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Built-in Intelligence
Building intelligent, portable workloads with WorkloadIQ—Build
by Ken Baker

If you haven’t heard, near the end of last year Novell unveiled its unique approach to intelligent workload management (IWM) with the introduction of WorkloadIQ. WorkloadIQ focuses on enabling IT organizations to better manage and optimize their computing resources in a policy-driven, secure and compliant manner across physical, virtual and cloud environments, while serving up the business services that end users need and want in a flexible manner. WorkloadIQ will empower organizations to manage the entire workload lifecycle while ensuring their environments are policy-driven, performance-optimized, identity-aware and integrated.

In an IWM world powered by WorkloadIQ, the end goal is to have workloads that freely move around and that are self-aware of their environment. For example, a workload could recognize that its performance is low and dynamically move from one environment to another based on certain parameters. As part of the move, it will automatically adhere to any audit, security or compliance requirements prescribed by the environment. To deliver on this type of intelligent workload management, WorkloadIQ is made up of four critical functions—build, secure, manage and measure. This article focuses on the build aspect of WorkloadIQ.

> Building Intelligent Workloads

The goal of the first component of WorkloadIQ is to allow you to build intelligent, portable workloads with integrated identity, security and management services. As a key aspect of WorkloadIQ, you can leverage the SUSE Studio product from Novell to build the integrated stack of applications, middleware and operating systems that will make up these intelligent workloads. The products make it quick and easy to create, test and configure workloads for virtual and cloud environments.

One of the biggest challenges in addressing the needs of intelligent workload management is being able to build a portable workload that can easily move from one environment to another. While the vision is to be able to allow workloads to seamlessly move from physical to virtual to cloud in a dynamic manner, that technology isn’t completely here today. However, SUSE Studio has the ability to build workloads in different formats that enable seamless portability within an environment as well as seamless and easy transformations between different environments.

SUSE Studio has the ability to build workloads in different formats that enable seamless portability within an environment as well as seamless and easy transformations between different environments.
For example, for virtual environments you can use SUSE Studio to build a workload in the Open Virtualization Format (OVF), which is a standard way to package and distribute virtual appliances or self-contained workloads that run as virtual machines. As an open, secure, portable, efficient and extensible format, virtual workloads in the OVF format are not tied to a specific hypervisor or processor architecture. This allows workloads built in this format to seamlessly move between different virtual environments such as VMware or Xen.

SUSE Studio also facilitates the seamless transformation of workloads from virtual to cloud. In other words, if you build an OVF formatted workload for your virtual environment, by simply changing the target format and clicking the Build button again in SUSE Studio you can quickly transform (rebuild) it into an Amazon EC2 images for the cloud. You also have the ability to simultaneously build workloads for multiple targets during the initial build process. (See Figure 1.)

When building a workload with SUSE Studio, there are five main steps to follow:

1. Select your OS environment
2. Choose your software packages/middleware
3. Configure the workload
4. Add any wanted overlay files
5. Choose the environment format and build the workload

Figure 1: You can simultaneously build workloads for your cloud, virtual, and physical environments during the WorkloadIQ build process.
SUSE Studio becomes both a catalyst and foundation for organizations to achieve standardization that simplifies workload management, saves time and reduces costs.

In terms of a server OS environment, SUSE Studio lets you choose from a set of base templates based on either SUSE Linux Enterprise Server 11, SUSE Linux Enterprise Server 10, openSUSE 11.1, or a Just Enough OS (JeOS) based on either SUSE Linux Enterprise 11 or openSUSE 11.1. The JeOS option is ideal for those workloads that don’t require all the RPMs or packages of the full blown OS distribution. When selecting your OS environment, you also chose between a 32-bit or 64-bit architecture. If you have previously built a workload with SUSE Studio, these will appear as template options as well.

When choosing the software packages that make up the middleware of your workload, you have three choices. First, you can choose to add or remove any of the software available from the base template that you chose. Second, you can choose software from external repositories by adding them to the build process. For example, you can add repositories from the openSUSE Build Server at download.opensuse.org/repositories, or from any other URL that provides a software collection compatible with SUSE Studio and its templates. The third option is to upload into SUSE Studio any compatible RPM packages that you have stored locally or from the Web. You just need to make sure that those packages are built for your workload’s chosen base OS template and architecture.

When you choose a software package, SUSE Studio automatically resolves any necessary dependencies. Additionally, to help you choose the best software package you can use SUSE Studio’s software search capability. For example, if you want to add an Apache package, you can enter “Apache” in the search field and it will bring up all the available Apache packages ranked by their popularity. (See Figure 2).

After selecting your software packages, you need to configure your workload. In this part of the process you can select language and keyboard, configure the network, enable the firewall, add users and groups, set up data base configurations and more. Next you’ll have the option to add any desired overlay files.
When you finally come to the actual build stage, you select the format for the environment for where your workload will run. As mentioned before, SUSE Studio actually allows you to select multiple formats, allowing you to build a workload for each of your target environments. For example, if you choose to build a cloud workload using the Amazon EC2 format, you can also opt to simultaneously build a workload for your virtual and physical environments as well by marking the additional formats that you want to build.

> Less Complexity, More Consistency

If you decide today that you want to run your workloads in a VMware environment, but tomorrow you decide you want to downsize your data center and move the workload to the cloud, it becomes easy through this ability to build and leverage the exact same workload for all these different environment formats. Not only does that speak to the portability that SUSE Studio delivers, but it highlights its ability to reduce complexity as well.

In fact, before even considering the benefits that portability provides, many organizations first look to SUSE Studio for its ability to provide a level of consistency or standardization that simplifies their overall workload management. For example, in an organization with 20 or so different business groups, each business group might build its own workload stacks with each using different versions of Windows or Linux, and different application sets and versions. That on its own becomes a wild mix that can be extremely difficult to manage and keep under control. That mix becomes wilder and even more unmanageable if you’re using scripts to build those workloads.

Software popularity ranking

*Figure 2:* SUSE Studio helps you choose the best software package for the workload you’re building with its software popularity ranking.
SUSE Studio becomes both a catalyst and foundation for organizations to achieve standardization that simplifies workload management, saves time and reduces costs. It lets you easily create a manageable set of base and fully built-out templates to address all your workload needs. And that simplification also makes it easier for organizations to get to the point where they can provide on-demand workloads.

For example, with SUSE Studio you could build a standard mySQL workload template that’s complete with the right OS and configured with the correct database schemas. (See Figure 3.) So, if someone in the organization comes to you requesting to launch a new mySQL application, you can say here’s the mySQL template for you to build it on. Or if someone wants a finance application, you can provide them the standard finance template. This allows you to provide standard workloads comprised of a consistent stack of elements, but with the flexibility to add some variation as needed.

**Figure 3:** You could build standard workload templates with OS and database schemas completely configured.
As you develop an on-demand workload capability with SUSE Studio, your on-demand workload templates can be used across all your different environments—physical to virtual to cloud.

Maintenance and update is another area where SUSE Studio reduces complexity in terms of intelligent workload management. SUSE Lifecycle Management Server is provided as part of SUSE Studio Onsite, which can automatically update and apply patches to your deployed workloads.

> **Greater Portability**

The simplification that SUSE Studio allows also helps prepare your organization to take advantage of the portability between different environments. To virtualize or move your application workloads to the cloud, you don’t want to have to deal with hundreds or thousands of stacks with all their different permutations as part of that process. And if you’re using scripts to build your workloads, trying to get the same results in generating a stack for the cloud that is equivalent to one you created a year or so ago for your physical or virtual environments can be nearly impossible. A script doesn’t have the intelligence to know what versions of which components you used when you created the original workload.

However, SUSE Studio does have that intelligence. It knows exactly what components and versions were used, making a rebuild or transformation to another environment as simple as clicking Build. And as already indicated, as you develop an on-demand workload capability with SUSE Studio, your on-demand workload templates can be used across all your different environments—physical to virtual to cloud.

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As part of WorkloadIQ, the SUSE Studio makes it easy to build virtual workloads, as well as extend them to private and public clouds. SUSE Studio is available online or as part of the SUSE Appliance Toolkit, which offers a comprehensive collection of tools, including SUSE Studio Onsite for building portable workloads, WebYaST for visibility into the configuration and performance of your workloads, and SUSE Lifecycle Management Server to facilitate the maintenance and updates of your workloads.
Delivering Workload Intelligence

In the world of intelligent workload management, you need to be able to deal with multiple environments, not just virtual and not just cloud. From a build perspective, that means you need portability and reduced complexity. As part of the WorkloadIQ solution, SUSE Studio delivers the portability, reduced complexity and stack consistency you need to quickly and easily build intelligent workloads that can be deployed in your physical, virtual and cloud environments. But WorkloadIQ doesn’t stop with the build process. Read the other WorkloadIQ articles in this issue of Novell Connection to learn what WorkloadIQ can do to help you secure, manage and measure your intelligent workloads.

Online Resources

Learn More

- SUSE Studio
- Enterprise Linux Servers
- Endpoint Management
- WorkloadIQ Build
Intelligent Workload Security
Dynamic Control, Portability and Flexibility with WorkloadIQ—Secure

by Ken Baker

In your physical and virtual environments when a user logs into a server and accesses certain files, you have the ability to view that activity within your log files. However, when you move your workloads to the cloud, its services and operating system might not be in your control. The workload might be hosted on a service provider’s machine with layers of firewalls and proxies that prevent you from establishing the peer-to-peer, or point-to-point connections you need to make sure that the right people can access the workload services for the right reasons. The “secure” component of WorkloadIQ solves that problem by allowing you to inject intelligence inside of those workloads with the security and identity and access management layers you need.

As part of its unique approach to enabling intelligent workload management, WorkloadIQ focuses on enabling IT organizations to better manage and optimize their computing resources in a policy-driven, secure and compliant manner across physical, virtual and cloud environments. It gives you a simple way to securely manage workloads across physical, virtual and cloud environments by leveraging the Novell ability to integrate identity and security into everything you do. Using a broad portfolio of WorkloadIQ products, solutions and partners, you can take advantage of those aspects of its intelligent workload management that make the most sense for your organization. (See Secure Products) While four critical functions make up WorkloadIQ—build, secure, manage and measure—this article deals with the “secure” component of WorkloadIQ.

Embedded Security Intelligence

Security and compliance are one of the major concerns for any enterprise. You have to ensure that you have the right levels of data protection and access control to protect your intellectual property, control access and to comply with government and industry regulations. That becomes increasingly difficult in a workload management scenario that needs to leverage physical, virtual and cloud environments. Your identity services need to be able to grow as dynamically as your cloud and virtual environment. You need to be able to flexibly manage security within the individual workloads themselves, including user activity monitoring across all of your different environments independent of where the workload actually resides. This type of balanced flexibility and control requires intelligence embedded inside your workloads.

WorkloadIQ delivers that ability by letting you inject or embed an intelligent identity footprint into your workloads. By leveraging Novell Identity Manager 4, as soon as one of your intelligent workloads comes online, Novell Identity Manager can recognize it as a unique, identifiable entity that can be dynamically provisioned by policy with the appropriate security, user access controls, monitoring and reporting. That built-in intelligence can allow Novell Identity Manager to recognize the purpose or context of that workload, talk to it, and act upon it in an appropriate and dynamic manner.

For example, you can use the user application in Novell Identity Manager 4 to trigger provisioning workflows, including leveraging its Role Mapping Administrator to provision the workload with user access authorizations and permissions based on their business roles in your organization. You could have it kick off a workflow process that notifies business managers about the availability of the workload’s services. It could ask them if they want to turn on its access and
By leveraging Novell Identity Manager 4, as soon as one of your intelligent workloads comes online, Novell Identity Manager can recognize it as a unique, identifiable entity that can be dynamically provisioned by policy with the appropriate security, user access controls, monitoring and reporting.

security, and if so what type of security they want to turn on. Such options might be to leverage policy to automatically provision the workload with Novell Sentinel, Novell Privileged User Manager, Novell Access Manager, or any or all of the components that make up the Novell Compliance Management Platform.

Also, by using standard REST APIs to interact with the workload via the REST interface in Novell Identity Manager, you could also have other services interact with the workload to secure and provision it. The key is that it provides dynamic, flexible and intelligent access based on the purpose or context of the workload. You can determine what you want to happen when that certain type of workload comes online. As a result, you can create very lightweight, highly portable workloads that once injected with this intelligent footprint can be dynamically acted upon, expanded and secured as needed within a matter of hours, rather than the weeks and months that would be required to manually provision and secure other vendors’ workload management solutions. Furthermore, at anytime you have the ability to change or apply new policies that can automatically and dynamically update and change how the workload is provisioned, secured and managed.

> Dynamic, Portable Workloads

With the secure component of WorkloadIQ you also have the ability to easily and dynamically administer your workloads’ access management services from anywhere. This ability ties back to the intelligent identity footprints embedded into your workloads, as well as to the content package manager in Novell Identity Manager.

The content package manager in Novell Identity Manager allows you to easily create, distribute, consume and control your workload policies through modular packages that act as the building blocks for all your policies. This lets you create lightweight workloads with a baseline set of standard policies, and then as needed apply custom policies on top of them in a dynamic matter without having to do any hard-coded point-to-point scripting. So, instead of having to bring in a team of consultants or engineers to write policy code every time you deploy new workloads, with a few simple clicks you can dynamically apply the needed policy packages. In fact, you can even use a smart phone to easily add, modify, or remove policies from any of your workloads, regardless of whether those workloads are physical, virtual or in the cloud. The content package manager also automatically provides you notification of any conflicts or dependencies between policies and then helps resolve them.
Intelligent Workload Security // Novell Connection Magazine

> Modular, Headless Workloads
One of the main advantages of injecting intelligence into a workload is that it makes it become headless. In other words, that intelligence allows you to easily and dynamically tie additional external services to those workloads. That means at build time you don’t have to embed every service that you might need into that workload. So, instead of having large, heavy-duty pre-built workloads with large memory footprints that lack flexibility and portability, and are hard to maintain, you can build lightweight highly flexible, portable, and manageable workloads that when they come online they simply grab the extra services they need.

For example, you could create a security appliance running the Compliance Management Platform products that listens for new workloads to come online. When a new WorkloadIQ workload comes online it would send out a heartbeat letting your security appliance know that it’s alive. The security appliance could look at the workload’s identity footprint to determine what type of workload it is, and then according to policy it could say this workload needs services from Novell Sentinel and its complete reporting framework. It might determine the workload needs Novell Privileged User Manager, Novell Access Manager or Novell Access Governance Suite. Its ability to dynamically tie new services and policies to that workload virtually become endless.

Additionally, as policy changes, new services can be added, while existing services can be modified, replaced or removed seamlessly. This type of headlessness eliminates inter-dependencies and gives you the flexibility to move workloads from one environment to another, while giving you the ability to dynamically instrument them with the security and controls you need.

> Dynamic Workload Role Management
As mentioned before, the intelligence injected into these workloads allows you to easily provision them with the appropriate user accesses and entitlements by leveraging the Role Mapping Administrator in Novell Identity Manager. (See Figure 1.) Instead of having to write low-level scripts (that have to been manually maintained and updated) for each of your workloads, as is required by other vendors’ solutions, you can create pre-defined baseline policies for users’ entitlements based on their roles in the organization. These roles can apply to any of the workload services that you might bring online, or you might have a different set of roles defined for different types of workloads. You do this by creating role associations with the Role Mapping Administrator.

For example, using the Role Mapping Administrator’s click-and-drag interface you could specify that a set of profiles on salesforce.com or SAS are equal to certain groups in Active Directory. Once these associations are made they can be automatically applied to certain workloads that come online. If those roles’ entitlements or associations need to be expanded or

With the secure component of WorkloadIQ you also have the ability to easily and dynamically administer your workloads’ access management services from anywhere.
modified some time in the future, those additions and changes can automatically flow to all of your workloads that use those roles. That ensures consistent access control and compliance across all your workloads, while eliminating the need to manually update each workload whenever changes occur.

> Intelligent Event and User Monitoring
The embedded workload intelligence provided by WorkloadIQ augments your ability to monitor and correlate events that occur within your workloads. (See Figure 2.) For example, in your virtual environment you might already have the ability to monitor the status of your different virtual machines in terms of memory usage, CPU usage and other similar metrics. Using the identity activity and correlation capabilities provided by Novell Sentinel you can get correlated details on events occurring within those virtual machines as well. So, instead of just knowing that two or three virtual workloads on a host are struggling because the CPU is being over-used, it can help you determine the cause of that overutilization by correlating the events happening within individual workloads, such as revealing that one of them is performing a significant amount of file copies or other activity that exceeds the norm. That kind of actionable information can trigger remediation efforts that allow you to proactively address potential problems.

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**Role mapping administrator interface**

*Figure 1:* The intelligence injected into WorkloadIQ workloads allows you to easily provision them with the appropriate user accesses and entitlements.
That same capability in Novell Sentinel allows you to monitor user activity within your cloud, virtual and physical workloads, correlating or tying that activity together based on identity to give you a single unified picture of what users are really doing throughout your different environments. It can correlate identity on user activity across all your workloads to alert you to suspicious activity.

For example, it could correlate a string of events that show that even though logs in your SAP workload indicates that Bill Smith logged in and accessed SAP records from your San Francisco office on a certain date at a certain time, other system event logs show that Bill Smith never even logged into the San Francisco network or even entered the building on that day. Instead, the other logs might even indicate that Bill Smith was actually in New York that entire day.

User activity report in VMs

Figure 2: By injecting intelligence into your workloads with WorkloadIQ you can monitor and correlate events that occur within your workloads.

The content package manager in Novell Identity Manager allows you to easily create, distribute, consume and control your workload policies through modular packages that act as the building blocks for all your policies.
Intelligent Workload Security // Novell Connection Magazine

With the strong integration between identity management and security management inherent to WorkloadIQ, it doesn’t matter whether activity is occurring in your physical, virtual, or cloud environments, you can still track what’s going on and tie that activity back to specific user roles and identities. That type of correlated user activity monitoring not only saves you time, but it enables you to easily identify potential security issues that would otherwise go unnoticed.

> Dynamic, Flexible Control
Your security and identity services need to be able to grow and evolve in as dynamic a fashion as the virtual and cloud environments where they run. You also need to be able to control, monitor and secure what’s going on inside those workloads in a dynamic manner. You can do all that by leveraging the intelligent identity footprints that WorkloadIQ lets you embed within your workloads.

Whether in physical, virtual or cloud environments, WorkloadIQ gives you the dynamic flexibility and control over your workloads to keep them secure and your organization safe. To find out more about WorkloadIQ, read the other articles in this issue of Novell Connection and learn what WorkloadIQ can do to help you build, manage and measure your intelligent workloads.

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- Novell Identity Manager
- Novell Sentinel
- Novell Privileged User Manager
- Novell Access Manager
- Novell Compliance Management Platform
- WorkloadIQ Secure
Managing Service Levels in the Cloud
Cloud Manager Takes Control of Virtual Workloads
by Michael Astle

Sometimes solving one problem creates new problems. Take the problem of server growth and utilization. When data centers are filled with physical servers where each plays a specific role, individual servers are often underused or overtaxed. Then comes along virtualization to solve that problem. Enterprises were quick to begin their adoption of virtualization as a way to consolidate servers, cut power costs and save on floor space in their data centers. Yet full adoption has been slow, and analysts say it will take until 2013 before even 69 percent of all workloads have been moved to virtual environments. The reasons for this slowing in the adoption of virtualization can be attributed to three barriers: security, management and server sprawl.

When workloads become virtual, they also become mobile, and mobility can be a nightmare for IT managers concerned with security, which should be everyone. Traditional hardware tools often can’t control security and ensure compliance, especially when the workload moves outside the enterprise firewall, along with identity, policy and compliance capabilities. For more information on virtual workloads and security, see Intelligent Workload Security in this issue of Novell Connection.

The next barrier to the adoption of virtual workloads is management. As organizations migrate to virtual infrastructures, they end up with environments that mix physical, virtual and cloud infrastructures. This mixture turns into management stacks that multiply by necessity just to manage the workloads. The result is complexity and inefficiencies that take their toll on the IT department’s time and budget. Yet for the foreseeable future, IT managers need to deal with physical, virtual and cloud infrastructures.

The third barrier to adoption is server sprawl. Server sprawl is a direct result of the solution to a problem. When the cost of servers dropped to commodity levels over the past decade, data centers simply added new servers every time the business needed a new service. The result was physical server sprawl that left many or most servers underused. Virtualization came along and solved this problem by consolidating physical servers onto virtual servers that are cheaper and substantially easier and faster to install and that better use data center resources. However, IT departments soon recognized an unintended consequence: virtualization throws a curtain over the costs for individual services that the business requests. IT departments can’t allocate costs to business departments, because the costs are spread virtually over numerous physical servers.

Cloud computing can reveal the cost of provisioning computing resources and improve the ability of IT to manage workloads and allocate their costs to the business.
Managing Service Levels in the Cloud // Novell Connection Magazine

With services essentially free to the business, the business requests more resources than are necessary, and the result is the over-provisioning of workloads. Enterprise infrastructures today are often over their capacity before consolidation projects are even complete.

Enter cloud computing. Cloud computing can remove that virtual curtain to reveal the cost of provisioning computing resources and improve the ability of IT to manage workloads and allocate their costs.

This article looks at what is new in Novell Cloud Manager, a management component of the WorkloadIQ approach by Novell, to meeting the needs of the intelligent workload management market. This article assumes you are familiar with many of the capabilities of the existing version of Novell Cloud Manager.

> Harnessing the Cloud

Novell developed Cloud Manager as the management component of its WorkloadIQ strategy to help enterprises rapidly deploy and manage private clouds, built either from existing virtual machines—likely the most common case—or from scratch. Where IT departments charged business units for physical resources in the past, Novell Cloud Manager gives them the ability to easily package and price services for the business user today.

One feature that makes Novell Cloud Manager flexible and cost effective for organizations with virtual environments is that it sits on top of and communicates with the organization’s existing virtualization technologies. It is compatible with VMware, Hyper-V and Xen, so organizations can continue to benefit from their existing investments while adding control and visibility. (See Figure 1.)

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Novell Cloud Manager architecture

Figure 1: Novell Cloud Manager lets you build a cloud environment using the existing virtualization technologies in your data center.
Setting Up a Cloud

To understand how IT can package and price services based on virtual machines, let’s look at how you might set up a business service in a cloud using Novell Cloud Manager. Most organizations setting up a cloud already have a virtual infrastructure, so we’ll look at how you import and configure existing virtual machines.

Importing virtual machines is a fairly easy process. First, you log in to Novell Cloud Manager, select the Business Services option and click the Virtual Machines tab in the Cloud Manager window. Novell Cloud Manager discovers unassigned virtual machines and displays them in a new window.

You will import these into a new business service, but first you need to create the service and assign it to a user. You do this by clicking the Deployed tab, which opens a window showing existing services, and, in this version of Novell Cloud Manager, this window has a new link called Import. When you click this link an Import Business Service window opens. (See Figure 2.) This is where you create a service name, enter a business purpose and select a user for the service. Ideally, the user should be a member of the IT infrastructure team for the business unit.

To import the virtual machines that will make up this business service, click the Import button. This shows you the unassigned virtual machines. You will click on each virtual machine to configure it individually. In the configuration menu you can select the license cost—this is important, because the license cost is how your IT organization will charge the business unit for its service. (See Figure 3.) You also assign a service level. Bronze is the default and has a service level of 90 percent. You can also select Silver, Gold or Platinum for service levels of 95, 99 or 99.95 percent respectively. You also assign the number of virtual CPUs, memory, available storage and the number of network interface cards.
Under the Disks tab, you now have the option to include the system and data disks in the cost of the service.

Click Import to import the workload and attach the cost and other settings.

All that’s left is to click OK after each configuration and Import when you’re finished configuring virtual machines. Cloud Manager then shows you the monthly costs of business services to the business units. (See Figure 4.)

Costs for deployed services

Figure 4: IT can now charge each business unit for the actual cost of the services it uses.
Cloud Manager is part of the Novell WorkloadIQ strategy that helps enterprises rapidly deploy and manage private clouds using existing virtual machines or from scratch.

> Changing a Configuration
If you are familiar with the previous version of Novell Cloud Manager, you know that you can add services, but you haven’t been able to change the configuration of existing services—say, add more RAM. With the latest version of Novell Cloud Manager you can now change the service level and reassign resources, including the number of virtual CPUs, RAM, storage and the networks to which the service is associated.

In the Cloud Manager console, this is easy enough to do. The IT administrator assigned to the service logs into Novell Cloud Manager and selects the service that needs to be changed. (See Figure 5.)

Edit Workflow window

*Figure 5:* You can now modify existing workloads, including service levels, costs and other configurations.
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The administrator selects the service from the menu and can then change the expiration date and business purpose description. The service level can be changed, as well as any of the resources. The administrator can also add new workloads from the Change screen.

Novell Cloud Manager can also assign up to 10 disks to a single service, including one system disk and nine data disks.

> Making Configuration Easier with Workload Templates
Novell Cloud Manager creates a workload zone and associated host group, which are managed by a Novell PlateSpin Orchestrate server. Although these functions are outside the scope of this article, it is important to know that with the zone and host group created, Cloud Manager then discovers appropriate templates from the Novell PlateSpin Orchestrate server. These templates, which you can edit, populate the configurations for future workloads to make your job easier.

Also simplifying your job, you can copy workload configurations. Let’s say you have to create five similar workloads. When you create the first workload you can specify to copy that workload five times. Then you can use the Change screen to make any necessary tweaks to each of those workloads.

> Generating Reports
Novell Cloud Manager also generates numerous usage, cost and other reports that enable the IT organization to plan the purchase of resources based on usage trends, and they help the business to determine the cost of the services it uses and invest its limited money on services that make the most business sense.

Novell Cloud Manager is a powerful tool that enables organizations to deploy business services faster and with greater automation and consistency. At the same time, and equally important, it gives the IT organization the ability to attach costs to the business services it delivers, giving the organization the ability to control server sprawl and stop the proliferation of workload over-provisioning.

To learn more about Novell Cloud Manager, go to www.novell.com/products/cloud-manager/.

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Intelligent Workload Measurement
Novell Operations Center monitors and measures service level performance, no matter where your services are running!

by Bill Tobey

If there’s any management function that becomes indispensable as we start repackaging key business services as portable workloads, it’s the ability to monitor state and measure performance no matter where those workloads are running. Measuring service performance was hard enough when everything ran on physical resources safely within our own firewalls. Today we’re virtualizing many of those physical systems, seeding clouds in our own data centers, consuming some applications as SaaS while running others in public infrastructure clouds like Amazon EC2.

These hybrid environments add tremendous complexity to service management, and the fact that we no longer own or operate all the spaces where our services run doesn’t begin to get us off the hook for our SLA commitments. We started down the road to virtualization and cloud computing in search of standardization, efficiency, service quality and economy; if we can’t measure service performance accurately there’s no way to know whether we’re accomplishing anything.

IDC describes the challenge like this: “The nearly constant stream of workload provisioning and system configuration changes that occur in highly virtualized cloud computing environments results in the creation of a large volume of events, logs, and notifications across the system. IT organizations need tools that can effectively correlate these data streams and provide relevant metrics to track service level, root cause, compliance and fulfillment status, and drive automated remediation activities as needed.”

In fact, monitoring and measurement require two distinct types of functionality:

- First, the ability to connect all the available silos of IT information, correlate events in the IT infrastructure with the services they affect, and monitor those event streams for significant service impacts.
- Second, the ability to integrate IT and business performance metrics in ways that capture the contribution and significance of each service to the business, are meaningful to business users, and are continuously available to all stakeholders in near real time.

> Novell Operations Center: The WorkloadIQ Solution for Service Measurement

In the Novell portfolio of WorkloadIQ solutions, Novell Operations Center provides management, monitoring and measurement of key business services across physical, virtual and cloud environments.

Novell Operations Center monitors service performance and availability, models the relationships between services and the underlying infrastructure, and provides automated real-time measurement. It integrates the outputs of existing management tools with business context, creating a business-centric view of the most complex IT environments. It is available with connectors to most leading third-party systems and infrastructure management solutions, and is, of course, tightly integrated with all Novell identity, security and management solutions, including:

- Novell Cloud Manager
- Novell PlateSpin Recon
- Novell Sentinel
- Novell Identity Manager
• Novell ZENworks (includes Novell ZENworks Asset Management, Novell ZENworks Configuration Management, and Novell ZENworks Linux Management)

We started down the road to virtualization and cloud computing in search of standardization, efficiency, service quality and economy; if we can’t measure service performance accurately there’s no way to know whether we’re accomplishing anything.

Novell Operations Center is available as a complete business service management solution, or in three focused solutions that let customers build their service management capabilities flexibly and incrementally.

**Novell Operations Center for Service Measuring** monitors and manages performance in real time, alerting you before service levels drop. It integrates business context and prioritization rules into measurement activities, accounting for calendars, transaction value and volume, and other business factors to reveal bottom line impacts. Historical trend analysis provides guidance for future resource use, management and improvement. All these measurements are collected and consolidated in real-time dashboards that transform complicated technology into actionable, easy-to-understand business communications.

**Novell Operations Center for Service Monitoring** consolidates all available data sources, providing end-to-end service health monitoring of mixed-IT environments in a true end-to-end service management view. It helps business users understand service performance and IT to recognize business impact. Important new features include:

- Event Manager collects, filters, de-duplicates and normalizes line-oriented event data from any source. Working in sync with the Novell Operations Center intelligent service model, Event Manager turns raw data into clear, pertinent information that IT and business teams can understand and respond to.
- Experience Manager uses passive, synthetic transactions to measure end-user response times for Web-based applications.

**Novell Operations Center for Service Mapping** provides automated mapping and policy-based management of the complex relationships between key business services and the underlying IT infrastructure. Key components of this solution include a configuration management system, federated configuration management data base (CMDB) and asset management and discovery integration.
> **Service Monitoring and Measurement in Complex Mixed Environments**

**Novell Operation Center** gives IT and line-of-business personnel a real-time view of business service health and performance, regardless of whether the workloads that deliver those services are running internally or externally; in physical, virtual or cloud environments. (See Figure 1.) All that’s required is that workloads are configured with on-board intelligence and are reporting to some management solution with a standards-based API.

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**Monitoring and measuring NOC**

**Figure 1:** Novell Operations Center monitors workload health and measures business service performance in mixed physical, virtual and cloud environments, collecting and integrating information from multiple business and IT management applications.

For workloads running in public infrastructure-as-a-service (IaaS) cloud environments such as Amazon EC2, Novell Operations Center connects with the indigenous management solution and retrieves all relevant information and events as they are made available. In the case of Amazon EC2, a new adapter connects to Amazon CloudWatch, allowing Novell Operations Center to retrieve and consolidate operational and performance metrics for all live AMI instances. Experience Manager provides an independent measure of health and end-user responsiveness through synthetic transaction testing.

For SaaS services, Novell Operations Center monitors health and measures performance in the same manner, through integration with the service providers’ management systems and independent transaction testing. For internal cloud environments, Novell Operations Center connects directly with Novell Cloud Manager, as well as most other virtual systems management tools.

Finally, for workloads running on traditional physical infrastructure, Novell Operations Center...
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connects with the existing systems and infrastructure management solutions to collect and integrate health and performance metrics and events.

> Business-Centric Service Monitoring: The View from the Dashboard
So what does a business-centric view of an IT service actually look like? In this view of a typical Novell Operations Center dashboard, the portlet display at the upper left shows an overview of a manufacturing company’s order handling process, with a separate health indicator for each major process segment from order capture through materials procurement, manufacturing, finished product delivery, billing and payment processing. (See Figure 2.) The process detail display immediately below informs us that the data inputs for our process health indicators include feeds from an ERP monitoring system, an event management system, and an incident management system.

![Novell Operations Center](image)

**Novell Operations Center**

**Figure 2:** Novell Operations Center provides a real-time view of service health, showing the impact of infrastructure events on business operations.

The yellow indicators in the process overview are alerting us to major business impacts to the order capture and manufacturing processes, while the process detail display indicators show us that the alarms have been triggered by data from the ERP and event management systems.
By selecting the Root Cause display from the Actions menu in the Overview portlet, we find that two system events are responsible for the alarms—a network card and a system node CPU have failed. (See Figure 3.) Novell Operations Center has correlated these two otherwise unrelated events into its model for the order processing service, allowing us to see exactly where these infrastructure events will impact business services and operations. With this information in hand we can prioritize our response activities accurately and appropriately to get these systems and the services they support back on line ASAP.

The process overview dashboard also provides real time information about service performance against a critical SLA. In this example the company has set a goal that 90 percent of incoming orders will be processed within four hours of receipt. The tracking portlet at the bottom of this view displays processing data from the ERP system. (See Figure 4.) It shows that current performance against that goal is safely within target range.

If we wish to see performance trends over a longer interval, historical analytics allow us to interrogate detailed historical data through any type of view we choose to define. (See Figure 5.)
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SLA performance

Figure 4: Novell Operations Center provides real-time dashboard views of service performance against SLAs.

> Business Service Monitoring and Measurement Made Simple

As the IT infrastructure that delivers critical business services becomes an ever-more dynamic and complex mixture of physical, virtual and cloud-based resources, IT organizations and their customers throughout the business need easy-to-use tools for monitoring services and measuring their performance regardless of where the underlying workloads are running. Novell Operations Center brings together all the available information about infrastructure state and service performance in an intuitive, business-centric presentation that gives every stakeholder exactly the information they need to optimize their contribution to the business.

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**Historical analysis of SLA performance**

*Figure 5:* Novell Operations Center also tracks and displays SLA performance trends over time.

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- Novell Operations Center
- WorkloadIQ Measure
Taking WorkloadIQ into the Future

by Todd Swensen

With the launch of its WorkloadIQ strategy early in 2010, the intelligent workload management market quickly emerged as a major area of focus and investment for Novell. Since that initial stake in the ground, Novell has been working to refine its WorkloadIQ strategy and approach—and deliver products and solutions that provide a wide range of different intelligent workload management services and capabilities. So exactly where does WorkloadIQ stand after its first year? And more important, what types of intelligent workload management progress and innovation can Novell customers look forward to in the years to come?

Before we explore these questions, it’s probably useful to quickly review how WorkloadIQ fits into the intelligent workload management (IWM) picture. In a nutshell, IWM is a market category that exists to help IT organizations manage and optimize computing resources across physical, virtual and cloud environments—and do it all in a policy-driven, secure and compliant way. Of course, in a world where workloads need to move freely and securely among physical, virtual and cloud environments, it’s no longer practical to develop complex rules engines and workflows that can work across every possible type of environment and infrastructure. Instead, it makes more sense to integrate identity-driven governance and compliance, IT service management, and business management services and controls inside the workloads themselves, which is ultimately what makes them intelligent. And that’s exactly what Novell is working to do with WorkloadIQ.

> Build, Secure, Manage, Measure—Into the Future

The WorkloadIQ approach divides IWM into four key lifecycle areas: Build, Secure, Manage and Measure. Perhaps the best way to understand exactly what WorkloadIQ can offer your organization today—and where it’s headed in the future—is to take a closer look at each of the four areas.

Build: Enabling Intelligent, Portable Workloads

Workloads—and the operating systems that power them—need to possess certain characteristics and capabilities to work well across physical, virtual and cloud environments. The “Build” part of the WorkloadIQ approach focuses on providing those capabilities through SUSE Linux Enterprise and a variety of associated tools and solutions. Today, organizations are using SUSE Linux Enterprise to run production workloads in physical, virtual and cloud environments.

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WHAT MAKES A WORKLOAD INTELLIGENT?

What are the biggest differences between the traditional workloads of the past and the intelligent workloads of the future? Intelligent workloads are:

- **Policy-driven**, which means they can regulate and manage themselves, recognize when they are at capacity, and automatically find additional capacity—all based on pre-defined policies.
- **Secure**, which means they include security controls and real-time monitoring and alerting that move with them between environments.
- **Compliant**, which means they understand and follow security protocols and processing requirements and provide built-in log management and compliance reporting.
Going forward, service packs could enable SUSE Linux Enterprise to reduce friction and add even more flexibility by storing additional intelligence. Enterprises are also using SUSE Studio and the SUSE Appliance Toolkit to simplify image creation, streamline application deployment, and build intelligent workloads for physical, virtual and cloud platforms. Upcoming versions of SUSE Studio could allow organizations to make workloads smarter by integrating additional identity and security services directly into pre-existing workloads, rather than building them from scratch. Together, these additions and enhancements will continue to make SUSE Linux Enterprise the ideal platform for building and running intelligent workloads across physical, virtual and cloud environments.

“Intelligent workload management enables IT organizations to manage and optimize computing resources in a policy-driven, secure and compliant manner across physical, virtual and cloud environments to deliver business services for end customers.”

Secure: Extending Identity and Security Management Across Physical, Virtual, and Cloud Deployments
In a world where applications and services constantly shift between physical data centers, virtual infrastructures, and private or public clouds, you need solutions that can extend identity, access, compliance and security management to all of these different environments. Today, WorkloadIQ includes a range of solutions that allow you to attach identity and security management directly to portable workloads, apply consistent security capabilities within and around managed virtual images and workloads, and provide a wide range of policy-based identity and security solutions that extend to cloud environments. In the future, Novell intends to refine and expand these capabilities with potential new versions of Novell Identity Manager and Novell Sentinel, new versions of the Novell Compliance Management Platform and the Novell Cloud Security Service, and the addition of hosted identity and SaaS inspection services. Together, these Novell products can extend proven identity-driven services into the cloud—and lead the way toward complete SaaS and Infrastructure as a Service (IaaS) management and security solutions.

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WORKLOADIQ SOLUTIONS TODAY
Novell can increase your Workload IQ with solutions that help you build, secure, manage and measure workloads across all your physical, virtual and cloud environments:
• **Build** with enterprise Linux servers and the SUSE Appliance Toolkit.
• **Secure** with identity and access management, compliance management, and security management for intelligent workloads.
• **Manage** with virtualization, workload, and endpoint management solutions for intelligent workloads.
• **Measure** with complete business service management solutions for intelligent workloads.
Manage: Simplifying and Unifying Data Center and Endpoint Management
WorkloadIQ management solutions fall into two broad categories—data center management and endpoint management. In the data center arena, WorkloadIQ is working to enable IaaS cloud adoption with policy-driven, self-managed private and public business service provisioning. The future of WorkloadIQ management also calls for extending new compliance and security management capabilities to the cloud and developing new tools for integrating Novell solutions with more third-party products. Many of these capabilities are expected to be delivered or enhanced through new versions of Novell Cloud Manager, the introduction of Novell Server Manager, and updates to PlateSpin Recon, PlateSpin Migrate, PlateSpin Protect and PlateSpin Forge.

On the endpoint management side, Novell is working to create a completely unified endpoint management experience across physical, virtual and cloud environments, and bring security and lifecycle management together into a single infrastructure. Additionally, alternative delivery models such as soft appliances and enabling new “endpoint management as a service” solutions have the potential to eliminate a great deal of operational complexity. In the future, these capabilities may be extended primarily through the new ZENworks platform and the addition of Novell Service Desk for IT Service Management.

Measure: Complete Business Service Management for Intelligent Workloads
In a diverse intelligent workload environment, the ability to measure workload performance and monitor security events in real time across the entire physical, virtual and cloud infrastructure becomes critically important—and the future of WorkloadIQ is focused on delivering those capabilities. This starts with expanded logging, auditing and reporting capabilities that provide detailed information about the productivity and usage of all your IT resources. It also includes building more real-time insight into your IT operations with the ability to monitor, measure and map established IT policies and processes across physical, virtual and cloud environments. Finally, Novell is constantly working to improve the tools that help you identify and understand all of the security and business risks hiding inside your IT organization—and provide real-time information about impending security risks. Novell is working to expand all of these capabilities—and continue to extend them to the cloud—through a new release of Novell Sentinel and Novell Operations Center.

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LEARN MORE ABOUT WORKLOADIQ
For more information on how WorkloadIQ can help you intelligently build, secure, manage and measure workloads, visit www.novell.com/workloadiq. Or check out the WorkloadIQ blog at www.workloadiq.com.
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> Explore the Present and Future of WorkloadIQ
Novell obviously has a very full plate of new WorkloadIQ products and solutions, and it's virtually impossible to cover them all in a short article. But the important thing to remember is this: After one year, Novell is more committed than ever to its WorkloadIQ approach. That commitment is accelerating the progress and momentum of a long list of WorkloadIQ solutions that will continue to make your workloads more intelligent and break down the barriers between physical, virtual and cloud environments. Many of those solutions are slated to be available to you in the near future. So visit www.novell.com/workloadiq today. And start making WorkloadIQ a reality for your business.

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- Build
- Secure
- Manage
- Measure
WorkloadIQ: Start Anywhere
A Phased Approach to Intelligent Workload Management
by Eric Harper

It’s a little over one month into the new year, so it’s time to ask the notorious question: “How are your New Year’s resolutions coming?” If you’re like most people, those resolutions probably had something to do with working out more, eating less or getting better organized. And, if you’re like most people, you probably shot too high and by this time you’ve already scaled back your expectations or scrapped them altogether.

So, what went wrong? It’s hard to say, but according to experts, most people try to make changes that were too drastic. People can change their behavior and habits, but usually not too quickly and not all at once.

What does this have to do with Novell and WorkloadIQ? I’ll get to that in a second, but first let’s define what a workload is and what intelligent workload management means.

> What is Intelligent Workload Management?
I don’t have to tell you the IT world is changing. New technologies and business models have led to new principles of computing. In the not too distant past, IT dealt in single-purpose physical environments where single applications were tied to single processors. It was a one-to-one relationship, and it was that way just about everywhere. In many ways, we’re still using this system.

However, IT has been evolving that one-to-one system into virtualization, where pooling resources became an efficient way to handle increasing computing demands. Now, we’re taking that virtualization model to the cloud, both public and private.

When there was one application for one server, no one thought much about what a workload was. But now we look at workloads as the modern IT building block. For our purposes here, I’ll define workloads as integrated stacks of applications, middleware and operating systems to optimize the use of resources. Intelligent workload management addresses the need for a more effective model of computing that allows organizations to manage and optimize computing resources in a policy-driven, secure and compliant manner across physical, virtual and cloud environments.
So, if you’re one of the millions of people who have given up on the annual goals you set back in January, then maybe the problem wasn’t the goal, just the timing. For example, if you’re a couch potato and your goal is to exercise more, it wouldn’t make sense to go out on January 1 and try to run six miles. That would be dumb. If you didn’t hurt yourself, you’d at least be convinced that running wasn’t for you and come January 2, you’d be punching that snooze button like a shark nose at the beach.

The same goes for intelligent workload management. We all know it’s a good idea. We all know we need to get there, that it’s the best way to balance the flexibility virtualization and cloud computing provide with the control required by security and regulation concerns. But when looking at all the steps involved with implementing a full-featured intelligent workload management solution, it can seem pretty daunting.

WorkloadIQ from Novell is built for you. You can get started with just one or two WorkloadIQ offerings while Novell and its partners help you leverage your existing technology assets.

But don’t despair. WorkloadIQ from Novell is built for you. You can get started with just one or two WorkloadIQ offerings while Novell and its partners help you leverage your existing technology assets. That’s the equivalent of starting with a ten minute walk to get those legs moving again while you build up to that 10K race. Over time, you can move toward the complete WorkloadIQ vision at a pace that makes sense for your IT organization. That’s why the Novell team working on WorkloadIQ products and solutions constantly reiterates the mantra: start anywhere; grow everywhere.

Take a look at these three examples of organizations and partners that leverage WorkloadIQ at differing levels of adoption to get their IT departments moving toward intelligent workload management so they can take advantage of the flexibility of virtual and cloud environments while maintaining the control required to do so.

> Sesame Workshop

Sesame Workshop is the nonprofit educational organization that changed television forever with the legendary Sesame Street program. Sesame Workshop hosts nearly 50 consumer Web sites, many with large volumes of media content, thousands of concurrent users and more than one million unique visitors per month. Facing increasing hardware and software licensing costs with Sun Solaris and Microsoft Windows, the company evaluated a move to Linux.

Working with ITAM Services, Sesame Workshop selected Novell ZENworks Asset Management, a WorkloadIQ product, to streamline its inventory processes and selected SUSE Linux Enterprise Server as the open platform for its Web architecture. “Novell ZENworks Asset Management is a good fit for us because it works across our multiple platforms including UNIX, Windows, Linux and Macintosh,” said Noah Broadwater, Vice President of Information Services...
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at Sesame Workshop. “We tested several solutions and found that Novell ZENworks Asset Management doesn’t place a big burden on our network like other solutions. We are getting great performance.”

By implementing Novell ZENworks Asset Management, Sesame Workshop reduced inventory administration time by 70 percent and can better comply with auditing requests and leasing contracts. “Without Novell solutions, we would need to increase our IT budget every year by at least $1 million,” said Broadwater. “Just as Sesame Workshop innovates in media and entertainment, we try to innovate in IT. Novell gives us the tools to compete with our bigger competitors, but without the huge price tag.”

> Vodacom Business
Vodacom Business offers a total communications service portfolio to corporate customers. Their services include next-generation IP voice, managed networks and infrastructure, internet access, hosting and storage. And they’re using SUSE Linux Enterprise Server from Novell as well as virtualization and workload management solutions including PlateSpin Recon, PlateSpin Migrate and PlateSpin Protect (all WorkloadIQ products and solutions) to respond to growing business demands, improve server workload performance, reduce energy consumption and lower costs.

“Cloud computing will change the way companies do business. The service delivery model is vastly scalable and less resource and energy intensive, enabling organizations to purchase robust and reliable infrastructure and application services for a reduced cost,” says Richard Vester, Executive Head of Hosted Services, Vodacom Business. “However, security concerns are inhibiting the adoption of cloud computing. Our partnership with Novell enables us to deliver infrastructure and application services that can support our customers’ specific security policies and regulatory compliance requirements.”

Novell is the only vendor who can deliver solutions that let you take a phased approach to intelligent workload management.

> SAP
Novell CMDB, a WorkloadIQ solution, is the first configuration management data base (CMDB) to be certified for SAP IT Service Management by SAP AG. Novell myCMDB and Novell CMDB360 combine to deliver a Web-based application, CMDB repository and configuration management that gives organizations insight into the relationships and dependencies between business services, workloads and the IT environment. This visibility removes the risk that change brings.

“Our cooperation goes beyond Linux to leverage industry-leading technologies from each company to give customers high-value, low-complexity solutions to pressing challenges such as regulatory requirements and optimizing applications in virtualized environments,” said Narina Sippy, Senior Vice President and General Manager, GRC Solutions, SAP Business Objects Division.
> **Conclusion**
Novell is the only vendor who can deliver solutions that let you take a phased approach to intelligent workload management. WorkloadIQ enables you to securely manage the entire workload lifecycle while ensuring all of your computing environments are policy-driven, performance-optimized, identity-aware and integrated across physical, virtual and cloud environments.

If intelligent workload management is on your resolution list for this year but seems like too much to handle, don’t scrap the whole idea. Let Novell’s broad portfolio of WorkloadIQ products, solutions and partners deliver the end result you need: a flexible IT infrastructure with complete control.

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Save Your Energy—and the Power Company’s, Too!

by Richard Whitehead

We live in a hectic world. It seems like there’s never a spare moment to...uh... spare. There are always projects to manage; meetings to attend; errands to run; and damsels, end users and CIOs in distress to save. It seems like my work as WorkloadIQ Man is never ending. But I digress. With so much asked of you these days, you want to focus your efforts where they can do the most good—and not waste your time or energy.

Speaking of wasting energy, I ran across an interesting statistic the other day that said 35 to 50 percent of electrical energy consumed for a conventional data center is for cooling. Those numbers simply astounded me. Up to half of the power that a data center uses is for air conditioning? Wow.

One surefire way to decrease the amount of cooling needed is to get rid of the hardware that needs cooling in the first place. Of course, I’m talking about virtualization. What? You thought I’d be writing an article on the benefits of weatherstripping? Don’t you know me by now?

> SUSE Studio to the Rescue
Virtualizing server systems can certainly save utility power. When you use SUSE Studio to create software appliances that run on virtual machines (among other things), you can also save your own time and energy.

SUSE Studio is a Linux appliance construction kit. Novell hosts this service for free, making it possible to create customized software appliances via a Web browser in only minutes. Anything from a customized Linux distribution to a one-off software appliance for the data center or desktop.

To create an appliance, you can simply duplicate and modify an existing appliance, or start from scratch using sample templates. With only a few mouse clicks, you can combine your software with the OpenSUSE or SUSE Linux Enterprise operating system, and preconfigure the appliance for easy setup and use. SUSE Studio automatically resolves any software dependencies for you. You can also remotely boot your appliance on a Novell server and test it right in your browser.

Your resulting software appliance can then be saved as a VMware image, live CD, bootable USB drive, hard disk image or even a XEN virtual machine.

Software appliances are a major component of the WorkloadIQ approach. They allow customers and ISVs to quickly build self-contained workloads that run in physical, virtual and cloud environments. Since July 2009, more than 585,000 Linux-based software appliances have been built using SUSE Studio.

> Kudos to Clever Contributors
Novell recently held a SUSE Studio award contest—the first annual "Disters"—which celebrates innovators of Linux-based software appliances. Two grand prizes of $10,000 were presented—one for the best commercial appliance and one for the best appliance in the open-source community.
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Top honors went to:
• **Radical Breeze**, a Washington state company, won the commercial category with **Illumination Software Creation Station**. The appliance is a complete, self-contained distribution that allows users to visually program their own software applications with no programming experience required and no need for setup.
• **Anderware**, a software company from Sweden, received the community category grand prize for **Hypergrid to Go**. This appliance allows users to easily set up an extension to the OpenSim platform to create a multi-user 3D world similar to Second Life.

Honorable mentions included:
• **EasySpooler** by ROC Software’s Paul Scripko is an advanced print spooler that streamlines printer administration. Easy to install, implement and use, EasySpooler enables better use of IT resources, including people and paper.
• **BrowserBox** is an appliance assembled by Jacob Rask. It’s designed to help Web developers and quality assurance technicians perform cross-browser testing. It includes 22 versions of 13 different browsers, including Google Chrome, Mozilla Firefox, Microsoft Internet Explorer, Opera, Apple Safari, Android Browser and others.
• **freeSWITCHBOX** by Gourav Shah is a tailor-made VoIP distro in a box. Get started with free telephone system within minutes. It includes the most up-to-date freeswitch build from the source code repository as well as the cutting-edge freePBX V3 GUI for configuration and administration.

Markus Rex, senior vice president and general manager of Open Platform Solutions at Novell, had this to say about the entries: “The quality of submissions in the Disters awards showcases how far software appliances have advanced in the marketplace. Companies are generating significant value from our SUSE Appliance Program, getting to market quickly and easily with fully supported software and virtual appliances. The financial prizes awarded to the winners through the contest should help them advance their appliance adoption that much further.”

You can view and download these innovative appliances and others on the SUSE Gallery, an online showcase where developers can publish their appliances and end users can download them at no cost.

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GIVE YOUR WORKLOADS AN IDENTITY

If you’ve read many of my blogs, you likely know my mantra: Identity management is a key enabler of cloud computing and intelligent workload management. Yet, thus far, many customers have been challenged with building their own identity-aware workloads. Not anymore! The new SUSE Appliance Toolkit 1.1—a complement to SUSE Studio—is available now, includes integration with Novell Identity Manager, making it much easier to create identity-aware applications that run on virtual appliances.
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> **Go Team Green!**
Using SUSE Studio to build your own customized software appliances is a smart way to go. You'll be able to more easily virtualize hardware, reducing energy consumption, keeping more e-waste out of landfills and banking some green—all while saving yourself substantial time and energy. Equally important, SUSE Studio is yet another WorkloadIQ solution that helps you move along the path to intelligent workload management and secure cloud computing.

—Richard

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**Learn More**

- SUSE Studio
- SUSE Appliance Toolkit 1.1
- SUSE Gallery
- Disters