



BPM and SOA

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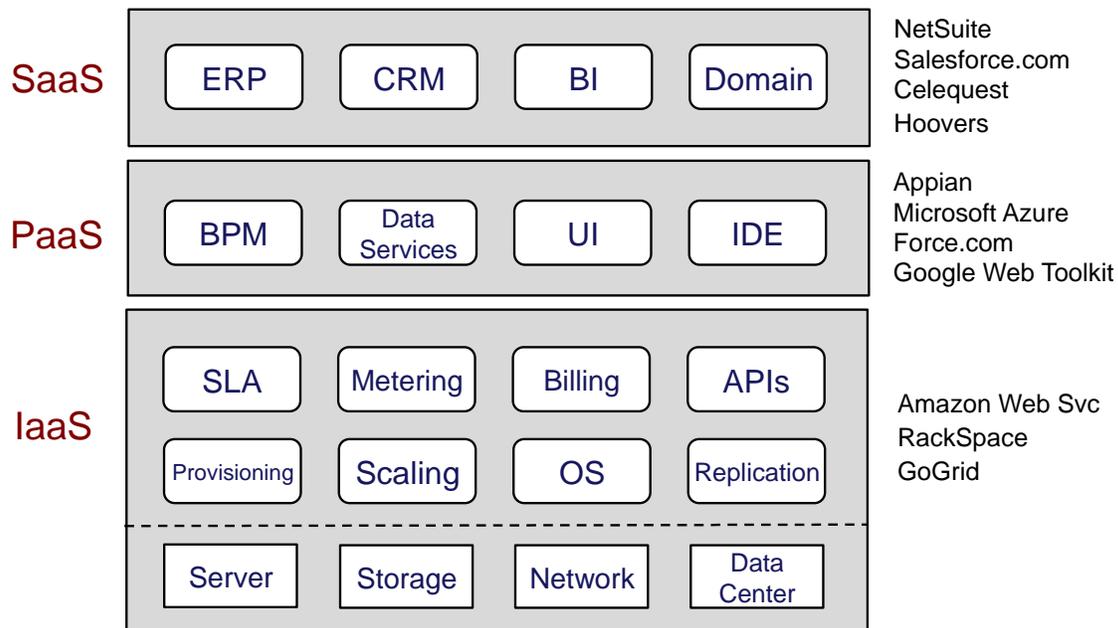
SOA and the Cloud

The cloud is all the rage this year, so not to be left out, I thought I better write something about it. Once you get past the 'cheaper, faster, better' hype, one of the common themes is the apparent synergy between the cloud and SOA. Well duh! The cloud is all about making IT resources available as services, and Service Oriented Architecture is all about creating solutions with service building blocks. In this Column I take a little more critical look at this connection. Let's start with some (of my) definitions:

"SOA is an *architectural approach to developing solutions* where a 'service' is the main concept of analysis, design, implementation, deployment, and operations". To get the most benefits from SOA, it is best done at a scope that spans organizational boundaries. Service designs must incorporate both business and information requirements.

"The cloud is a *deployment and sourcing model* for IT resources, which are provided as services." There are three categories of services that are generally recognized when discussing the cloud, as illustrated in Figure 1:

- IaaS – Infrastructure as a Service is the delivery of computing infrastructure - such as hardware, storage, application environments - as a service. Or as many have ironically pointed out " Even hardware is software now".
- PaaS – Platform as a Service is the delivery of a computing platform and solution stack, including all of the capabilities to support the complete life cycle of delivering web applications and services, entirely from the Internet.
- SaaS – Software as a Service is the delivery of business or application functions, structured as services, typically provided on demand and billed on a usage basis. SaaS is perhaps the most common form of cloud services. For example, the SaaS Showcase (<http://www.saas-showplace.com>) lists hundreds of different vendors in 50 different application categories with services available today.



Original Source: Gerhard Bayer, ISG, Inc.

Figure 1 - Cloud Service Categories

So, SOA is an architectural style where a service is the fundamental unit of thought. SOA depends on the architectural principles of separation of concerns, distribution of responsibility, cohesion, and coupling to break solutions into modular, deployable units of function and information. The cloud depends on these architectural principles of service, where there are three primary types of resources being modularized as services; logic, platforms, and infrastructure. In other words, if done right, the cloud is both an example of SOA, and a perfect platform for SOA.

SOA and the cloud share common fundamentals. The implication for the cloud is that the same service design principles that make a good SOA service need to be applied to a cloud service: well defined interfaces, loose coupling, proper decomposition, common semantics, etc. Unfortunately, just like many SOA designers don't really understand this, many cloud service designers don't either. So buyer beware. Make sure the services you're getting are well designed, implemented, and operated. Now the question is where do these cloud services fit into an overall SOA approach?

I've written extensively about SOA Services in other BPTrends Columns. In particular, see 'What Kind of Service Does a Business Process Need', June 2006, 'SOA Service Usage Types', November 2007, and 'Collaborative Business Applications: Part I', November 2008. In those Columns, I presented the hierarchy of service types show in Figure 2. I explained that the activities of a business process are implemented by operations on a (large granularity) business service, and that a business service is composed of medium domain services and smaller utility services. Furthermore, services are a combination of their interface, which is what we know about and how we use a service, and their implementation, which is how the service implements its functions and information. There are several possibilities for that implementation, including integration with existing systems (using an integration service), custom code, or externally as in the cloud.

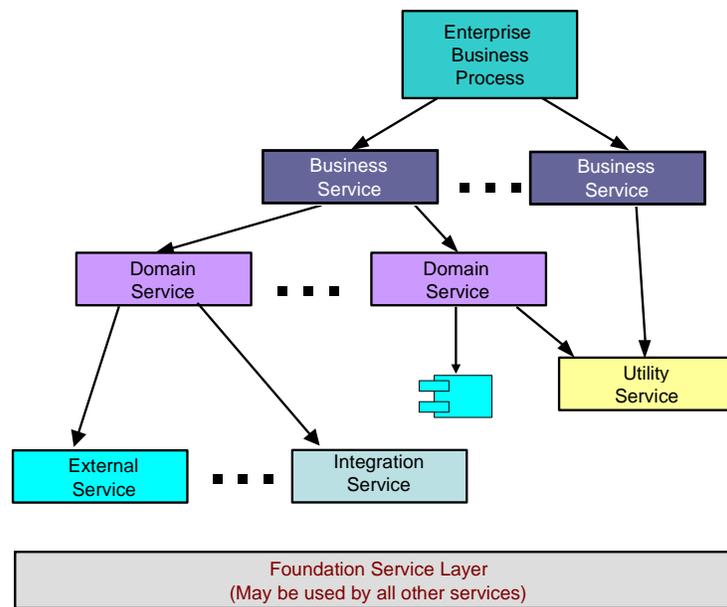


Figure 2 - Hierarchy of Service Types

A SOA solution should be expected to integrate cloud based services as well as on-site services, to support business processes. In addition, it should easily be possible to provision your own service on a cloud infrastructure, or to use cloud based platforms for development. Like anything else, there are good ways to do this, and not so good ways, so some implementations will have more problems with security, performance, reliability, and accountability than others. But this will be a failure of the implementation, not of the cloud or SOA.

When we superimpose the cloud categories and service types, we get Figure 3 which illustrates the relationship of the service types to their cloud sourcing options. For example, external services, including business, domain, and utility services can come from cloud SaaS providers. There are cloud services that even provide entire business processes, although it is not likely that they can be made to utilize services from your SOA infrastructure.

From a development perspective, we could use a PaaS BPM tool to create business processes, or a PaaS Integrated Development Environment (IDE) to create custom services. And from an infrastructure perspective, we could use an IaaS platform to provision any custom services that we create.

In addition, there are many functions provided by enterprise infrastructures, such as communications and collaboration, that are also available from the cloud and that fit into our overall SOA / Cloud perspective.

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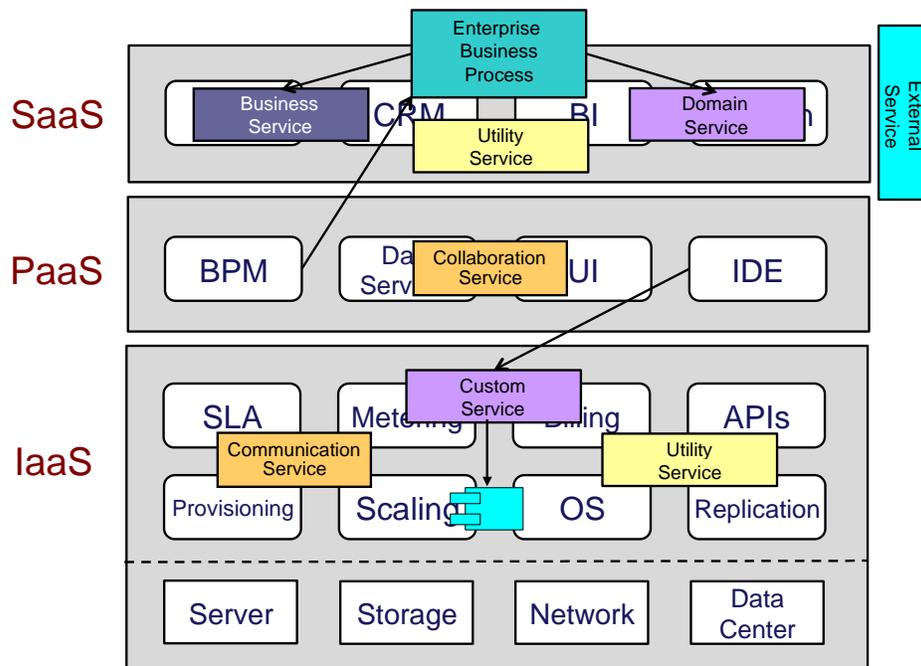


Figure 3 - SOA Service Provided by the Cloud

So the options are many. But here's the sticking point...the big IF. "If done right" means that organizations adopting the cloud need to take an 'architecture first' approach to what they're doing. The potential for building newer, faster, in-the-cloud application silos is tremendous, and the challenges of integrating these applications at the business process level are daunting. Then there are the thorny issues of security, management, governance, etc. A particular concern for the combination of SOA and the cloud is the issue of integration. That includes integration at the information semantic level, the functional level, and the operational level. As architects, we must not only understand the relationship of SOA and the cloud, but we must shape it so that it adds value to our enterprise, rather than complexity, cost, redundancy, inconsistency, or risk.