

Managing the Abstraction of Virtual Environments — Dunes S-Ops on the Horizon

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Management Summary

When you sail in high winds in the open sea, there aren't a lot of familiar landmarks by which to orient yourself. You concentrate on the changes in the wind. You keep your eye on the compass and a hand on the wheel, to keep your heading true. You feel the tilt of the deck, which may indicate a need to adjust or change your sails. It is the coordination of the set of the sails and the heading of the boat that allows you to cope with the irregularity of the wind – and to use it to get to your destination. Of course, the weight and size of the keel must be adequate, the equipment must be ready to use, and the crew trained to respond as a team at a moment's notice. Management of the journey is reduced to a need to know, and management of the elements is delegated.

In the data center, change in business demands, like gusts of wind, is continuous. Like a sailing ship, the data center must tack frequently – but not predictably so. Self-reporting assets, highly-automated utility routines, and easy management, like the well-coiled lines on a sailing ship, let administrators optimize routines and cope with exceptions. **Orchestration of workloads translates business demand into data center functionality, much as the set of the sails captures the wind and translates it into horizontal velocity. But there are more changes ahead.**

In most enterprises, computers are being used, to a significant extent, for business processes that are not the straight-through procedures of old-fashioned data processing. Geographic distribution of the workforce, a greater reliance on partnering for full-enterprise business functionality, and more opportunities for self-service have turned many processes into a deconstructed series of episodic *transactions* that are aggregated to a point of completeness. Humans used to be the multiplexers. With the volume of today's business, we are asking machines to do the same kind of juggling. It is this expanding business use of computers in other-than-protracted-processes is what makes assigning applications permanently to physical servers – with room to grow, and a spare to fail over to – and managing by the physical device less efficient – and more painful. **A service-oriented management is a better alternative.**

Virtualization of computing elements (servers, network, storage) helps the orchestration of IT processes use the resources of the data center more efficiently. It allows the data center to avoid risk by decoupling process from specific physical assets and running it where there is an appropriate environment. The ability of virtualization to make one server act as many server, and process different workloads simultaneously, as well as over time, makes the switch to service-oriented management into an operational as well as a business priority. Keeping things ship-shape is not enough. **There is hard sailing to be done, and the data center must be managed as a business tool, not just a massive, expensive aggregation of equipment.**

Dunes Technologies SA, a Swiss software company, has developed *S-Ops*, a unified platform for policy-driven service management of distributed, virtual resources. It amalgamates and automates a lot of processes. *Inventory*, like the compass and maps, tells you what you have to work with. *Provision*, like the sails on a ship, translates the wind of demand and the sails and hull of data center assets into business velocity. There is, of course, also *Monitoring* to fulfill the need to know, as you look to the horizon. And the *Policy* module provides management of the coordination which is the key to sailing a ship – or running a business. For more details, read on.

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Virtual Machines

Dunes *S-Ops* focuses its concentration on virtual machines, though its ambitions include management of the larger virtual environment of network and storage as well as processor elements. For now, it manages VMware's virtual machines and betas of Microsoft's server virtualization products. It runs on Intel processor (using *Windows* or *Linux*) and is priced per virtual machine – a variable pricing that is pleasantly congruent with the fortunes of business. It uses agents and open standards interfaces, though its inner workings are based on its own extensions to XML. And it provides wizards for all systems managements operations of more than two steps. This means a quicker learning curve and fewer opportunities for user error.

Inventory

The *Inventory* module covers a lot of territory, for the *need to know* is much more multi-dimensional in virtual environments. Information about elements is captured at the virtual machine, infrastructure, application and service level. Metadata information can be included. *Inventory* includes all of the sorting and reporting functions that one finds in traditional management, but it also has the synchronization capabilities to make adding and removing elements – or services – straightforward. *Inventory* can include planned acquisitions for the purpose of modeling different usage scenarios. And it has the ability to share management information with other users in a safe, secure (albeit proprietary) way.

Provision

The *Provision* module covers the service lifecycle (yes, everything has a lifecycle these days). You can create (design, test, modify) deploy, control and scale (up or down) the service – and hundreds of services. The relationships of all the elements of each service are organized by the *Policy* module described below.

Monitor

The *Monitor* module may sound prosaic, but it is the reality check of real-time management. Monitoring is done by agents that capture information at the service, virtual, and infrastructure levels. Performance metrics are captured. Faults are noted, isolated, and escalated as necessary. *S-Ops* has the ability to personalize the monitoring interfaces so that each user sees only what is relevant to the decisions they may make. It can also aggregate the metrics so that the user can see everything needed to make a fully-informed decision. As of now, the monitoring allows the users to act within their authority. Over time, more can be automated.

Policy

Enterprises have many best practices, both business practices and data center practices, that they don't want lost in a translation to a service-oriented architecture. The evolution from best practices to policy is rather like the evolution from an assembler language to an advanced programming language. It is not that *what* is mandated changes, but that the *way* that it is stated has evolved to

be more broadly re-usable. It is also important to an enterprise that best practices not be instantiated in a static, read-only form of a comprehensive custom script, for business practices will need to evolve easily, as the business does. The *Policy* provides the integrated development environment (IDE) and the tools to allow policies to be articulated, modeled, tested, implemented, evolved and re-used. Dunes' patented *collaborative wizard development* process allows the policies to be implemented as wizards, which some prefer, as well as traditional scripts. *Policy* orchestrates, not the elements, but the service level agreements by which the elements are managed. This tiering of management allows automation of the straightforward cut-and-dried elements – like the roller systems used in modern boats to reef the sails – while preserving the ability to amend broader policies as needed.

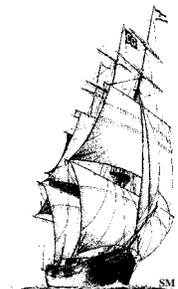
The Sea-Change

Dunes *S-Ops* moves management from an enumerative approach to control to a contractual, publish and subscribe, service-oriented approach. This allows workloads to be managed to the immediate need (indicated by the volume of subscriptions) rather than by an estimate of probable asset capacities that will be required. If assets are networked and virtualized, it then become a matter of find, bind and supply – routines at which compute routines excel. Automated provisioning can ping and find assets¹. If an asset is removed from service or retired, it is just not seen – and other assets are selected. The system can alert an administrator when a threshold number of assets becomes unavailable before the dearth reaches a critical level. What is important about this is more what you *don't do* than what you *do*. The *IT elements and the management system* do more for you.

Instead of configuration, think of composing services. Instead of thinking of spare capacity, think of cloned virtual environments that take up very little room until they are activated. The control is still there, it has just been better focused onto the things that matter. You can stop bailing and sail your boat.

Conclusion

A change to service-centric computing is here. It is time to get your sea legs and take advantage of the opportunities offered by a more adaptive management of your environment. **Think about the simplicity of service-oriented management, and about its use in environments rife with emulations, partitions – and grids.** Check out Dunes and *S-Ops* at www.dunes.ch.



¹ Of course, an application could reside permanently on a particular server. It just doesn't have to.

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