**[Infrastructure as a Service](http://www.interoute.com/vdc) (IaaS)**

[Infrastructure as a Service](http://www.interoute.com/vdc) (IaaS) provides access to computing resource in a virtualised environment across a public connection, usually the internet. In the case of IaaS the computing resource provided is specifically that of virtualised hardware, in other words, computing infrastructure. The definition includes such offerings as virtual server space, network connections, bandwidth, IP addresses and load balancers. Physically, the pool of hardware resource is pulled from a multitude of servers and networks usually distributed across numerous data centers, all of which the cloud provider is responsible for maintaining. The client, on the other hand, is given access to the virtualised components in order to build their own IT platforms.

In common with the other two forms of cloud hosting, IaaS can be utilised by enterprise customers to create cost effective and easily scalable IT solutions where the complexities and expenses of managing the underlying hardware are outsourced to the cloud provider

The following are salient examples of how IaaS can be utilised by enterprise:

* Scalability; resource is available as and when the client needs it and, therefore, there are no delays in expanding capacity or the wastage of unused capacity
* No investment in hardware; the underlying physical is set up and maintained by the cloud provider, saving the time and cost of doing so on the client side
* Utility style costing; the service can be accessed on demand and the client only pays for the resource that they actually use
* Location independence; the service can usually be accessed from any location as long as there is an internet connection and the security protocol of the cloud allows it
* Physical security of data centre locations; services available through a public cloud, or private clouds hosted externally with the cloud provider, benefit from the physical security afforded to the servers which are hosted within a data centre
* No single point of failure; if one server or network switch, for example, were to fail, the broader service would be unaffected due to the remaining multitude of hardware resources and redundancy configurations.  For many services if one entire data center were to go offline, nevermind one server, the IaaS service could still run successfully.

**Public Cloud**

The most recognisable model of cloud computing to many consumers is the [public cloud](http://www.interoute.com/vdc) model, under which cloud services are provided in a virtualised environment, constructed using pooled shared physical resources, and accessible over a public network such as the internet. Public clouds, however, provide services to multiple clients using the same shared infrastructure.

Public clouds are used extensively in offerings for private individuals who are less likely to need the level of infrastructure and security offered by private clouds. However, enterprise can still utilise public clouds to make their operations significantly more efficient, for example, with the storage of non-sensitive content, online document collaboration and webmail.

The public model offers the following features and benefits:

* Ultimate scalability; cloud resources are available on demand from the public clouds’ vast pools of resource so that the applications that run on them can respond seamlessly to fluctuations in activity
* Cost effective; public clouds bring together greater levels of resource and so can benefit from the largest economies of scale. The centralised operation and management of the underlying resources is shared across all of the subsequent cloud services whilst components, such as servers, require less bespoke configuration. Some mass market propositions can even be free to the client, relying on advertising for their revenue.
* Utility style costing; public cloud services often employ a pay-as-you-go charging model whereby the consumer will be able to access the resource they need, when they need it, and then only pay for what they use; therefore avoiding wasted capacity
* Reliability; the sheer number of servers and networks involved in creating a public cloud and the redundancy configurations mean that should one physical component fail, the cloud service would still run unaffected on the remaining components. In some cases, where clouds draw resource from multiple data centres, an entire data centre could go offline and individual cloud services would suffer no ill effect. There is, in other words, no single point of failure which would make a public cloud service vulnerable
* Flexibility; there are a myriad of IaaS, PaaS and SaaS services available on the market which follow the public cloud model and that are ready to be accessed as a service from any internet enabled device. These services can fulfil most computing requirements and can deliver their benefits to private and enterprise clients alike. Businesses can even integrate their public cloud services with private clouds, where they need to perform sensitive business functions, to create hybrid clouds

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