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Modernise and prosper: It's time to imbibe server orchestration

Live long by transporting what you know to a virtual environment

Server farm deployment used to be a simple enough process. Sometimes it was manual, sometimes it was automated. The odd shell script here or there, or some basic file manipulation was the order of the day along with PXE and other automation tools. It was workable at best.

As virtualisation technology matured, so did the automation of virtual deployments. Virtualisation gave access to accelerated deployment tools and techniques such as deployment from templates and cloning. An administrator could do a bit of post-deployment batch scripting, but that was usually the limit of modification without jumping through hoops.

Fast forward to the last few years and cloud and elastic compute have driven automated deployment to new levels of efficiency and ease. The administrator of old needs to reskill and understand that the days of performing manual deployments are almost over.

Orchestration and workflows are the new way forward for all but the smallest of enterprises. To be clear, to fully utilise an orchestration solution and see the returns, a company needs to be of a certain size and do more than a few deployments a week. Orchestration comes into its own when you have hundreds or thousands of virtual machines per week

Just about every cloud offering has orchestration capabilities. But what is orchestration exactly?

A good working definition is something which describes a way to automate the management of systems, software and services. The key words here are “automate” and “management”. Put simply, orchestration is the process of automating server builds, but taking the process further and building business logic and intelligence into the deployment.

Orchestration can also mean less paperwork and less manual interaction. A good example of this is in a well-configured orchestration environment, where all the requirements to stand up a server (IP pools, DNS entries and such) are all available ahead of time. Not having these potential bottlenecks can slash provisioning time from days to hours, or even quicker.

A very positive effect of automation is that it’s less prone to human failure and is flawlessly consistent in deployment. Humans make errors. Orchestration deployments may fail, but that is usually because some subsystem is broken rather than being the fault of the deployment itself – or some badly factored code, of course.

A good example of orchestration in use is providing the ability to self-provision. Within an orchestration-enabled organisation, approved users such as project managers or nominated staff should be able to utilise a self-service portal. This portal should allow them to select the type of server desired from a well-stocked service catalogue. Any customisation required can then be added, such as being able to take the default specification for a virtual server and modify it by adding additional CPU, memory or disk capacity as needed.

Orchestration isn’t solely used for machine deployment. It can be used to offload service catalogue items such as power cycles, snapshot requests, passwords resets and such like from the IT service provider to local administrators or team leaders, for example. Such tools are critical in a multi-tenanted environment.

Underlying orchestration logic can also be configured to simplify complex issues that tend to consume precious admin cycles. An example of such an issue in a large environment is that the virtual machine requester may well not know which VLANs are required. It is understandable, as they are not system admins.

Some orchestration environments get around this issue by allowing a requester to mimic existing server network settings. Logic can be built into the workflow to restrict the available machines based on type. An example would be that a Postgres DB server shouldn't be able to live on the same VLAN as the webservers, for obvious infosec policy reasons.

Digital fuel for you, too

This request can then be submitted and a fully built virtual server should hopefully be built and deployed as requested. Other clever orchestration workflow features include the ability to set limits so that the requester can't get too greedy and request multiple terabytes of disk space for a basic server. If a server request (meaning things like CPU, RAM or disk space) is above a pre-determined limit, logic can ensure that the request can be sent to a more senior person for approval. Such logic can be very useful if the company in question has a chargeback model at work.

This is partly why vendors such as VMware are gobbling up companies such as DigitalFuel, to incorporate accurate costings for the virtual machine costs based on real-world hardware costs and overheads. This is especially useful in a chargeback model.

Whilst this may sound like something that a basic portal could do, the real secret sauce is that in a well-created orchestration system, the back end of the orchestration system will also handle jobs such as adding the server DNS entries, IP address and CMDB (system configuration databases). The orchestration logic is simple enough.

The interesting part is how orchestration logic is married to the business logic. The two most difficult parts of setting up an orchestration system are getting the system to work well with third-party systems and getting the business logic just right. Once done, however, it pays dividends in cost of deployment and lower management overhead.

Hopefully, by now you are convinced that orchestration is a useful tool. The big question is how this affects you, as the system administrator. In small companies that stand a handful of servers per month, not a lot. Those of you that work for service providers or larger companies, however, need to get on board with orchestration.

Working within an organisation, I have seen jobs that consumed most of the day for a staff member and two at peak times (deployments) become fully automated. The workload dropped by a good 80 per cent. There will, of course, always be exceptions to the rule, which are not automated for whatever reason – usually involving very complex and specific designs, as well as deployment of pre-packaged machines, such as OVF deployments.

So, my fellow admins, it is time to get ahead of the curve rather than be left behind. There is exceptionally good money to be had if you are proficient at it. What makes getting good at orchestration a really good idea is that it is no longer a purely administrative task.

A proficient orchestration administrator needs to understand in detail not only the hypervisor but also the automation and integration with third-party applications. On top of that, the ability to grasp business processes and convert them into logic routines is critical. Also, there is the need to be proficient in scripting and API use to make full use of it. To be fair, you can get third parties to do this – but that's cheating.

How big is this? Put it this way: a certain tier-one vendor which possesses a name-your-price mentality has already tried to hire one of our internal cloud and orchestration gurus on several occasions. That should give you an indication of the level of demand for those with skills in orchestration that are married to the cloud.

Administrators, this is the way of the future. No longer will it be a disjointed piecemeal approach, but instead it will be a self-service environment with a catalogue of services which can be selected and purchased.

So what orchestration tools should you look at? The short answer is that it really depends on your environment. All the major vendors will have their own orchestration suites and methodologies.

What happens next is up to you. ®

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We can probably help you.

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