Chapter 6
Cloud Build Methodology

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ABSTRACT

The cloud build methodology chapter provides an introduction to the build methods for hybrid clouds. It does this by first introducing the concept of a hybrid cloud and the different types of services provides by clouds. It then overviews the components of hybrid clouds and how these components get incorporated into the design. It takes a brief look at the cost drivers with building a cloud to provide background with design decisions to be made. With the background on the design, it takes the reader through the build of a hybrid cloud and how automation can be used to reduce the cost. Lastly, it takes a brief look at a possible direction of cloud builds.

INTRODUCTION

The idea of computing being viewed as a utility is not new, the fact we now call it cloud is symptomatic of the maturity level the idea has now reached. As with any new technology, with greater uptake comes maturity and with maturity comes the beginnings of standardisation of design. This was seen with the electrical supply industry. In that industry's early days, there were no standards around type of current, connector or even voltage. Companies and households - collectively referred to as consumers - saw the benefit of electricity over gas or in house coal burning to drive manufacturing engines, but they had to decide which electricity company to follow. This meant picking a voltage, current type - Alternating or Direct - and if they were offered it at all, a connector for their lights and machines. At the time, lights and electrical based equipment was comparatively more expensive than it is now largely due to the different standards employed by the various suppliers. Even now, light bulb manufacturers still need to account for many different connector options. Slowly, the consumers and the machinery suppliers to those consumers, moved to Alternating Current (mainly because of the electrocution risk with direct current – if a person grasps a cable that is carrying direct current there is the risk that the muscles will contract and not release) and on standard voltages and connectors - at least at a country level. So that today the electric industry has standardised on current and voltage. Although variances with voltage still occur between countries.

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Cloud is still in the phase of consumers needing to make a decision about the type of cloud technology to use with the very real risk that they will need to change in the near future as the industry moves down a different tack. Fear not though, a modular approach to design and build can reduce the risk.

An example where significant variances still exist in our electrical supply are with connectors. Whilst household and commercial power connectors are standardised within each country, light bulb connectors or sockets vary. There is the Edison screw, the bayonet fitting and then there are different sizes of each. This has driven a modular approach to light bulbs with manufacturers building bulbs in two parts, the top being the light emitting part and different bases for connection to different types of sockets.

Like the electrical supply industry, it is based upon, clouds can also be carefully designed in a modular fashion to allow for changes to be made without complete re-designs. This chapter will give you the tools you need to make the decisions about what design is right for your requirements and how you can safely ride the current of cloud to its future standard.

BACKGROUND

There are several different types of cloud. Each type has its own design requirements.

Public Cloud

As with most new technologies, they evolve and change as new uses become available. The initial concept of cloud computing was along the lines of a power supply model. At it's most fundamental, a power supply model has one or more power generators, a distribution network and a means of measuring a user's usage. This is not dissimilar to the model initially conceived for cloud computing. One or more central data centres housing all the compute power, a distribution network (the internet) to allow users to access the compute power and user access controls with metering to measure user usage. This is what we today call Public Cloud computing.

Private Cloud

With a Public Cloud model, users log in through the internet to a computing environment that is shared with other users. The extent of sharing being in part a factor of the supplying company and also the amount of segmentation the user requests (and is willing and able to pay extra for). Although Public Clouds were the original vision of cloud computing, other models have evolved for specific requirements. The first of these is what is referred to as a Private Cloud. This is like having your own generator in the power supply analogy. Like its analogy, this requires the owning party to provide all the infrastructure to provide this capability. It is typically used by large enterprises who have requirements that fall in to one of more of the following areas:

- Dedicated infrastructure,
- Security requirements or concerns,
- Data sovereignty requirements and no available public cloud in country or state,
- Legacy systems requiring cloud systems to be physically co-located due to latency or bandwidth issues, and