

# ***How to Actually Deliver A Private or Hybrid Cloud***

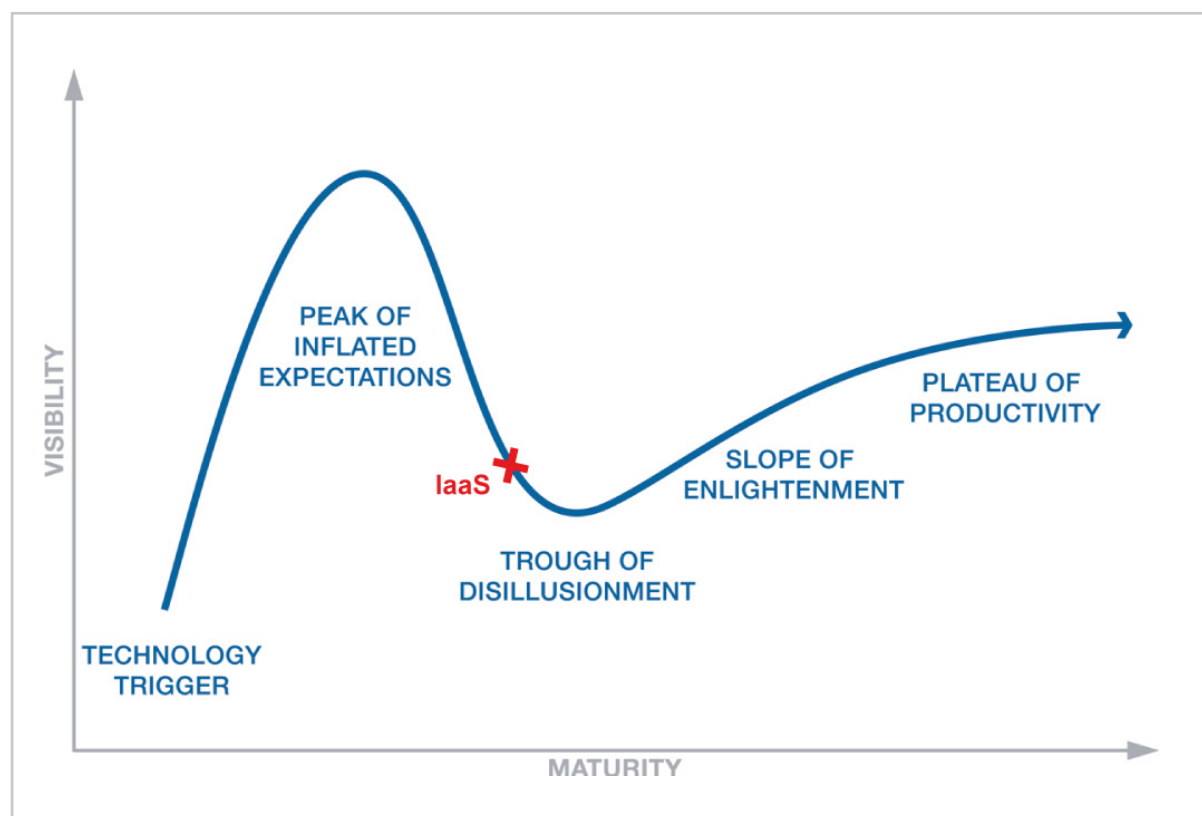
*SOLUTION WHITEPAPER*

MARCH 2017

## ABSTRACT

More than half of IT Assets are now cloud-based, according to a survey of IT decision-makers in recent research conducted by Cisco. By 2019, they estimate that 86% of data center workloads will be Cloud based. According to the 2016 RightScale “State of the Cloud Survey”, 85% of enterprises have a multi-cloud (hybrid) strategy with respondents running 41% of their workloads in a public cloud and 38% of their workloads in a private cloud.

This is supported by Gartner’s August 2016 Hype Cycle for Cloud Computing, which shows Public Infrastructure-as-a-service (“IaaS”) as making progress up the “Slope of Enlightenment”, whereas the private, in-house equivalent (“Private IaaS”) is stuck back at the bottom of the “Trough of Disillusionment”. Please see the Gartner generic Hype Cycle for further clarification (fig. 1).



The purpose of this whitepaper is to show how, with minimal time and effort, a “public cloud experience” can be delivered to consumers of your private cloud infrastructure. Further we will make no distinction between private and public cloud. Our approach will be to provide a common layer over both private and public cloud infrastructure, giving a holistic and positive “hybrid cloud” business user experience.

Specifically, by seamlessly adding a software layer over your existing or new infrastructure, it will take 60 days or less to deliver a private/hybrid cloud that outperforms all of the brand-name public clouds.

## THE PUBLIC CLOUD EXPERIENCE

Public cloud computing is the practice of using externally hosted data centers to store, manage, and process your data and workloads, rather than a local server or a personal computer. These public data centers are most commonly virtual, provided as dedicated or shared infrastructure.

Services like Amazon Web Services and Microsoft Azure enable their customers to provision multi-tier web application environments in minutes instead of often days or weeks if looking for a similar set of infrastructure within their own organization.

## PUBLIC CLOUD EXAMPLE

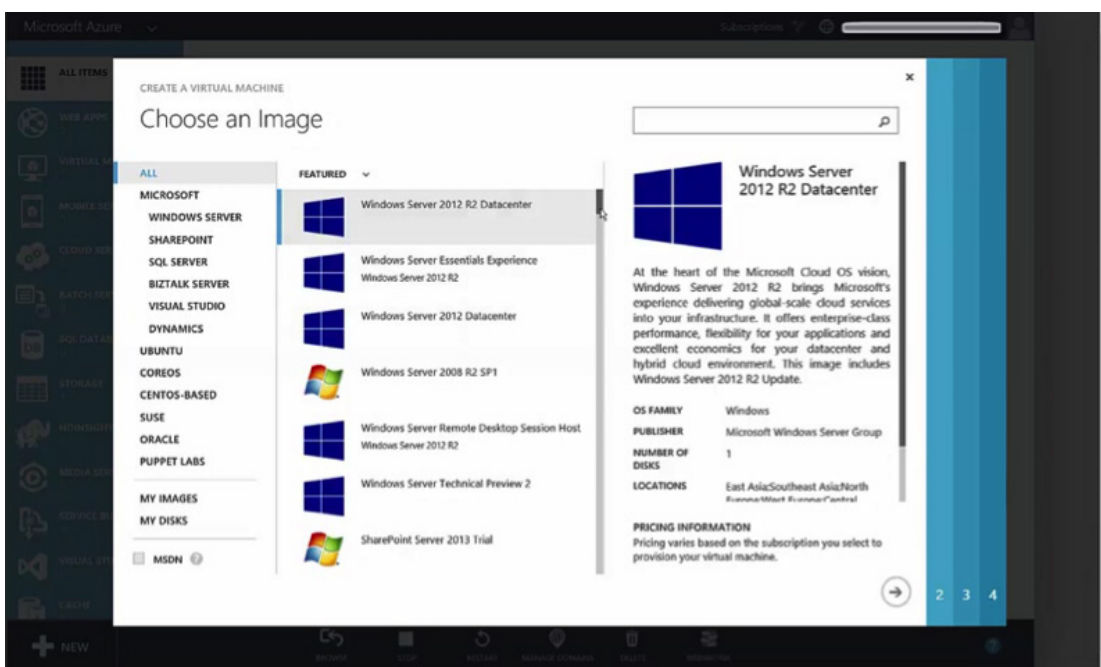
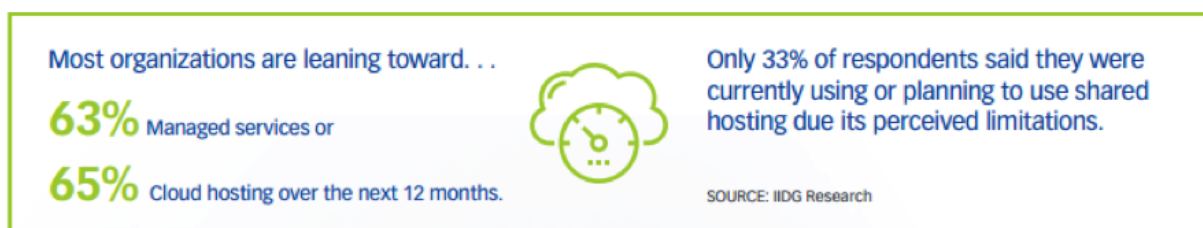


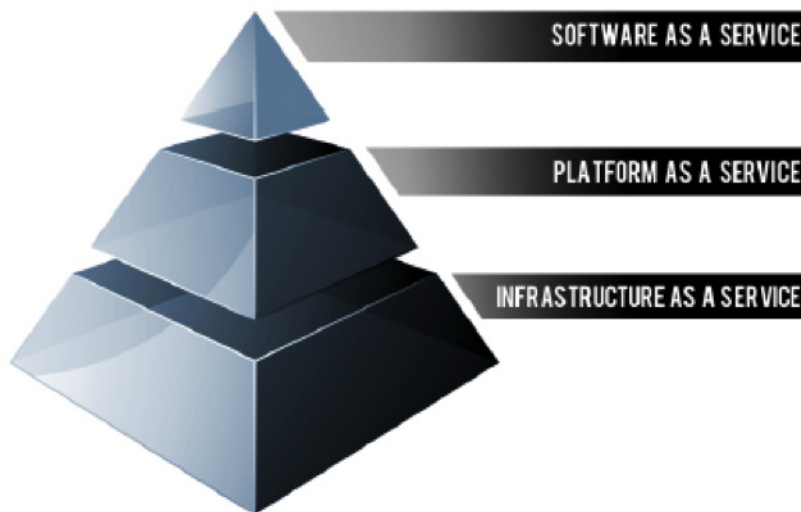
Fig 1: Microsoft Azure user service portal. User requests a Windows Server 2012 virtual machine to host a new web app in Microsoft's public cloud. Delivery takes about 15 minutes.



Cloud Computing is a broad term that describes a broad range of services. It is first important to understand what the Cloud really is and its different components. Since the Cloud is a broad collection of services, organizations can choose where, when, and how they use Cloud Computing.

Cloud Computing is often described as a stack, as a response to the broad range of services built on top of one another under the moniker “Cloud”. The generally accepted definition of Cloud Computing comes from the National Institute of Standards and Technology (NIST). The NIST definition runs to several hundred words but essentially says that: Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

The diagram below depicts the Cloud Computing stack – it shows three distinct categories within Cloud Computing: Software as a Service, Platform as a Service and Infrastructure as a Service.



## THE CLOUD MARKET

There is increasing pressure on network managers to deliver the applications and services required to provide a fast and reliable Infrastructure for a company. Virtualization has now revolutionized IT and it will only become more intense as cloud models are poised to dramatically change IT Infrastructures yet again. Public cloud solutions such as *Amazon Web Services* and *Microsoft Azure* are gaining in popularity as organizations look for ways to increase capacity whilst improving performance and speed and lowering IT costs. As the demands on a business grow, so does the need to keep adding services to your network. The cloud model moves a company from Infrastructure to application delivery and services, which is why investment in cloud IT Infrastructure is gaining ground compared to overall infrastructure investment

## CLOUD INVESTMENT STATISTICS

According to research, IDC's April 2016 Worldwide Quarterly Cloud IT Infrastructure Tracker found that cloud IT infrastructure sales accounted for 32.2% of the total IT infrastructure spend in the fourth quarter of 2015, up from 28.6% a year ago. In comparison, traditional IT infrastructure is down by about 2.7% year over year in the fourth quarter, according to IDC.

An IDG research survey found most organizations are leaning toward managed services (63%) or cloud hosting (65%) over the next 12 months. Only 33% of respondents said they were currently using

or planning to use shared hosting due its perceived limitations. Email and other messaging applications, along with data storage and data management, were the top contenders for managed cloud services, cited by 61% and 50% of respondents, respectively. This supports the premise that small and mid-sized businesses (SMBs) prefer to offload as much of their IT infrastructure as possible to outside resources to stretch limited IT capacity. Contracting for third-party cloud services also allows organizations to focus on technology-related initiatives with growth opportunity or cost savings potential.

The least likely applications for cloud deployment include compliance management and supply chain management, in any model, per the IDG research. This suggests that SMB respondents either don't have these application platforms in place or remain hesitant about moving to the cloud. *Microsoft Azure* adoption saw more than 120,000 new subscriptions added each month. 85 percent of the Fortune 500 use Microsoft Cloud. And *Microsoft* has more data centers than *Google* and *Amazon* combined.

While overall cloud investment is up, there is no consensus around a single cloud architecture. The IDC research found that organizations are split between private (17.5% growth) and public cloud (14.6% growth) deployments as they modernize their infrastructure, specific workloads, and performance. In addition, enterprises are still experimenting and evaluating the trade-offs of different cloud models.

The accessibility of the shared hosting model makes it a solid option for organizations just starting the cloud journey. With this model, a customer pays for a set amount of storage space accompanied by standardized features and stacks on a single server; the resources are shared among multiple customers. There are several advantages to this approach, including the ease of getting started and the likelihood of a reasonable, fixed cost. On the flip side, however, the one-sized-fits-all approach can limit flexibility and scalability, and it does not support a utility pricing model, meaning customers can overpay for unused capacity. In addition, because resources are shared, not dedicated, customers may be subject to external performance issues that are not related to their application or specific environment

## THE PRIVATE / HYBRID CLOUD EXPERIENCE

Private cloud has (or should have) the same technical functionality as public cloud up to a certain level. In particular, the end user experience should be at least the same or better than using the public cloud. There is a range of good reasons for organizations to want to have a private cloud – cost, security, effective leveraging of existing resources, governance and risk compliance, to name but a few. Hybrid cloud is the practice of an organization using both private and public clouds depending on requirements and circumstances.

However, it extremely common for private cloud offerings to be viewed as far less satisfactory than their public cloud competitors. Creating a private cloud from an infrastructure point of view is quite straightforward – arguably any virtualized environment is, from an infrastructure point of view, a private cloud. If we think of private cloud infrastructure as being made up of compute, storage and network resources that are aggregated and shared via a virtual hypervisor such as VMware's ESXi or Microsoft's Hyper-V, it becomes clearer that the creation infrastructure for private cloud is by no means the primary challenge to delivering a private cloud.

The real issue is the ability to connect your end users and business requirements to your cloud. Consider the example above of ordering an Azure workload from Microsoft: All Microsoft takes responsibility for is the delivery and security of the resulting virtual machine. The list of things they do not take any account of but your business has to is very long indeed:

- **Who authorized this purchase?**
- **Who is the virtual machine for?**
- **What is it to be used for?**
- **What capacity do you require the virtual machine to have?**
- **What is the relationship to other workloads?**
- **How much will it cost?**
- **Is it compliant to your build standards?**
- **Is compliant to your governance, risk and compliance standards?**
- **What software is needed?**
- **What about software licensing?**
- **What storage or network should be used?**
- **What backup policy applies?**
- **How long do you need the virtual machine for?**
- **Etc etc etc**

Within an organization all of these questions and more need to be dealt with before a workload can be provisioned internally. In fact, critically they also need to be answered before using a public cloud.

What happens in organizations is that the demands and constraints listed above create a significant time lag before a workload can be provisioned as disparate processes are followed within the organization to reach the point of delivery.

The emergence of converged infrastructure (and now hyper converged infrastructure) in the form of pre-built and pre-configured cloud infrastructure has simplified the creation private cloud infrastructure for customers, but it has done little to address the challenge outlined above.

There is an additional software layer above the infrastructure software management layer needed to turn any converged infrastructure into fully automatic self-service, fully end-to-end lifecycle cloud and to deliver the user experience they expect and demand based on their experiences of public cloud.

On average customers spend 12 months procuring and implementing their private cloud infrastructure. Up to another 12 months is spent with their IT Service Management software vendor trying to create a self-service portal that somehow connects to the cloud infrastructure and normally delivering an end result that is far inferior to the public cloud experience.

In summary, 24 months of multiple employees and contractors' time and millions of dollars in capital expense are typically forfeited by most private cloud customers before the environment is mature enough to deliver the type of cloud experience needed to sustain DevOps or any kind of agile software development methodology.








Requests for private virtualized infrastructure deployments need to be self-service, fully automated, and delivered in minutes before anything agile is realistic. The entire lifecycle of the virtual machine needs to be managed – not just up to the point of provisioning. However, it should not take two years and millions of dollars to get there.


## PRIVATE CLOUD: SOLUTION

The solution architecture described in this section is intended for both business and technology readers. Its purpose is to provide you with an easier path to a fully-integrated private/hybrid cloud.

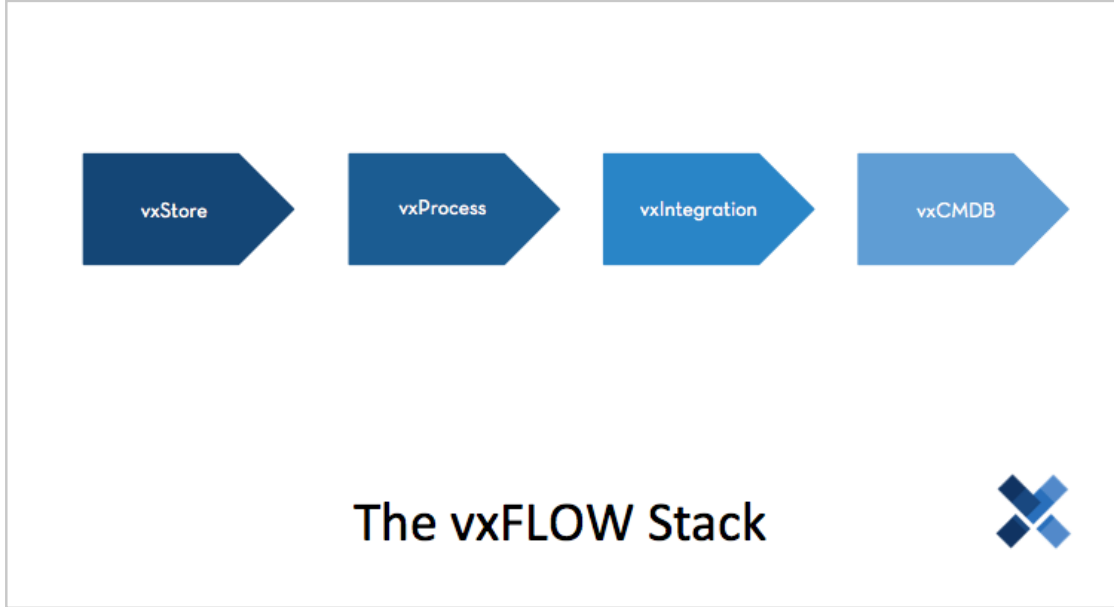
vxFlow delivers the end to end functionality needed to create a true private cloud within your organization.

### How can vxFLOW help you?

-  vxFLOW offers an easy path to a fully managed Private/Hybrid Cloud experience
-  Dramatically reduce time to delivery for provisioning of virtual resources
-  Fast, agile delivery of your Private/Hybrid Cloud
-  The ability to provision multiple resources at once and maintain logical relationships between items
-  Allows you to fully manage your virtual environments for their entire lifecycle, mitigating security and compliance risks
-  Human Orchestration: Dynamic approvals and business rules ensures that tasks are managed and approved by the right people, at the right time
-  Pre-configured environment eliminates 'blank page' issues

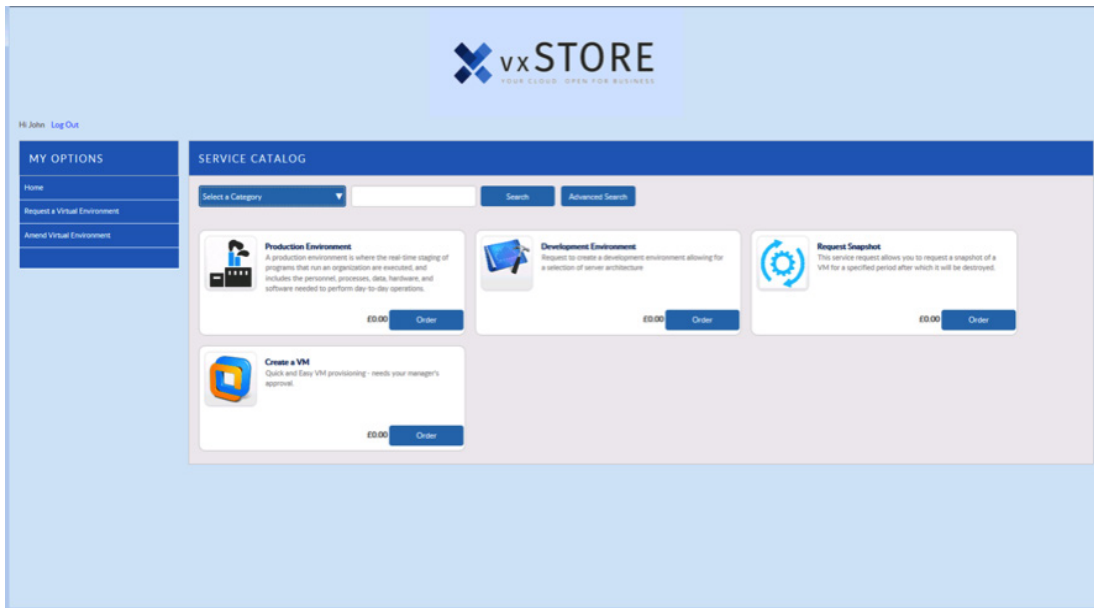


## THE vxFLOW FUNCTIONAL STACK WITHIN A SINGLE APPLICATION:



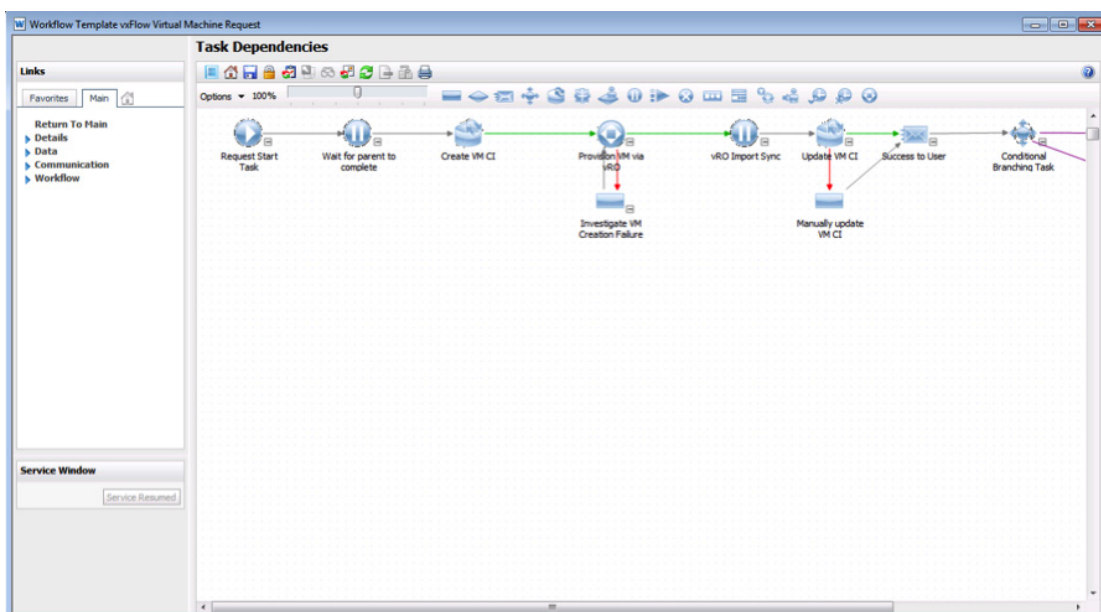
## 1: vxStore - AN IT STORE

The vxFlow self-service IT Store enables a public cloud type end-user experience for your internal customers:



- A modern sleek interface that is self-building (no coding needed!) and works on any browser
- Can be completely rebranded to your corporate standards in minutes
- Any point in the site can be linked to via URL – your customers don't even need to know they are using it!

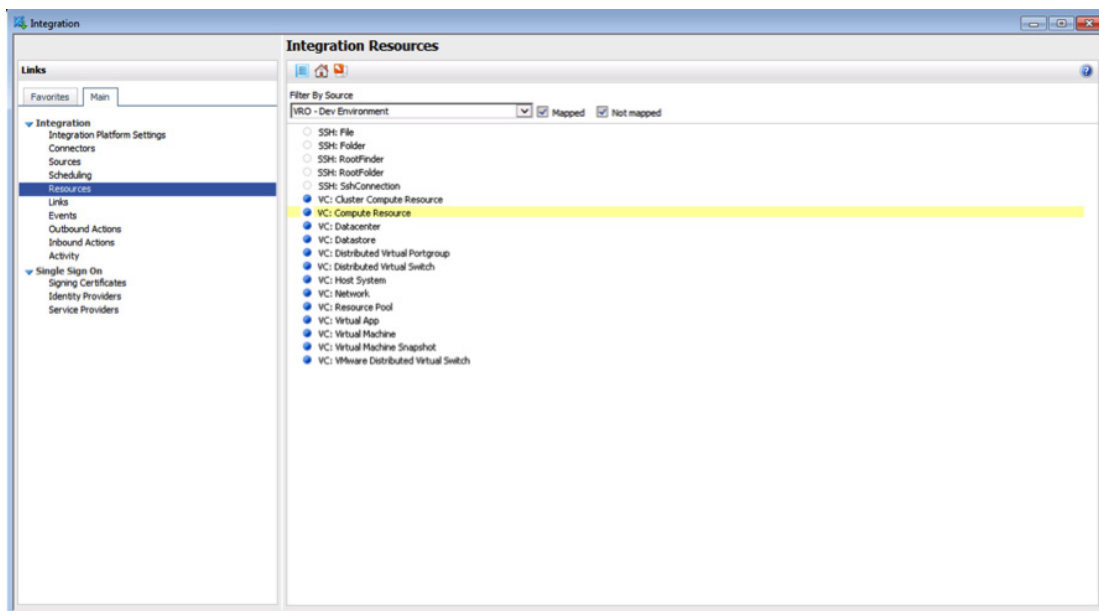
## 2: vxProcess Engine





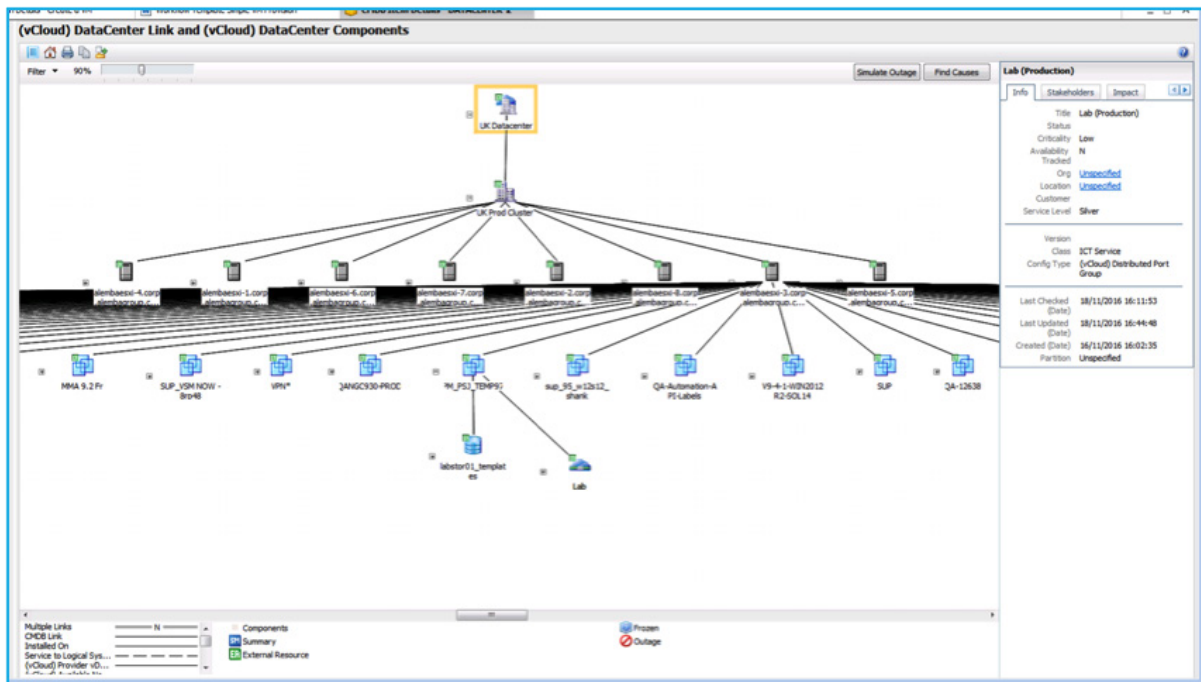
- The vxStore pages are the actually the public face of vxProcess - a highly sophisticated business process and automation engine
- Graphically managed for ease of design
- Supports highly complex business process automation
- Ships with pre-built best practice processes already built which can be quickly altered as needed
- Previously manual steps can now be fully automated
- The automation of the process enforces process compliance and governance. (steps cannot be circumvented or forgotten!)
- This means that all the competing needs of the business – Speed Vs. Risk, Convenience Vs. Compliant etc. – are satisfied to produce the most efficient delivery of service possible.

### 3: vxIntegration



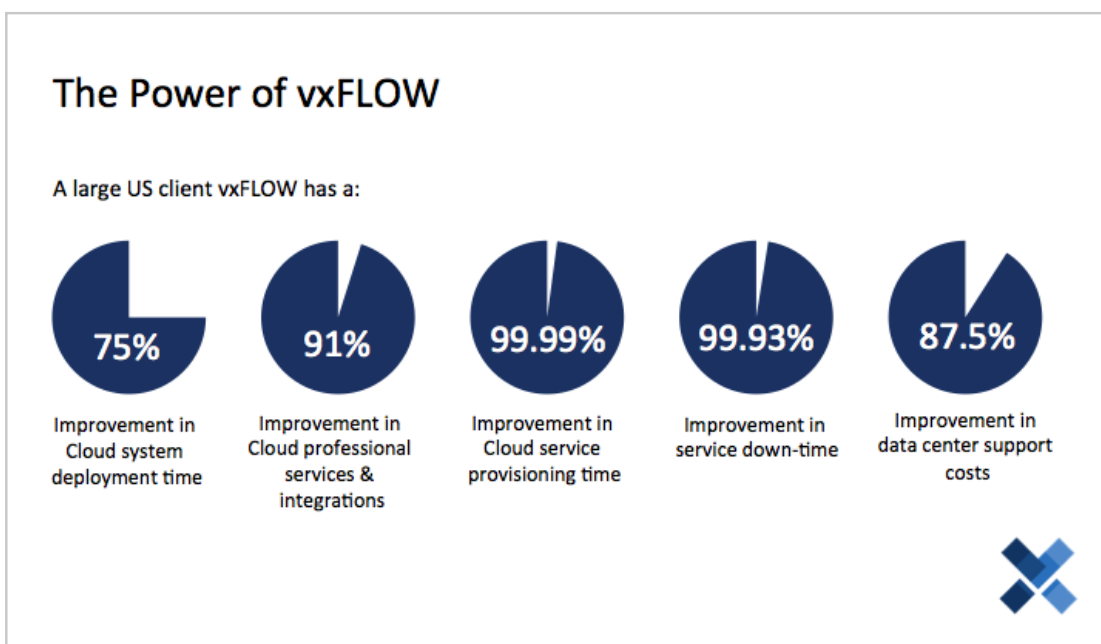
- The vxIntegration platform is key to successful cloud process automation
- The platform bilaterally integrates to many other systems to both exchange information and to accept and initiate actions
- vxProcess provides an elegant and effective method to embed automation within your business process workflows
- The primary integration for cloud process automation is with VMware's vRealize Orchestrator providing hundreds of off the shelf IT automation processes

## 4: vxCMDB



- vxCMDB is vital for the on-going management and support of your environment
- The dynamic nature of successful cloud process automation combined with automated technologies for load balancing, high availability and performance management means the rate of change in the environment makes the manual management of vxCMDB impractical
- Our solution is to maintain vxCMDB fully automatically!

## PRIVATE CLOUD: BUSINESS CASE



## CONCLUSION

Your goal is to offer your customers the same experience for private and/or hybrid as they get when using the public cloud.

vxFlow gives you the ability to quickly join up the business to your service offerings and to actually automate the entire service, from the time someone in the business needs something to the end of the lifecycle, fully automating all points in between. It provides the vital layer missing from existing private/hybrid cloud software stacks to truly connect your business to the cloud.

***vxFlow: Your Cloud. Open For Business.***