

Introduction to **FUJITSU** Software **ServerView Resource** **Orchestrator NS Option V3**

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Fujitsu Limited

- What is ServerView Resource Orchestrator
NS Option
- References

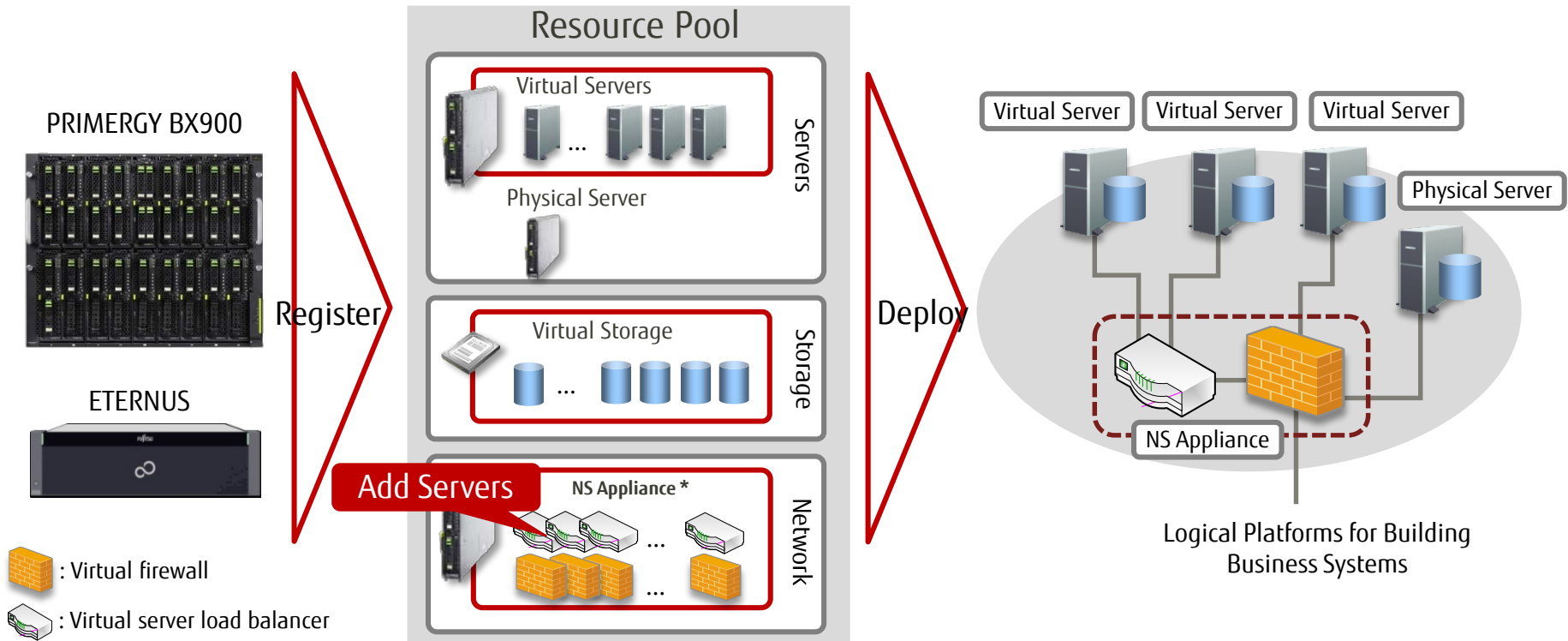
What is ServerView Resource Orchestrator NS Option

- Features of NS Option
- Merits of Using NS Option
- Overview of Available Functions
- System Requirements
- Required Software and Units for License Purchasing (Example)
- Usage Scenario of NS Appliance (Example)

Features of NS Option

Virtual Firewalls and Server Load Balancers can be Deployed Flexibly

- Software appliances operating on PRIMERGY
- As with servers and storage, networks can be flexibly configured as deployment target resources of logical platforms, managed using ServerView Resource Orchestrator



* NS option provides virtual firewalls and server load balancers operating on PRIMERGY BX924 S2/S3/S4 or PRIMERGY RX300 S7/S8 other than managed servers or admin servers. This is called NS Appliance.

Merits of Using NS Option [Installation]

Realizing Shorter Installation Times than when Using Dedicated Hardware Devices

- Purchase of additional dedicated hardware devices (firewalls/server load balancers) when adding business systems is unnecessary
- Securing of space for dedicated hardware and cabling is unnecessary

Work Item	NS Appliance	Dedicated Hardware Device
Purchasing of additional devices for business systems	Unnecessary (*1)	Necessary
Network design for additional business systems	Unnecessary	Necessary
Preparation of devices for additional business systems (*2)	Unnecessary	Necessary

*1: As up to 20 NS Appliances can be created on a dedicated PRIMERGY, purchase of additional devices is unnecessary if you require less than 20. (However, licenses are required)

*2: Preparations such as securing more space for additional devices and cabling

=> NS option can be installed in an existing server environment,
as it is a software appliance!!

Merits of Using NS Option [Operations]

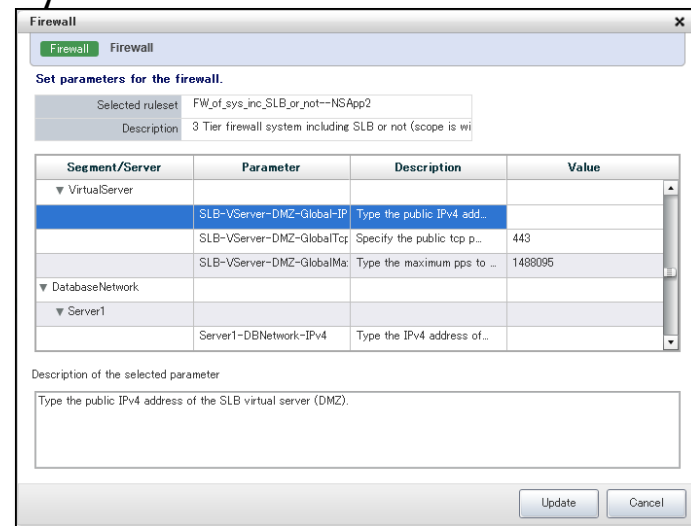
Simultaneous Operation of Multiple Business Systems can be Easily Performed

■ Easy to manage when operating multiple business systems at one time

- Policies and logs of network security or server load balancing can be separated by business system
- Configuration and modification can be performed without affecting other business systems

■ Necessary policy settings can be easily performed when creating business systems

- Simplified configuration using the GUIConfiguring network security is made even easier by the simple configuration mode



Operation Work Item		NS Appliance	Dedicated Hardware Device
Business System Units	Policy change	Supported	Partially Supported (*3)
	Log management	Supported	Partially Supported (*3)

*3: When sharing between multiple business systems, generally it is not possible to change policies for commonly-used dedicated hardware without affecting the other business systems.

*4: When sharing between multiple business systems, logs of commonly used dedicated hardware are managed on a device basis.

=> NS option can deploy firewalls or server load balancers necessary for business systems dynamically and flexibly, as it is a software appliance!!

Overview of Available Functions

■ List of Available Functions

Function Item		Overview
Network Security Functions [FW]	Access Control	Access between tenants and business systems can be limited.
	Network Address Translation (NAT)	Hides servers on a logical platform.
	Anomaly-based IPS (Defense against attacks)	Protects servers from Flood attacks, enabling service to be continued.
Server Load Balancer Functions [SLB]	Server Load Balancing	Server load leveling can be realized, and stable service provided.
	Server Failure Monitoring	Servers on which a failure is detected can be excluded, and unavailability of services can be avoided.
	Web Acceleration	Establish a permanent TCP connection in advance, and reduce the loads of Web servers.
	Session Persistence	Guarantees access to a server which provides continuous services.
	Access Control	Limits the requests exceeding the server capacity, and ensures stable operation.
	SSL Accelerator (HTTPS)	HTTPS communications can be encrypted or decrypted, and the loads on Web servers can be reduced.
High-Availability Functions [HA]		Even if a failure or a route error occurs on the active side of NS Appliance, as operations are switched over to the standby side, operation of business systems can be continued.

* Use dedicated devices (IPCOM EX series, IPCOM VA series) for requirements which are not supported by NS Appliance (Anti-virus, Web content filtering, signature based IPS, WAF, performance).

System Requirements

■ Required Hardware

Hardware			
Servers	Blade Servers	Chassis	PRIMERGY BX900
		Server Blades	PRIMERGY BX924 S2/S3/S4
		LAN Switch Blades	PY-SWB104 (PG-SW109)
		Converged Fabric Switch Blade (10Gbps 18/8+2)	PY-CFB101 / PYBCFB1010 / PYBCFB1011 / PYBCFB1012
	Rack Mount Servers		PRIMERGY RX300 S7/S8
Storage	SAN Storage (*1)		Storage devices which can be connected with physical L-Servers
	Internal Disk of a Server (*2)		SAS SSD, SAS HDD

■ Server Requirements

*1: Unnecessary when deploying on an internal disk of a server. *2: Unnecessary when deploying on SAN storage.
Contact Fujitsu staff for information regarding hardware.

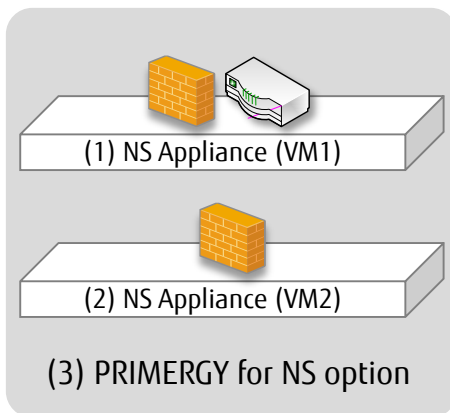
Type	Requirements
CPU	Dual core CPU or higher
Memory	6144 MB or more (a) Only when using for firewalls Memory Use = $4096 + 2048 * \text{Number of NS Appliances}$ (b) When using firewalls and server load balancers Memory Use = $4096 + 4096 * \text{Number of NS Appliances}$ (c) When using a combination of (a) and (b) Memory Use = $4096 + 2048 * \text{Number of NS Appliances (firewalls)}$ + $4096 * \text{Number of NS Appliances (firewalls/server load balancers)}$ * Up to 20 NS Appliances can be created on a single dedicated PRIMERGY.
Disk Space	100 GB *When creating 11 to 20 NS Appliances, 175 GB is required.

Required Software and Units for License Purchasing (Example)

■ Required Software

Official Name	License Structure	Note
ServerView Resource Orchestrator NS Option Virtual Server License V3	Purchase one license for each virtual appliance operating as an NS Appliance	Purchase of ServerView Resource Orchestrator NS Option media pack V3 is necessary.
ServerView Resource Orchestrator Cloud Edition Server License V3	One license is required for each PRIMERGY for which NS Appliance is operating.	Purchase of ServerView Resource Orchestrator media pack V3 is necessary.

■ Units for License Purchasing (Example)



[Number of Necessary Licenses]

ServerView Resource Orchestrator NS Option Virtual Server License V3 => 2 licenses ((1), (2))

ServerView Resource Orchestrator Cloud Edition Server License V3
=> 1 license ((3))

[Media Pack]

ServerView Resource Orchestrator NS Option Media Pack V3 => 1 pack

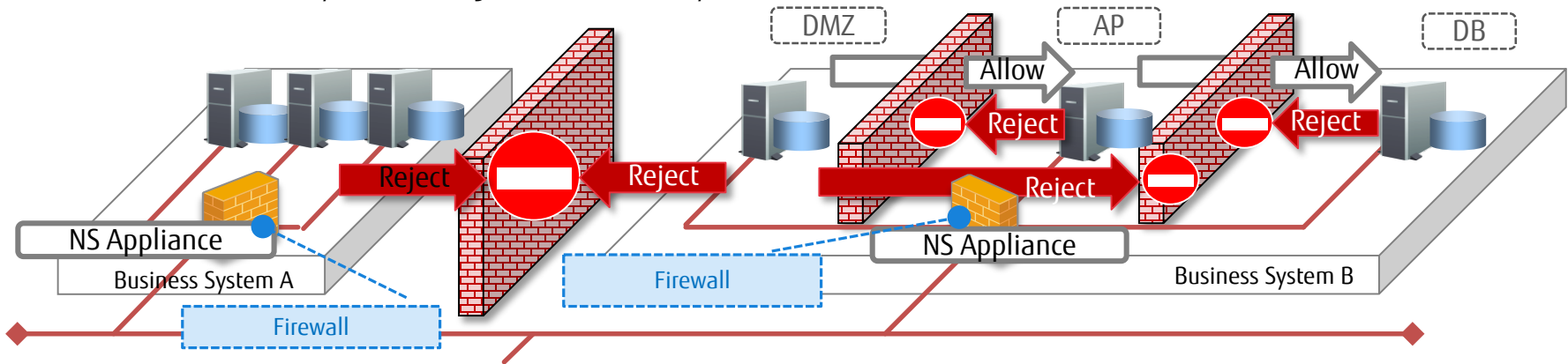
ServerView Resource Orchestrator Media Pack V3 => 1 pack

Usage Scenario of NS Appliance (Example)

Use Functions Based on Business System Requirements

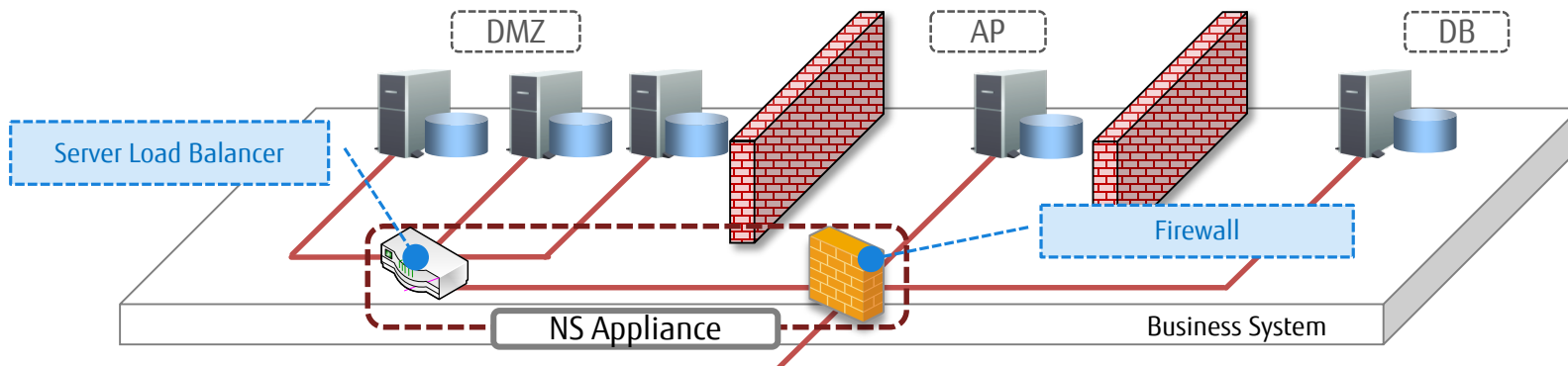
■ When using firewalls only

- Use with business systems and segments of business systems divided -



■ When using the integrated type (firewalls + server load balancers)

- Use with secure business systems comprised of groups of servers providing stable service -



References

- [FW] Network Security Function
- [SLB] Server Load Balancing Function
- [HA] High-Availability Function

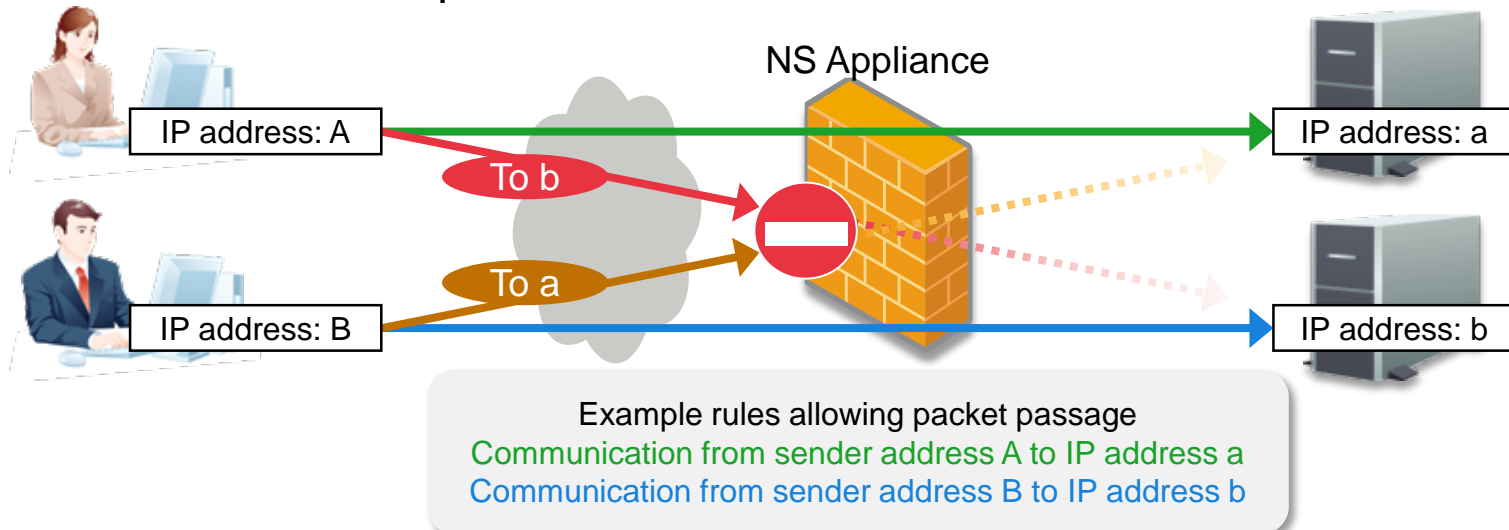
Blocks Unauthorized Access

[Function] ■ Controls traffic of communication packets by referring to the communication packets which attempt to pass.

Packet information used as criteria to determine whether to allow the packet to pass through

- IP addresses (sender and destination IP addresses)
- Port numbers (sender and destination port numbers)
- Interface (the interface that receives packets)
- ICMP session information
- IP protocol number (tcp, udp, etc.)

[Effects] ■ Possible to control access between tenants and business systems
■ Possible to prevent unauthorized access



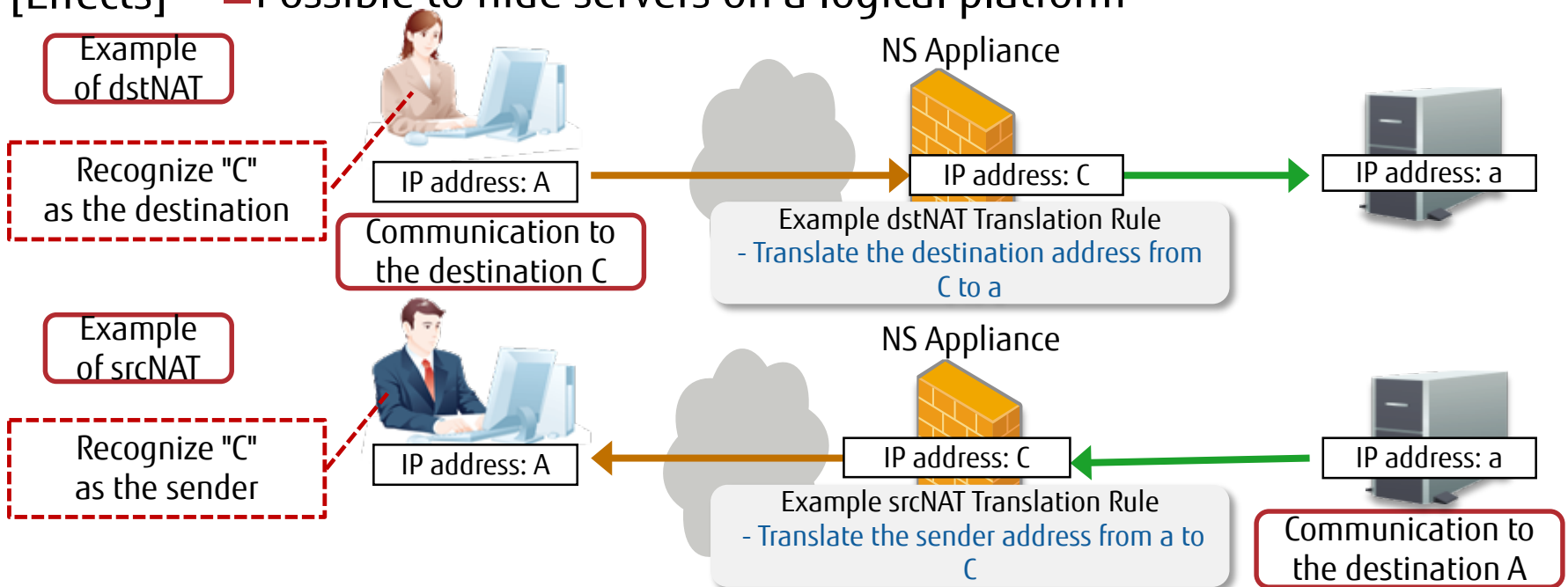
Hides Servers on a Logical Platform

[Function] ■ Translates sender and destination information of communication packets passing through.

Address Translation

- dstNAT : translates destination IP address
- dstNAPT : translates destination IP address and destination port number
- srcNAT: translates source IP address
- srcNAPT: translates source IP address and source port number

[Effects] ■ Possible to hide servers on a logical platform



Protects Servers from Flood Attacks

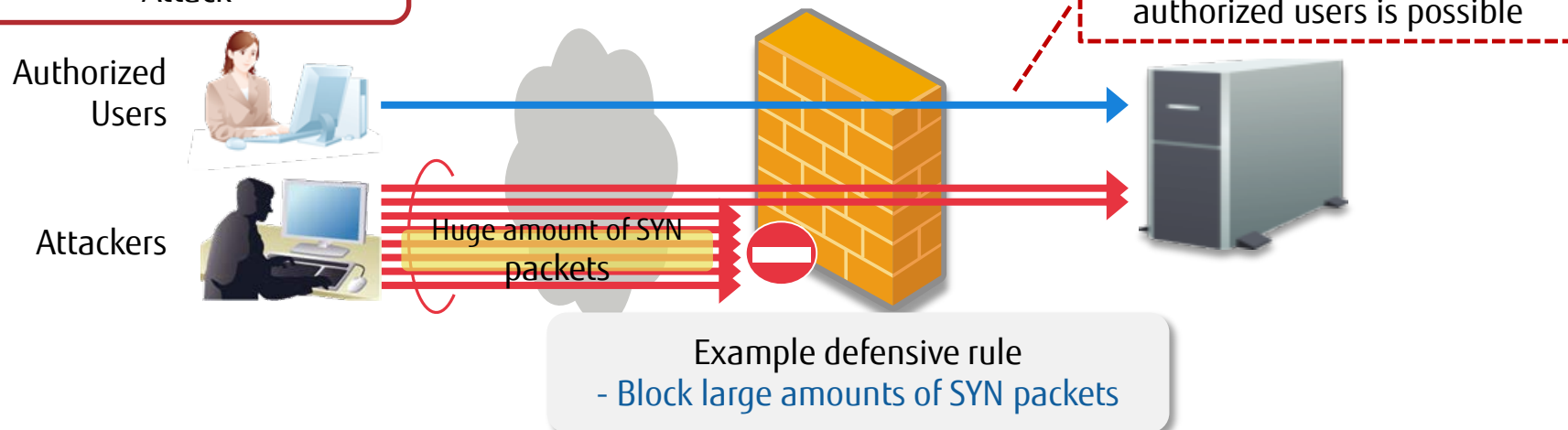
[Function] ■ Protects servers on an logical platform from DoS attacks aimed at blocking services provided by the target server

Attacks Defended Against

- Anti-SYN Flood attack/Anti-UDP Flood attack
- Unauthorized packets (IP packets, TCP packets, UDP packets, ICMP packets, ARP packets)
- Overlapped Fragment attacks
- Ping-of-Death attacks
- Land attacks

[Effects] ■ Protects servers from DoS attacks, and enables continued service

Example of Anti-SYN Flood Attack



Note: Anomaly-based IPS is enabled against all attacks other than SYN Flood/UDP Flood attacks, and drops all detected packets.

[SLB] Server Load Balancing

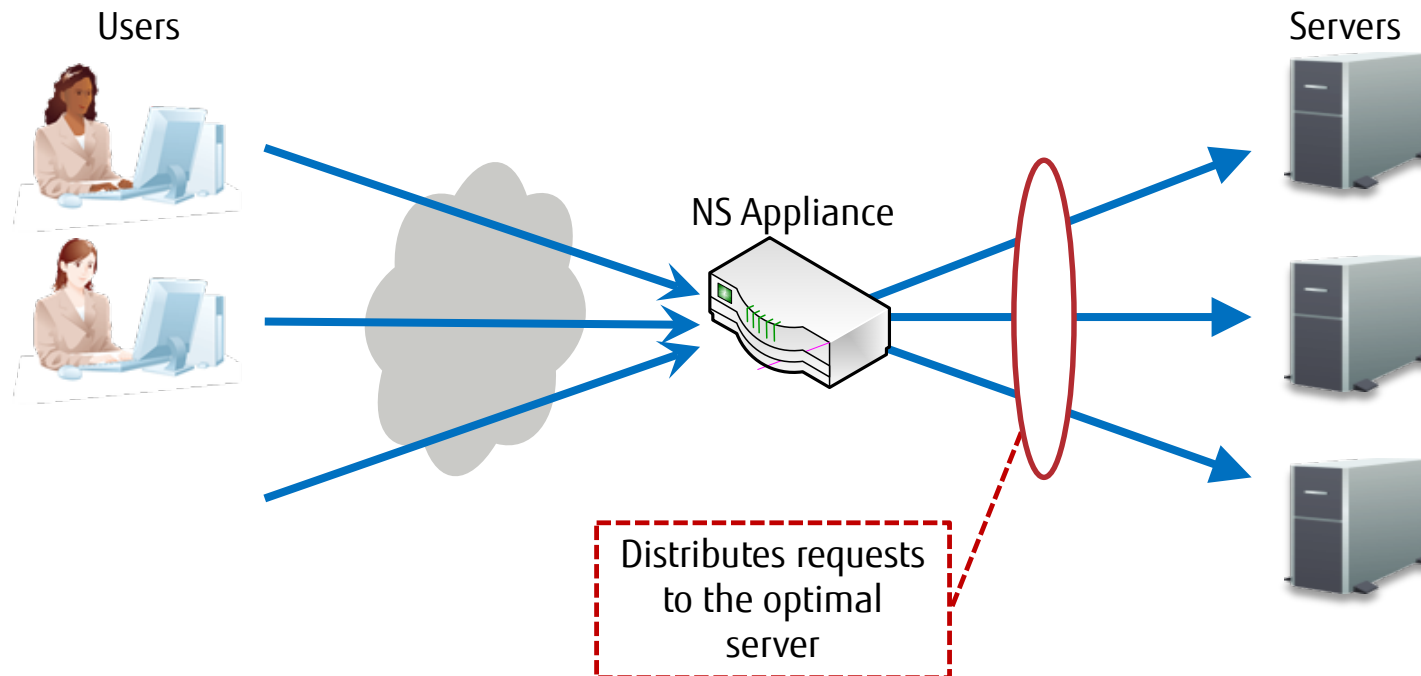
Levels the Load on Servers on a Logical Platform

[Function] ■ Virtualizing multiple servers on an logical platform as a single server

Server Distribution Methods

- Round robin method
- Minimum connection method

[Effects] ■ Distributes access loads among servers, and provides stable service



[SLB] Server Failure Monitoring

Monitors Server Statuses and Balances Load Among Normal Servers

[Function] ■ Monitors the operating status of servers that are targets of load balancing

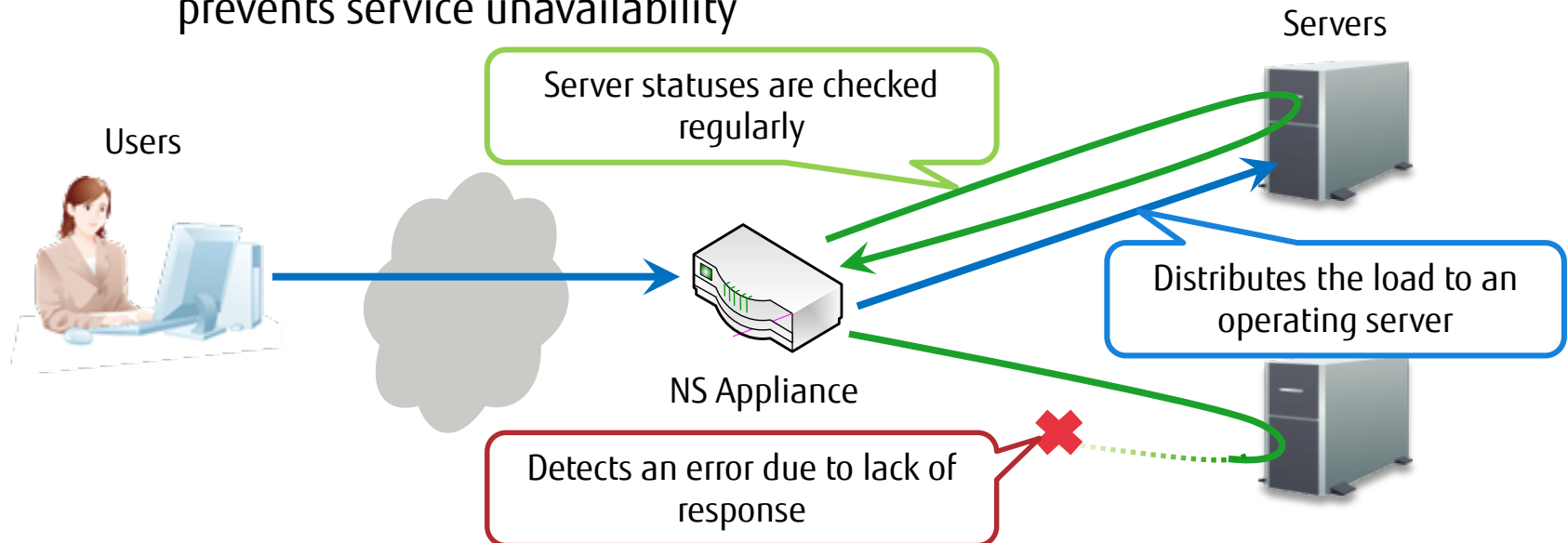
Server Failure Monitoring

- Device monitoring (Layer 3 level: PING monitoring)
- Service monitoring (Layer 4 level: TCP/UDP port monitoring)

Operations when there are no allocation destinations after failures are detected

- URL redirection
- HTTP error message response
- Connection reset/connection purge

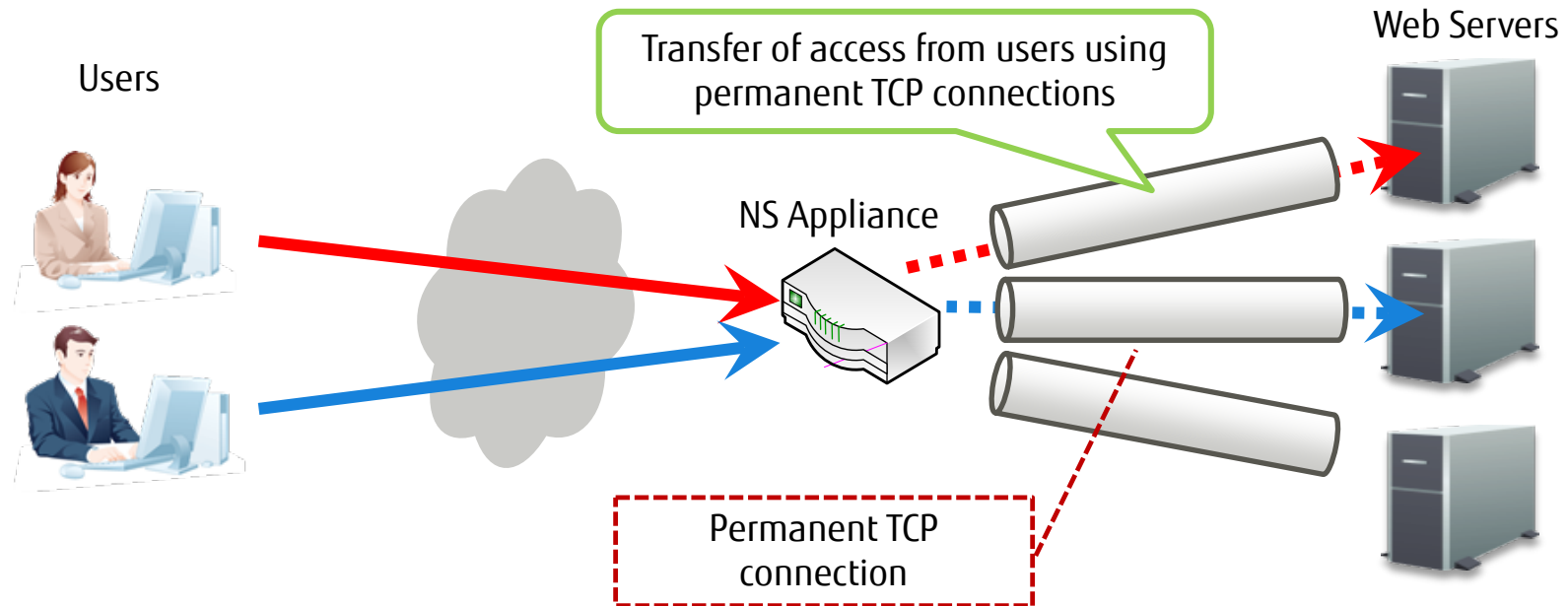
[Effects] ■ Excludes failed servers from the transfer request targets of the user, and prevents service unavailability



Improves Capacity by Establishing Connections in Advance

[Function] ■ Establishes TCP connections in advance, and reduces the number of times the process of establishing TCP connections is performed each time there is access by a user

[Effects] ■ Reduces the load on Web servers by transferring requests using permanent TCP connections



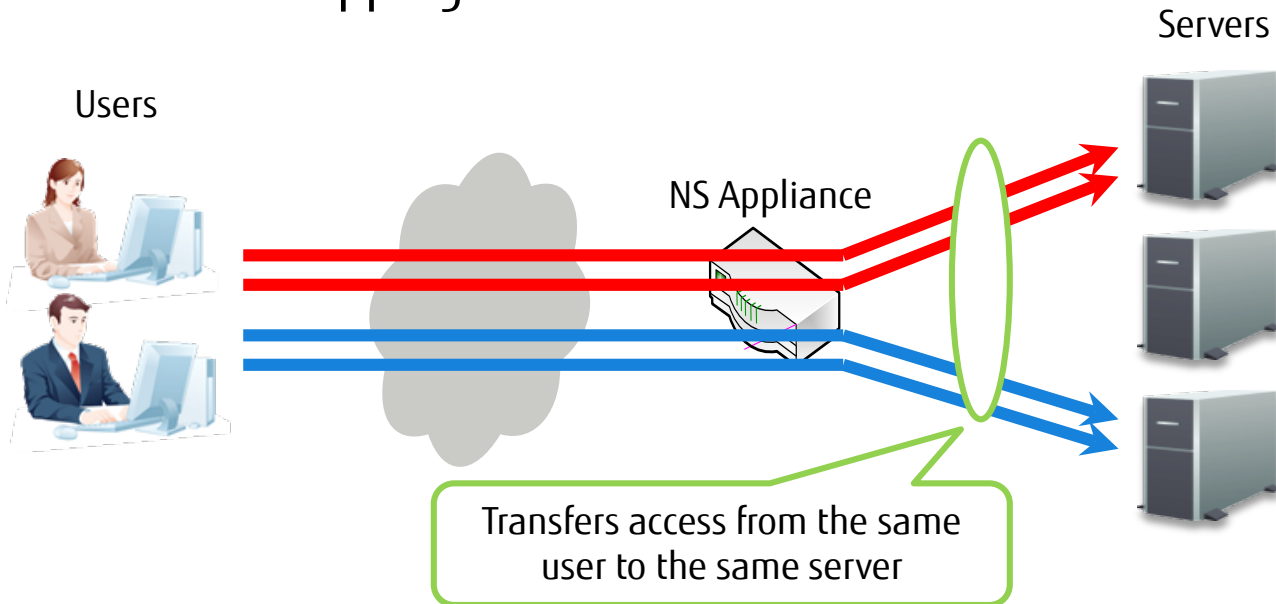
Improves Capacity by Establishing Connections in Advance

[Function] ■ Transfers a series of packets (transaction) to the same server, for a certain duration

Units of Session Persistence

- Node basis
- Connection basis

[Effects] ■ Ensures access to servers providing continuous services, such as online shopping



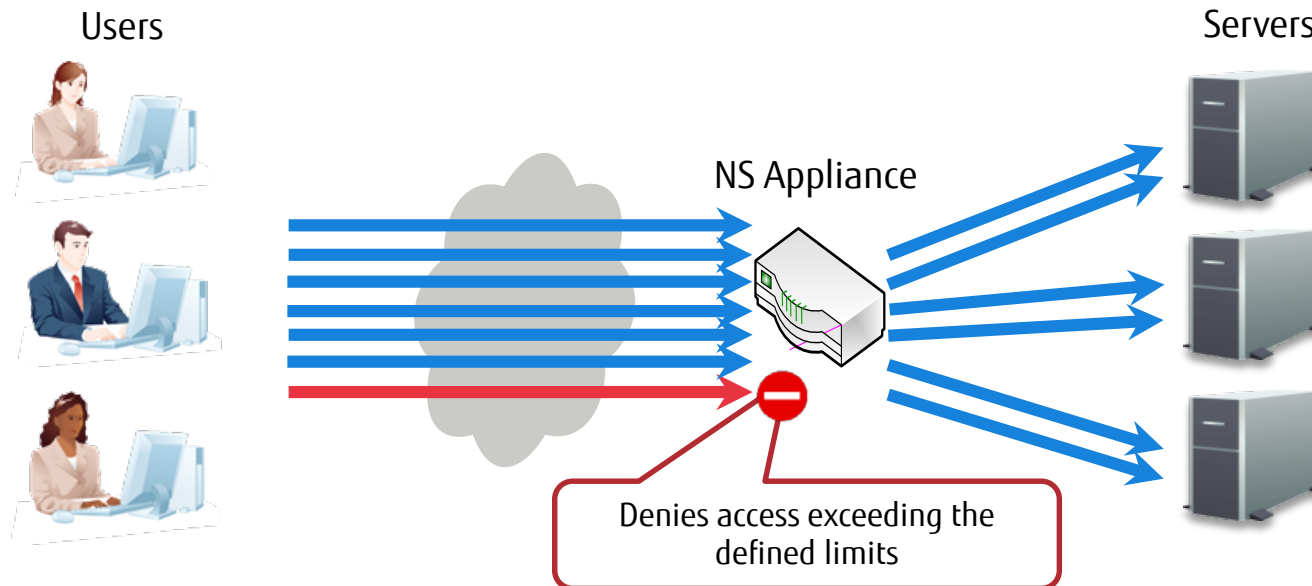
Limits Number of Accesses to Within the Capacity of the Server

[Function] ■ Control numbers of requests transferred from users to each server

Units of Access Control

- Number of nodes
- Number of connections

[Effects] ■ Ensures stable operations of servers that are targets of load balancing



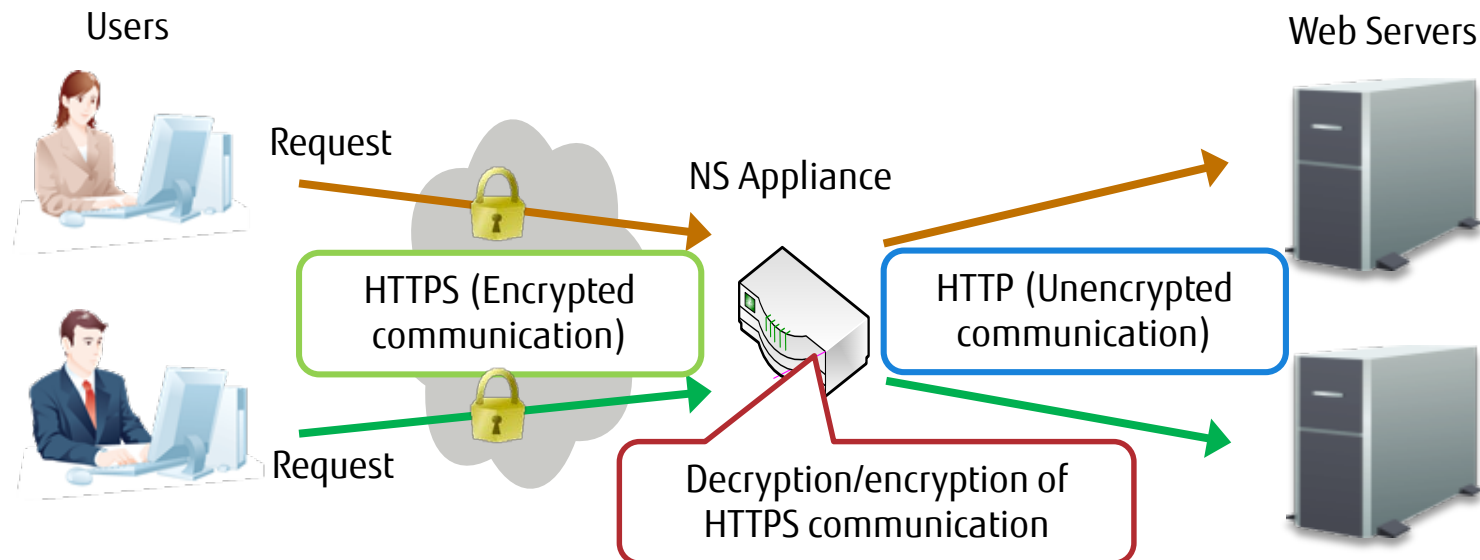
[SLB] SSL Accelerator (HTTPS)

Reduces the Load on Web Servers

[Function] ■ Converts HTTPS to HTTP communication, and performs load balancing

Used protocols
- SSLv3.0
- TLSv1.0

[Effects] ■ Reduces the load on Web servers by performing offloading of encryption/decryption of Web server communications



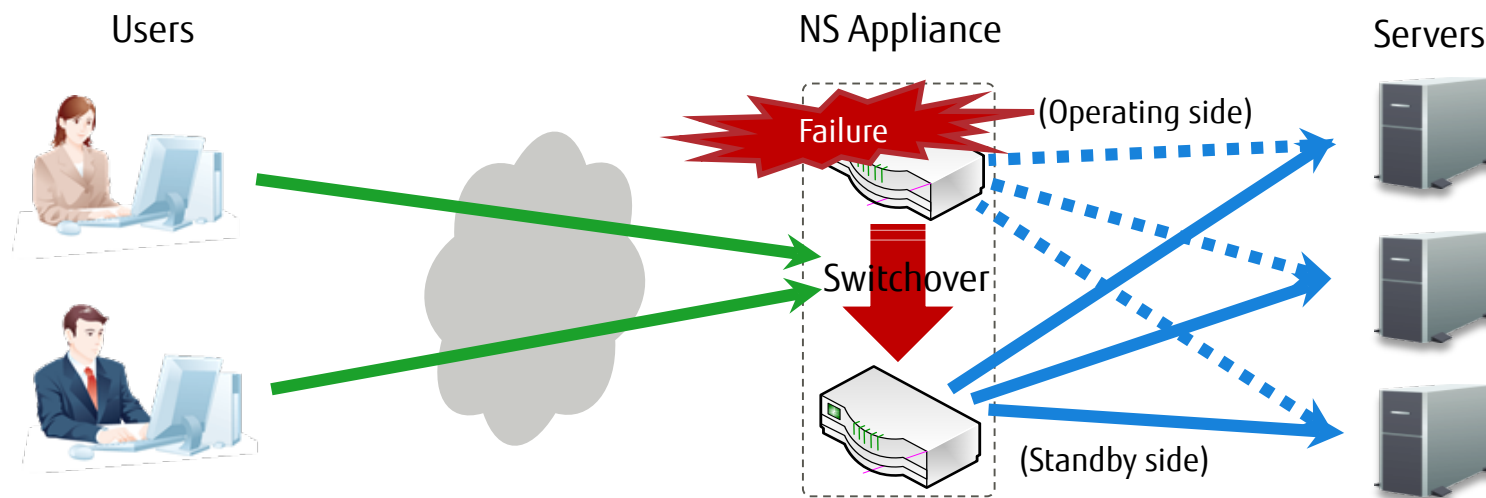
Enables Configuration of Networks with High Reliability and Availability

[Function] ■ Improves reliability through use of a redundancy configuration of the operating side (Active)/standby side (Standby)

High-Availability Functions

- Redundancy function
- Gateway fail safe function

[Effects] ■ Enables continued business system operation, even when the operating side is down or a route error occurs



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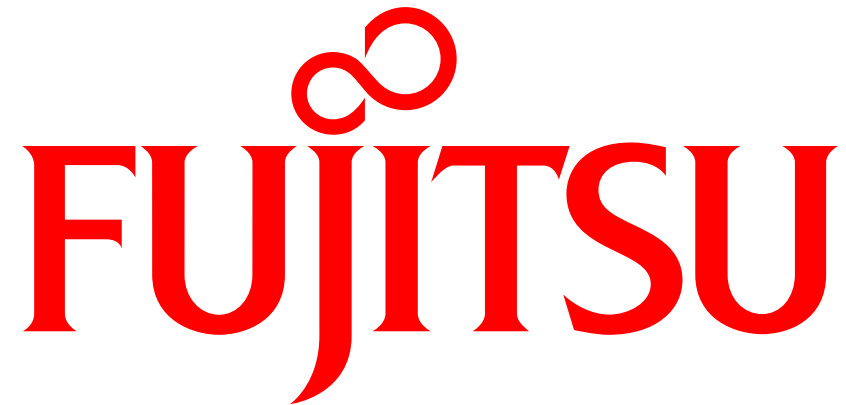


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Green Product

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