Procedures Employed for Supporting Enhancement of NEC's Cloud System Competitiveness and OSS Model-Building SI Technology

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Abstract

NEC announced the "NEC Cloud System" in October 2015. This solution features an OSS building model that was developed mainly by using open standard technologies and combining products and technologies already demonstrated via NEC's achievements in support of its cloud platform services. In order to enhance its competitiveness it is essential for the corporation to market solutions that are easily understandable and installable. In consequence, it enhances our abilities to integrate systems, in other word, the solution of system integration (SI). This paper introduces our SI strategy aimed at achieving such a result.

Keywords

NEC Cloud System, cloud platform, OSS, OpenStack, White Paper, Leaflet, proof of concept, sales promotion, efficiency improvement

1. Introduction

Up to the present, NEC has been responding to customer needs for cloud platforms by combining a wide range of our most advanced technologies. However, recent rapid changes in both social and management environments have made it necessary to absorb these changes by enforcing a more extensive range of strate-

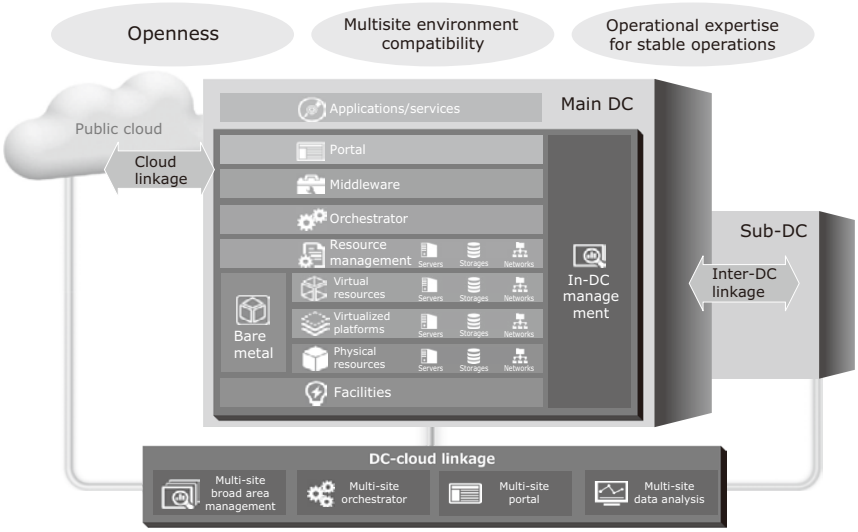

Fig. 1 Concept of the NEC Cloud System.

gies, and even more promptly than hitherto.

To deal with such circumstances, we have announced a cloud solution called the "NEC Cloud System". It incorporates various cloud system procedures that we have used in the past and provides compatibility with rising needs of the open standard technologies. These procedures include OpenStack and Software Defined Networking (SDN). It is based on the achievements of the cloud platform services provided previously by NEC (**Fig. 1**).

Vendors continue to release cloud solutions one after another. In this day and age, no vendor can survive by simply providing cloud solutions. Especially, as the adoption of open standard technologies means that an increasing number of enterprises employ similar technologies, or that the field competition is becoming more sever.

In order to enhance competitiveness it is required to improve the impact of system integration (SI), and it is also important regarding how we can make the cloud solutions easy to understand and to install. Below, we introduce the SI process arrangement by using sales and SI tools aimed at resolving these issues.

2. Specific Measures

2.1 Clarification of Targets

Although the NEC Cloud System has been developed to meet various needs as advised by our customers, the optimum solution varies for each customer. One of the features of the NEC Cloud System is the building block method, which can provide combinations of function blocks for customers who want to implement only that which is essential and at a minimum investment level.

Recently, together with other features we examined how to promote this solution to customers by utilizing the Business Model Canvas (BMC) and by thoroughly analyzing the Customer Segment (CS) and Value Proposition (VP). Our aim is to apply these results to the fine tuning of our sales tools.

Regarding the Customer Service, we explored what was troubling customers, assessed the issues that were of concern to the customers and classified the customers into three categories. These are: (1) the "telecom carriers" who run businesses focused on the networks and aim at implementing flexible networks based on NFV (Network Functions Virtualization) and in enhancing their competitiveness, (2) the "service providers" who possess their own cloud platforms with the aim of providing service businesses such as IaaS, PaaS and SaaS to third parties, and (3) the "enterprises" that aim at centralizing their legacy silo systems or starting new systems promptly (**Fig. 2**).

After defining the CS, we are currently assessing the value that we can provide (VP) for each CS, and documenting it for use by our sales engineers. When they indicate details of their various usage cases, customers will be able individually to envisage the available advantages and will also become aware of the potential benefits to their businesses.

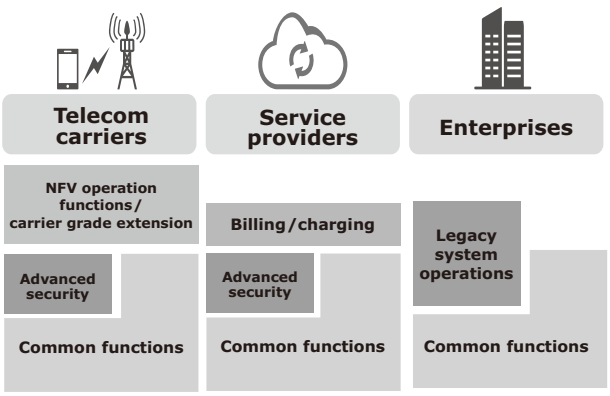

Fig. 2 The three Customer Service and building block methods.

2.2 Measures for Improving SI Efficiency

The NEC Cloud System can be customized flexibly according to the use/no-use of functions and the status of each customer by means of discoveries via open standard technologies and open source software (OSS), software structural analysis (turning software into white boxes) and by actual machine verifications. However, flexible customization often leads to an increase in verification costs that accompany any extension to the requirement definition period and to an increase of scale. Such an event could make it impossible to follow business changes flexibly and enforce the required strategies promptly.

To deal with this issue, we have defined the function blocks from the viewpoint of SI and prepared technologies for improving the SI efficiency based on achievements gained in our past cloud service projects.

(1) Function block definition from the viewpoint of system integration (SI)

There are over thirty function blocks that form the units of the building block method. We defined these function blocks from the SI viewpoint by balancing them appropriately (**Fig. 3**). There are the units that customers require that are found in our past cloud project activities and the units that we can provide efficiently even during the actual building stage. For example, since the log collection

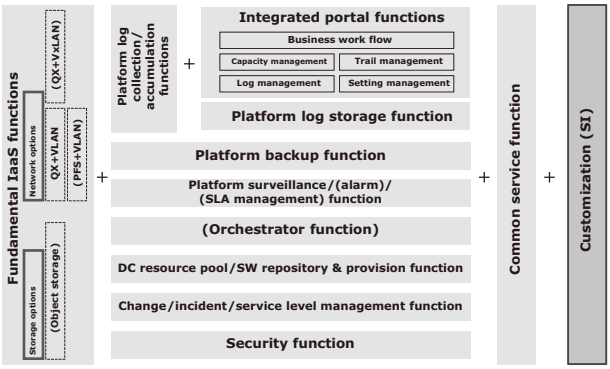

Fig. 3 Sample of NEC CS block definition.

function alone has no advantage for the customers, we grouped it together with the log analysis function into a single block. However, as the log storage function is closely related to the auditability requirement and to the storage capacity that is a cost factor, it was defined as an independent function block.

In the redefinition of the blocks based on the interfaces between different function blocks, we considered: the internal information regarding the NEC Cloud System development, such as the establishment of a function blocking procedure, the effects of linkages with external functions, and the extension units for upscaling, etc. Such considerations enable the appropriate choice of blocks to meet the needs of each customer and also the adequate linkage and conformation with external systems. Thus, quick requirement definitions become possible during the requirement hearing process.

(2) Efficiency improvement tools with a lateral deployment capability

Up to the present, NEC has been involved in various SI case studies. The so-called efficiency improvement tools built via this experience, such as system design documents and building scripts. These efficiency improvement tools try to take the lateral deployment into considerations, however, they are not optimized especially for individual cases and persons, and cannot in fact achieve the effective model systematization in individual cases. Due to such inadequate events, the efficiency improvement tools have to be built according to the general concept of the project. If the design elements and environmental conditions vary widely between cases, the efficiency improvement tools have to be capable of customization over a wide area. They should then often be judged as making things worse when the time taken for mastering use of the tools is taken into consideration. In addition, the impossibility of organizing a system for retaining the efficiency improvement tools themselves becomes another factor that hinders lateral deployment.

On the other hand, the NEC Cloud System including its prospects is positioned as the most important solution in our involvement in the cloud services business. This is because it is based on the idea of "One to Many", under which we create "One" powerful solution while passing through the process of reviewing the real needs of the "Many" customers. Our aim is to create a solution that will be securely introduced by many customers. Therefore, we have simplified the design elements and the environmental conditions by organizing blocks and analyzing the components. This strategy creates an efficiency improvement tool that enables the SI of each block via the shortest route.

To improve the efficiency, we classified the SI process into the three steps of design, building and testing. Based on this classification, we also advanced standardization for the design and testing while automating the building and testing. In particular, we placed special emphasis on automating the building process, because it brings the reduction of work time and also the uniformity of product quality acquired by minimizing the human involved labor process.

When we made a choice from existing tools, our basic selection was OSS. In the building of the Red Hat Enterprise Linux (RHEL) OS, we incorporated a kick start function, which is the auto installation mechanism, and a tool called the Cobbler that is capable of managing multiple settings integrally. For the Red Hat Enterprise Linux OpenStack Platform (RHEL-OSP), which is an OpenStack platform, we adopted the Red Hat Enterprise Linux OpenStack Platform Director based on the Triple IO project of Red Hat, Inc.

For the installation and settings executed using the Command Line Interface (CLI) including other OSS, the Puppet and Chef are popular tools for auto building and auto setting of Linux servers. However, we selected the tool called Ansible, which is recently attracting attention, because of its capability of being used without installing software in the target server, for its simplified settings and for its variety of automatic settings.

In addition, we decided to automatically create the information input to these tools from the parameter design document. At the same time, we arranged

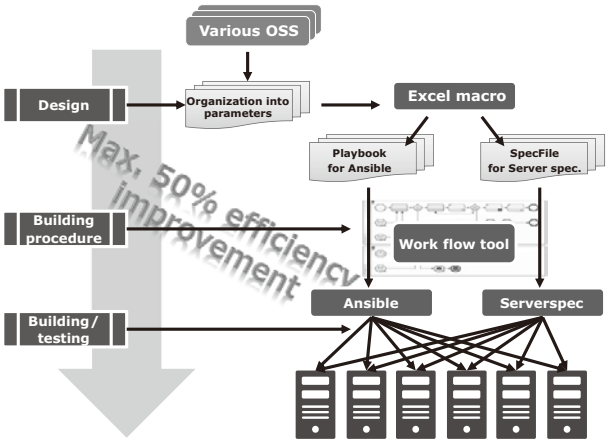

Fig. 4 Image of SI efficiency improvement.

the work required in the actual SI such as the tool usage procedure information, disk mounting and server re-launching that have to be executed manually, and produced a unique work flow tool for reducing the installation period (**Fig. 4**). The accumulated preparation achievements can reduce the number of items to be modified in each project so as also to enable reduction of the variance in quality depending on work skills.

2.3 Quick Response to "Need of touch"

Based on the fine tuning of the efficiency improvement tools and considering the SI and the results of their verification in actual machines, we are also tackling the PoC (Proof of Concept) environment for customers and developing a support environment for the training of our SI engineers.

In the PoC environment, we arrange the main setting in advance so that the customers can envisage the scenes of use and overlap them with their own business scenarios. It is also possible to check the functions of all of the block units, although this may be on a small scale, as well as to customize solutions according to the customer's request.

In the training environment, building of the cloud platform itself can be influenced by also covering the method of use of the efficiency improvement tools. From the arrangement to the design item check and the building procedure and post-building operation check, the factors required in the actual SI can be checked on the actual machines.

The key to the arrangement of such environments lies in the measures taken for the hardware-dependent part. Although the NEC Cloud System is multivendor-compatible, the demonstration on an actual machine is not possible with every piece of hardware. Also, even when different pieces of hardware are from the same vendor, measures supporting firmware and drivers are necessary depending on the models and hardware configurations. With regard to these measures, it is our intension that verification using the highly relevant hardware, the NEC Cloud System and by applying our accumulation of expertise and inherited achievements from already-introduced environments, will lead to a reduced introduction period.

3. Conclusion

In the above, we have described the measures required for delivering the NEC Cloud System to as many customers as possible. In order to achieve it, we examined the preparation of sales tools, efficiency improvement tools and environments applicable to PoC, etc. from the viewpoint of SI building.

The cloud platform implemented via the NEC Cloud System is IaaS. The global IaaS market has a high annual average growth rate of 19.8% (IHS Technology survey). When the survey target is limited to OpenStack, the annual average growth rate is as high as 31.9% (survey by Infiniti Research Ltd.). Because of the high potential of this market, we are also receiving an increasing number of inquiries from overseas customers. The future policy of NEC is to endeavor to improve the SI capability and to retain our commitment to be the first to deliver original technologies in the global market. We will respond to the expectations of those customers that wish to expand their businesses by employing cloud-based operations, instead of simply utilizing existing cloud services.

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