1440M2*, RX2450M2*
Controller	PRAID CP500i, RAID EP680i, PRAID EP580i, PRAID EP540i, PRAID EP520i PSAS CP503i, PSAS CP 2100-8i
Administrator Syst	em
Software	Edge, Firefox and Google Chrome
Hardware	Standard PC, LAN

*) The iRMC firmware functionality of AMD server RX1440M2 and RX2450M2 have equivalent to those of Intel server, except for following:

- IPMI Fencing and CPU utilization monitoring function in iRMC WebUI doesn't support.
- Video output in iRMC WebUI is no longer necessary because it can be output to both Internal and External VGA.

Standard Functions (I)

Browser Access

The iRMC S6 features its own web server, which can be accessed from the management station with a standard web browser. All sensor information, such as fan speeds, voltages, etc., and the complete configuration of the iRMC S6 are made available to administrators via the web interface.

Security (SSL/TLS 1.3, SSH)

Secure access to the web server and secure graphical console redirection including mouse and keyboard can be provided over HTTPS. An encrypted connection protected by using SSH mechanisms can be set up and configured to access the iRMC S6 using the Remote Manager. Incorrect logins will be logged. The Remote Manager is a Telnet-based interface of the iRMC. You can use the Remote Manager from any Telnet/SSH client. With the web interface, only HTTPS is supported and links on HTTP being re-directed to HTTPS ensuring secure access.

FUJITSU Software Infrastructure Manager (ISM)

With ISM Fujitsu is providing a powerful tool for monitoring and managing IP based local and distributed IT infrastructures, covering servers, storage, network devices as well as power and cooling. As a successor of the popular ServerView Operations Manager ISM is supporting the complete range of tasks for business critical server operations.

ISM detects the iRMC S6 and automatically assign it to the relevant server. it is possible to start the iRMC web user interface directly from the ISM graphical user interface.

iRMC S6 provides hardware status and inventory data of the PRIMERGY server to ISM through network connection. iRMC S6 provides basics for management functions of ISM.

Power Management

Regardless of the server status, the following options for powering the managed server up or down from a remote workplace are provided:

- via the iRMC S6 web interface
- via the *Power Control* menu of the AVR window
- via the Remote Manager and the command line interface (CLI)
- via Rest / Redfish API

With this, a managed server can be powered up, a power cycle can be initiated, or it can be shut down gracefully or instantly (power button override), e.g., if the operating system no longer responds. In addition, an immediate or graceful reset (reboot) can be initiated.

Power Consumption Monitoring

To monitor system power consumption via the web interface several reports are provided. You can choose between reports for a single day, for a month or a year - up to five years. This will require redundant power supply supported on the chosen platform. These reports are available through Redfish and DCMI API.

Power Consumption Control

iRMC S6 allows comprehensive power consumption control on the managed server. In addition, you can specify the mode that the iRMC uses to control power consumption:

• O/S controlled:

Power consumption is controlled only by the operating system of the managed server.

Minimum Power: The iRMC S6 controls the server to achieve the lowest possible power consumption. In this event, system performance is not always ideal.

• Scheduled:

Allows the detailed specification of the schedules and modes (*O/S controlled, Minimum Power, Power Limit*) iRMC S6 uses to control the power consumption on the managed server.

• Power Limit:

Restricts the max. power consumption of the managed server

You can switch between these modes as required.

Note: Above settings are CPU specific and are not available for all CPU types and Fujitsu PRIMERGY servers.

Customer Self Service (CSS)

Not all components of a Fujitsu PRIMERGY server have to be replaced by Service. There are components you can replace on your own. They are marked in the iRMC S6 web interface and this information is provided in Infrastructure Manager (ISM) as well. In addition, error list of the System Event Log (SEL) shows for every event whether it has been triggered by a CSS component.

Text Console Redirection

Text console redirection will be available depending on how it is configured and on the operating system of the server:

- Either for the duration of the BIOS POST phase only, or
- Beyond the BIOS POST phase, while the operating system is running

You can configure the text console redirection via LAN with the UEFI setup utility.

Text console redirection is available via Telnet/SSH.

Basic functions of a BMC

iRMC S6 supports the basic functions of a BMC such as voltage monitoring, event logging and recovery control.

"Headless" System Operation

The managed server does not require a mouse, monitor or keyboard to be connected, as the server status can be monitored and operated from the WebUI. The benefits of this include lower costs, far simpler cabling in the rack and increased security.

Identification LED

To facilitate identification of a server, for instance if the server is installed in a fully populated rack, you can activate the identification LED from the iRMC S6 web interface.

Global error LED

A global error LED always informs you of the status of the managed server. Global error LEDs indicates errors that can be fixed by service.

CSS (Customer Self Service) LED

CSS LED indicates errors that can be fixed by customer.

Standard Functions (II)

Power LED and Front Panel LED

The power LED informs you whether the server is currently switched on or off; the Front Panel LED informs you on the power status of the server.

LAN

In most Fujitsu PRIMERGY servers, one LAN interface of the built-in NIC (network interface card) is reserved for the management LAN. In other servers, you have the option of configuring this LAN interface to

- reserve it for the management LAN
- set it up for shared operation with the system or
- make it completely available to the server system.
- The ports marked with a wrench symbol
 - are assigned to the iRMC.

Network Bonding

Network bonding for the iRMC S6 is designed for redundancy in the event of Ethernet network adapter failures. Thus, iRMC S6 network management traffic is protected from loss of service which occurs due to failure of a single physical link.

The iRMC S6 supports the active-backup mode, e.g., one port is active until the link fails, and then the other port takes over the MAC address and becomes active.

SNMPv1/v2c/v3 support

You can configure an SNMP service on the iRMC S6 which supports SNMPv1/v2c/v3 GET requests on SC2 MIB, MIB-2, OS.MIB, STATUS.MIB and RAID.MIB. You can also configure SNMP Trap.

When the SNMP service is enabled, information on devices such as fans, temperature sensors etc. are available via the SNMP protocol and can be viewed on any system running an SNMP Manager.

Command Line Interface (CLI)

Remote Manager, in the iRMC S6 provides a text-based menu of basic management tasks.

Simple Configuration – interactive or script-based

The following tools are available to configure the iRMC S6:

- iRMC S6 web interface
- FUJITSU Software Infrastructure Manager (ISM)
- UEFI BIOS Setup
- REST
- Redfish

It is also possible to carry out configuration with the FUJITSU Software Infrastructure Manager (ISM) or IPMIVIEW using scripts or Rest / Redfish API. This means that it is possible to configure the iRMC when the server is first configured via ServerView Installation Manager or via SSDP. It is also possible to configure a large number of servers on the basis of scripts and profile management. SOA(Service Oriented Architecture) services can be used to integrate into VMware, Nagios, etc.

Local User Management

The iRMC S6 has its own user management function which allows up to 16 users to be created with passwords and to be assigned various rights depending on the user groups they belong to.

Global user management using a directory service

The global user IDs for the iRMC S6 are stored centrally in the directory service's directory. This makes it possible to manage the user identifications on a central server. They can therefore be used by all the iRMCs that are connected to this server in the network.

The following directory services are currently supported for iRMC S6 user management:

- Microsoft[®] Active Directory
- OpenLDAP

CAS-based single sign-on (SSO) authentication

The iRMC S6 supports Centralized Authentication Service (CAS) configuration, which allows you to configure the iRMC S6 web interface for CAS-based single sign-on (SSO) authentication.

The first time a user logs in to an application (e.g., the iRMC S6 web interface) within the SSO domain of the CAS service, they are prompted for their credentials by the CAS-specific login screen.

Once they have been successfully authenticated by the CAS service, the user is granted access to the iRMC S6 web interface as well as to any other service within the SSO domain without being prompted for login credentials again.

DNS / DHCP

iRMC S6 provides support for automatic network configuration. It has a default name and DHCP support is set by default so that the iRMC S6 gets its IP address from the DHCP server. The iRMC name is registered by the Domain Name System (DNS). Up to five DNS servers are supported. If DNS/DHCP is not available, the iRMC S6 also supports static IP addresses.

Standard Functions (III)

Power Supply

iRMC S6 is permanently active and accessible while the server is AC powered. iRMC is starting automatically when the server is connected to the AC power network.

Alert Management

The alert management facility of the iRMC S6 provides the following options for forwarding alerts (alerting):

- Platform Event Traps (PET) are sent via SNMP
- Direct alerting by email
- Syslog

Read, filter and save the System Event Log (SEL) and the internal Event Log (iEL)

You can view, save, delete and forward the contents of the SEL/iEL to an external syslog server.

- by using the iRMC S6 web interface or
- by using the Telnet/SSH-based interface (Remote Manager) of the iRMC S6.
- by using via REST / Redfish API

Prefailure Analysis (PDA)

iRMC S6 takes care of prefailure analysis for HDD/SSD, memory and fans.

Online Firmware Update

The iRMC S6's firmware can be updated online since there are two independent images of the firmware on the system board. In case an error occurs during firmware flash, the redundant firmware image can always be used as a backup (Secure Flash).

Online BIOS Update

The BIOS of Fujitsu PRIMERGY servers can be updated online via the iRMC S6 web interface.

Gen3 FJBU (Server built-in battery unit)

Gen3 FJBU status is shown in the iRMC S6 web interface. Moreover, if AC-Fail is detected in PSU, iRMC graceful shutdown the system to protect data by using power from FJBU.

SSDP (Simple Service Discovery Protocol)

SSDP (Simple Service Discovery Protocol) is a standard protocol that discover, notifies, and responds to UPnP (Universal Plug and Play)-enabled network devices.

SSDP enables server Plug and Play. The iRMC can be discovered by ISM using SSDP. This allows you to perform initial configuration and management from ISM without any interaction with the server.

Monitoring of Storage components

HDD, SSD, NVMe and RAID status of the managed server is shown in the iRMC S6 web interface. This includes disk cabinets, Fujitsu ETERNUS JX40. Readout of the status is possible via IPMI and Redfish.

UEFI support / Secure Boot

Unified Extensible Firmware Interface (UEFI) is a specification for a software program that connects a computer's firmware to its operating system. UEFI has a firmware validation process, called secure boot. Secure boot defines how platform firmware manages security certificates, validation of firmware, and a definition of the interface (protocol) between firmware and the operating system.

RESTful API

RESTful API allows an easy configuration of multiple systems via scripts.

Redfish

Redfish provides unified programmatic interface that can easily be controlled through scripts. iRMC S6 conforms to the latest Redfish version 1.9. Redfish API also provides OEM extensions to configure iRMC specific settings.

Redfish is an emerging open industry standard specification and schema for datacenter and system management by DMTF (Distributed Management Task Force).

Task Manager

With the Task Manager you can schedule and control REST/RedFish tasks, i.e. online or offline updates, etc. The Task Manager shows a list of all scheduled tasks and their status, e.g. pending (waiting for execution), running or completed.

LAN over USB

LAN over USB is a feature that enables Ethernet connection from the local host to the iRMC over the USB port.

Use cases is:

- Redfish from local host to iRMC
- iRMC Web interface visible from local host
- SSH from local host to iRMC for "Remote Manager"

MCTP (Management Component Transport Protocol)

If the LAN and FC card supports MCTP, the operating status and temperature of the LAN and FC card can be obtained via MCTP.

Monitoring GPU Card

If a GPU card is installed, various information such as GPU operating status and temperature can be monitored.

PFR (Platform Firmware Resilience)

PFR repeats the step-by-step verification of the firmware layer to be started up next until all the firmware of the entire system is started up, Thereby forming a chain of trust between the firmware of the entire system and ensuring reliability. (Trust chain - means that hardware verifies the boot loader, then boot loader verifies the iRMC firmware). If any falsification found_PER automatically recovery by flushing iRMC

If any falsification found, PFR automatically recovery by flushing iRMC firmware with a secured image.

Extended functions of the iRMC S6 iRMC S6 Advanced Pack

The iRMC S6 Advanced Pack enables Advanced Video Redirection (AVR) and Virtual Media functions.

Advanced Video Redirection (AVR)

Advanced Video Redirection with iRMC S6 offers the following benefits:

- Operation via a standard web browser.
- User can select Java, HTML5 or VNC (Java-free) prior to the start of an AVR session.
- System-independent graphical and text console redirection (including mouse and keyboard).
- Remote access for boot monitoring, BIOS administration and control of the operating system.
- AVR supports up to two simultaneous "virtual connections" for working on a server from a different location. It also reduces the load on the network by using hardware and video compression.
- Local monitor-off support: It is possible to power down the local screen of the managed Fujitsu PRIMERGY server during an AVR session in order to prevent unauthorized persons from observing user input and actions carried out on the local server screen during the AVR session.
- Low bandwidth:

In the case of a reduced data transfer rate, you can configure a lower bandwidth (bits per pixel, bpp) in terms of color depth for your current AVR session.

Virtual Media

The Virtual Media functionality makes a "virtual" drive available which is physically located on a remote workstation or made available centrally on the network using the *Remote Image Mount* functionality.

The "virtual" drives available with Virtual Media are simply managed in the same way as local drives and offer the following options:

- Read and write data.
- Boot from virtual media.

• Install drivers and small applications. Update BIOS from remote workstation. (BIOS / Firmware update via USB).

Video Capturing

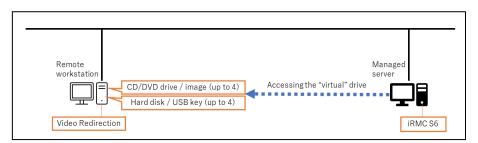
As a useful tool for remote troubleshooting Video Capturing creates a video recording of the events that are displayed on the monitor at the managed server.



Virtual Media supports the following device types to provide a "virtual drive" on the remote workstation:

- CD ROM
- DVD ROM
- Memory stickCD ISO image
- DVD ISO image
- Physical Hard disk Drive
- HDD ISO image

The *Remote Image Mount* functionality provides ISO images centrally on a network share in the form of a "virtual drive".



To activate the iRMC S6 Advanced Pack a license key is required. It can be ordered in combination with a new Fujitsu PRIMERGY server (ex-factory activation; PYBRMC44) or subsequently (field activation; S26361-F1790-L244).

Extended functions of the iRMC S6 ServerView embedded Lifecycle Management (eLCM)

Simplified Management



ServerView embedded Lifecycle Management (eLCM) for Fujitsu PRIMERGY servers greatly support routine management tasks. System administrators benefit from simplified, highly integrated and automated server management processes.

- eLCM consolidates and enhances ServerView functions directly available (embedded) within the server – without the need of external media like USB / CD / DVD.
- Users have instant access to embedded ServerView functions and can thus conveniently start the required management tasks. eLCM and its highly integrated processes ensure a safe and reliable execution.
- eLCM increases the overall operational effectiveness and reliability of IT infrastructures by enhancing the management capabilities of each individual Fujitsu PRIMERGY server with a highly integrated server management concept for a continuous 24x7 server operation.

Enhance security, stability and overall performance

The iRMC S6 handles all eLCM-related network traffic exclusively via its dedicated management LAN port. None of the system LAN ports used by the server operating system is concerned. Limiting any management related traffic to the management LAN relieves the productive LAN load and beyond that helps to avoid security threats.

eLCM is making obsolete the traditional server management based on agents and management software running on the server operating system. Shifting the management software to the iRMC S6 frees managed server CPU from management tasks, thus improves the performance of the managed server.

The only software that eLCM in some cases needs to be run on the server operating system is the ServerView Agentless Service component of the FUJITSU ServerView Suite. Exclusively communicating with the iRMC S6 over HTI (High Speed Transfer Interface), the Agentless Service has only a very small footprint on the server operating system, with negligible impact on the system's overall performance.

eLCM Functions

Server OS Installation

Reproducible and totally unattended installation of major Operating Systems



Embedded Installation Management (eIM) is the eLCM equivalent to the well-proven ServerView Installation Manager. Stored on the iRMC S6 SD card for immediate use, no external ServerView media needed to set up and install Fujitsu PRIMERGY servers.

eIM provides a fast and secure server configuration and installation. The server is deployed either unattended or menu-driven, locally or remotely. In preparation for the required operating system all configurable system components are identified and the necessary drivers are provided automatically.

PrimeCollect

Extensive and largely automated health management



eLCM PrimeCollect collects and stores detailed information about the hardware and software of Fujitsu PRIMERGY servers including error information in case of server malfunction. The collected information is stored in a ZIP file on the iRMC S6 SD card.

Within the concept of eLCM the PrimeCollect functionality and usability is enhanced and extended as follows:

- Create PrimeCollect archives automatically and scheduled
- Maintain a history of PrimeCollect archives
- Display PrimeCollect archives in the iRMC S6 web interface
- Transfer PrimeCollect archives to another computer via management LAN.

*The ServerView Agentless Service is required for PrimeCollect operation.

Custom Images

Download bootable ISO images onto the iRMC S6 SD card



 Downloading and/or booting of ISO images can be started from the iRMC S6 web interface manually or scheduled by a timer. Boot image selection is also possible in POST phase with F5-key. The UEFI setup of some Fujitsu PRIMERGY servers allows directly boot the server from an image located on the iRMC S6

SD card.

eLCM image management can handle eLCM images as well as images provided by the customer (custom images). eLCM images are special images each providing one or more eLCM functions (e.g., offline update) and are made available and advertised by Fujitsu via their own repository server.

Server Update Management

Comprehensive and largely automated update management



BIOS, firmware and drivers installed on a server make it difficult to keep the system up-to-date. eLCM meets this challenge in various respects. With only a few mouse clicks from the iRMC S6 web interface, you configure and initiate the following actions:

- Get displayed the available updates
- Start and monitor the update process

These actions, which can be executed separately or combined, may be started either manually or scheduled by a timer. Beyond that, eLCM update management provides largely automated workflows for performing various kinds of updates (BIOS, firmware, drivers).

Extended functions of the iRMC S6 ServerView embedded Lifecycle Management (eLCM)

Scripting

Hardware configuration via scripts and server profiles



Scripts and server profiles – that is a set of configuration parameters that determine how a Fujitsu PRIMERGY server behaves in action – allow configuring a bunch of servers in one single sweep, thus greatly reducing deployment time and efforts as well as maintenance costs.

The iRMC S6 supports three types of APIs:

- RESTful (Representational State Transfer) incl. profile management,

- SCCI (ServerView Common Command Interface; based on IPMI).
- Redfish API by DMTF

ServerView embedded Lifecycle Management (eLCM) is offered as an option for Fujitsu PRIMERGY servers based on iRMC S6 incl. SD card socket and requires a license key that can be ordered either together with a new Fujitsu PRIMERGY server (ex-factory activation; PYBLCM14) or subsequently (field activation; PY-LCM14).

More information

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