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IIJ's Cloud Business Overview and Service Strategy

September 15, 2021

Executive Officer

Division Director for Cloud Division

Naoshi Someya

Agenda



IIJ's Cloud business overview

About IIJ's new Cloud service "IIJ GIO P2 Gen.2"

IIJ's Cloud strategy for Multi-Cloud

Features of IJ Services

In anticipation of utilization of Multi-cloud Cloud

Provision of Multi-cloud, a cloud and management service optimal for shift from on premises.

Multi-Cloud Management Platform (MMP)
 IJ Unified Operation Management Service
UOM

IJ GIO
 Infrastructure P2 Gen2

Public Cloud

Direct Connect Gateway to cloud Network

Just connecting to the network gateway to cloud provides access to public clouds, network services and managed services

Digital Work Place

- Cloud proxy
- File server
- Cloud exchange
- Active Directory
- Remote access
- Virtual Desktop Infrastructure

Promoting use of office cloud DWP(Digital Workplace)

Cloud-based IT infrastructure service that allows operations to be executed in a digital space

IJ Omnibus
 IJ Private Backbone

Security Service
 Security Operation Center

Maintaining security in a digital space Security

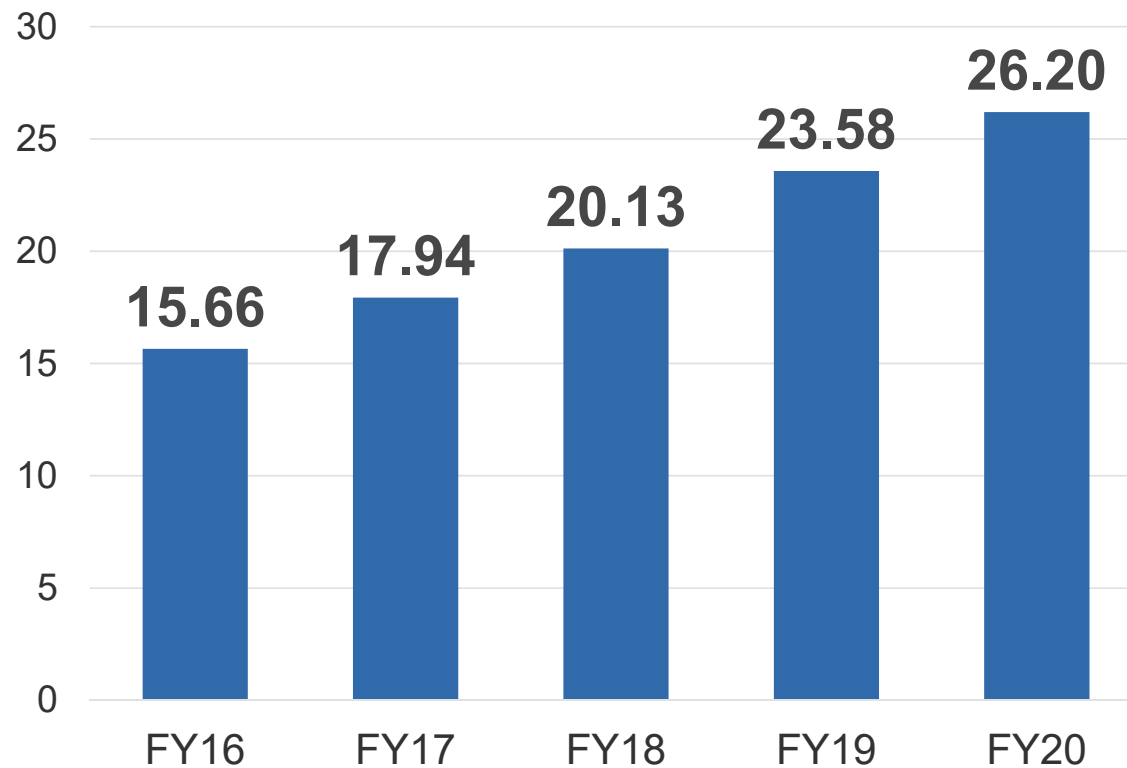
Security service centering around SOC that maintains security in a digital space

Customer (On premises)

IIJ's Cloud Business Overview

IIJ's Cloud service revenues

(Unit: JPY billion)



IIJ's Cloud service revenues have been continuously increasing as the Japanese enterprises' cloud migration and adoption increased.

In addition to IIJ's own Cloud services, such as IIJ GIO, Public Cloud Services, such as AWS and Azure, are also contributing to the revenue growth.

Multi-Cloud, combining multiple Cloud services, has been increasing.

Recent circumstances surrounding Cloud



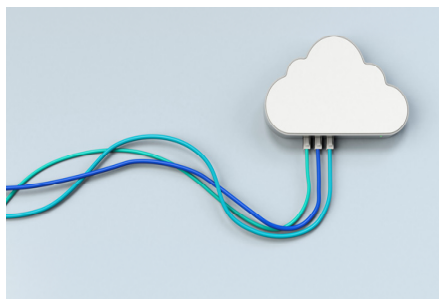
Changes in the working style due to the COVID-19 pandemic

- Increase in use of clouds in associated with the increase of teleworking
- Video conferences, chats, schedulers, emails, virtual desktops, etc.



Thirst for digitization

- Expectation for standardization of operations, utilization of IT and creation of new corporate value
- Cloud as an indispensable technical element in utilization of data, AI, machine learning and digitization

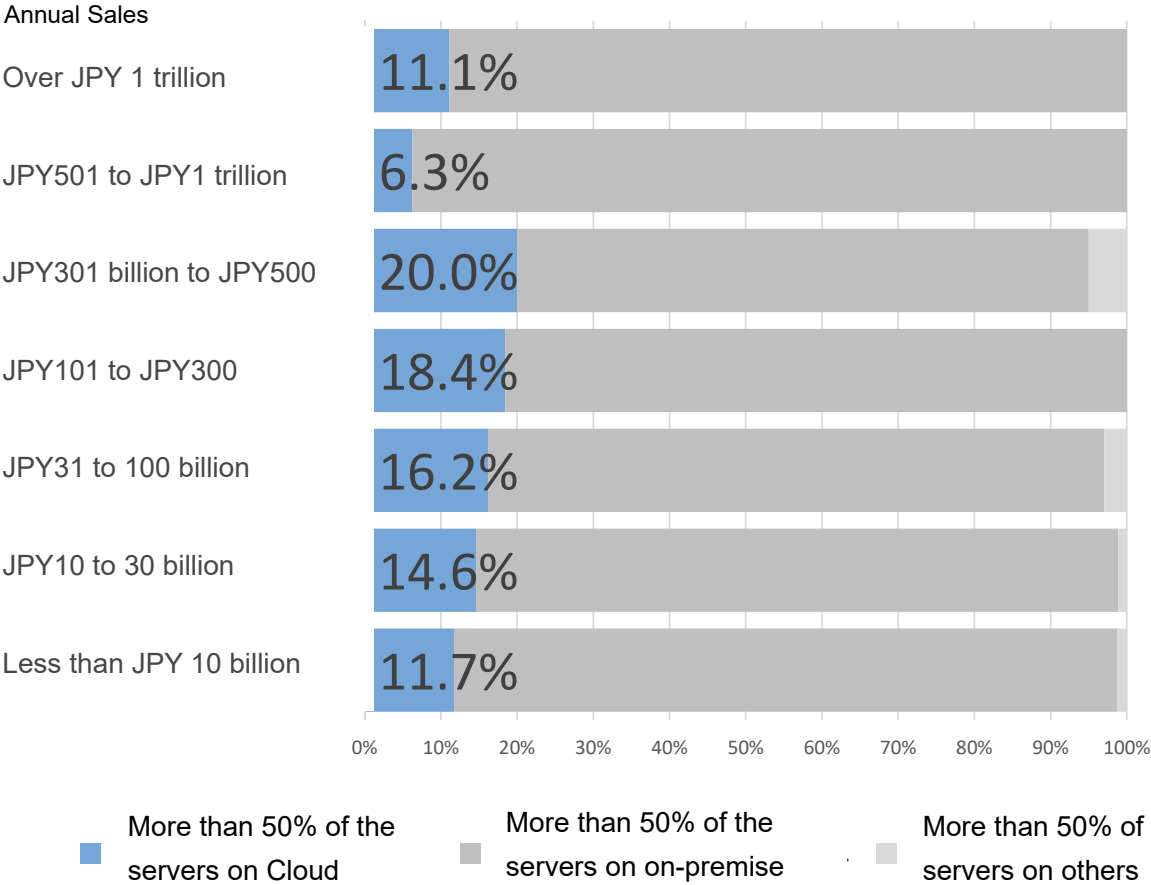


Commoditization of use of cloud

- Approx. 70% use a cloud service, including partial use *1
- No hesitation in using foreign-affiliated cloud services such as AWS and Azure

*1 Source: WHITE PAPER 2020 Information and Communications in Japan, Ministry of Internal Affairs and Communications

Still so many assets are on on-premise



Only 20% of the surveyed clients had shifted more than 50% of their servers to Cloud

Source: "Nationwide report on IT department 2021" published by IJ in July 2021 (n=737)

Factors that hold Cloud migration back and issues of on-premises

Factors that hold Cloud migration back ^{*1}

- Leak of information/security
- Expensive to repair the existing systems
- Concerns over network stability

Issues of on-premises

- Necessity of facility renewal and high initial cost
- Securing infrastructure maintenance staff
- Difficult to increase/decrease resources

*Source: "Reasons for not using cloud services", WHITE PAPER 2020 Information and Communications in Japan, Ministry of Internal Affairs and Communications
<https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/r01/html/nd232140.html> (Japanese text only)

Third option for an on-premises-to-Cloud migration

Virtual resource-based IaaS that abstracts hardware and separates physical layers and user contract layers.

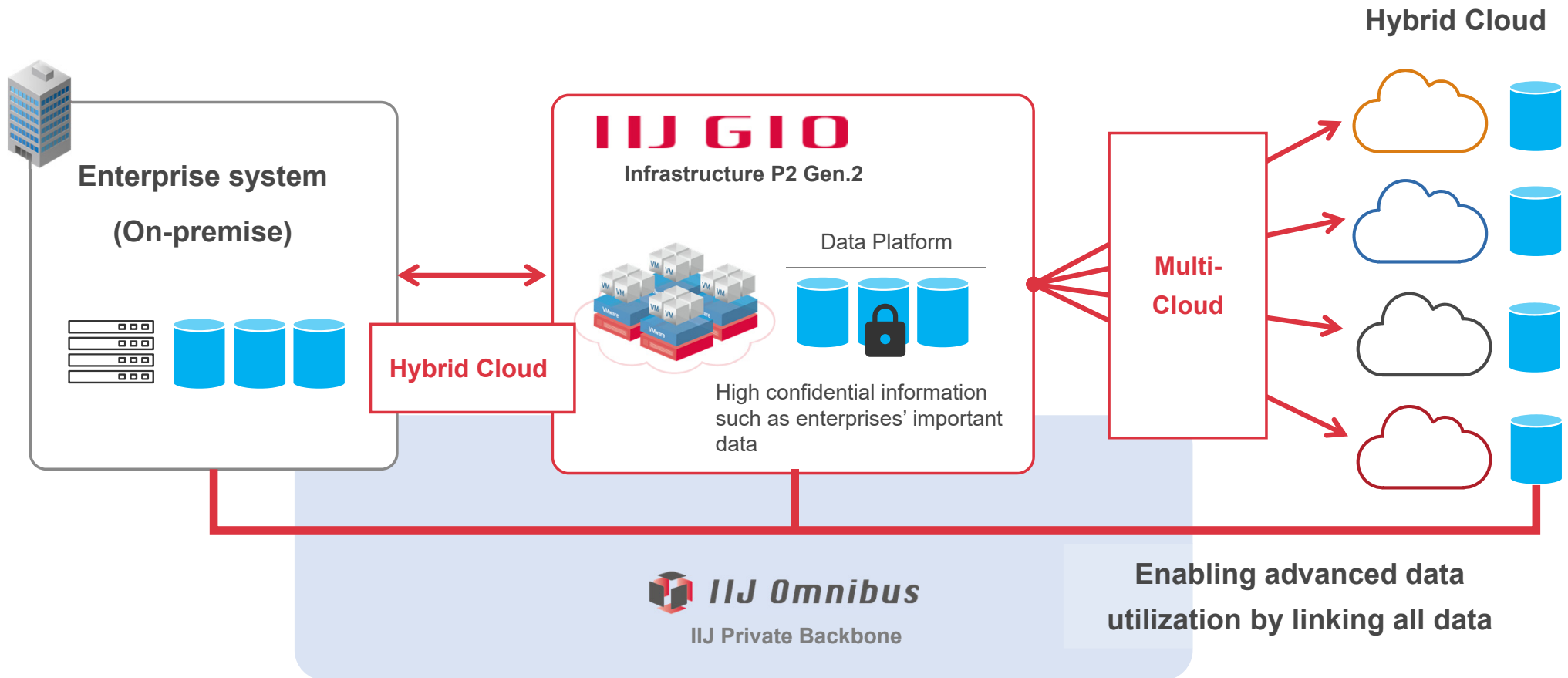
It allows on-demand expansion/reduction of resources, which is a feature of a public cloud, while being as migratable as a private Cloud.

**Scheduled to be released on
October 1, 2021**

	General public cloud	General private cloud	IJ GIO P2 Gen.2 *1
Method of provision	On-demand (1vCPU~)	2 or more physical servers or more	On-demand (1vCPU~)
Resource	Common	Dedicated	Common
Method of use	Select an appropriate virtual server	Freely build within the scope of resources	Freely build within the scope of resources
Migration from on premises	Requiring design	Migrate as it is	Migrate as it is
Response to facility renewal	None	Available	None

*1 IJ GIO Infrastructure P2 Gen.2 Flexible server resources

IIJ GIO as a HUB for Multi-Cloud



To use IIJ Cloud Services with ease

■ About ISMAP responses of IIJ GIO P2

* ISMAP (Information System Security Management and Assessment Program): A security assessment program for the government information systems

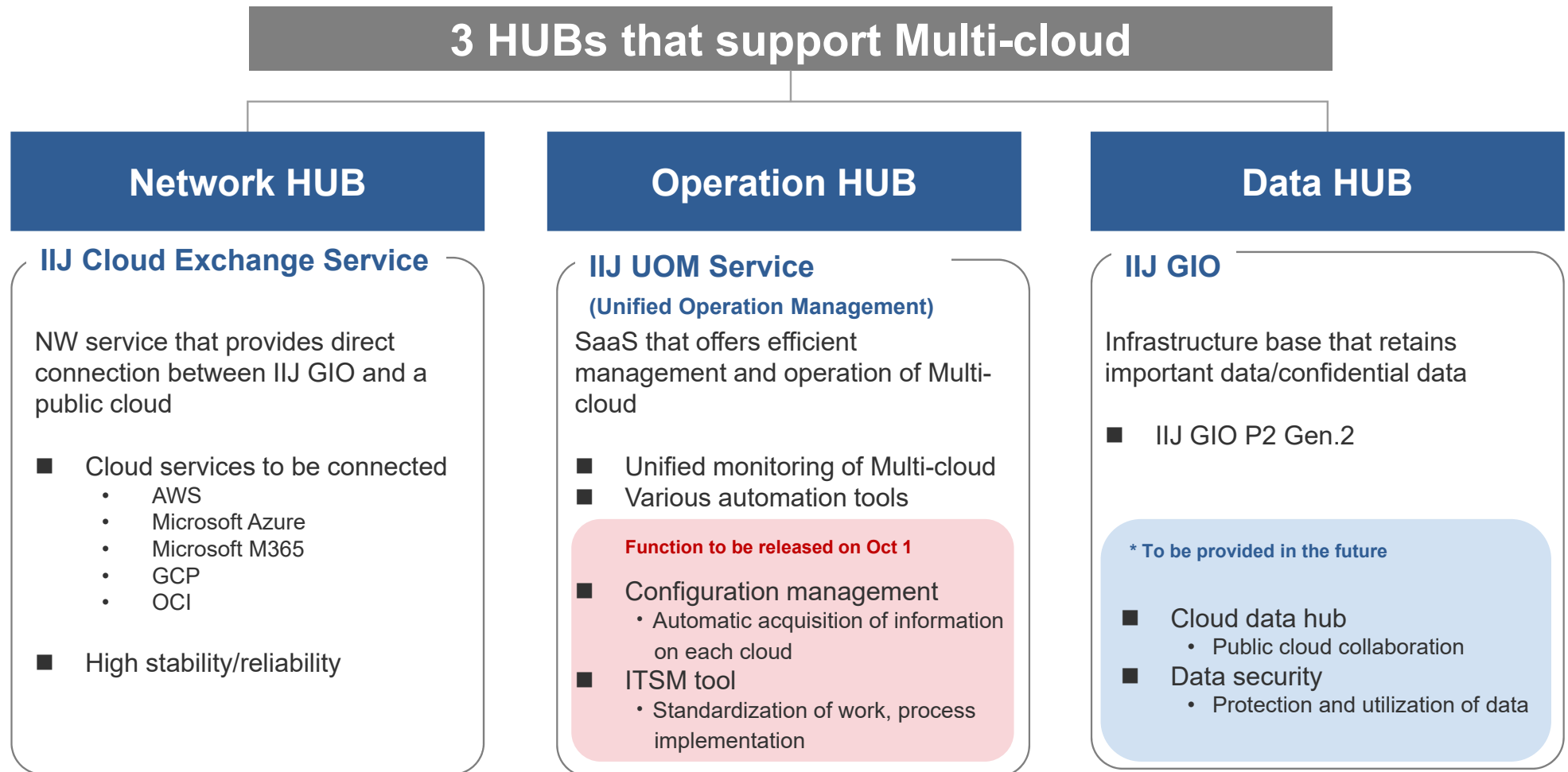
- As of May this year, auditing by a third party auditing body was completed and the application was filed to ISMAP Steering Committee.
- Current status: Under review. Scheduled to be registered around fall if no problem is found.
- As for IIJ GIO Infrastructure P2 Gen.2 to be released on October 1, early additional application to ISMAP is planned.

■ About BCR

* BCR (Binding Corporate Rules): An operator permitted to move personal data concerning EU GDPR outside the area

- Approval of BCR (processor, administrator) given by a German personal data protection agency on August 5 this year.
- Officially approved by EU to be a corporate group that takes appropriate protective measures
- IIJ's reliability and commitment were proved by passing the world's most rigorous screening of GDPR

IIJ's Cloud Services targeting towards migration to Multi-cloud

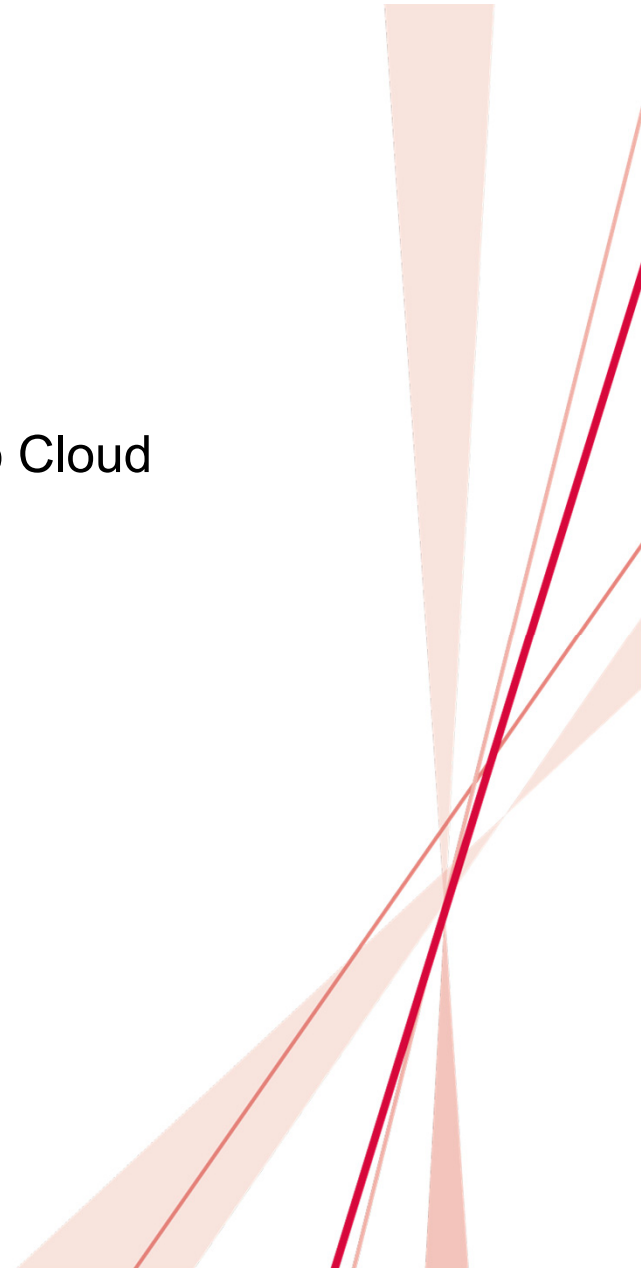


IIJ GIO

New Cloud Services targeting enterprise systems' full migration to Cloud

IIJ GIO Infrastructure P2 Gen.2

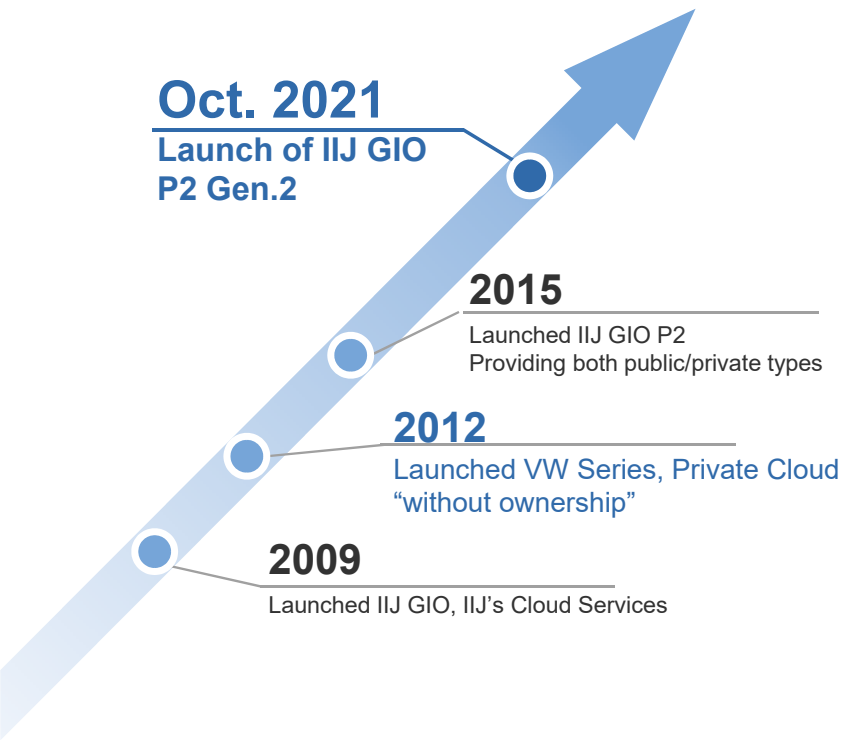
General Manager of Cloud Service 3 Department
Naoki Miyazaki



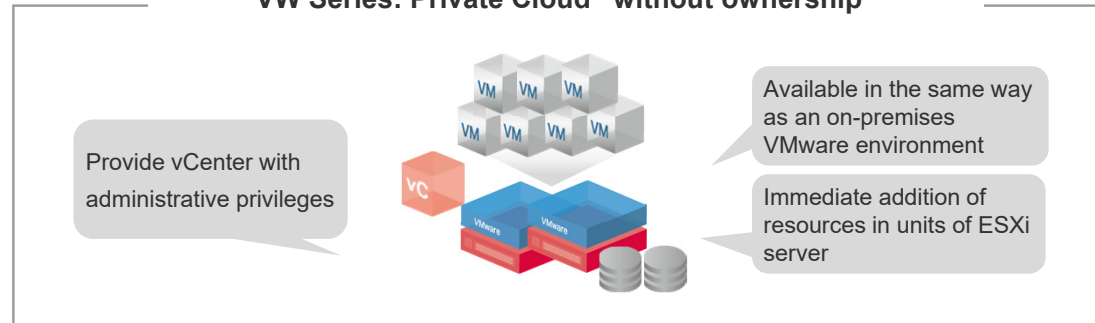
IJ has been providing Private Cloud “without ownership” since 2012

From our many years of operating VMware environment Clouds, we identify issues of a private cloud, such as **lack of flexibility in addition/deletion of resources** and **burden of base operations including updating of VMware**.

Flow of IJ GIO service provision



VW Series: Private Cloud “without ownership”



Can be solved by VW Series

Migration destination of on premises

- Migration destination from on premises soon to be in need of renewal
- Minimize the impact of migration on the systems and operation processes



Cannot be solved by VW Series

Reduce burdens of base operation

- Advantages of Public Cloud in scalability/flexibility
- Reduce burden of base operation of Private Cloud

Fusion between private clouds and public clouds

IJ GIO Infrastructure P2 Gen.2 Flexible server resources

Feature
1

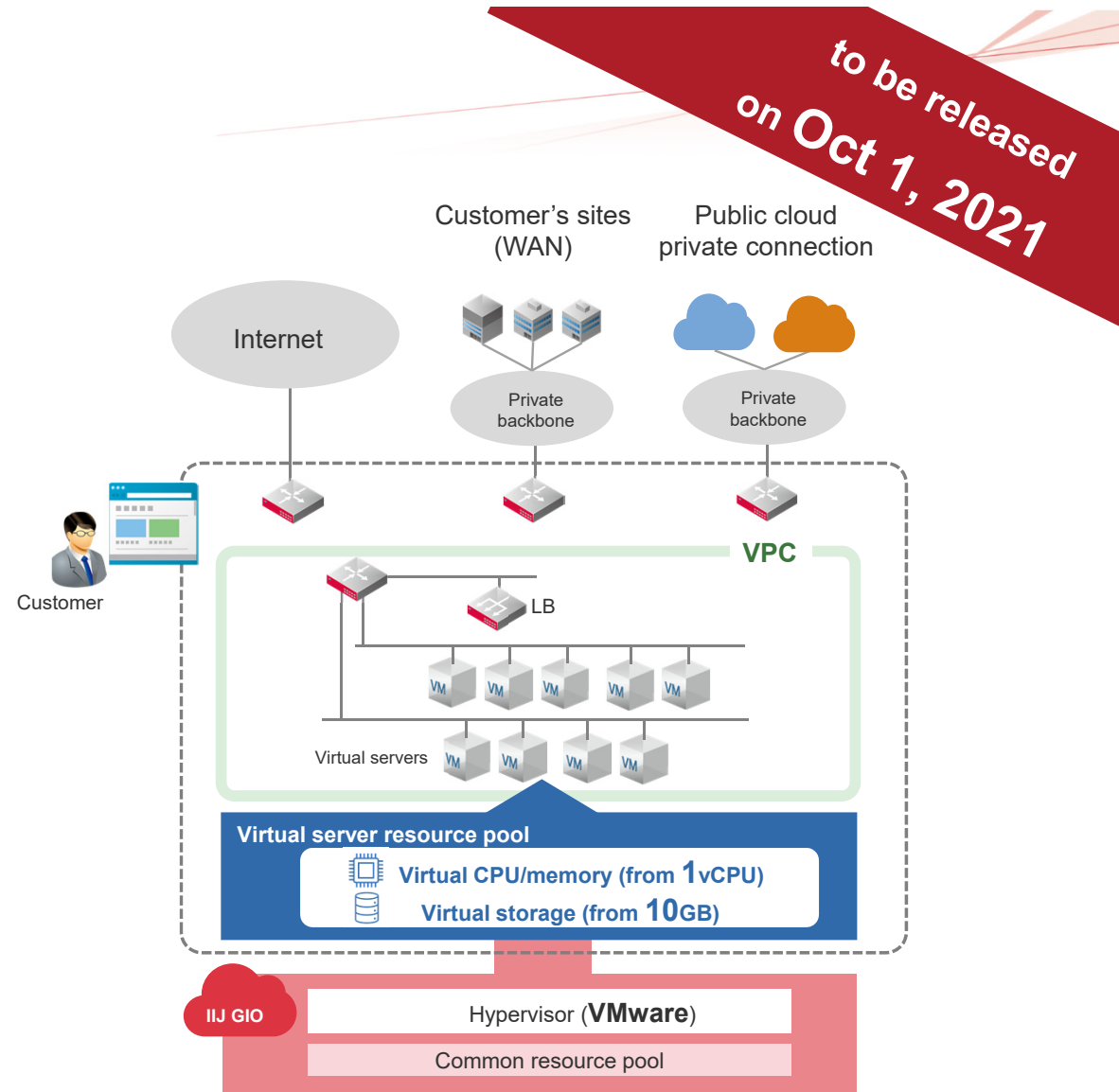
VMware-based Cloud, which is highly migratable from on premises

Feature
2

Resources extension as flexible as Public Cloud. Freeing administrators from operating virtualized platform

Feature
3

Implementation of Multi-cloud environment in collaboration with IJ network services

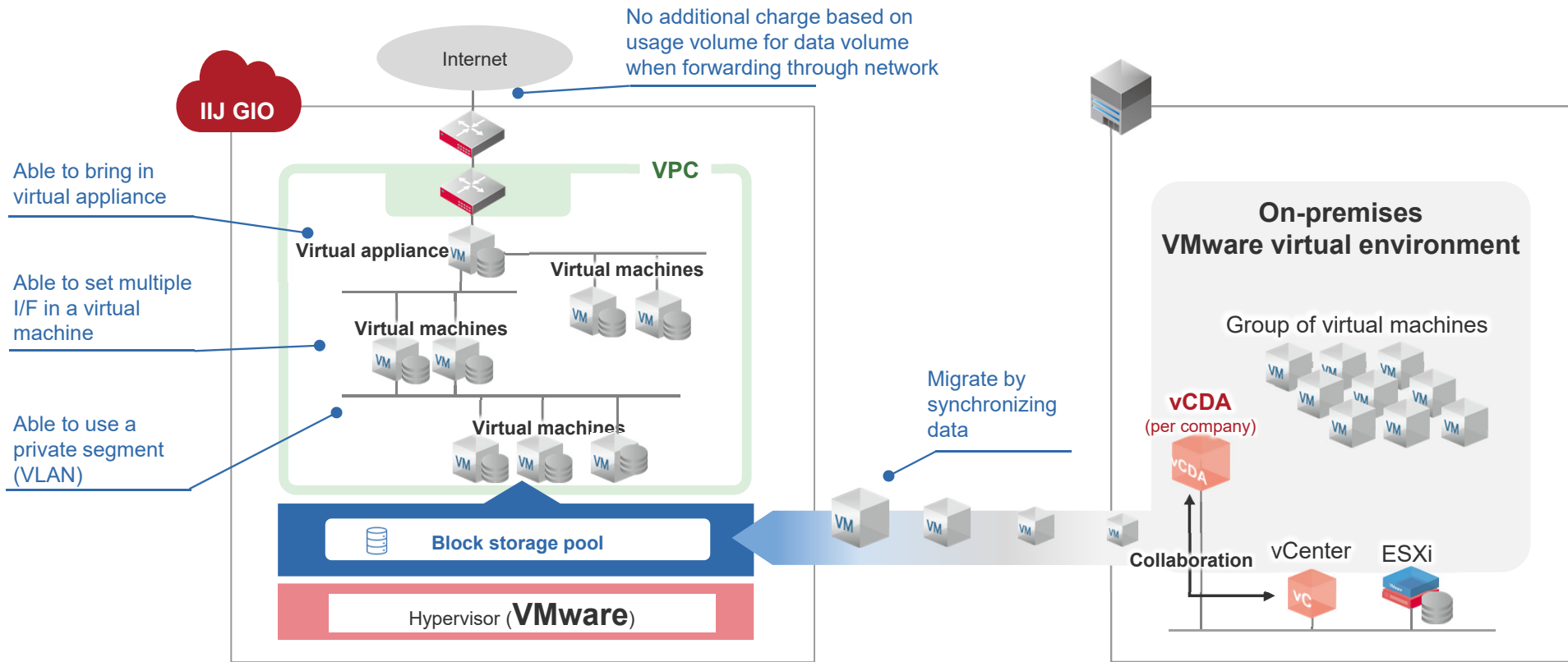


Feature
1

Highly migratable VMware Private Cloud

Although migration to Public Cloud requires a number of changes in configuration, IIJ GIO Gen.2 adopts VMware as a virtual base to **minimize changes in the design concept and operation system in an on-premises environment.**

A menu to support migration tasks is prepared in addition to provision of the data synchronization tools for migration between VMwares.



Feature
2

Resources extension as flexible as Public Cloud

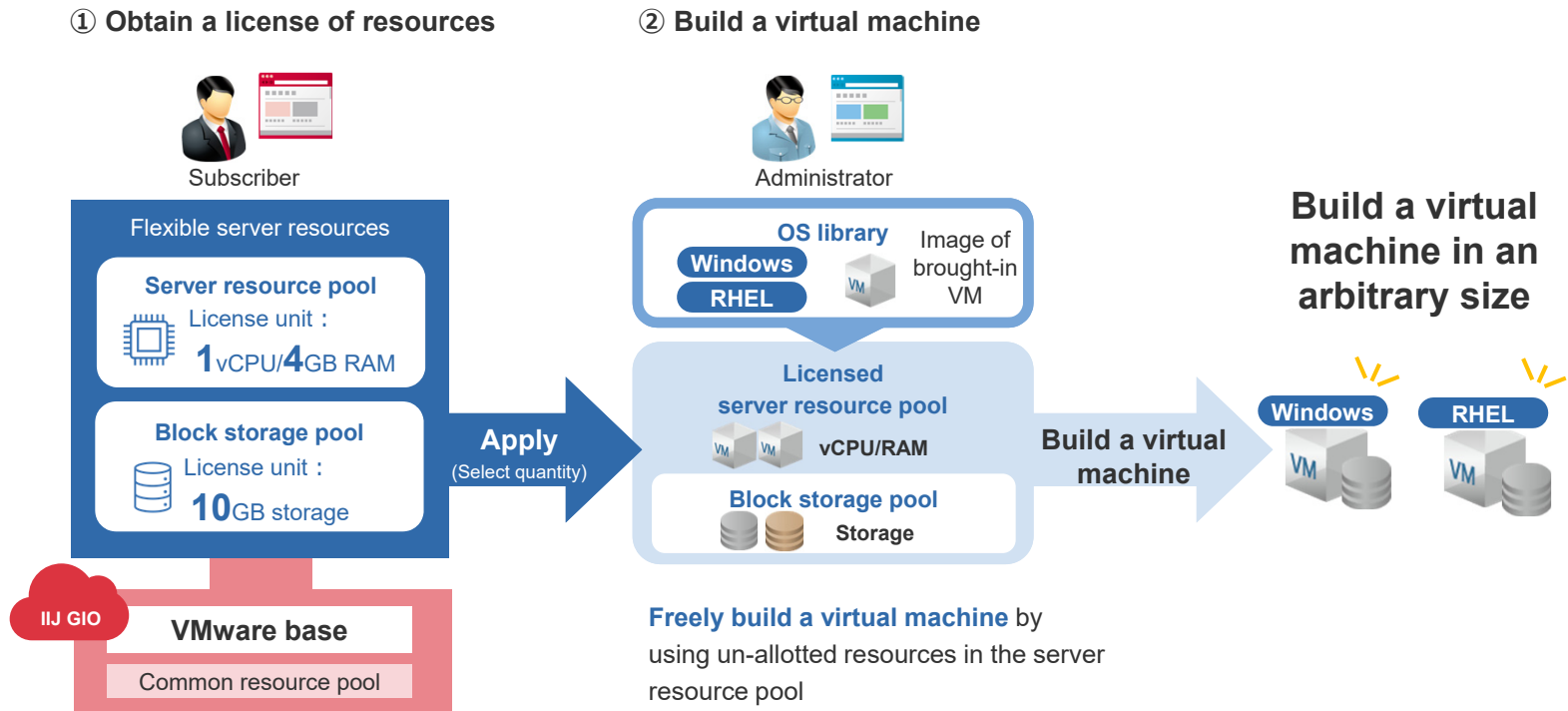
Virtual resources **can be used in units of 1vCPU** while being in a **VMware environment** where virtual machines can be built by freely allotting server resources. It offers an easier small start than the conventional VMware environment where resources are added in units of a physical host.

It **frees** an administrator **from base operation tasks including life cycle management** by hiding the hardware of physical server.

Allow phased migration that **extends in units of 1vCPU**

Allow immediate use after applying from the control panel

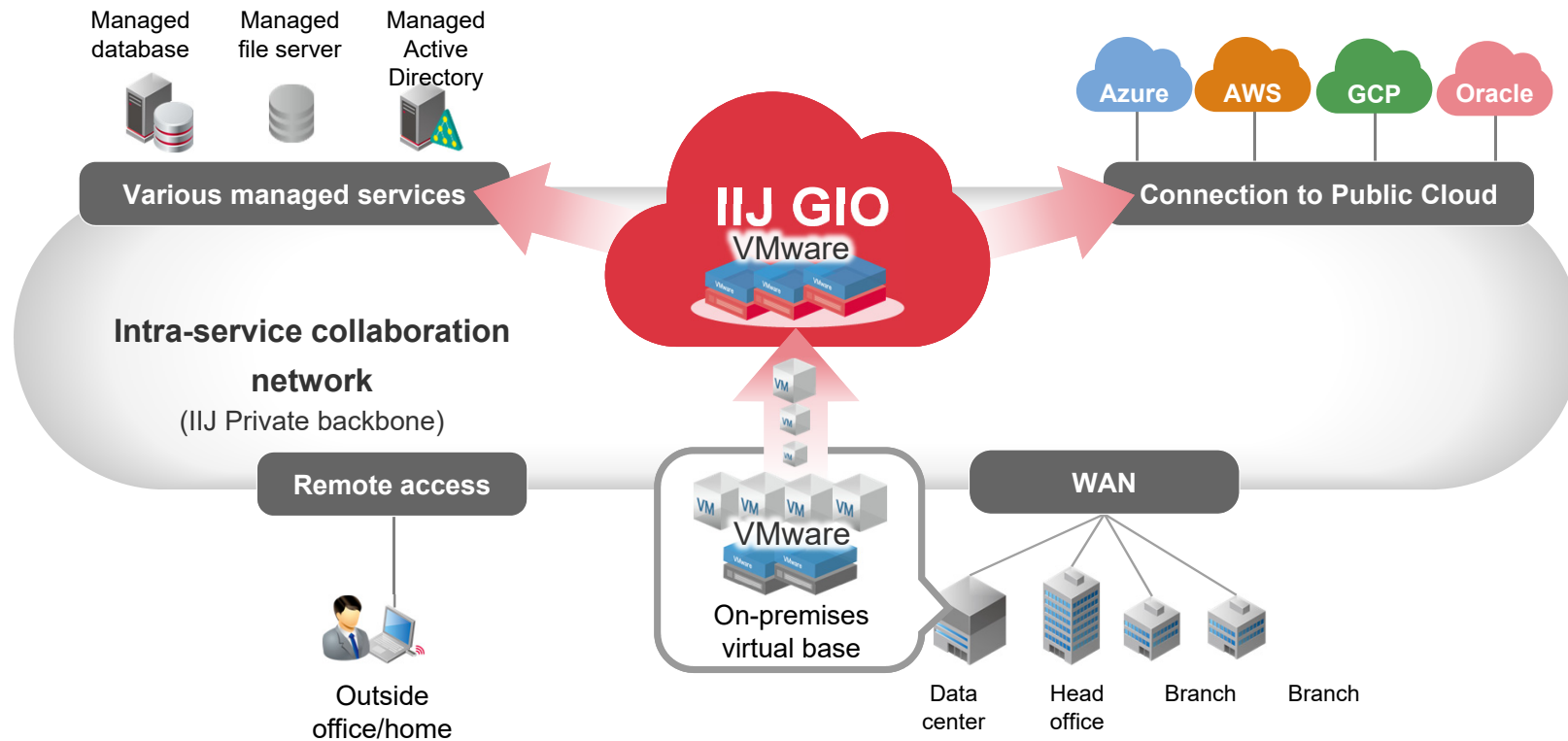
Freed from base operations such as H/W troubleshooting, base renewals and other tasks that are troublesome even on premises



Implementation of Multi-cloud environment in collaboration with IIJ network service

It implements a **Multi-cloud environment** in collaboration with IIJ network services, such as WAN and public cloud connections.

Costs can be optimized by deleting unnecessary server recourses in units of 1vCPU even when migrating to Public Cloud, which requires changes of applications, after migrating to IIJ GIO from on premises.



Flexible server resources service menu

Gateway resources

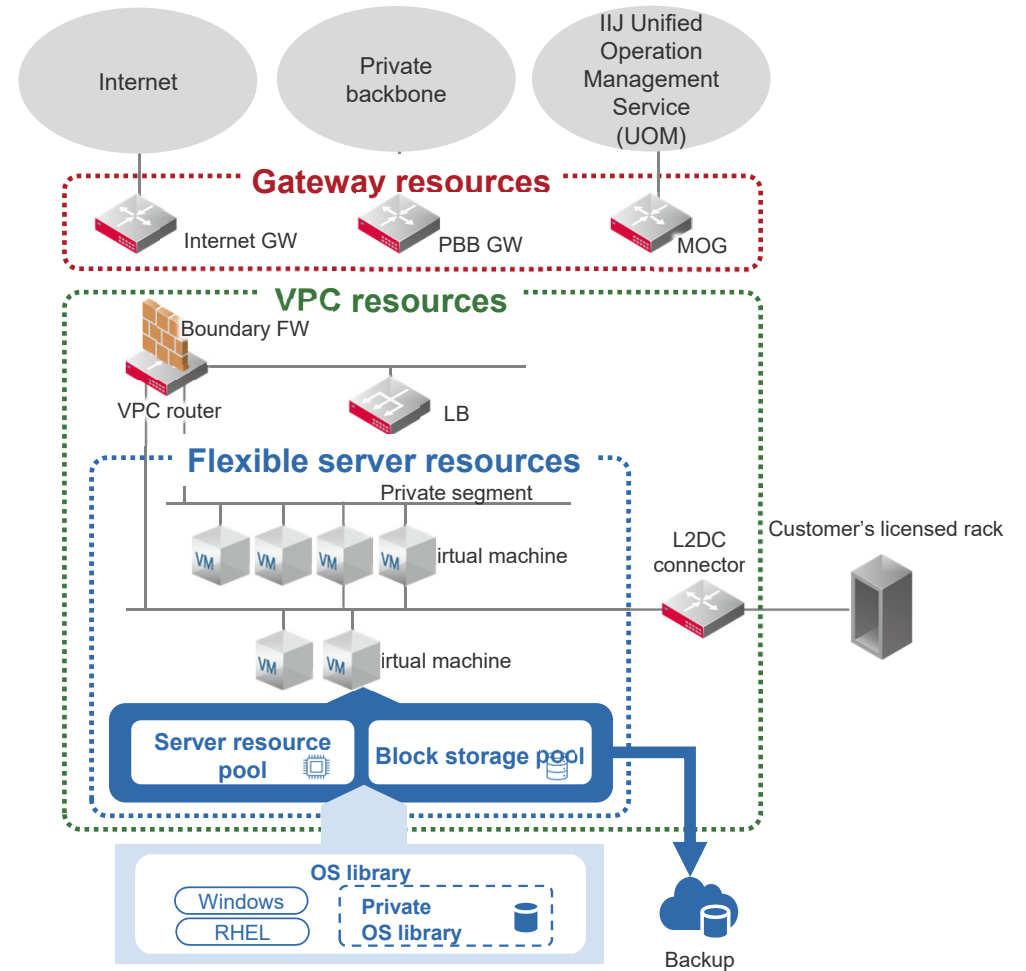
Gateway	Internet gateway	
	PBB gateway	Free of charge
	MO&OP gateway (MOG)	Free of charge

VPC resources

VPC Standard service	VPC router
	Private segment
Network	Boundary firewall
	Load balancer
Connector	L2DC connector <Provision scheduled in March 2022>

Flexible server resources

VM	Server resource pool
	Block storage pool
Backup	Backup <Plan to launch in March 2022>
OS library	Windows Server, RHEL
	Private OS library



Overview of IJ GIO Infrastructure P2 Gen.2 service

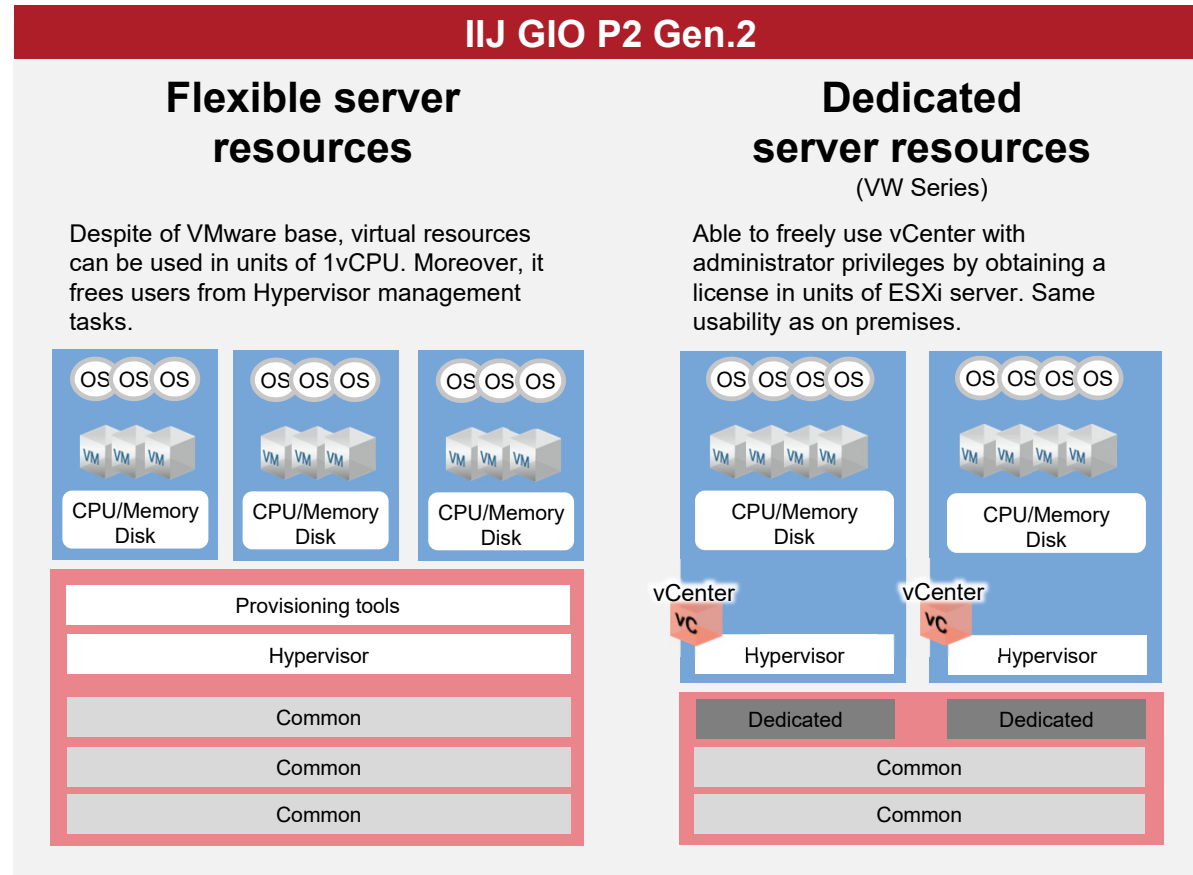
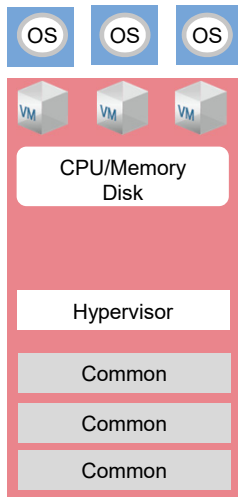
P2 Gen.2 provides “Flexible server resources” and “Dedicated server resources”

Managed by customers
Scope of the provided service

OS
Virtual machine
Resource pool
Provisioning
Hypervisor
Server
Storage
Network

Public resources

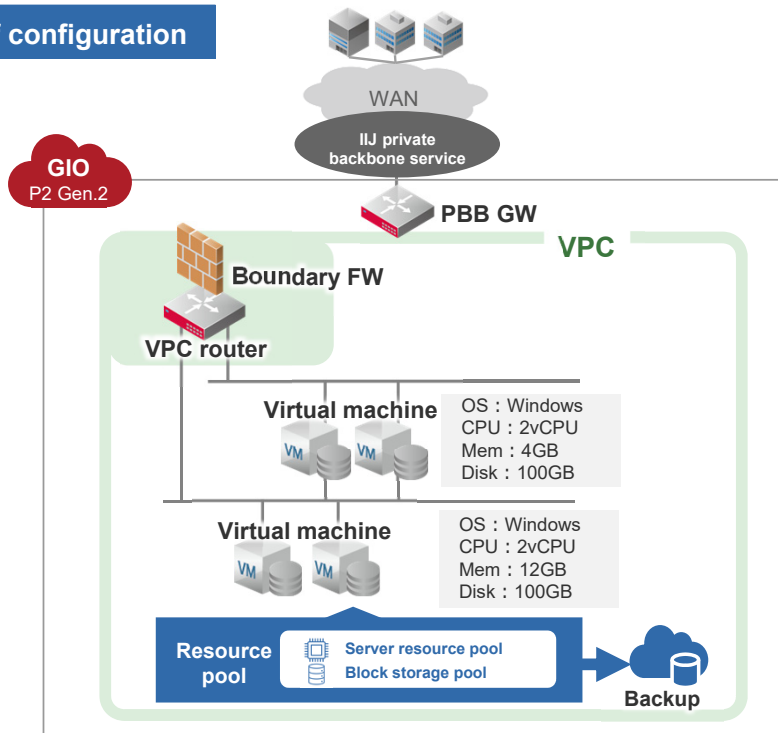
Used by each virtual machine with determined specifications



Use case in sample configuration (Flexible server resources)

- ✓ Consisting of four Windows virtual servers, the total server resources amount to 8vCPU, 32GB in memory and 400GB.
- ✓ Firewall functions and backup of each server are saved remotely.

Image of configuration



Estimated costs

Service	Item	Qty
Gateway resources	Private backbone gateway	1
VPC resources	VPC	1
	Boundary FW	1
	Server resource pool	8
Flexible server resources	Block storage pool/Basic	44
	OS license/Windows	4
	Backup/VW	4
	Backup/capacity (GB)	40

Cost

Initial cost: ¥0
 Monthly cost: ¥98,800

Services designed to automate and optimize operation jobs for Multi-Cloud

IIJ Unified Operation Management Service (UOM)

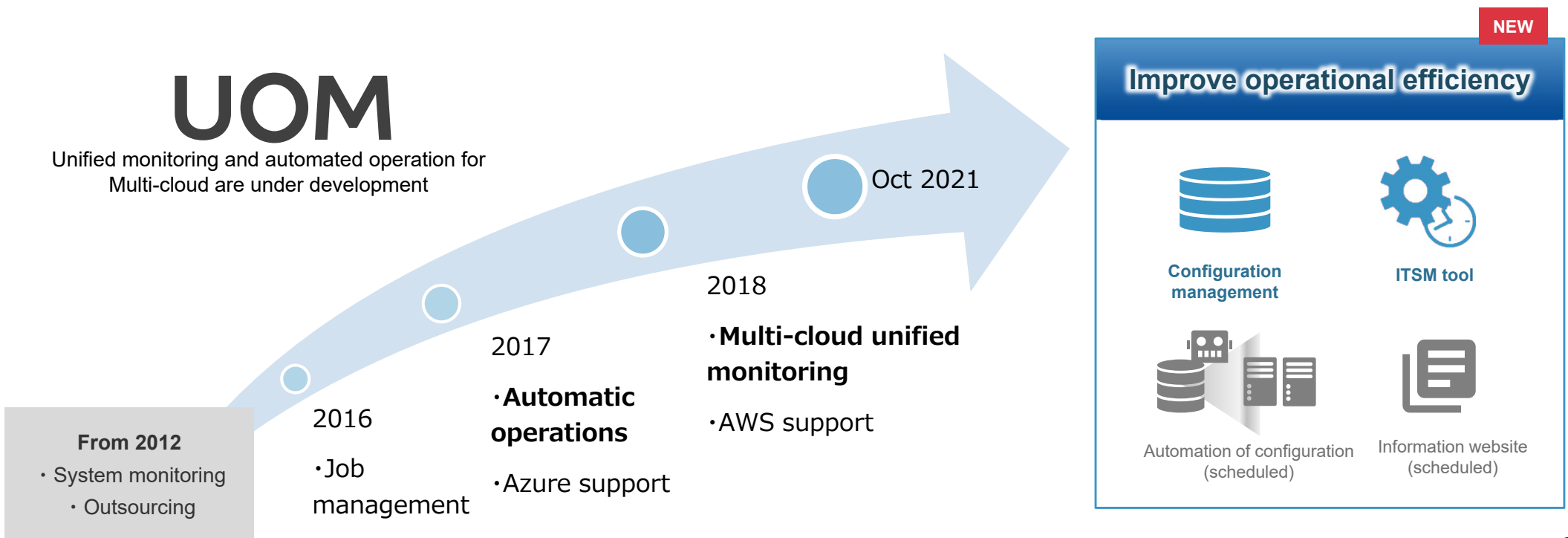
Cloud Department
Deputy General Manager for Cloud Service 3 Department
Ryo Fukuhara



Unified Operation Management Service launched in 2012

Service scope expanded for improved Multi-cloud operational efficiency

“Configuration management” and “ITSM tool” are to be added in October 2021



Situations surrounding IT sectors

Centralized management of Multi-cloud

Automation to replace the shortage of workers

Framework of IT operational management

Recognize system status and improve IT management operational efficiency in Multi-cloud environment



Recognize system status

Issue:

Contents managed in Excel are not reliable



Improve IT management operational efficiency

Issue:

Unable to perform IT controls in Multi-cloud

The issue in configuration management is unreliable information

Limit of Excel management

There is a ledger in Excel for each system, making management complicated

- Asset management for each system
- Management information is fragmented
- Unable to find necessary information immediately



Management information is old

Unable to recognize the current situations because the asset information is not updated

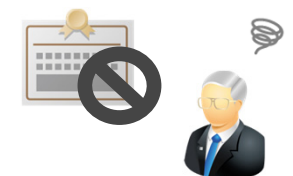
- Managed, but not updated
- It takes time to investigate the current situations
- Unable to start the primary tasks right away



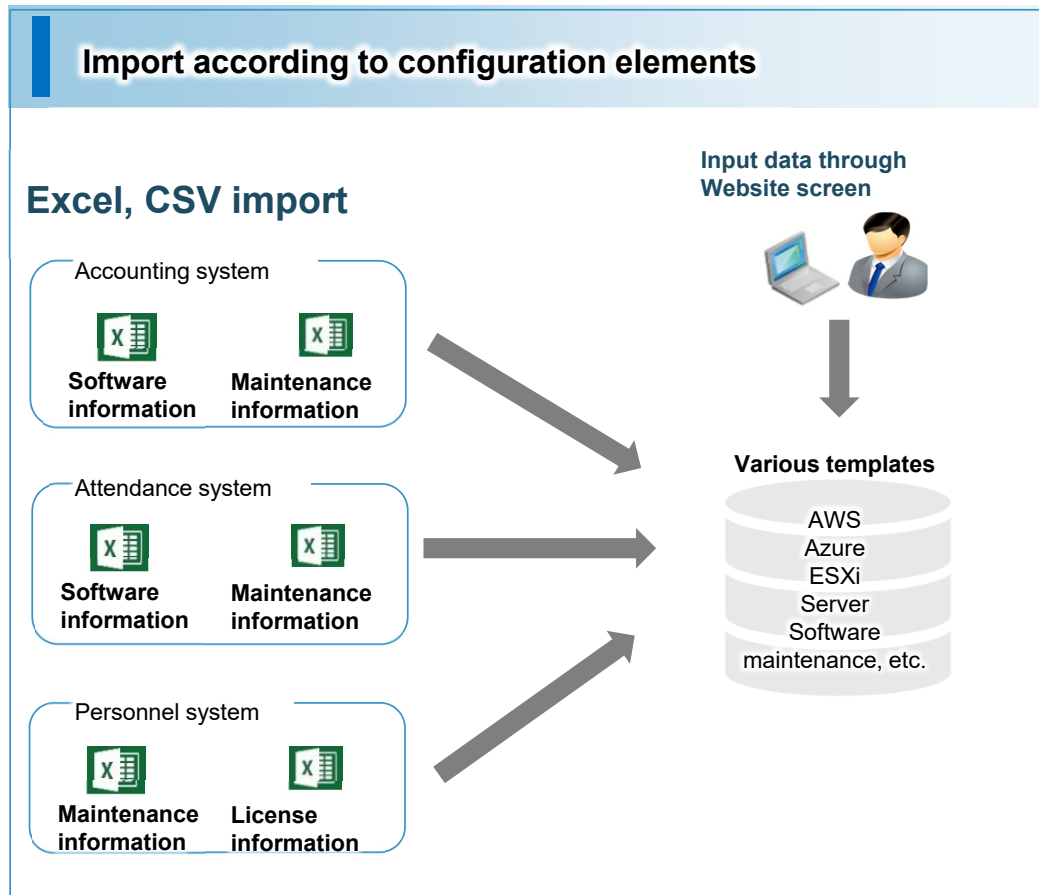
Fail to manage maintenance expirations

Omission of renewal of licenses/maintenance expiration dates

- Too many licenses/maintenances to control
- Additional cost is generated by backdating
- System's security risks



Centrally manage configuration information and use Excel import



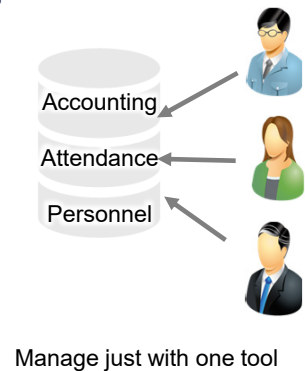
Easy registration by importing from Excel ledgers

- Centrally manage registered data
- Unify the management data using templates
- Effective use of the existing ledgers

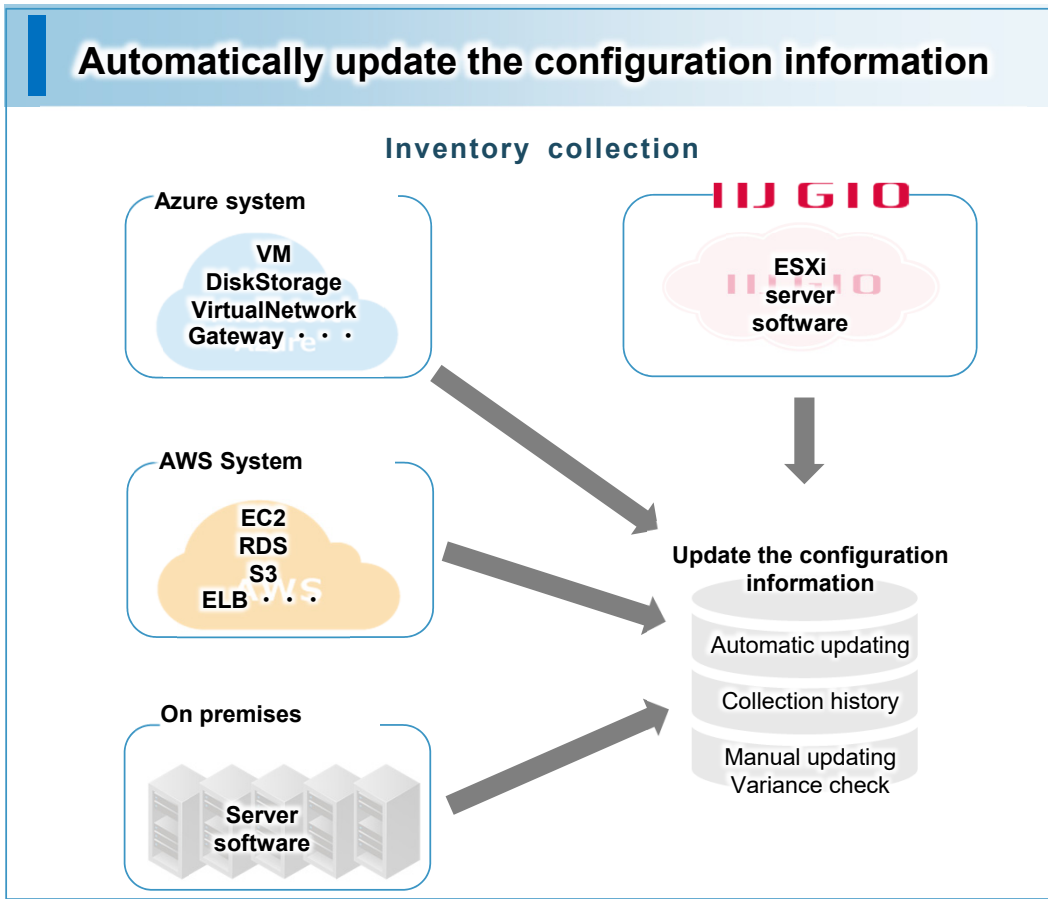


Security guaranty by giving access authorities

- Management by restricting access
- Allow use by multiple people
- Management groups are available in ITSM tool, too



Automatically acquire & update configuration information with the latest information



Automatically collect the information on a regular basis to update the information

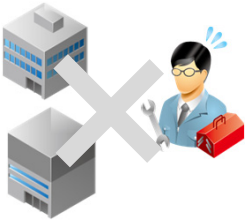
- Automatically update the registered data
- Check collection history and variance
- Able to use the latest configuration information right away



Use the latest data

Support cloud and on premises

- Azure, AWS and ESXi management templates are available
- Able to manage on-premises servers at the same time
- Elimination or reduction of current inventory surveys



Minimize onsite surveys

Mail notification of license/maintenance renewal

Notification before license expiration


Expiration reminder

Name of host	node01
Maintenance contract	H/W maintenance contract
Maintenance contact	service 01-2345-6789
Maintenance expiration date	2021/08/31 Aug 31, 2021


Notifications before expiration

- 1 week before
- 2 weeks before
- 3 weeks before
- 1 month before
- 2 months before

Infrastructure team



APL team




Management team



Prevent omission of maintenance renewal

- Centralize the maintenance data
- Send reminder mail to the team in charge
- Able to renew maintenance according to the schedule




Prevention of forgetting update

Manage by linking to nodes and software

- Clarify maintenance targets
- Able to find maintenance information immediately when a problem occurs

Name of host	node01
Maintenance contract	H/W maintenance contract
provider	service ○○ Co., Ltd.
Maintenance expiration date	Aug 31, 2021



Increase troubleshooting efficiency



Dependence on individual skills disables Multi-cloud control

Management operations depending on individual skills

Operations depend on individual skills, destabilizing operational quality

- There is no predetermined operating flow
- Dependence on skills of a person in charge
- Unstable operational quality



Unexpected system failure

Works are undertaken without the system administrator's knowledge

- Unapproved tasks are executed
- Work progress is invisible
- It is unknown who is doing what



Multiple management tools generate additional work

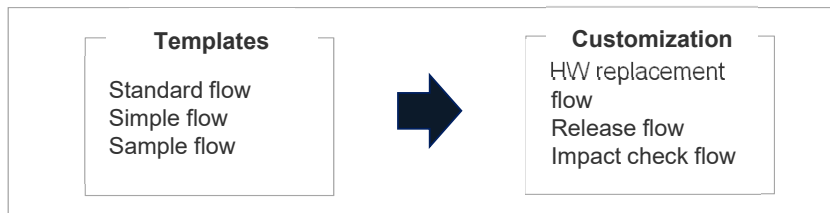
Each of the multiple systems has its operation management tool, complicating the management

- Use of multiple tools reduces the efficiency
- Management details vary depending on the tool
- Operations cannot be standardized

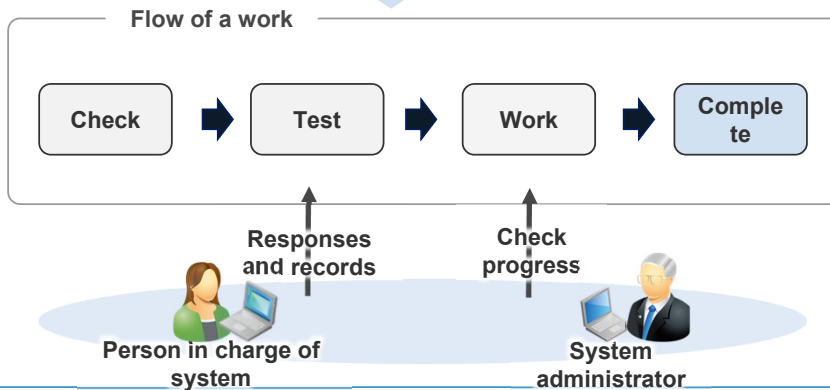


Standardize work flows for progress control

Convert flow of a work into workflow

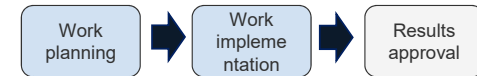


Utilization of workflow



Standardize work flows for progress control

- Work process independent of a person in charge
- Stabilize operational quality
- Recognize administrator's work progress



Integrate work processes

Customization using the sample template

- Flow in line with ITIL
- Sample flow for each management process
- Create by drag-and-drop actions using GUI

- Templates**
- Incident management flow
 - Request management flow
 - Problem management flow
 - Change management flow
 - Resource management flow

Workflow adapted to the operations



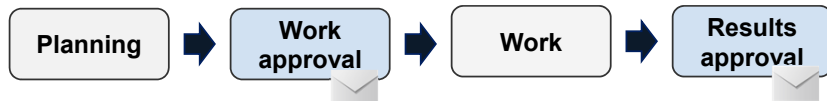
Incorporate administrator's approval to strengthen operational control

Approval of administrator is mandatory

Results approval flow



Approval flow before work



Work planning



Person in charge

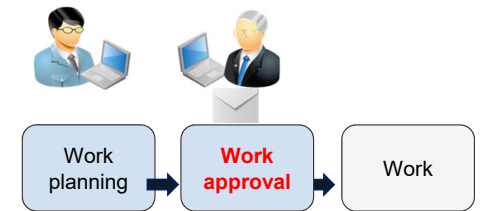
Work approval



System administrator

Arrangement of approval process according to the contents

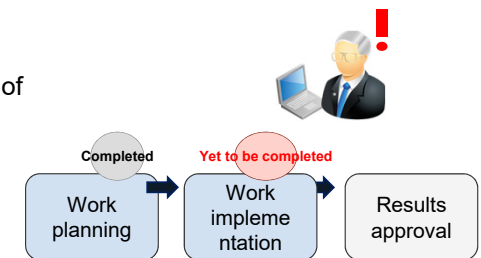
- Make sure to approve work results
- Work starts after obtaining an approval
- Prevent works conducted without the administrator's knowledge



Make an approval mandatory

Administrator checks the work process

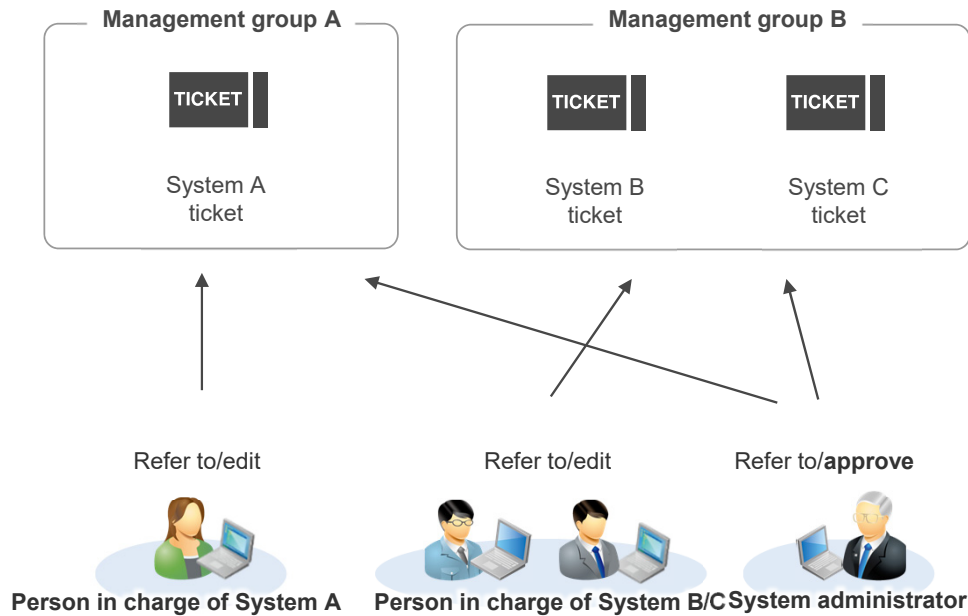
- Workflow of unapproved work stops
- Clarity who is responsible for the work
- Manage the progress by checking the status of workflow



Check the progress

Unify management of multiple systems

Reduce workload on an administrator



Limit tickets accessible by each person in charge

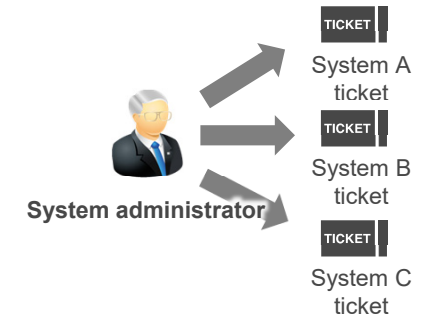
- Access restriction in conjunction with management groups for configuration management
- Access restriction for each person in charge and vendor
- Standardize management items of tickets



Ensure security

The administrator has access to all tickets

- Recognize status of all systems
- Establish common format for reports from each system
- Reduce management workload using just one tool

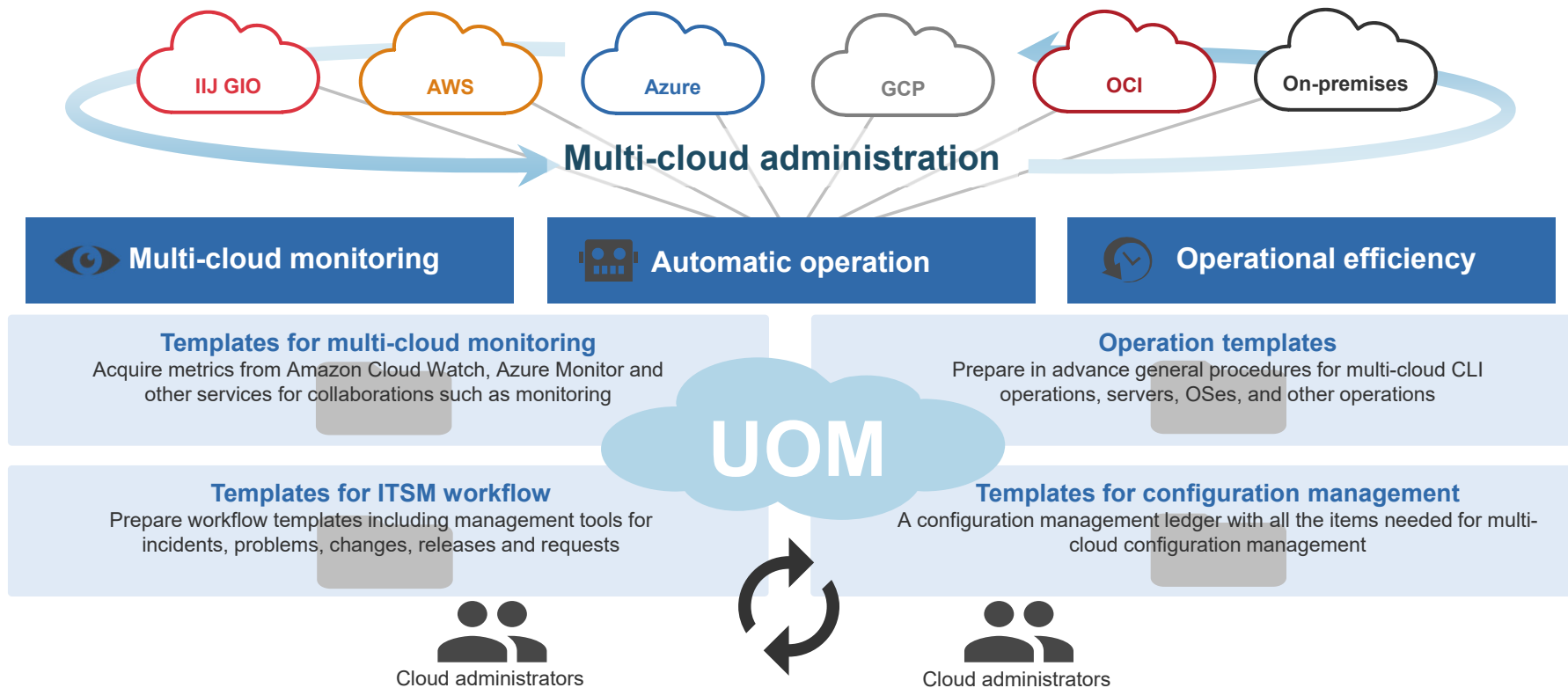


Reduce workload on an administrator

“Operations hub” that provides support for Multi-cloud operations

Templated knowhow makes multi-cloud management operations easier

~Platform to centrally manage system monitoring/operations and business operations ~





The internet started in Japan in 1992, along with IIJ. Since that time, the IIJ Group has been building the infrastructure for a networked society, and with our technical expertise, we have continued to support its development. We have also continued to evolve our vision for the future and innovate to make it a reality. As an internet pioneer, IIJ has blazed the trail so that others could realize the full potential of a networked society, and that will never change. The middle "I" in "IIJ" stands for "initiative," and IIJ always starts with the future.

Disclaimer

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