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Commerce as a Service Solution Accelerates Transition to

E-commerce for Traditional Manufacturing Enterprises and Retailers

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Abstract: Using internet to operate business has become very important for traditional manufacturing enterprises and retailers. These enterprises are facing great risk when entering e-commerce due to lack of experiences and large volume of initial IT investment. This study analyzed the Commerce as a Service (CaaS) solution which can perfectly solve these problems. The solution is based on leading e-commerce platform and cloud computing technology, which provides small to medium sized clients with a low cost alternative e-commerce. Clients will be relieved of the responsibility of managing an IT shop while still maintaining full control over their site through business user tools.

Keywords: e-commerce, Commerce as a Service (CaaS), service model, cloud computing, Software as a Service (SaaS)

1. INTRODUCTION

While the internet becomes more popular and the distribution network rises fast, e-commerce has enjoyed an accelerating growth in the past few years. The importance of e-commerce has been recognized by more and more enterprises. Using internet to operate business has become very important for traditional manufacturing enterprises and retailers to increase their core competitiveness and to transform their operating models [1].

However, traditional manufacturing enterprises and retail enterprises don't have sufficient experiences of e-commerce. Coupled with the characteristics of internet technology itself, these enterprises are facing great risk when entering e-commerce. IT investment in the early stage is of the largest proportion and traditional enterprises usually lack the experience to build IT facilities. The requirement of these manufacturing enterprises and retail enterprises are relatively clear: They need solutions on mature e-commerce platforms to meet their needs at a relatively low cost and start the e-commerce business quickly. They also want to make full use of their partners' knowledge and experiences of operating e-commerce to reduce risk [2].

In order to meet the requirement of these manufacturing enterprises and retailers for platform and operation of e-commerce, the industry proposed e-commerce SaaS (Software as a Service) offering solution [3], [4]. This solution is based on leading e-commerce platform and cloud computing technology [5], [6]. Manufacturing enterprises and retailers are now trying to use mature e-commerce platforms to quickly enter the market and lay the foundation for future development, because they see that choosing mature platforms with strong technical strength is the best choice to avoid risk [7]. At the same time, they also reduce IT investment with new technologies and flexible financing means to transfer risk to partners or share risk with partners in order to reduce risk.

As CaaS solution is not only an attempt of cutting-edge IT technology like cloud computing, but also an innovation in business model, this paper will introduce the concept of CaaS with both sample system architecture and sample business scenario for how to run CaaS solution. It also shows industry applications and comparisons with traditional on-premise e-commerce solution.

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2.   SAAS AND CLOUD COMPUTING

2.1 Software as a service (SaaS)

Software as a Service is a model of software deployment where an application is licensed for use as a service provided to customers on demand. Normally a user of SaaS will not pay the traditional license fee for software usage, nor fund the IT team to perform the IT related work. Instead, the end user subscribes to the software service based on time used, revenue sharing or other policies. Normally the application delivers software services to multiple users in a limited number of application instances using a multi-tenant architecture. From business perspective, the cost structure will be totally changed; the capital will be changed to subscription fee or revenue sharing model.

For well-known SaaS providers — including Salesforce.com and Workday — the SaaS business model is the key to winning deals. Forrester's research indicates that many customers are interested in and considering SaaS solutions as alternatives to self-hosted software installations and perpetual-license models. North American firms have the highest adoption rates; Asia Pacific firms have the largest number of pilot projects; and European firms have shown significant interest in the topic.

2.2 Cloud computing

Cloud computing is a widely used technical term, which has many parallels to the Internet itself. The "Cloud" refers to a large number of computing resources which can be dynamically assigned and are provided "as a service" over the Internet in a scalable way. Cloud Computing refers to both the applications delivered as services over the Internet and the hardware and systems software in the data centers that provide those services [8]. The services themselves have long been referred to as Software as a Service (SaaS). The data center hardware and software is what we will call a Cloud. Due to many years' developing, the security of cloud computing can be well managed [9]. When a Cloud is made available in a pay-as-you-go manner to the general public, we call it a Public Cloud; the service being sold is Utility Computing. We use the term Private Cloud to refer to internal data centers of a business or other organization, not made available to the general public. Thus, Cloud Computing is the sum of SaaS and Utility Computing, but does not include Private Clouds.

Cloud is a strategic move of IT industry [10]. In China market, both the MNC (Multinational Corporation) like IBM, Google and Microsoft and local vendors like Kingdee, Ufida and AliSoft are aggressively moving into Cloud and SaaS business.

2.3 Commerce as a service (CaaS)

CaaS solution is the SaaS software delivery model through offering outsourced e-commerce services. The solution includes hosting e-commerce on the Cloud infrastructure in a data center and operating the services. Customers will use Web to access the services. The main goal of the CaaS solution is to provide small to medium sized clients with a low cost alternative e-commerce to the traditional enterprises. Clients will be relieved of the responsibility of managing an IT shop while still maintaining full control over their site through business user tools.

3.   CAAS SYSTEM ARCHITECTURE

3.1 Cloud infrastructure

The cloud infrastructure is a secure virtual IT infrastructure including database, storage, network, input/output device, some specific cloud computing tools and so on [11]. The cloud specialist will perform the virtual machine lifecycle management, infrastructure resource quota management and infrastructure monitoring, to control the usage of virtual machine for infrastructure resource including CPU, RAM, storage, internet or intranet network bandwidth, etc.

3.2 E-commerce instance

The e-commerce instance deployed on Cloud is a e-commerce platform with various capabilities as follows:

- Out-of-box functions like products catalog management, search, marketing campaigns, etc;
- Some customization/extension to the out-of-box features based on customers' requirements;
- Non-functional capabilities to achieve great performance and ensure security;
- Integrating to 3rd party services and existing systems;
- Ability to support every phase of the commerce cycle, i.e. buy, market, sell and service, across multi channel including physical store, web store, call center, mobile, social and so on;
- Administration tools with good usability for merchant admin with different roles

3.3 Operation application

In CaaS solution, operational support services, including provisioning, metering, monitoring and management, problem determination etc, and business support services like metering and billing are also needed. For example, as is shown in Diagram 1, a standalone application works as a simple business support system in CaaS solution. Customer account management provides UI and service for account manager to manage customer information. Offering management provides UI and service to manage the service provided by CaaS offering, e.g. base solution plus add-ons. Billing management will query and measure transactions amount for all completed online orders and generate the report.
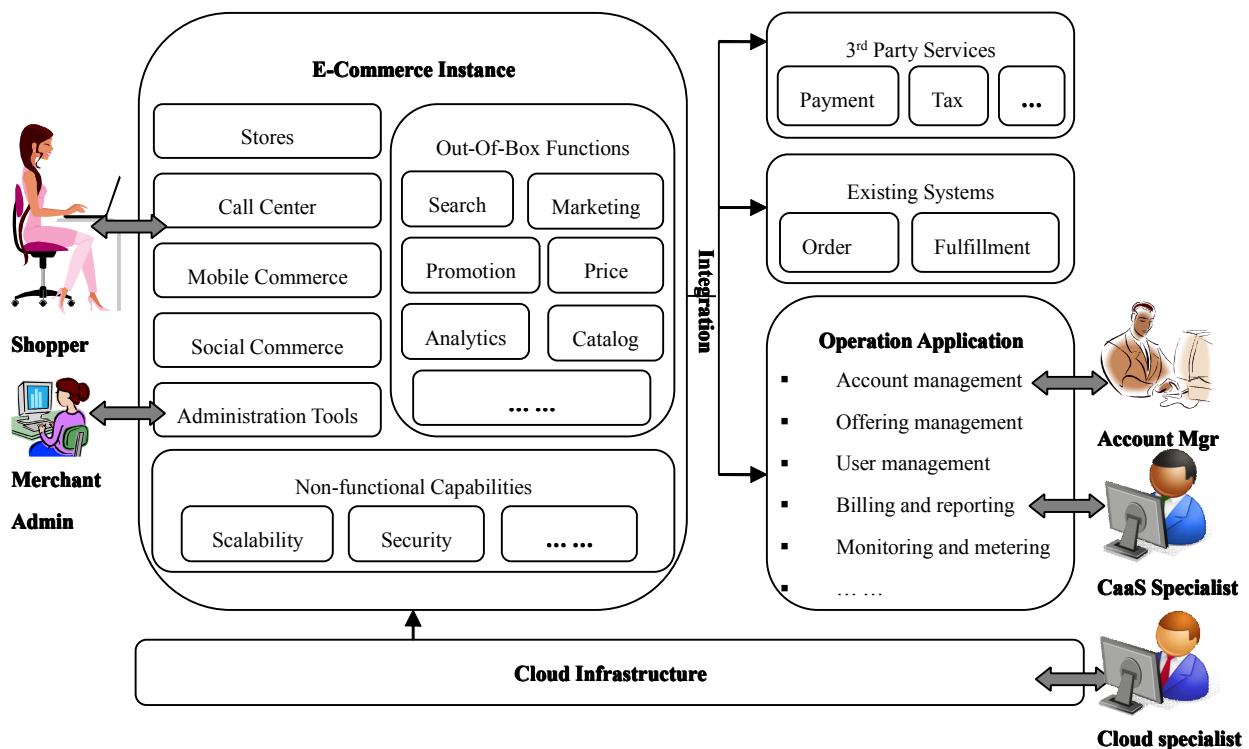
Diagram 1 System Architecture

4. CAAS BUSINESS SCENARIO

CaaS solution is not only an attempt of cutting-edge IT technology like cloud computing, but also an innovation in business model. Aspects like how to engage a customer, how to share both risks and revenue with partners, etc, need to be considered. Diagram 2 is a sample business scenario for how to run CaaS solution.

Business engagement stage usually includes business model identification, requirement investigation, gap analysis, etc. Then a contract is signed up between enterprise customer and CaaS solution provider,

documenting the service descriptions, roles and client responsibilities and so on. In the stage of customer onboard, an account for the new customer is created, with information like the subscription period, service levels, sizing and capacity planning requested by customer, such as number of CPU, memory, storage, network, etc. CaaS provider will then setup and configure the cloud infrastructure, customize the e-commerce package according to the requirement. Acceptance testing and soft launch will ensure the solution is ready to go. Once the e-commerce is up, enterprise customer can focus on running his online business activities, while the CaaS provider will run the IT operation, maintenance and support. The operation application will query and measure transactions amount for all completed online orders and generate the report as a basis for revenue sharing. Enterprise customer can request to add or reduce services according to their business requirement. CaaS provider will update the base solution accordingly.
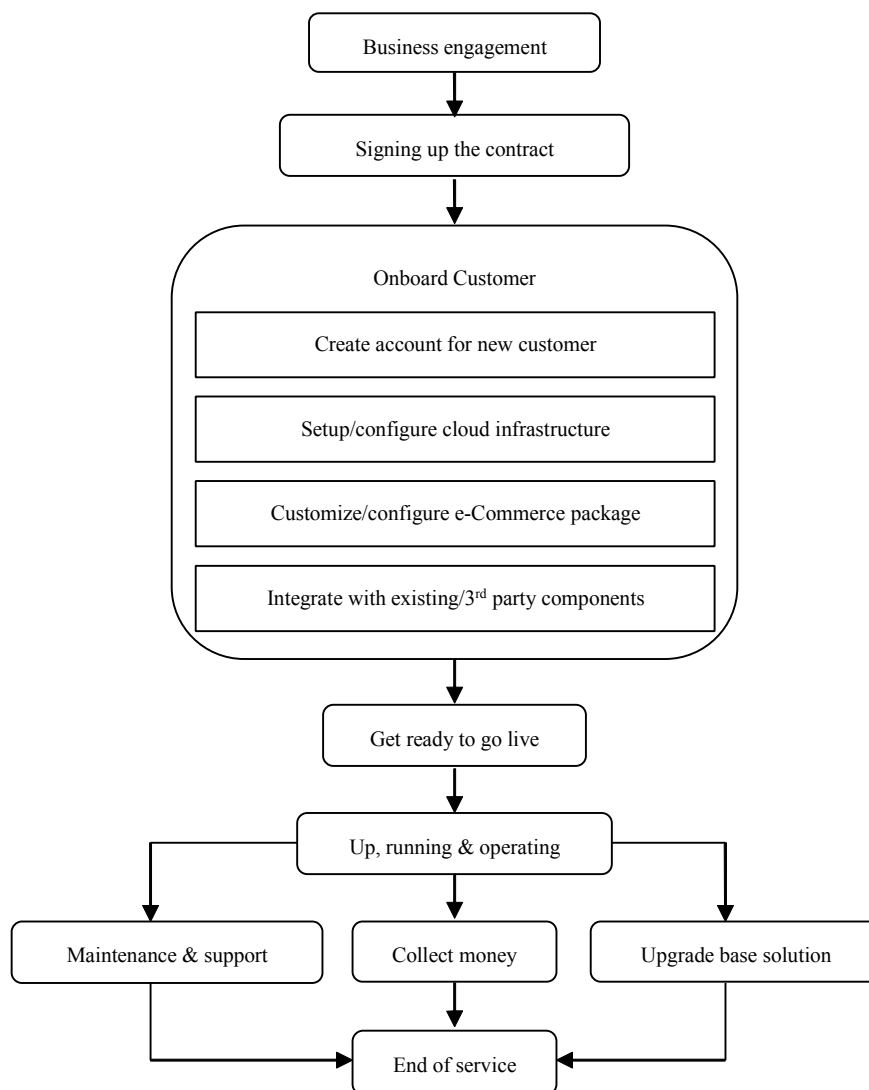
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                    ┌─────────────────────────┐
                    │   Business engagement   │
                    └─────────────────────────┘
                                │
                    ┌─────────────────────────┐
                    │  Signing up the contract │
                    └─────────────────────────┘
                                │
        ┌───────────────────────────────────────────────┐
        │              Onboard Customer                  │
        │   ┌───────────────────────────────────────┐    │
        │   │    Create account for new customer    │    │
        │   └───────────────────────────────────────┘    │
        │   ┌───────────────────────────────────────┐    │
        │   │   Setup/configure cloud infrastructure│    │
        │   └───────────────────────────────────────┘    │
        │   ┌───────────────────────────────────────┐    │
        │   │  Customize/configure e-Commerce package│   │
        │   └───────────────────────────────────────┘    │
        │   ┌───────────────────────────────────────┐    │
        │   │ Integrate with existing/3rd party     │    │
        │   │ components                            │    │
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    │ Maintenance &  │ │Collect money│ │ Upgrade base     │
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            └───────────────┼───────────────┘
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                    │     End of service       │
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Diagram 2 Overview of business scenarios

5. Applications

Currently, there are many could providers, but not many CaaS providers [12]. As a leading company for new technologies, IBM has invested a lot in this area. Building on extensive capabilities on Smart Commerce, Cloud expertise and Cloud collaboration networks, IBM is introducing IBM Commerce on Cloud, the industry's first integrated enterprise class e-commerce solution in the cloud that spans marketing, selling and fulfillment. On the

one hand, IBM Smarter Commerce helps organizations that are struggling to meet the rising consumer demands brought upon by rapidly changing digital marketplace, automate their buying, marketing, selling and service processes. On the other hand, it offers companies the benefits of cloud economies, such as low up front capital investment, pay-for-use models, and instant and ongoing scalability. Companies of all sizes can quickly set up and maintain an on-line storefront, deploy the same customer digital buying experience as the most advanced retail brands in the world.

6. Discussion

6.1 Compare CaaS solution with traditional e-commerce solutions

Compared to CaaS, traditional on-premise e-commerce solutions are targeted at enterprise customers who request much more customization could tolerate longer time to market and are able to afford much more up-front investment in customization service, hardware as well as software. They also have their own IT staffs to operate the e-commerce services. Instead, CaaS offers a relatively standard offering with tailored capabilities. When enterprises request advanced capabilities and more differentiation through advanced customization, they can migrate to on-premise traditional model from CaaS.
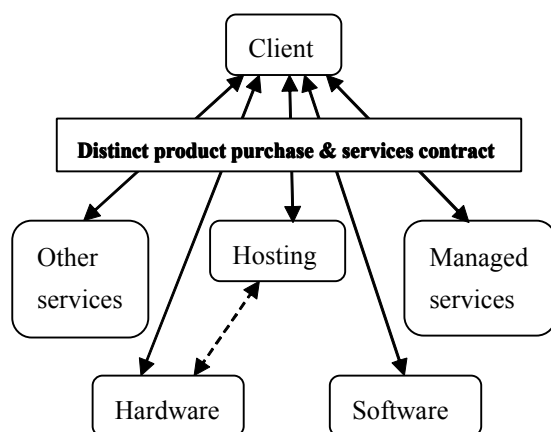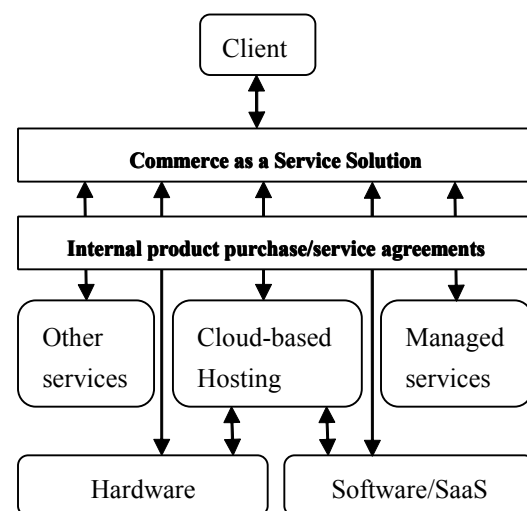
Diagram 3 Traditional on-premise solution   **Diagram 4 CaaS Solution**

6.2 Benefits of CaaS solution

Compared with traditional approaches, the CaaS solution provides below differentiated values:

• A mature e-commerce platform. A mature platform can reduce the system construction risk, and makes use of abundant e-commerce practices.

• Low cost to construct the system. When the future remains unclear, enterprises can construct electronic commerce which can meet their own needs with minimal investment.

• Fast on-line. Complete the implementation of e-commerce in a short time, and start e-commerce operation quickly.

• No investment on system operation. Partners are responsible for the operation investment of the electronic commerce system. The enterprises do not need to invest special resources and can focus on business.

• Thorough e-commerce ecosystem and professional e-commerce consulting. CaaS can help enterprises to build a whole e-commerce ecological system to integrate logistics, internet marketing, statistics and analysis, and cooperate with e-commerce business partners.

• Stable IT support system. The support system can meet the demands of different business in different

periods. Resources can be distributed according to different needs.

7. Conclusion

It has become not only important but also urgent for traditional manufacturing enterprises and retailers to transform their business models to e-commerce to increase their core competitiveness. However, due to their deficient experiences for e-commerce and big initial investment on IT facilities, these enterprises face many technical barriers and large investment risk. The industry proposed commerce as a service solution to host e-commerce on the Cloud infrastructure in a data center and offering outsourced e-commerce services, which is a dramatic step forward in enabling companies to transform their business to e-commerce. Companies of all sizes can now benefit both the value of cloud computing, no investment on hardware and software, lower entry barrier, time to market and limited up-front fee, and the value of world class e-commerce package to deliver a better client experience by providing personalized marketing, selling the way customers want to buy, and delivering products through a supply chain that's prepared for the unpredictable.

REFERENCES

[1] Delfmann W, Albers S, Gehring M. (2002). The impact of electronic commerce on logistics service providers. International Journal of Physical Distribution & Logistics Management, 32(3):203-22

[2] Yao T X, Xu Y H, Liu S X. (2011). Research of Cloud Computing in Small Medium Enterprises Application. Computer Knowledge and Technology, 7(14):3328-3329 (in Chinese)

[3] Cai H, Zhang K, Wang M M, Li JL, Sun L, Mao X S. (2009). Customer centric cloud service model and a case study on commerce as a service. IEEE International Conference on Cloud Computing, 57-64

[4] Cusumano M. (2010). Cloud computing and SaaS as new computing platforms. Communications of the ACM, 53(4):27-9

[5] Buyya R, Yeo C S, Venugopal S, Broberg J, Brandic I. (2009). Cloud computing and emerging IT platforms: Vision, hype, and reality for delivering computing as the 5th utility. Future Generation computer systems, 25(6):599-616

[6] Sun C. (2012). Research of E-Commerce Based on Cloud Computing. Advances in Computer Science and Information Engineering, 15-20

[7] Qiao W B. (2010). The Lacks of Cloud Computing Applications and Recommendations for Improvement. Computer Knowledge and Technology, 6(16):4581-4582 (in Chinese)

[8] Armbrust M, Fox A, Griffith R, Joseph A D, Katz R, Konwinski A. (2010). A view of cloud computing. Communications of the ACM, 53(4):50-8

[9] Ramgovind S, Eloff M M, Smith E. (2010). The management of security in cloud computing. Information Security for South Africa (ISSA), 1-7

[10] Deed C, Cragg P. (2012). Business Impacts of Cloud Computing. Cloud Computing Service and Deployment Models: Layers and Management. IGI Global

[11] Dikaiakos M D, Katsaros D, Mehra P, Pallis G, Vakali A. (2009). Cloud computing: Distributed Internet computing for IT and scientific research. Internet Computing, IEEE, 13(5):10-3

[12] Liu T. (2011). E-Commerce Application Model Based on Cloud Computing. International Conference on Information Technology, Computer Engineering and Management Sciences (ICM), 1:147-150