

Shared IT Platform Service “RIACUBE”

WATANABE Shou, KUSAKAWA Naoki

Abstract

In March 2008, NEC launched “RIACUBE,” a shared IT platform service for use in construction of the cloud-oriented data center platform. RIACUBE is a shared IT platform service that has been developed using an advanced data center platform and product technologies and is based on experience gained in the diverse outsourcing operations of NEC. This paper introduces the background of the RIACUBE development, development policy, functions, features and future deployment plans.

Keywords

IT platforms, IT infrastructures, cloud computing
system model, lifecycle management

1. Introduction

The shared IT platform service “RIACUBE” introduced in this paper is a service product combining the operation/maintenance technologies that have been designed based on NEC’s experience in its diverse outsourcing operations together with an advanced data center platform and various product technologies.

“Advancement of open technology has led to the creation of complex systems and the need for much labor for the maintenance and management of IT platforms.”

“The limited availability of personnel who are busy in their daily operations results in difficulties in keeping abreast of the daily progress of IT platform technologies.”

“Management requests for IT cost reductions have been increasing year by year.”

“There are requests to enhance the internal governance, reinforce the security and enable business continuity at minimum cost.”

These are some of the issues forming the background of the development of RIACUBE that the customers are conscious of with regard to the IT systems operations of their IT departments. To solve these issues of the customers’ IT departments, we have set targets to meet the following requirements for the further development of RIACUBE.

- 1) It should be a partnership model product that can share customers’ management requirements instead of the traditional vendor type product that is simply sold off.
- 2) It should be able to optimize IT platforms and operations.
- 3) It should be subjected to continual enhancement and im-

provement.

The following sections describe how RIACUBE is meeting the above requirements.

2. Partnership Model

As shown in Fig. 1, the partnership model concept of NEC is totally different from the vendor-type model that leaves our control once we have sold it off. The aim of this model is that we become a real partner of each customer by matching the service we provide from the customer’s viewpoint with the requirements of their management targets. In order to achieve this aim, RIACUBE is equipped with the following features.

(1) Implementation of an Asset-less Environment

To support the asset-less management of the customer, NEC holds the assets required as IT infrastructures and provides these to the customer as services.

(2) Optimization of Cost

We offer the service level required by the customer’s IT system and the IT platform resources that match the service timing/period and for the required amount at low prices by making use of the volume advantage of a service provider. This procedure can optimize the IT system costs of the customer.

(3) Maintenance and Ongoing Quality Improvement

We not only maintain the quality of the IT platform but also enable the long term usability of services by adopting the latest technologies in a timely manner and by continually enhancing functions.

- The traditional vendor-type, or sold-off model, depended on the orientation of the customer's/manager's requirements that were often quite different from the vendor's expectations.
- The partnership-type model can align orientations and build a continual relationship in which NEC can exercise its considerable expertise.

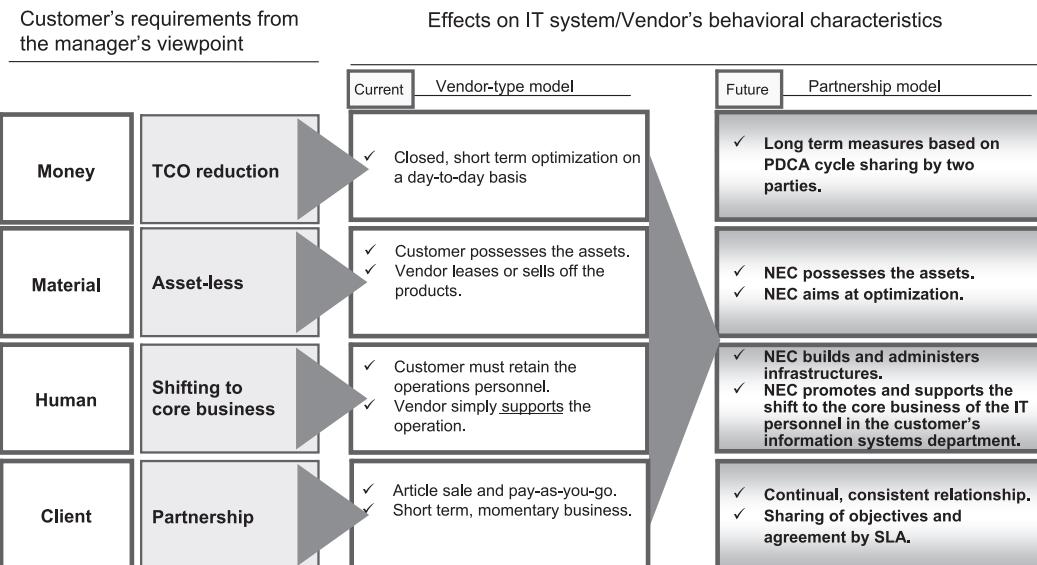


Fig. 1 Partnership-type model.

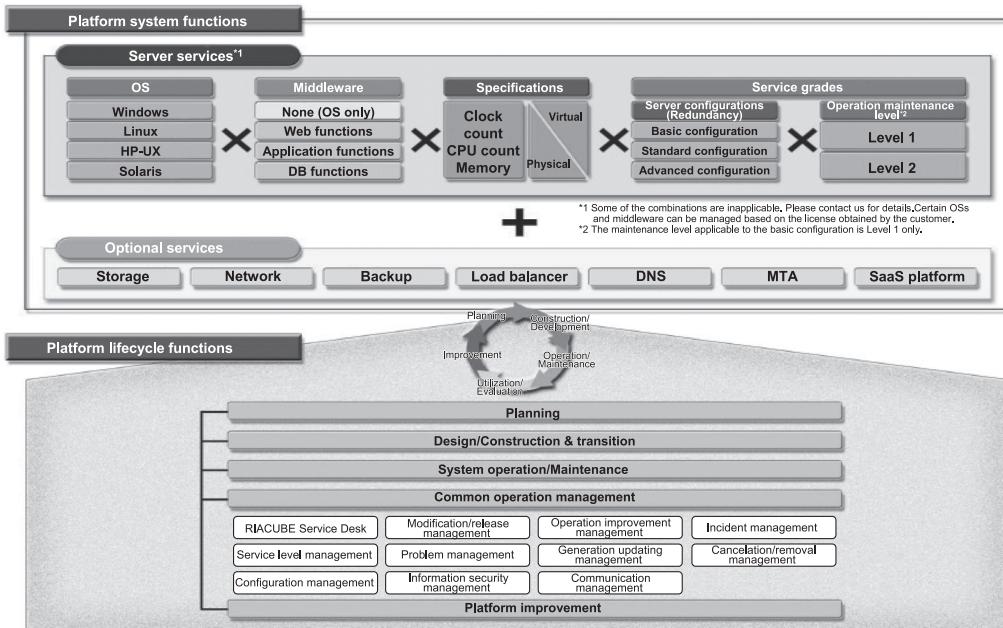


Fig. 2 Service components.

Shared IT Platform Service “RIACUBE”

- The functions required for configuring APs and PKGs with SaaS are provided as one of the RIACUBE services. This arrangement enables the availability of support for speedy service installations.
- An authentication function is provided so that SSO can be executed with the application.
- General-purpose components are provided so that efficient function expansions are available.

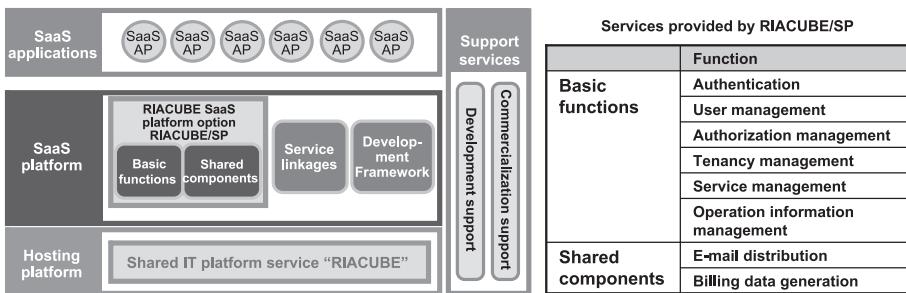


Fig. 3 SaaS platform option.

3. IT Infrastructure Optimization

The basic ideas that we use in the provision of optimum IT infrastructures for customers include support for a wide range of IT platform functions, construction of platforms/standardizations of operations, selection of multiple service levels and convenient billing system settings. These benefits are described separately in the following.

(1) Support for a Wide Range of IT Platform Functions

As shown in Fig. 2, RIACUBE is provided as a service menu combining IT platform resources (platform system functions) and standard administration/operation work (platform lifecycle management functions).

Support of major OSs and middleware makes it applicable to a wide range of IT systems.

RIACUBE can be introduced in two patterns. These are the SaaS pattern for service providers (Fig. 3) and the outsourcing pattern with IT platforms for general enterprises that can migrate to RIACUBE. RIACUBE can be used as the platform for both of these patterns.

(2) Construction of Platform/Standardization of Operations

The customer needs to quickly meet the requirements for running applications and to implement IT platforms of a stable quality. At NEC, long experience in the SI business has made it possible for us to establish a technique called the “system model,” which turns systems into models and then reuses the models as components. This technique enables

system construction in terms of short delivery time and high quality.

Specifically, at NEC we first verify the operations of platform products. We then design a standardized platform based on the verified products and build the hosting platform (shared equipment), and then build and operate the IT platform for the customer on the hosting platform. This is the reason that we are able to provide IT platforms of stable quality in a short period. Fig. 4 shows a summary of the web three-layer model, which is one of the typical models offered by RIACUBE.

Designed to work together with the standard IT platform described above is another pillar for supporting RIACUBE, this is the administration/operation function, called the platform lifecycle management function. The platform lifecycle management of RIACUBE standardizes the operation/maintenance and manages each phases of the life cycle management. It also enables NEC to provide our services safely and securely to support the lifecycle management of the customer’s IT system operations.

The administration work we perform in the routine operation phase is compliant to ITIL. We define the lifecycle management policy on the adopted platform products in order to minimize sudden increases in customer costs due to unexpected events that may occur within the agreement period.

(3) Compatibility with Multiple Service Levels

In order to provide the customer’s IT system with an IT platform at optimum cost, it is required instead of prepar-

ing a single service level to prepare multiple service levels that can meet various requirements of the platform such as operation and cost.

RIACUBE provides three kinds of server configuration that feature different redundancies and two operation/maintenance levels with different functions.

The options combining the server configuration and operation/maintenance level are referred to as the service grade, and the target service level values (operation target values) are defined for each service grade.

The support range of the operation/maintenance level 1 (L1) covers the monitoring and maintenance of the hardware and that of the operation/maintenance level 2 (L2) covers monitoring and operation/maintenance of the hardware, OS and middleware.

The service grades and examples of operations target values are shown in the following tables (**Table 1** and **Table 2**). For example, basic L1 is suitable for purposes for which the service level can be relatively low and the price should be minimal, such as for development environment servers. On the other hand, advanced L2 is suitable for purposes that need high-reliability servers such as the ERP package. In this way, the capability of providing IT platforms according to the availability and operation/maintenance levels required by the customer is one of the significant features of RIACUBE.

(4) Convenient Billing System Setting

One of the customers' expectations for the cloud service is the possibility of optimizing investment in an IT platform by utilizing the required IT resources for the required time period and by the required amount.

Based on sharing of IT platform installations/operations by multiple customers and segmenting of CPU resources using virtualization technologies, RIACUBE sets a billing system featuring low prices to match the IT resources required by the customer as well as providing convenience of use.

The CPU and memory are offered in a virtualized environment, the minimum unit being defined as a combination of a 1 GHz-equivalent CPU and a memory of 1 GB. The customer is given the option of selecting 1 unit of CPU/memory equivalent to 1 GHz (1-way) and 1 GB up to 22 units of CPU/memory equivalent to 22 GHz (8-way x 2.750 GHz) and 22 GB.

The minimum storage is 20 GB but can be additionally purchased in increments of 10 GB.

For the server resources, a temporary resource enhancement menu is available for dealing with short-period resource requirements such as seasonal variations in the resource demand.

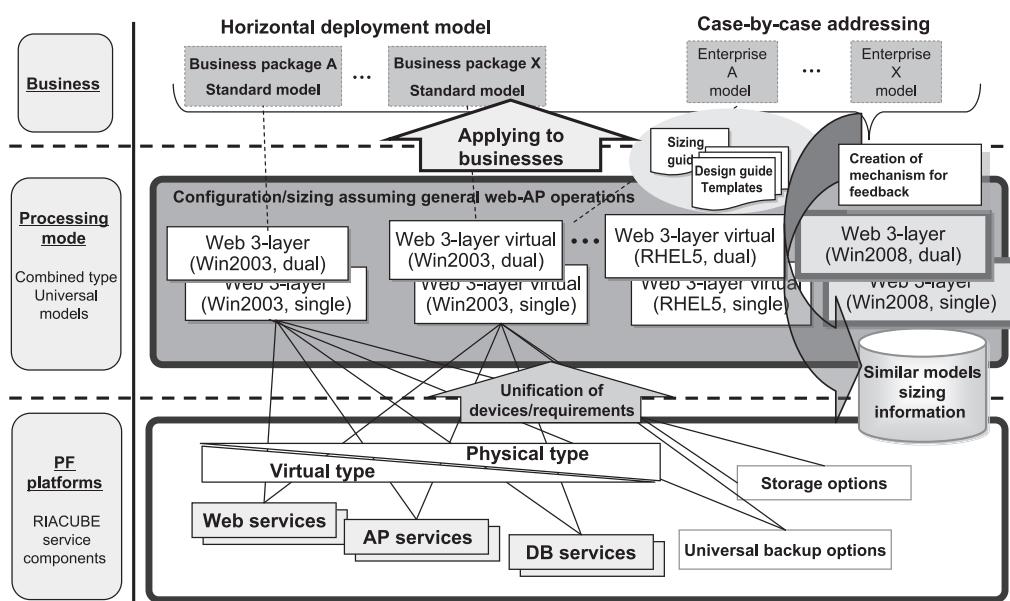


Fig. 4 Relationship between RIACUBE and the web three-layer model.

Cloud-oriented Service Platform Solutions/IT platform services & supporting technologies
Shared IT Platform Service “RIACUBE”

Table 1 Service grades.

	Basic L1	Standard L1	Standard L2	Advanced L1	Advanced L2
Redundancy	Single-server configuration	Shared standby unit configuration		Dual configuration	
Operation/maintenance level (*1)	L1	L1	L2	L1	L2
Outage time criterion	From detection of hardware ping deviation to interim recovery	From detection of hardware ping deviation to interim recovery	From alarm detection by process or component monitoring of OS/MW to interim recovery	From detection of hardware ping deviation to interim recovery	From alarm detection by process or component monitoring of OS/MW to interim recovery

Table 2 Examples of operation target values.

	Basic L1	Standard L1	Standard L2	Advanced L1	Advanced L2
Operation targets	System platform availability	99%	99.9%	99.95%	
	System domain recovery time	—	4H	2H	
	System domain recovery timing	Moment of operation acceptance	Moment of operation acceptance	Moment of daily backup	Moment of daily backup
	Scheduled maintenance time	12H/week	12H/week	12H/month	12H/week
	Fault notification time			≤ 30 minutes	12H/half year

4. Continual Improvement and Enhancement

Since the progress of IT technology is extremely fast, catching up with the latest technology has always been an important issue for customers. With RIACUBE, we always watch the technological trends and advance services by adopting products with the highest cost efficiencies. In the following, we will introduce three of our activities as examples of our endeavors to provide improvements and enhancements for the functions of RIACUBE.

(1) Efforts for Cost Reduction

In order to make continual cost reduction possible, we aim to improve the efficiency of operation/maintenance work and to enhance the service menu.

(1) Improvement of Operation/Maintenance Work

NEC announced the concept of an IT platform supporting cloud computing, “REAL IT PLATFORM G2 *1 ” in October 2009. With RIACUBE, we will adopt a group of products capable of realizing this vision in order to significantly improve the efficiency of IT platform operation/maintenance work. For example, we will enhance Web-SAM, a system service management tool, to promote quicker fault analysis/countermeasures and labor saving/automation of administration work.

2) Measures for Minimum Service Level

Recently, customers often request low-cost services in which a minimum number of operations are offered as IT platform resources. This kind of service can for example reduce additional costs by utilizing the IT platform operation personnel resource of the customer enterprise. To meet the above needs by enabling such service menus, we will review the way that RIACUBE components are combined and optimize platform design from the viewpoint of cost reduction, that is to say via the platform system functions and platform lifecycle management.

(2) Expansion of OS/MW Support

We are planning support for the business platform middleware that is often required by mission-critical business systems, such as data transfer middleware, forms control middleware and job management middleware. These enhancements are expected to expand the scope of application of RIACUBE.

(3) Measures for Non-functional Requirements Grades

Six major Japanese IT vendors including NEC have organized a Conference on Non-functional Requirements Grades for Visualization of System Platform Order Requirements. The aim being to attempt to ascertain the requirements of the ordering parties of system platforms. The results of this study are expected to be shared and used widely by user enter-

*1 Group of products for the next-generation IT platform to support cloud computing as proposed by NEC.

ses and IT vendors. We will arrange the resulting documents on RIACUBE in order to explain the service levels and available services to customers based on the concept of non-functional requirements grades.

5. Conclusion

RIACUBE was developed as a service platform to be used with the cloud-oriented data center platform provided by NEC and it has been applied to a large number of businesses since the start of the service. With the help of RIACUBE, NEC propose to apply advanced technologies quickly and effectively in order to establish a leading position in the cloud-oriented service for solving customer issues with regard to IT system operations.

Authors' Profiles

WATANABE Shou
Manager
System Services Delivery Division
Systems Services Operations Unit

KUSAKAWA Naoki
System Services Delivery Division
Systems Services Operations Unit