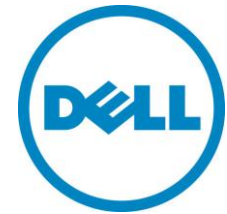


Dell VIS Creator



Technical Guide

Respond to business requests faster with an automated workload deployment platform that gives authorized users access to IT through a self-service portal while improving control over IT resources.

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1 Overview

The Virtual Integrated System (VIS) brings together an end-to-end solution constituting of state-of-the-art servers, storage, networking, and software tools to work as one dynamically configurable entity that is open and pragmatic. The result is a fast-to-deploy and responsive infrastructure that helps businesses respond to customers' and employees' changing needs. Dell's solution is a distinct alternative to the closed nature of competitors' proprietary and vertically integrated stack.

With the economic challenges facing most companies today, customers have adopted virtualization as an approach to lowering their operational costs as well as improving their overall business agility. While virtualization has delivered to its promises, the management of virtualized infrastructures has become more challenging.

- Management is getting complex since the environment is scaling and changing rapidly
- Long lead times between requesting for provisioning virtual machines
- Current virtualization deployment tools do not enforce governance & compliance
- Due to the ease of deploying a VM, VM Sprawl is a significant challenge
- Do not have a solution to support a multi-vendor environment

1.1 Dell Virtual Integrated System (VIS)

Dell's Virtual Integrated System Architecture is composed of three key components; **Dell Advanced Infrastructure Manager (AIM)**, **VIS Creator** and **VIS Director**.

Dell Advanced Infrastructure Manager (AIM) solution is a single management point for physical and virtual resources that can accelerate provisioning of new hardware and applications while providing improved efficiency and maximizing flexibility. It simplifies the process of making changes in the data center by combining servers, storage, network and workloads into a unified solution that dynamically allocates resources.

VIS Creator Unlock the hidden efficiencies in your data center by improving time to productivity and control of your IT environment by automating the deployment of virtual server and desktop workloads with the Dell VIS Creator. This automated self-service tool empowers authorized users to deploy and monitor resources while enabling IT to improve response time and control.

VIS Director is the command center for Dell's next generation data center. It offers IT professionals an intuitive end-to-end view of the data center by logically linking physical and virtual resources. The level of visibility, automation and customization of VIS Director helps organization ensure that performance and resource utilization are optimized, service levels are met and problems are solved quickly.

1.2 VIS Creator

VIS Creator is a key component of the VIS product portfolio. It is an automated workload deployment and management platform for virtual servers and desktops providing authorized users a self-service portal to select and deploy resources automatically as well as

manage the resources throughout their lifecycle. IT administrators can customize an extensive set of out-of-the-box workflows to automate many of the day-to-day tasks associated with service delivery. This enables IT resources to focus on other strategic initiatives. All this is done seamlessly with the ability to orchestrate these services across multivendor components including hypervisors, connection brokers, image deployment technologies and other management systems. The VIS Creator is designed to increase access, control and flexibility, which can add up to significant CapEx and OpEx savings and improved service delivery times.

1.3 VIS Creator Feature Overview

Feature	Function	Benefit
Self-Service Portal	Automated, policy-enforced delivery of IT server and desktop workloads from initial provisioning through decommissioning and archival	- Improve service delivery from days to minutes - Delegate responsibility while maintaining operational control
Automated Sprawl Control	- Designed to eliminate over provisioning and unauthorized usage - Identify and reclaim inactive and abandoned resources - Automate the decommissioning and reuse of retired resources	- Re-using reclaimed equipment can help lower capital costs - Improve resource utilization
Virtual Desktop Infrastructure Provisioning (VDI)	- Provisioning and management across desktops and servers - Integration with the desktop ecosystem	- Single pane of glass for virtual desktop provisioning - Common portal for all configuration requests
Secure Multi-tenancy	- Limits which users can see data or execute tasks - Leverages existing authentication and business grouping	- Improved data security - No additional authentication or business grouping requirements
Workload Templates	A template that outlines the resource allocation, design parameters, and process automation considerations that control how the resource will be managed throughout its life	- Designed to deliver the right-size machine at the right service-level, reducing over-provisioning - Standardize IT processes to help enforce governance and controls throughout the machine's life
Business Grouping	Multi-tier organizational grouping	Flexibility to allocate the right amount of resources to each

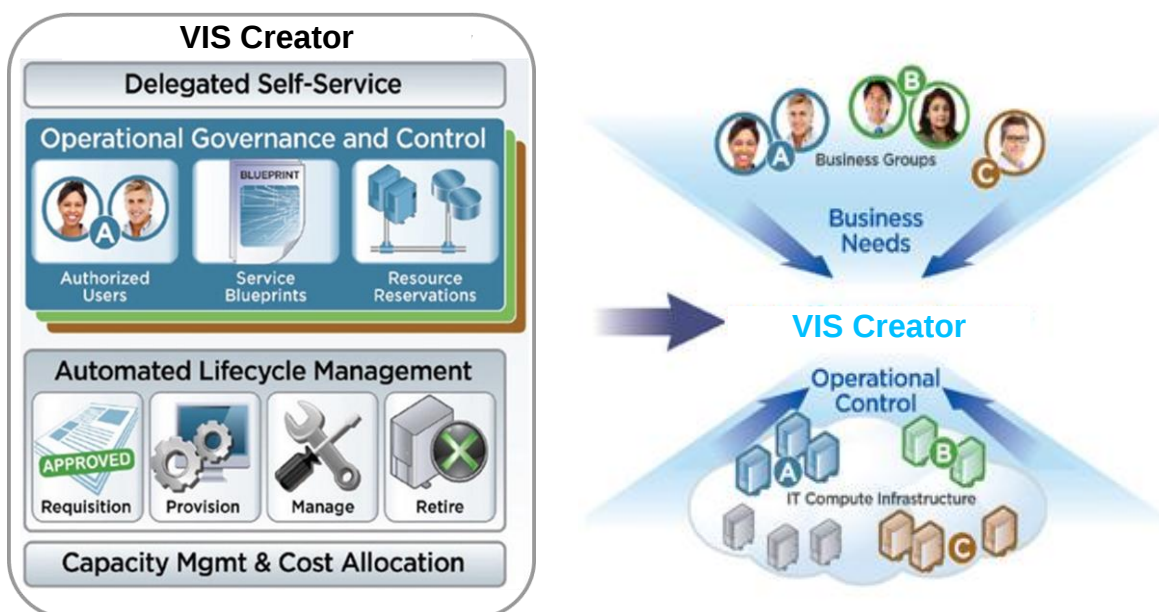
Feature	Function	Benefit
	Organizes resources, policies, processes, and management-access controls for each group or service tier.	- business group - Ability to set up different IT services, processes, policies for different groups
Resource Reservations	Reserve resources and establish service tiers in a shared infrastructure for specific uses and/or groups	- Control resource consumption - Helps assure that resources are available when needed and reallocate resources as necessary to meet shifting business priorities
Access Controls	Identifies and specifies the rights of authorized users of specific resources and business groups	Allows IT to strictly control who can reserve and deploy valuable resources
Extensible Approvals	Flexible approval process that gives the option of simple or complex approval policies for different management activities	Standardize IT approval processes without sacrificing options
Multi-vendor Interoperability	- Orchestrate delivery across multi-vendor technology stacks - Hypervisors - Image/App Deployment - Connection Brokers - Management tools	- Works with what you already have deployed and provides future-ready platform as your IT groups - Avoid technology lock in
Multiple Image Deployment Options	- Platform tools like Windows WIM Imaging, Microsoft SCCM, and Linux Kickstart - Enterprise management tools like BMC BladeLogic, HP Server Automation, and others - Space-efficient tools like Citrix Provisioning Server and NetApp FlexClone	- Flexibility to fit into your existing environment - Protect investment in existing tools and processes
Supports Desktops and Server Provisioning	- Provisioning and management across desktops and servers - Integration with the desktop ecosystem	- Single tool for desktops and servers - Common portal for all configuration requests

2 Product Features

An enterprise typically has multiple types of IT consumers who want different things from the IT organization. IT's challenge is mapping workload services to users with as much flexibility as possible to accommodate each group's requirements. VIS Creator provides the industry's most flexible platform for rapidly automating the delivery and management of virtual workloads.

VIS Creator maps virtual workloads to users automatically based on policies and processes established by IT. Moreover, these policies automate and manage the workload lifecycle from requisition through retirement.

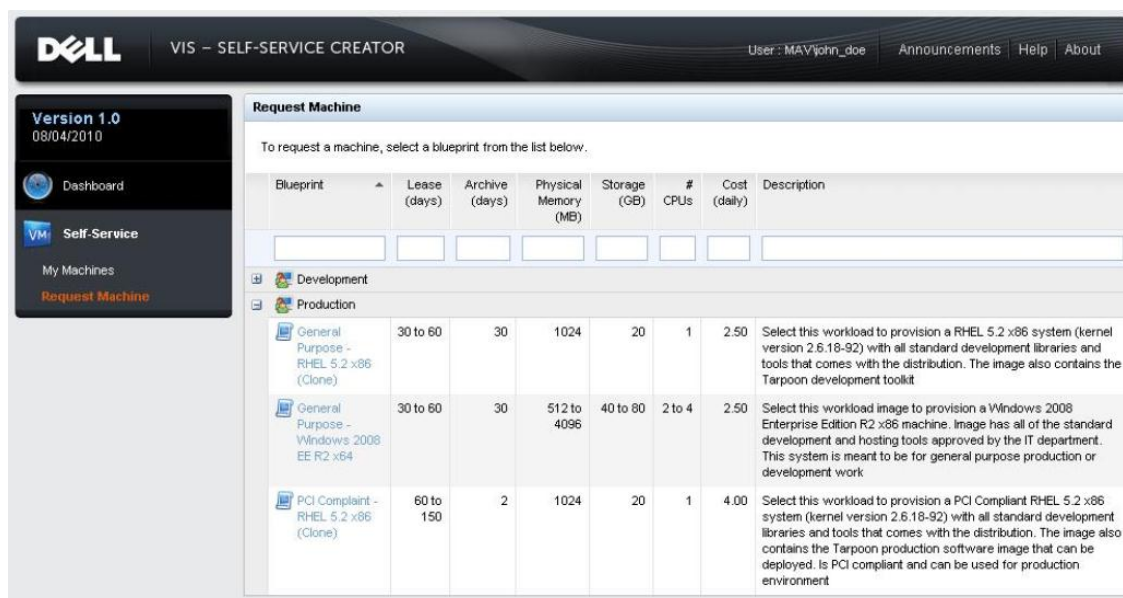
IT administrators can use out of the box workflows and be up and running on day one. The time to value for a customized solution is also faster than other vendor offerings or in-house development.



With VIS Creator, IT can easily be responsive to the diverse needs of business lines, server and desktop users, development and production, and other groups — likely for the first time.

2.1 Role-based Self-Service Portal

The self-service portal is one of the key features of VIS Creator. In aligning with the goal of VIS to improve operational efficiencies in the datacenter via IT Process automation, the self-service portal frees up IT administrators from repeated manual activities while empowering end-users to request for the “right” workload. With a view into the cost and the capacity of the virtual workloads, end-users are given the choice of choosing the workload that best meets their requirements. The always available on-demand capability of the portal also results in significant improvement in the end-user's customer experience.



The end-user is the audience the IT department serves. VIS Creator exposes a minimalistic self-service end-user portal from where the end-user can request for new virtual workloads and also manage existing workloads already owned by then end-user.

2.1.1 Requesting new virtual workloads

On the VISCreator end-user console, the end-user has a view of a catalog of workloads that the user has access to based on provisioning group memberships. If configured by the administrator, the end-user has visibility into the cost of the individual resources. The user selects a workload, indicates the number of machines desired, makes other choices that may be available, and submits the machine request.

If the request workflow requires approval, the request is sent to the group manager, one or more outside approvers, or both, all of whom must approve the request.

When the request is approved, or if it does not require approval, the machine is provisioned from one of the provisioning group's reservations, built using the workflow, specifications and properties detailed in the blueprint, and turned on. Finally, the end-user is notified of the availability of the virtual workload

2.1.2 Managing existing virtual workloads

On the VIS Creator end-user console, the end-user can also view all the workloads owned by the user, can connect to any machine, and perform operations on it such as turning it off and on, re-provisioning it to its initial state, expiring it and even destroying it. The user can also check the lease status of the machine and ask the group's managers to extend the lease if necessary.

When the machine's lease expires, or it is manually expired, the machine can no longer be operated or reprovisioned. If the workload definition specifies an *archive period*, however, the machine's owner can request *reactivation* by a group manager at any time before that archive period ends. This allows the owner to retrieve data left on the machine or to extend

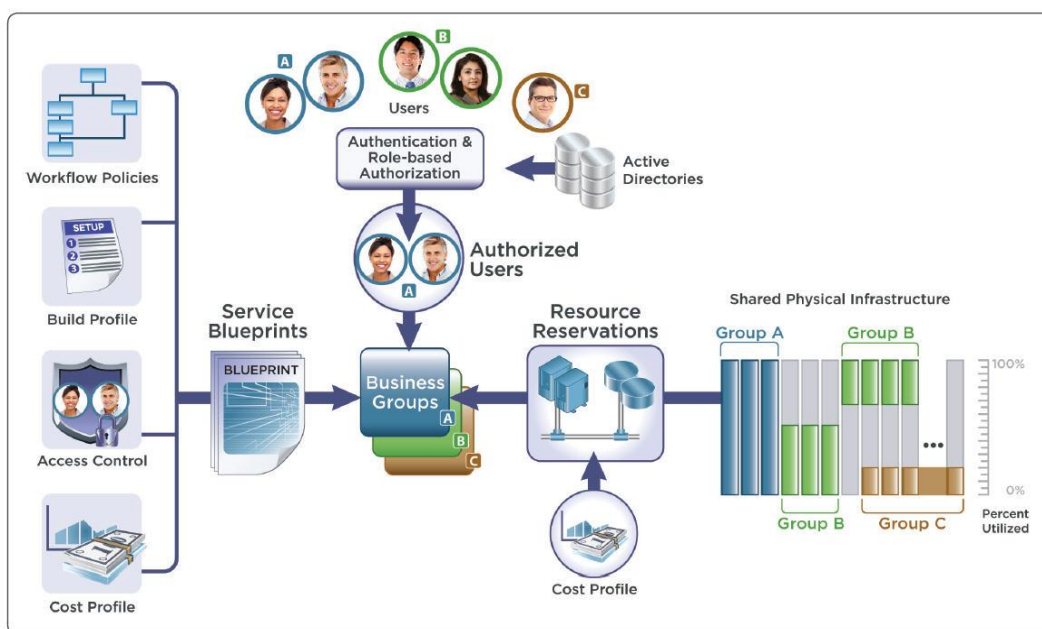
its use as changing circumstances require. Enterprise administrators can also search for and identify unused or underused machines and reclaim them (with the consent of the user) through early expiration.

When the end of the archive period is reached, or if there is no archive period, the machine is destroyed. The resources that provisioned it are now available to provision new machines.

2.2 Governance with policy-based automation

The ability to integrate both IT and business policies into the workload delivery workflows is a cornerstone capability of VIS Self-Service Creator. Policy based automation is enabled by creating groups that maps a specific set of users to pre-defined set of workloads that can be deployed to a pre-defined allocation of hardware resources. Before users can access resources, the administrator defines policies used to limit resource access, assure that builds are configured to standards, and enforce process workflows including approvals. Self-Service Creator can be customized for a company's unique environment by creating these policies

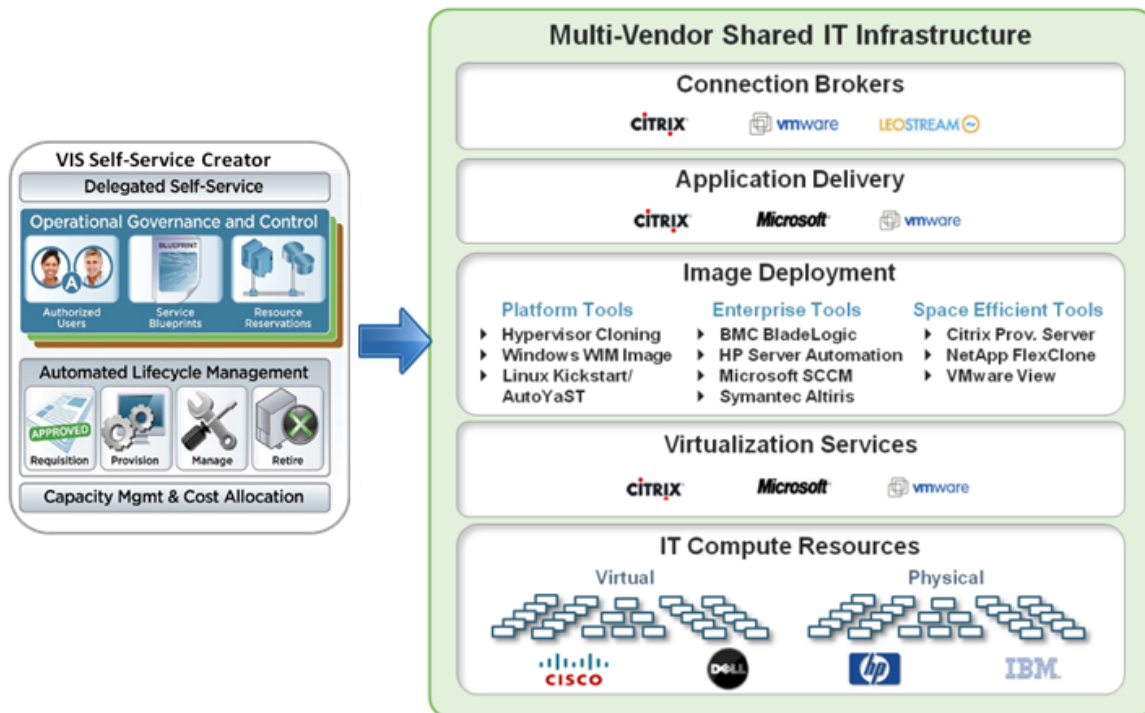
- **Business Groups:** Allows virtual workloads, resources, policies, processes, and management-access controls to be grouped into various groupings to provide the capability for IT to support various business functions



- **Authorized Users:** Identifies users authorized to access workloads and utilize physical resources and also specifies the rights of each user
- **Service Blueprints:** Provides a catalog of available virtual workloads and contains plans and specifications for building, managing, reclaiming, decommissioning, and archiving each virtual workload
- **Resource Reservations:** Reserves dedicated compute resources from shared physical infrastructure which can then be allocated to business groups

2.3 Extensive support for existing tools & Heterogeneous software

Process changes are often more challenging than technological changes. VIS Apc_rmp helps companies adapt to new workload-delivery paradigms without significantly changing the way they operate. The extensibility of VIS Creator ensures that there is no rip-and-replacement of existing management tools and processes and thus allows a company to become more efficient and productive quickly. With VIS Apc_rmp policies can be used to customize standard process automation without implementing any code changes.



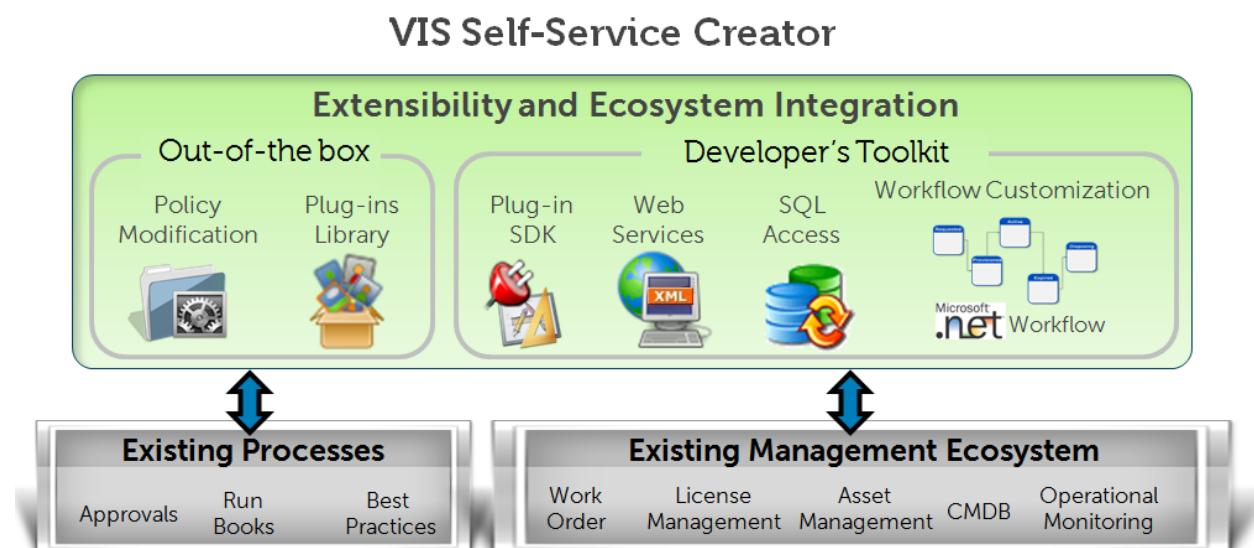
VIQ Creator orchestrates virtual workload delivery across multi-vendor components including hypervisors, connection brokers, image deployment technologies, and other management systems, all through a single console.

- **Hypervisors:** VIS Creator supports VMware ESX, Microsoft Hyper-V R2, and Citrix XenServer.
- **Virtual Desktop:** Provisions and manages systems and applications for both servers and desktops, including virtual-desktop components as Citrix XenDesktop.
- **Management tools:** In addition to cloning virtual machines, VIS Creator supports and orchestrates OS platform tools, enterprise management tools, space-efficient deployment solutions, and multiple image deployment options.
 - **Native Platform Tools:** VIS Creator supports the cloning capabilities of each underlying hypervisor, including VM customization when supported. For Microsoft Windows based machines, VIS Creator has built a custom WinPE builder that can be used along with a WIM image to provide a standard method for building and customizing machines across all hypervisors.

For Linux, Red Hat users can invoke Kickstart to customize VM clones and SUSE users can use the corresponding AutoYaST tool.

- **Enterprise Tools:** VIS Creator has integrated with enterprise tools from vendors, including BMC, Microsoft, and HP to enable companies to manage their virtual machines using the same tools used for their physical machines. VIS Creator automates and orchestrates the deployment and installation of OSES and applications software using these tools. Companies with large production environments value this additional functionality, which provides patch management and compliance enforcement not available with basic platform tools.

Out-of-the-box plug-ins facilitates image deployment options using tools from vendors as BMC, CA, HP, and IBM and virtual desktop delivery using Citrix XenDesktop. An extensibility framework based on Microsoft .NET and Windows Workflow Foundation enables users to design and manage custom data models and workflows.

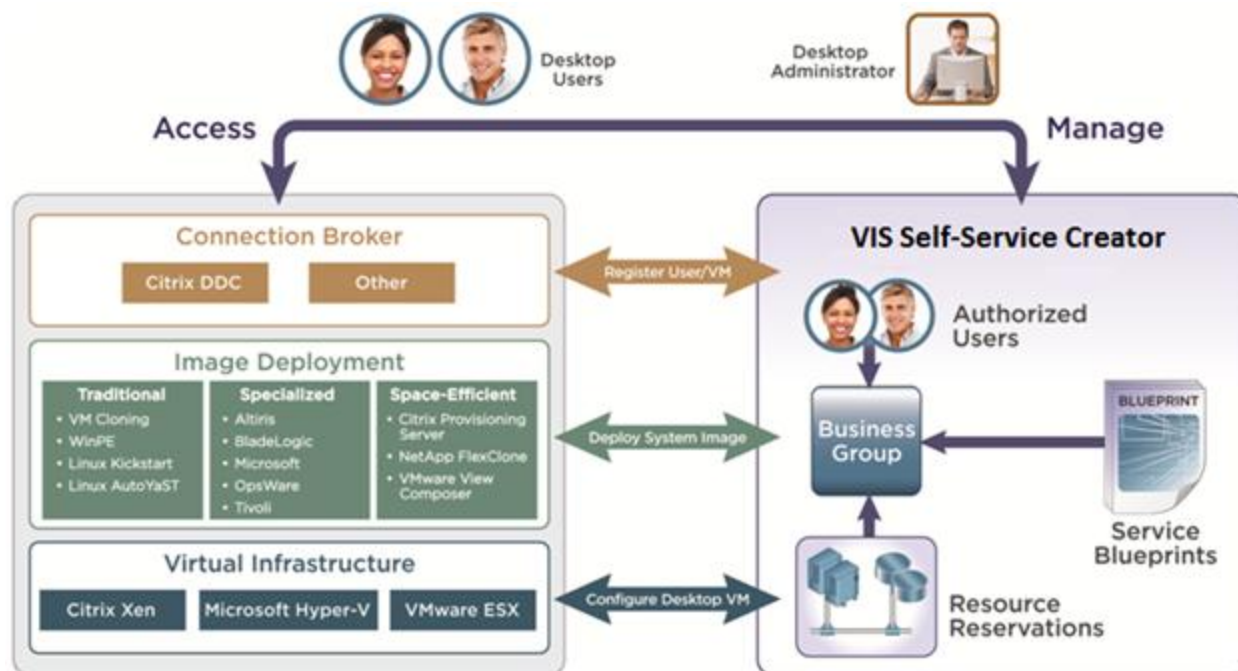


2.4 Delivery of Virtual Desktops

Compared to servers, desktop environments have more components, greater scale, a higher rate of change, and often demand a faster time to delivery — exacerbating the need for automation, orchestration, and control. VIS Creator simplifies and abstracts the complexity associated with managing a multi-vendor desktop solution, automating and orchestrating the tasks required to deliver the desktop service without staff having to use separate element managers.

VIS Creator's ability to support virtual desktop delivery is enabled via plug-in modules that automate provisioning and ongoing management of virtual desktop devices from a single management console.

Using VIS Creator, IT delivers and manages virtual desktops independent of the hypervisor, connection broker, and image deployment technology, all through a single management interface.

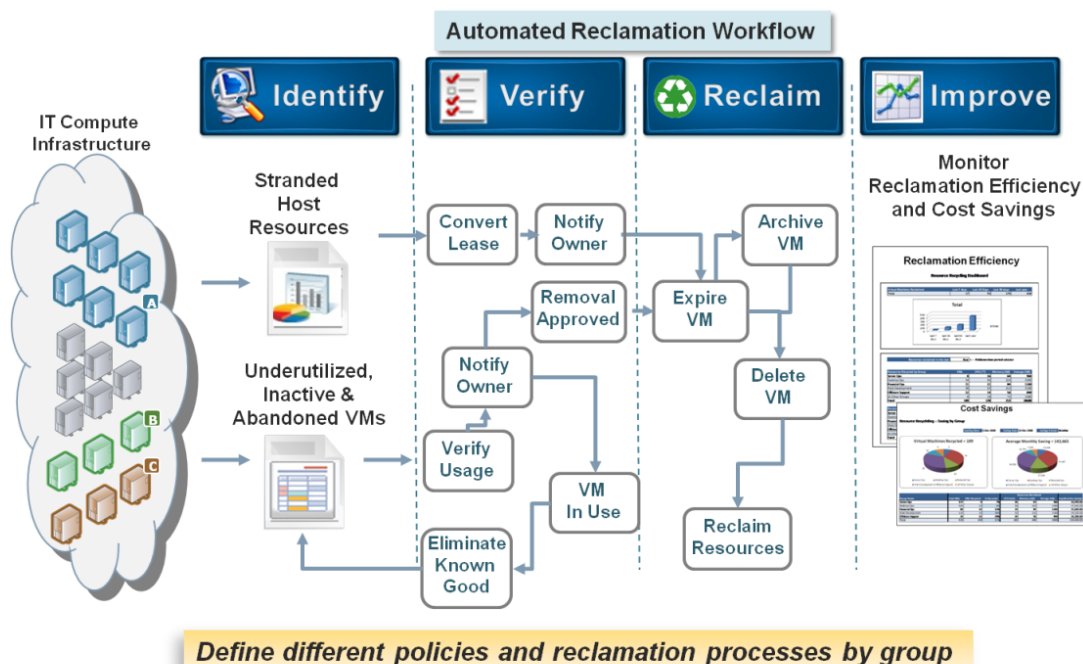


2.5 VM Sprawl Control

Virtual machine sprawl is a concern facing companies that have deployed desktop or server virtualization. It is not uncommon for 10 to 20 percent of virtual machines to be over-provisioned, inactive, or abandoned. The ability to quickly create virtual machines without the discipline and control of physical infrastructures results in VMs being provisioned without proper approvals, being over-provisioned, and consuming resources after they are no longer required. Reclaiming this underutilized capacity can be such a labor-intensive and time-consuming process that it is performed rarely, if at all.

VIS Creator helps companies control virtual machine sprawl and optimize resource utilization in three ways:

- **Reduce:** VIS Creator's self-service portal and automated workload delivery ensure that machines are configured according to predefined specifications, are available only to authorized users, and are provisioned to the allocated resources. With the appropriate policies in place, administrators control not only how a machine is built, but what resources are used and how much is consumed. Approval policies ensure that machines are not provisioned without business justification.
- **Reuse:** VIS Creator policies control how long a leased machine will exist and when archived resources will be reclaimed. Process automation orchestrates the retiring and reuse of expired resources.
- **Recycle:** Exception reports help identify stranded, inactive, and abandoned VMs. In addition, VIS Creator automates workflow, verifying if machines are still needed and reclaiming unused machines. Reports help monitor reclamation efficiency and quantify cost savings.



3 Deploying VIS Self-Service Creator

3.1 Getting VIS Self-Service Creator

VIS Self-Service Creator has two key value-propositions in-built into the solution – the capability to deploy and manage virtual servers as well as virtual desktops (VDI). Even though the same product enables these two capabilities, support for VDI environments requires a few additional plug-ins that are only exposed when the product is licensed for VDI as well.

To support these two use cases, VIS Self-Service Creator has two licensing models:

- Socket-based model for virtual servers:** For ease of ordering, the default product that has support for virtual server deployments is referred to as “**VIS Self-Service Creator for Virtual Servers**” internally within Dell (please note that the actual product name is VIS Self-Service Creator). This product is licensed on a per-socket basis and the software licenses will be available in any of the following bundles – 4-sockets, 10-sockets, 16-sockets, 32-sockets, 50-sockets, and 100-sockets.
- User-based model for virtual desktops (VDI):** The product that has support for virtual desktop deployments is referred to as “**VIS Creator for Virtual Desktops**” internally within Dell (please note that the actual product name is VIS Creator). This product is licensed on a per-user basis and the software licenses will be available in any of the following bundles – 10-users, 50-users, and 100-users.

VIS Creator can be purchased with PowerEdge M-series blades or PowerEdge Rack servers. The above socket or user bundles can be bought in any combination and in any quantity necessary to get to the total required for deployment at the customer site.

Once the license is purchased, customers may download VIS Self-Service Creator software from <https://partners.dynamicops.com/DellVISCreator>.

3.2 License activation process

NOTE: For purposes of explaining the process, we consider the socket-based licensing model. The process is similar for user-based licensing as well.

After the customer has chosen to purchase a set number of socket bundles for VIS Self-Service Creator, the customer shipment includes License card(s) – one each for each socket bundle. For example, if the customer purchased two 10-socket license bundle and one 4-socket license bundle (adding up to 24-socket licenses), the customer would receive three license cards – one each for each bundle. Each license card contains a unique activation code and a link to URL to <https://partners.dynamicops.com/DellVISCreator> where the customer can register the activation code(s).

Step 1: Log into the license portal. First time customers have to register before log-in.

Step 2: After initial log-in, the customer enters the activation keys that is on each of the license cards.

Please Enter Your Authorization Codes

Received Authorization-Code(s)

XXXXX-XXXXX-XXXXX-XXXXX
AAAAA-AAAAA-AAAAA-AAAAA
BBBBBB-BBBBBB-BBBBBB-BBBBBB

Please enter your authorization codes above, put each authorization code on separate line.

Register Authorization Codes

Purchased License Information

QTY	License Type
1	VIS Self-Service Creator, 4 Socket License, 1 Yr
2	VIS Self-Service Creator, 10 Socket License, 1 Yr

Claim License

Step 3: Once the activation code is registered, the customer will get a link to download the automatically generated license file.

VIS Licenses

Product Description	Date Claimed	Update License	Download
VIS Self-Service Creator, 24 Socket License	8/1/2010 7:49:20 PM	Modify	License

Register Authorization Code(s)

Step 4: Download the license file generated by the portal and input the license file into the VIS Self-Service Creator software. For step by step instructions on uploading the license file to the VIS Self-Service Creator software, customers may refer to the license manual available to download at the license portal above.

3.3 Supported Languages

In the 2.0 release in May 2011, VIS Self-Service Creator's user interface and documentation will be available in English only. Version 1.0 continues to be available in Simplified Chinese, Traditional Chinese, Dutch, French, German, Italian, Japanese and Spanish.

3.4 Supported Hardware & Software

Hardware support has two aspects – (1) hardware supported to run VIS Self-Service Creator software and (2) hardware running the hypervisors that will be used by VIS Self-Service Creator as a target to deploy workloads. Even though the scope of the latter is based on the Dell support matrix for the individual hypervisors, Dell will provide guidance on the platforms support for both (1) and (2) for VIS Self-Service Creator.

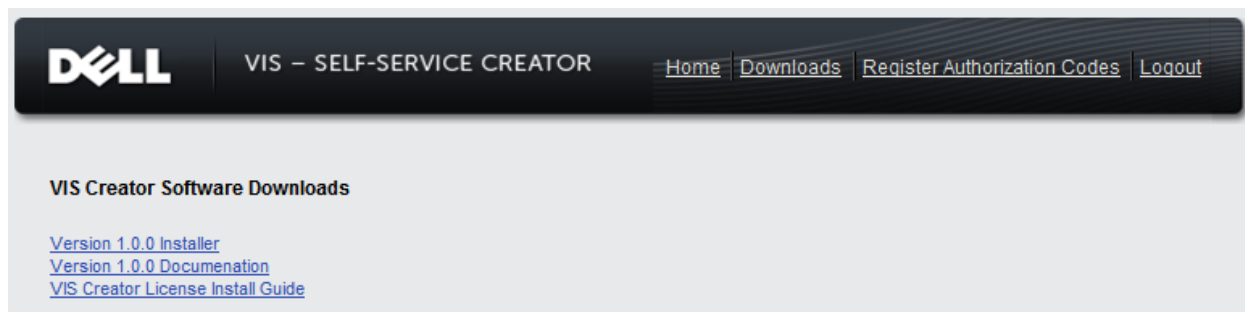
With every release of VIS Self-Service Creator, a hardware and software compatibility list will be published. This list will contain support details on the following:

- Rack mounted servers and Blade servers
- Operating Systems
- Server virtualization platforms

The hardware and software compatibility matrix will be available on the Dell support website ([direct link](#)).

3.5 Software download, installation and configuration

For access to the **software installation bits** and step-by-step instructions on product installation, license installation, product configuration, and on-going management of VIS Self-Service Creator, customers should go to <https://partners.dynamicops.com/DellVISCreator>.



4 Support

Dell will offer break/fix support for VIS Self-Service Creator via PROSUPPORT offerings. The scope of the PROSUPPORT offering includes L1, L2, and L3 levels of support.

4.1 Level 1

Support means the services provided in response to a customer's initial request for assistance. These services include, but may not be limited to, call logging, entitlement verification, basic installation assistance, basic troubleshooting, determination of whether a solution is contained in the product documents, review of symptoms in the partner's knowledgebase for known resolutions, and closing the matter with the customer after resolving the problem.

4.2 Level 2

Support means the services provided for detailed installation assistance, configuration information, compatibility information, problem isolation, advanced troubleshooting, and determining if a problem is reproducible.

4.3 Level 3

Support means services provided by the highest-level technical support engineers working in conjunction with development engineers to resolve problems in the product that cannot be resolved with Level 2 Support or are determined to be the result of a design, compatibility, or implementation defect. This includes defects that may be related to interoperability between the product and a third party's product.

5 Licensing Options

As mentioned in section 5.1, VIS Self-Service Creator software is licensed either on a per socket basis or on a per user basis (for VDI environments). In the per-socket model, the socket count is determined by the total number of sockets on physical servers that have been added as a resource into VIS Self-Service Creator. For example, if a 4-node VMware ESX cluster consisting of 2-socket servers is added into VIS Self-Service Creator as a resource, it will require 8 licenses of VIS Self-Service Creator. In the per-user model, the user count is determined by the number of users in associated Active Directory groups.

NOTE: The sockets on the server running VIS-Self Service Creator software do not need to be included when determining licensing requirements.

5.1 Perpetual License

A license with no expiration date and without any support or rights to updates, patches, feature upgrades, or new releases.

Every perpetual software license will be tied to either a 1-year or 3-year Support & Subscription contract. This subscription & support contract entitles the customer to patches, updates, and new releases as well as to break fix support (L1, L2, and L3). These entitlements are only available with an active software subscription & support contract with Dell.

6 Resources

6.1 Technical Documentation

The following guides and reference manuals are available with every major release of VIS Self-Service Creator. They are all downloadable by the customer.

From <https://partners.dynamicops.com/DellVISCreator> [Require log-in]

- VIS Self-Service Creator Installation Guide
- VIS Self-Service Creator Operating Guide
- VIS Self-Service Creator Release Notes

From <http://www.dell.com/vis>

- Reference Architectures for VIS Self-Service Creator
- VIS Self-Service Creator Hardware and Software Compatibility Guide
- Whitepaper: Product Overview
- Whitepaper: ROI using Self-Service Creator
- Whitepaper: Ecosystem integration