



Public Cloud Target Models



Part 4 of 8 – Application Hosting and Cloud Strategy



This is part 4 of an introductory series of documents intended to assist your organisation in defining your Application Hosting and Cloud Strategy. Your organisation may already have such a strategy, in which case these documents will hopefully confirm you are on the right track or they may identify challenges your organisation faces.

Public Cloud Target Models

From a top-down perspective there are 4 main models for public cloud deployment:

1. **IaaS Only:** This is where Public Cloud IaaS services are used to host virtual servers covering the application stack in much the same way they are in a traditional on-premise virtualised environment. This mainly consumes 'compute' services;
2. **Combination of IaaS & PaaS:** As above but includes elements of the solution deployed on PaaS services, for example the database layer being deployed on Azure SQL Database. This allows for consolidation of some layers and reduces the number of VMs required;
3. **SaaS:** Where the whole infrastructure stack is managed by the provider. There is some overlap with a particular style of PaaS where the service provides a development platform on which specific solutions can be developed (e.g. Pega). For the purpose of the target models these fit into this SaaS category;
4. **Cloud Native:** In this model applications are built natively in the cloud using common services¹, mostly built on PaaS and capable of leveraging many of the auto-scaling features associated with cloud deployments. In this model, solutions do not have hard borders between them, instead solutions are made up of loosely coupled "microservices".

¹ For the purposes of this document a "common service" is defined as something that can be consumed by many solutions and is built to prevent having to re-invent the same functionality or service again and again. A good example would be mapping or Geo services.

These models vary in terms of how they will contribute to the benefits and challenges introduced previously.

Target model potential to realise benefits				
Benefit	IaaS Only	IaaS+PaaS	SaaS	Cloud Native
Increased agility	Low	Medium	High	High
Consumption based delivery	Medium	Medium	High	high
Elasticity	Low	Medium	High	Medium
TCO and Opex smoothing	Low	Medium	Medium	High
Accessibility	Low	Low	High	High
Innovation and Currency	Low	Medium	High	High
Sustainability	Medium	High	High	High
Visible and contractual SLAs	High	High	High	High
Portability	High	Medium	Low	Medium
Target model potential to exacerbate challenges				
Risk	IaaS Only	IaaS+PaaS	SaaS	Cloud Native
IT Operating Model	Medium	Medium	Medium	High
Security and Compliance	Medium	Medium	Low	Low
Service assurance	Low	Low	Low	Low
Performance	Medium	Medium	Low	Low
Financial	Medium	Medium	High	High
Integration	Low	Low	High	Medium
Vendor lock-in	Low	Medium	High	Medium

Benefit levels:

- Low - Provides some benefits versus non-cloud environments. Needs a significant amount of human interaction to derive full benefit;
- Medium - Provides significant benefit versus non-cloud environments. Some automation built in;
- High - Provides the most benefit versus non-cloud environments. Most processes are automated.

Challenge severity:

- Low - Little additional deployment challenge versus on-premises environments. Challenge can be mitigated to a significant extent or entirely;

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- Medium - The challenge of moving to the cloud is significant OR difficult to mitigate;
- High - The challenge of moving to the cloud is significant AND difficult to mitigate.

Key observations:

- “IaaS only” offers the least opportunity to realise benefits;
- SaaS and Cloud Native models are most likely to realise benefits;
- The capability to realise benefits associated with SaaS depends on the relative maturity of a given SaaS offering, many services are described as SaaS but due to the way they are deployed they are closer to managed services which are not able to leverage cloud benefits. A simple maturity measure could be applied during selection, see Section **Error! Reference source not found.** for example SaaS maturity measures;
- The inclusion of the “Combination of IaaS + PaaS” option would require the definition and deployment of a “virtual data centre” in the cloud that provides the networking, monitoring and security framework in which to deploy IaaS components;
- Cloud Native represents the biggest challenge to many IT Operating Models, mainly because this is a major departure from the traditional application model and requires a mature Dev/Ops function.

Principles	Many organisations will not consider IaaS Only models of application deployment in the Public Cloud (as benefits are more difficult to derive) but will consider IaaS deployment where PaaS services (e.g. Storage, Database) are consumed alongside to consolidate and simplify the application stack.
	The organisation will define and deploy a “virtual data centre” in Microsoft Azure, AWS, IBM Cloud etc (comprising of virtual network, monitoring and security frameworks) to host IaaS components and integrate with on-premise.
	The organisation will measure the maturity of SaaS offerings during selection to ensure that the way they are deployed and consumed leverage cloud benefits.
IT Organisation Implication	Your organisation’s IT function will need to establish a Dev-Ops capability to develop & manage Cloud native deployments.

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