

NEC's Approach to Enterprise Cloud Computing

UENO Masayuki

Abstract

The cloud computing market is growing in the fields of consumer services and enterprise front-office task, with American IT vendors currently playing a leading role. On the other hand, by entering these fields at an early stage NEC is providing “Cloud-oriented Service Platform Solutions” designed to support mission critical enterprise systems. This paper introduces the concept of enterprise cloud computing utilization from the perspectives of its fundamental nature, solutions for enterprises and the technologies applied in its adoption.

Keywords

cloud computing, SaaS, PaaS, IaaS, data center, cost reduction

1. Introduction

More enterprises are positively considering the adoption of cloud computing. The currently provided services are mainly for consumers or front-office type jobs, but there are also high expectations for applications in the mission critical systems of enterprises. However, it is also a fact that many enterprises are still to be convinced that cloud computing is really useful and is a persuasive option from the viewpoint of management.

At NEC, we were among the first to implement the use of cloud computing in our own management system reform, and our experience and understanding of the fundamental nature of cloud computing issues are enhancing our ability to offer services and solutions to the customers. In this paper we will introduce the overall picture of our solutions for the use of cloud computing for enterprises.

2. The Cloud Services Market and NEC's approach

2.1 The NEC Concept of “Cloud-oriented Services”

A significant difference is found when we compare the cloud service to the conventional outsourcing method. With conventional outsourcing, the operations of the systems elaborated by user were consigned to data centers and the main purpose of this was to reduce the total system cost. On the other hand, the cloud services use previously prepared standard IT so they are able to present new benefits, such as speedy introduction, improved flexibility in addition to cost reduction.

For enterprise users, the implementation of the cloud system itself is not the main objective; the important point for them

What are NEC's “Cloud-oriented Services”?

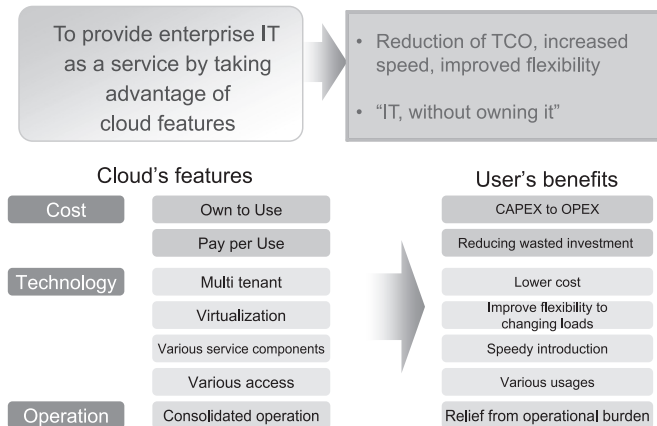


Fig. 1 Concept of “Cloud-orientated Services”.

is to benefit from the advantages of cloud computing by applying its features in their systems. At NEC, we adopted the term “Cloud-oriented Services” aiming at supporting enterprises in introducing an “IT, without owing it” by “providing enterprise systems as a service making use of cloud computing features” (Fig. 1).

2.2 Approach to Enterprise Cloud Computing

In looking at enterprise cloud services from the perspective of applications, there are the front-office, mission critical task and the back office activities as well as supporting the domains for starting new business fields. At NEC, we have begun to provide services for all of these areas under the name of “Cloud-oriented Service Platform Solutions.” Among them,

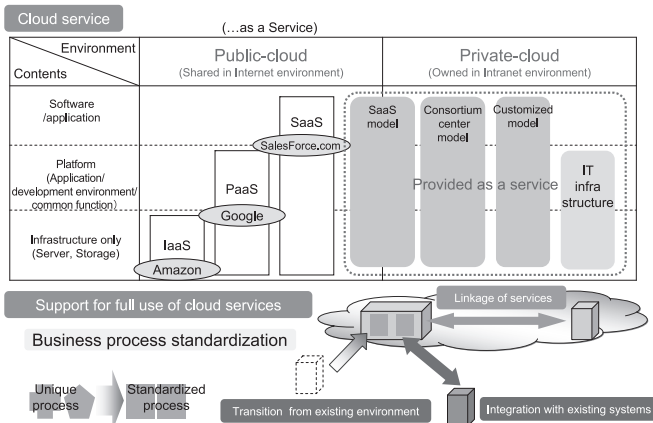


Fig. 2 NEC's approach to cloud-services for enterprises.

we began making application services for mission critical task and the new business fields from a very early stage (Fig. 2).

Enterprise cloud services can be roughly divided into the public cloud services (the system is shared in the Internet environment) and the private cloud services (the system is dedicated in an intranet environment). For the public cloud, American IT vendors provides services such as IaaS (IT infrastructure as a service), PaaS (services including infrastructure + software development/application/common functions) and SaaS (services that include applications). What is important in supporting the mission critical systems of an enterprise is to provide platform to ensure execution of transaction processing and to support mission critical systems. At NEC, we focus on the private cloud and prepare services for meeting its requirements. Usually, although the private cloud refers to the cloud environment built in the in-house data center environment of an enterprise, we also offer services from the NEC's data center to achieve "IT, without owning it." In addition to the SaaS model, we also prepare the consortium center model and the customized model to meet various requirements of enterprise systems (Fig. 3).

With the SaaS model, applications that have been prepared in advance are shared by multiple enterprises. It is also possible to share them within the enterprise group.

With the consortium center model, a system is shared by specific enterprises. Although such this model has already been used in bank accounting systems of regional banks, we have prepared a system applying the features of the cloud computing.

The customized model builds a dedicated environment for each enterprise. In fact, however, rather than being applied

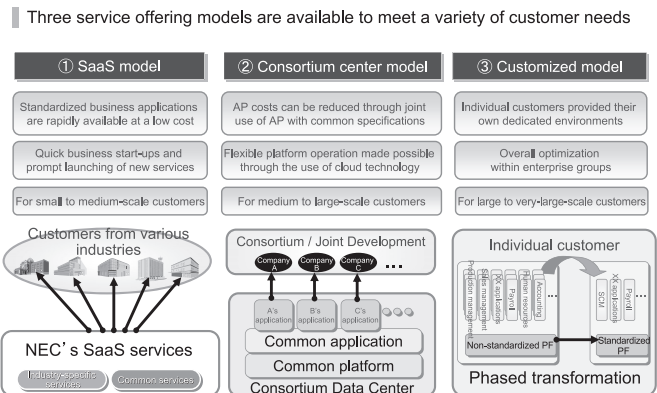


Fig. 3 Three service offering models.

simply to a single enterprise, it is applied to an enterprise with a large number of group subsidiary firms. This model serves to unify the previously diversified systems in sequence so that the entire group can benefit from the advantages of the cloud by sharing the unified system. This is the model that is currently put into practice by NEC in the reform of its own management system. NEC is currently advancing the building of a shared management platform for the whole group by standardizing the business processes and codes of its accounting, sales and purchasing operations. The accounting/sales/purchasing systems that used to belong to the group subsidiaries are transferred to the control of NEC's corporate head office in order to build an in-house cloud computing system and to thus implement "IT, without owning it," or Cloud-oriented Services in the group.

We have prepared a shared IT platform services (RIA-CUBE) and SaaS platform option (RIACUBE/SP) as general-purpose IT platforms capable of supporting private clouds (equivalent to IaaS or PaaS). If an enterprise requires an individual IT platform itself, we build one using the OMCS (Open Mission Critical System) technology that we have developed in our SI business (OMCS platform).

Services such as IaaS, PaaS or SaaS are not in themselves sufficient for an enterprise to put cloud services to actual use. The first topic to be considered is the standardization of business processes. This may sometimes be necessary to fill in the gaps between the standard processes offered by cloud computing and the unique processes of an enterprise. The second topic is the transition from the existing environment to the cloud environment, the third topic is the linkage between the cloud computing system and the current system used by the enterprise, and the fourth topic is the usage of new services that are

NEC's Approach to Enterprise Cloud Computing

made possible by connecting several cloud services. It is when these topics are approached in a comprehensive manner that the advantages of cloud services can be fully beneficial.

3. Cloud-oriented Service Platform Solutions

3.1 Concept

The current needs of enterprises include the coexistence of lean management under rapidly-changing and severe economic environments and the quick new business start up. Therefore, enterprise systems should be cost-saving, speedy and flexible. NEC has configured “Cloud-oriented Service Platform Solutions” by adding cloud computing features to the achievements that have been developed via our SI and outsourcing businesses. We are thus able to offer services for supporting the reform of enterprise management systems (Fig. 4).

The most significant feature of these endeavors is the capability, based on NEC’s recent experience of its own management system reform and offering total services from the data center to the business processes domain.

3.2 Service Offerings

The service offerings of these solutions includes business model consulting services for the support of business process reforms, applications services (SaaS, consortium center and customized models), shared IT platform services and other platform services (Fig. 5). In addition, we have also prepared special SaaS model services that can offer IT solutions

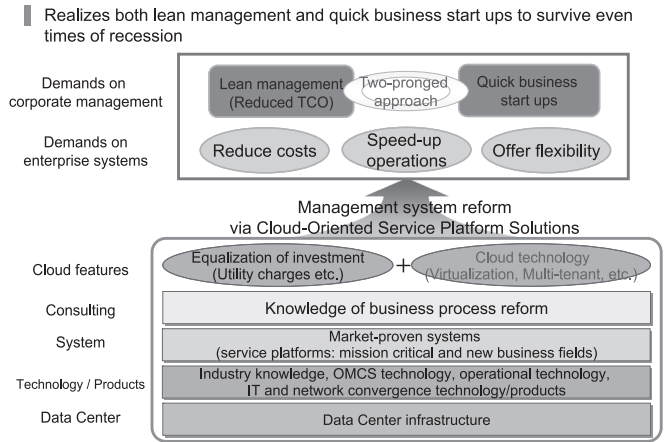


Fig. 4 Concept of Cloud-oriented Service Platform Solutions.

Business Model Consulting Services (Business Process Reform)	Application Services					
	Public Sector / Medical / Education	Financial Services	Media	Manufacturing	Distribution / Service Sector	
SaaS model	<ul style="list-style-type: none"> Local government mission-critical service Residence tax/pension e-file ASP service Construction Industry CALS ASP service Electronic application ASP service Electronic bidding ASP service GPRIME electronic library service Regional Medical Linkage Service (ID-LINK) e-Learning ASP service for educational institutions (I-Collabo) 	<ul style="list-style-type: none"> Leased assets information disclosure service Integrated Internet banking service MCS card ASP service 	<ul style="list-style-type: none"> Digital signage service (PanelDirector) 	<ul style="list-style-type: none"> Pharmaceutical regulation service Construction ordering service for construction industry (easyhousing) 	<ul style="list-style-type: none"> EC service RFID platform service (BitGate) Next-generation CRM service 	
Horizontal Services						
<ul style="list-style-type: none"> ERP Service (Accounting, HR, Payroll) (EXPLANNER for SaaS) Digital Signage Service RFID platform service EDI service (Purchasing Support [PLEOMART/PS], ordering and procurement support, order data collection and delivery) Staff Utilization Communication (Collaborative-ware [StarOffice X Series SaaS Service]) Security Marketing 						
SaaS model solutions for Small to medium-scale enterprises						
Consortium Center model	<ul style="list-style-type: none"> Local government mission critical service 	<ul style="list-style-type: none"> Bank operation BPO service Regional bank accounting service Credit guarantee service 		<ul style="list-style-type: none"> Construction industry mission critical service Cloud oriented Management System Consortium Center Service 		
Customized model	<ul style="list-style-type: none"> Customized services for each industry 					
Shared IT platform service						
<ul style="list-style-type: none"> Shared IT Platform Service [RIACUBE] SaaS Platform Option [RIACUBE/SP] 						
Platform Service						
<ul style="list-style-type: none"> Thin Client Service On-site outsourcing service On-demand Network Service Client management Service 						

Fig. 5 NEC Cloud-oriented Service Platform Solution Service Offerings.

- Expansion of the service solutions for front/peripheral, consulting and platform services by setting the “EXPLANNER for SaaS” mission critical services as the core.
- Fifteen service solutions are offered at present. This number will be increased to about 50 in the first half of FY2010

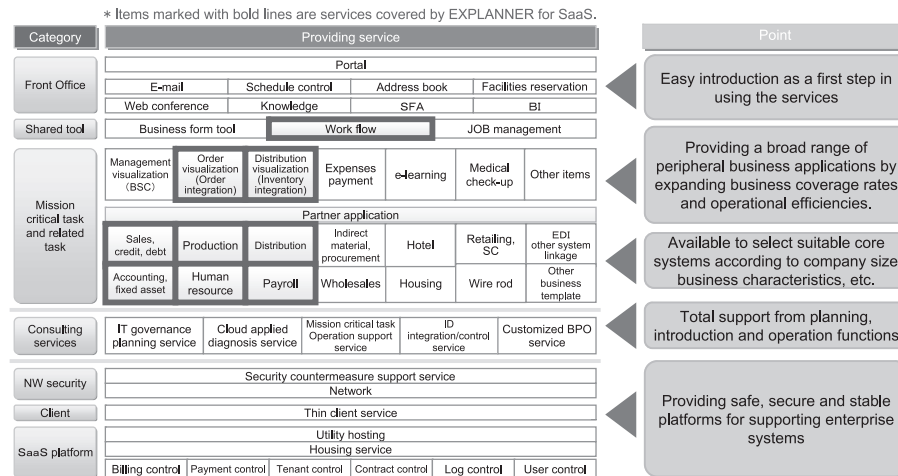


Fig. 6 SaaS model solutions for small to medium-scale enterprises.

as one-stop operations to small and medium sized enterprises (Fig. 6).

Our business model consulting services include not only reviewing business processes, based on experience gained from NEC’s own management system reforms, but also the unification of codes as the basis of group management efficiency improvement and the provision of global deployment assets for facilitating system deployment in group subsidiaries. We offer these functions as a methodology that leads directly to IT system reform.

With regard to the application services, the point is to develop the service offerings at an early stage, even for the mission critical tasks of enterprises and to provide it flexibly together with the service models. For example, we have started SaaS and consortium center model services for the mission critical tasks of small local governments with populations below a 100,000 (GPRIME for SaaS). With SaaS, we have EXPLANNER which has been implemented in a variety of small and medium private enterprises. Based on this, we have prepared “EXPLANNER for SaaS.” It covers production/sales management operations that have been regarded as being difficult to be implemented in SaaS, in addition to shared mission critical tasks such as human resources/payroll and accounting operations. Our achievements in SI business environments also make possible a model that provides a large-scale EC site as a service. In addition, we will also start to offer a

consortium center model service for accounting/sales/purchases operations based on the SAP system built into our management system reforms.

For small and medium enterprises, we cover a wide range of tasks including those associated with mission critical ones and industry-specific ones by placing the SaaS model ERP service (EXPLANNER for SaaS) as the core service (shown inside the thick frames in Fig. 6).

The services described above are expected to achieve cost reductions of 30% to 50% in terms of TCO (Total Cost of Ownership), introduction period reductions also of 30% to 50% as well as flexibility improvements thanks to the use of a common platform.

4. Technologies

4.1 System Building Technology

High reliability is required to support the mission critical systems of enterprises. At NEC, we build robust but flexible IT platforms/applications based on the OMCS (Open Mission Critical System) technology that we have cultivated in the fields of communications and financial industries. To reduce the system building period, we apply a mechanism called the “System Model,” which allows us to compile information on

NEC's Approach to Enterprise Cloud Computing

past building achievements into a data base and to reuse it. This mechanism is capable of reducing the platform verification/building period to about 1/10th of its initial estimation, e.g., (30 days to 3 days approx.)

4.2 IT/Network Common Platform

As in the age of cloud computing many IT and network resources will be concentrated at the data center, these resources need to be optimized from the viewpoint of data center operation as well as from environmental issues. At NEC, we are developing next-generation platforms that can use both IT and network resources globally in the context of REAL IT PLATFORM Generation 2. These new technologies are applied as early as possible in NEC's management systems for the purpose of comprehensively accumulating verifications.

4.3 Cloud-oriented Data Center

The NEC Cloud-oriented data center uses servers, storage capacity and network devices that are optimized for data center operation and designed for low power consumption. They are installed in facilities with environmentally friendly equipment.

In the age of cloud computing the data center is required to perform efficiently consolidated operation both of resources concentrated at the global level as well as for those that are dispersed globally.

At NEC, we provide integrated/centralized operation at the global level in order to ensure cost reduction and safe/secure

and high-quality operation.

These endeavors allow, for example, an enterprise deploying business globally to own a total-optimized management system platform without installing/running IT systems in its overseas bases.

5. Conclusion

It is critical in the use of cloud computing to comprehensively consider the features to be adopted, the items to be used as external services and how to achieve cost reductions, increased speed and flexibility improvements based on a full understanding of all the characteristics of the cloud (standardization).

At NEC we will continue to offer solutions for supporting the entire lifecycle management of the system via business process reform, innovation of IT departments, smooth transition from the existing environment to the cloud environment and step-by-step cloud implementation of mission critical systems based on the concept of "Cloud-oriented service."

On October 14, 2009, we opened a showroom called "NEC Cloud Plaza" as a venue for experiencing the cloud services (Photo). This facility demonstrates situations that we encountered in our management system reform work as well as in our actual SaaS services by accessing data centers inside and outside Japan. The plaza has already been visited by about 1,000 visitors from more than 300 enterprises in the half year since its opening. We hope that the readers of this report will have an opportunity to visit this facility.



Photo NEC Cloud Plaza.

Author's Profile

UENO Masayuki
Group Manager
Service Platform Systems Development Division
OMCS Operations Unit

The details about this paper can be seen at the following.

Related URL:

NEC Cloud Plaza:<http://www.nec.co.jp/solution/spfsl/cloud/plaza/>