

## 1. WHY DO ENTERPRISES STRUGGLE WITH CLOUD TRANSFORMATION INITIATIVES, PARTICULARLY WITH DEPLOYING PRODUCTION APPLICATIONS TO AZURE, AND OTHER PUBLIC CLOUDS?

- Although development organizations have embraced the cloud as an easy way to increase agility and acquire readily available resources, enterprise IT and security counterparts struggle to follow suit with large scale, mission critical deployments.
- Vixtera has deep expertise in enabling enterprises to successfully execute their cloud transformation initiatives, and with its Unity Orchestration and Cloud Automation platform enables enterprises to re-define and automate DevOps and large scale IT operations around the public cloud(s).

### A. INCOMPATIBLE INFRASTRUCTURE PLATFORMS

#### Problem – Hybrid IT

Our company has various infrastructures – VMWARE and base metal in production, OpenStack in the lab. We are also planning to use AWS and experimenting with Docker.

We need a platform that allows provisioning on all types of infrastructure with minimum effort

#### Solution

Unity uses a pluggable infrastructure provider approach that allows for various infrastructures to be used simultaneously and allows for the same templates (blueprints, recipes) to be used for provisioning of applications on all supported infrastructures.

Unity platform currently supports:

- OpenStack
- AWS
- VMWare
- Bare Metal
- Docker
- Oracle Cloud / HP Cloud



## B. WORKLOAD ADMINISTRATION – LIMITS OF CONTAINERS

*NOTE VIXTERA IS PRESENTLY PRODUCING A WHITE PAPER ON THIS TOPIC.*

### Problem – Limitations with Docker and Other Container Technology

My company, like many enterprises, has looked at Docker as an interesting technology. We have some energized developers that like it and have attempted to use it. We have some technology leaders that think that eventually Docker will play a big role.

Here is why my company and many others like us are not getting past the experimentation phase:

- Security. Docker lacks the security required to support production for major enterprise applications, including lack of workload isolation and images which embed middleware and libraries.
- Forklift Migration. Changing the infrastructure operations, changing the development and release process, and changing the service delivery is hard. Moving all applications to the new model may take years (3-5+).
- Hybrid Platforms. Many enterprise applications can't be deployed in a container alone, and require the ability to deploy and manage across bare metal, virtual machines and containers.
- Operational Efficiency. Once beyond simple deployments, the problem of container image management quickly becomes untenable. Since the OS, middleware and library can change at any time, the "networks of images" become a huge problem to operations.
- Networking. Container networking is in its infancy. As with early BM and VM, networking is very far from production level and it will take a while before it becomes a reliable backbone.
- Tenancy. Large IT organizations must support internal tenancy with isolation, security and other policies enforced. Currently, most Container solutions are still dealing with the Cluster level operations and are very far from robust enterprise-wide operations from this perspective.

Let's be clear, the Docker platform is great, it is fun and some derivative of it will be fundamental for the next evolution of IT. But this evolution will take some time and without some shift in thinking, will not allow an IT organization to create a comfortable Hybrid cloud operation, thus slowing down progression to clouds like Azure or AWS.

### Solution

- Invisible Infrastructure. Application Management solutions (e.g. Unity) hide the complexity of the infrastructure. Application Blueprints work the same on any cloud platform, facilitating portability and shielding IT from the specific details about HOW multiple clouds operate.
- Invisible Images. A new fundamental capability of Unity will become a major driver – on-demand image generation. Unity will automatically generate and "cache" any image in the appropriate Cloud/Region/Datacenter the first time it sees it. Its orchestration model is adapted to using these "optional" images automatically. So instead of creating 100 installations, it just clones the images 100 times. What is even more innovative is that Unity can do this for both VMs and Containers! Moreover, it can automatically build container "gold image" behind the scene, requiring no manual management. Same Blueprint can be used to actually build a

Container image or a VM image. As a result, IT organization does not need to change ANYTHING and get Container deployment tested and in production (when ready).

- Secure Resource Management Policies. Unity comes with built-in tenancy model that actually implements highly secure and uniform orchestration not only for the application workloads but also for the “surrounding” infrastructure including all network operations, managing (or integrating) credentials for all the provisioning operations and managing the resource-policies for resource scheduling. The model is pretty robust and allows to plug-in multiple providers that can use different infrastructure or different schedulers for resource allocation.
- Hybrid Application Deployments. Unity brings ability to compose applications that are deployed using components that are managed differently. For example, one can put a load balancer on a Container group, App Server on a VM group and database on a bare-metal group of hosts.

### C. MULTI-TENANT SUPPORT

#### Problem – Multi-Tenancy

Our company has multiple departments that require data, application and resource isolation and also restricted access to resources within the department. We require this not only on premise and in our private cloud, but also in any public infrastructure we incorporate.

#### Solution

Unity's is a business process oriented platform that has a built-in multi-tenancy model allowing for tenant –based separation of all aspects of the system including blueprints, environments, infrastructure resources etc. Unity also supports a role-based security model that allows for access restrictions to be applied within the tenant itself. Using Unity, the enterprise can aggregate its presence on each infrastructure provider while still providing the necessary granularity and tenant level security and control.

## 2. WHAT KIND(S) OF FUNCTIONALITY AND AUTOMATION DO ENTERPRISES NEED TO APPROPRIATELY SCALE THEIR DEVOPS AND IT ADMINISTRATION IN A HYBRID IT WORLD?

- Traditional IT processes and tools are ill equipped to deal with the complexities of public and private clouds, Continuous Integration, Agile, and other contemporary technological and organizational demands.
- The Unity platform is designed to help enterprise IT organizations to automate key application and deployment activities, eliminating manual processes and the cost and service failures attendant, while simultaneously enforcing consistent policies and reducing the need for highly skilled personnel.

### A. BLUEPRINTS AND PATTERNS

#### Problem – Lack of Consistency in Configuration

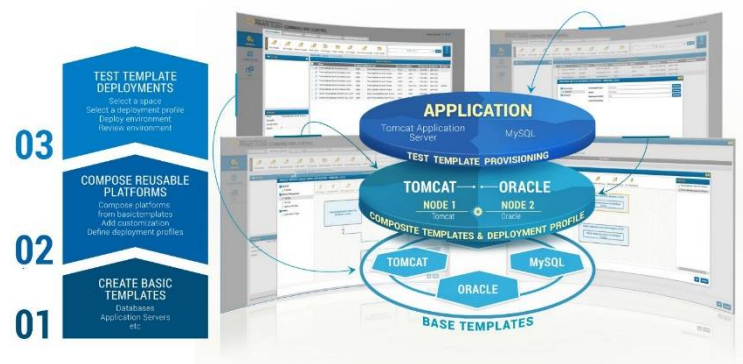
We have a large number of web applications using a standardized stack of platforms – httpd web server, Tomcat and JBOSS app servers, Oracle and MSSQL databases. How do I manage 100s of recipes in an enterprise environment with multiple data centers and various development groups?

We also want to deploy the same application based different deployment diagrams for DEV, QA and PROD environments.

#### Solution

Unity uses a flexible, cloud independent, blueprint model. The Unity blueprint model consists of base service templates (web server, app server, database) composable into highly reusable platforms (for example 3-tier platform i.e. Web server, App Server and DB interconnected via endpoints/dependencies) and applications defined as a set of customizations (WARs, DB scripts etc.) deployable on top of the platforms. All templates are versioned and have an associated lifecycle that makes them easy to manage across the enterprise.

Unity's ability to define multiple deployment profiles for the same template allows for various host configurations to be used for different environments.



## B. LACK OF SCALABLE PROVISIONING

### Problem

We are experiencing about 50% failures during our provisioning processes. The reasons are usually simple and easy fixable i.e. incorrect password, missing file etc. Every time we experience a failure we have to restart provisioning from the very beginning and it's very time and resource consuming.

### Solution

Unity's resilient provisioning approach with comprehensive and detailed failure diagnostics makes it easy to identify the reason of the failure.

Unity's unique resilient provisioning feature allows for restart/abandon of the provisioning process from the point of failure, dramatically reducing the provisioning effort.

### 3. WHAT ARE SOME EXAMPLES OF COMPLEX ARCHITECTURAL IMPLEMENTATIONS INDICATIVE OF THE TYPES REQUIRED TO GET LEGACY APPLICATIONS MIGRATED TO AND MAINTAINED ON THE CLOUD?

- The enterprise journey to the cloud is not a simple one and requires significant understanding of both the existing and target environments. Unfortunately, many enterprise IT organizations lack sufficient expertise to envision, plan, and execute the transformation, both organizationally and architecturally.
- Vixtera, through years of real world engagements, possesses a deep understanding of the requirements and limitations of storage, networking, security, orchestration, and other key determinants for successfully implementing a progressive path to a hybrid IT environment.

#### A. PORTING CLIENT / SERVER APPLICATIONS TO THE CLOUD

##### Problem

The main problem to porting the client/server applications to cloud is data portability. There are 2 possible scenarios that may be requested by customers:

1. Move client to remote desktop and keep data (DB, filesystem) on premise.
2. Move both client and data to the cloud, but keep both systems alive for a period of time or indefinitely.

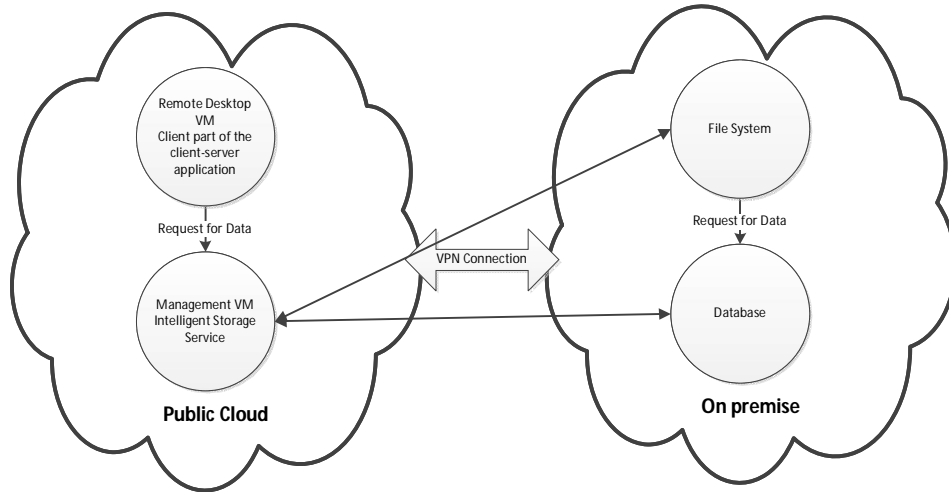
In both scenarios the following issues should be addressed:

- Security and Governance processes should be the same, especially when customer has a direct say to where and how the instance is hosted
- Application infrastructure components such as database and operating system should remain the same and can be managed in similar way.
- The licensing regime remains the same
- Upgrades can be planned and implemented in a traditional waterfall project model.
- The arrangement is easily reversible by reverting to a conventional, on premise version of the same client-server application

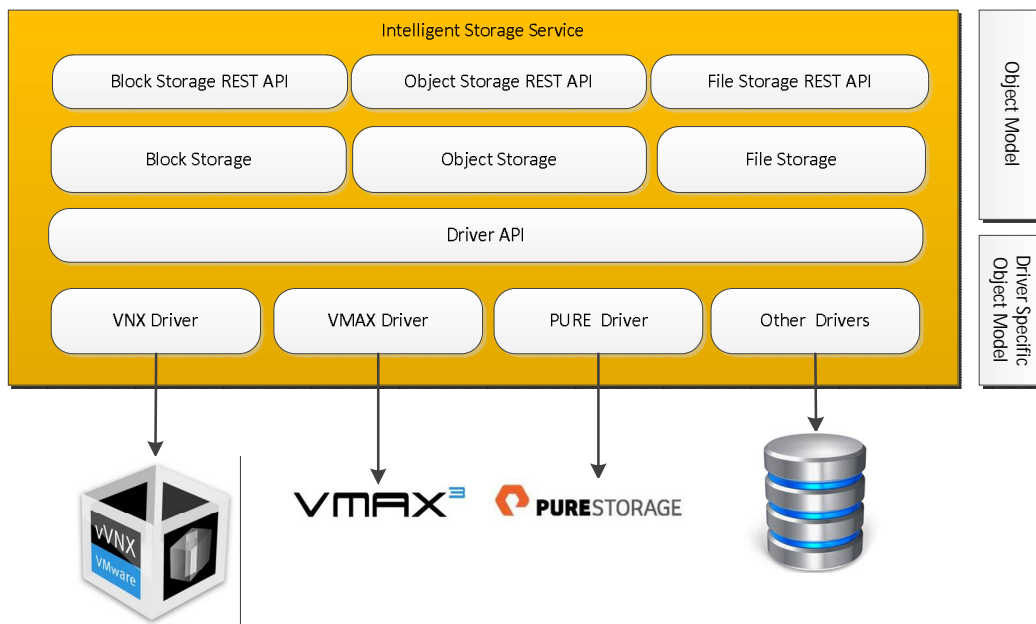
##### Solution

The solution to these problems is an intelligent storage service (ISS). Intelligent storage service is a proxy between the client (executable) and server (data) parts of the application.

ISS gets the requests for data (connection string for the DB, root folder for the file system etc.) and reroutes the request to the appropriate storage



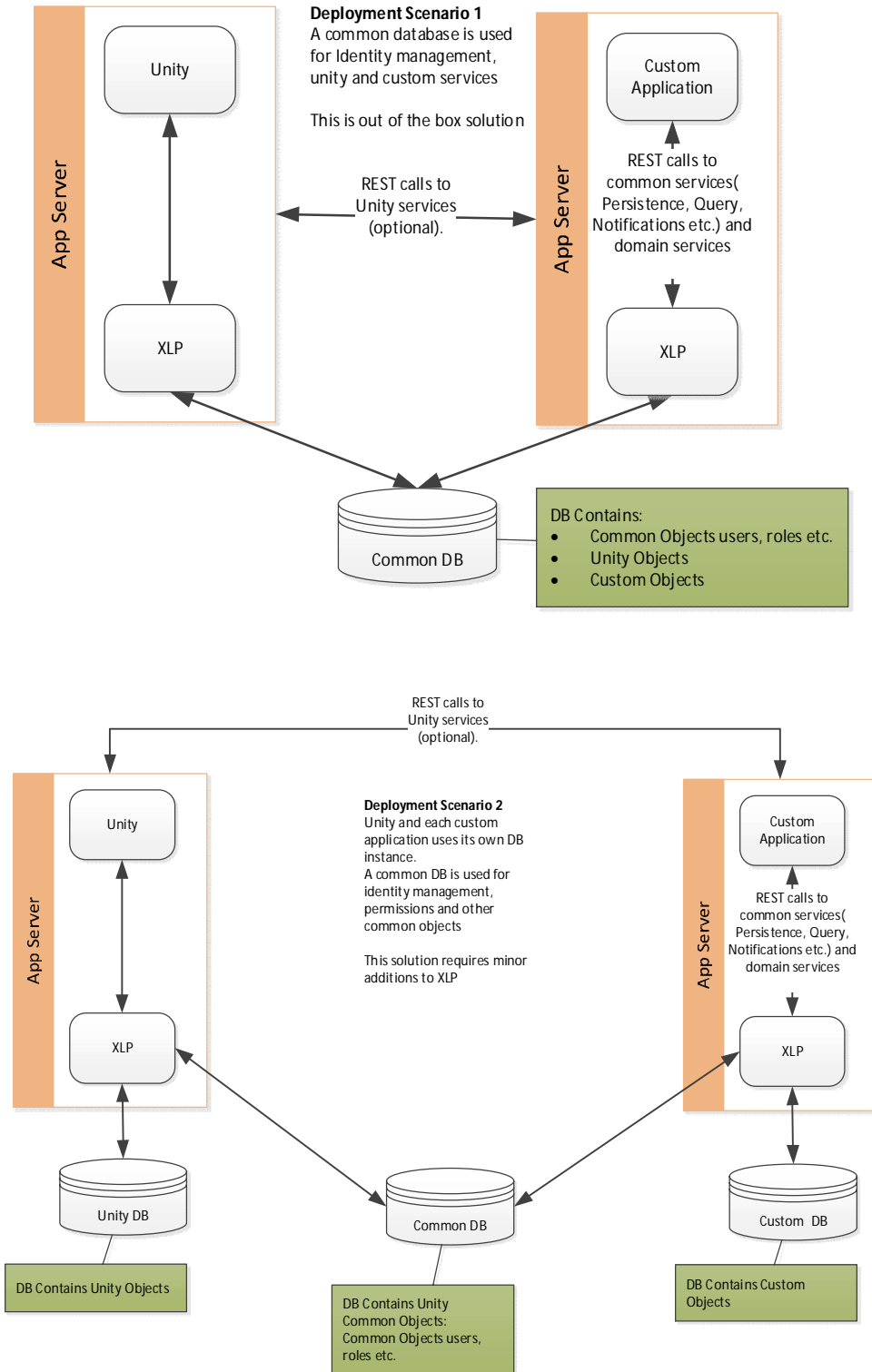
Connecting the clouds



Intelligent Storage Service

## B. ADVANCED DEPLOYMENT SCENARIOS

Vixtera has developed several advanced configurations for its enterprise clients in their journey to the cloud. Such configurations are often a precursor to the full migration or re-deployment of legacy applications, which often have dependencies on networking, storage and availability of data, and other key considerations.





**Deployment Scenario 3**

Unity and each custom application uses its own DB instance.  
 A Management application is used for identity management, permissions and other common objects

