Tool Up— Working with Containers and SUSE Manager

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Linux container technology dials up efficiency and keeps costs to a minimum, but only if you have the tools you need to keep control of audits, updates, configuration, and other lifecycle tasks. And with the ever-changing technology landscape, it has become critical that such management technology can work with containers. Fortunately, SUSE Manager includes such a solution, with tools for easily managing your container-based Linux resources.

What Is SUSE Manager?

SUSE Manager is a best-in-class open source infrastructure management solution that lowers costs, enhances availability, and reduces complexity for lifecycle management of Linux systems in large, complex, and dynamic IT landscapes. You can use SUSE Manager (Figure 1) to configure, deploy, and administer thousands of Linux systems running on hypervisors, as containers, on bare metal systems, on IoT devices, and on third-party cloud platforms. SUSE Manager also enables you to manage virtual machines (VMs) and containers.

Container Technology

Container technology has revolutionized the IT industry, but containers can place big demands on IT departments and budgets. If you want to maximize efficiency and minimize downtime, you need tools for configuring, managing, updating, and auditing your Linux container runtime environment. Many organizations run applications in VMs, on bare metal systems, and in containers. But, as your IT staff can tell you, the proliferation of tools and procedures necessary for managing all lifecycle phases of all those instances can cause serious headaches—unless you get smart and tool up.
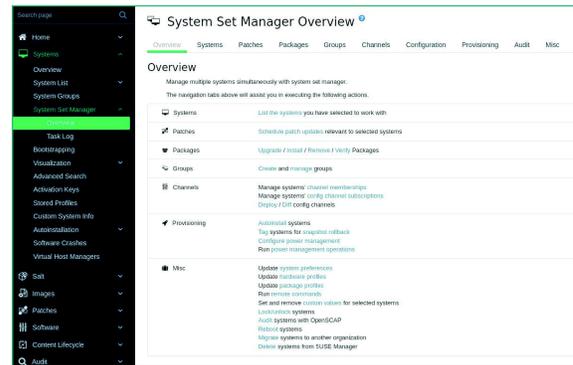
Figure 1. The SUSE Manager user interface enables you to control a comprehensive collection of essential management tasks from a single user interface.

SUSE Manager is a single application that enables you to manage the complete lifecycle of your Linux-based workloads running on containers, VMs, or bare metal. SUSE Manager extends the power and reach of a single admin, improving efficiency and reducing the learning curve for new staff. Close support for the Kubernetes orchestration system completes the picture of SUSE Managern as a powerful solution for managing Linux in container-based environments.

All in One

SUSE Manager is a single tool for managing all your Linux resources. You can use SUSE Manager to automate deployment and manage patches and updates. You can audit your systems to prevent unauthorized changes and even ensure compliance with CVE or OpenSCAP security standards. The Salt configuration management solution included with SUSE Manager enables you to create secure and optimized system templates in advance, so you can roll out new systems quickly and easily.

The power of SUSE Manager finds full expression in its support for container technologies. With SUSE Manager, it is possible to configure a Kubernetes Virtual Host Manager, using your own kubeconfig file. This task is handled via Systems | Virtual Host Managers, where you can select to create a new Kubernetes Cluster (Figure 2).

Figure 2. Creating a new Kubernetes Cluster in SUSE Manager.

It should be noted that SUSE Manager is not intended to serve as a front end for Kubernetes. However, by way of the SUSE Container as a Service (CaaS) Platform (which includes Kubernetes), it is possible to create the necessary connections that enable you to work with Kubernetes. Your system must meet the following prerequisites:

- At least one Kubernetes or SUSE CaaS Platform cluster is available in the network.

- SUSE Manager is version 3.1.2 or greater.

- SUSE Manager is prepared for container management (required channels are present and a registered build host should be available).

- The virtual-host-gatherer-Kubernetes package must be installed on the SUSE Manager server in order for additional Kubernetes features to be available from the user interface.

For more information, read the official **Kubernetes integration document.**

The container environment lends itself to rapid orchestration and deployment of new systems created for a single purpose. In this high-volume and high-velocity setting, SUSE Manager is capable of integrating with Kubernetes to lock down

security and ensure orderly process management, allowing for easy customization to adapt to your changing needs.

Image Building

Containers depend on system images and SUSE Manager specializes in image building and management. With SUSE Manager, you can automate building and rebuilding of custom container images from your Dockerfiles and the latest packages. SUSE Manager enables you to create and manage image profiles for easy and systematic rollout. You can adapt profiles using manual or automated techniques. You can also access external container registries or create your own local registry.

The SUSE Manager programming interface enables you to automatically trigger image rebuilding for rapid integration of patches and new features in a continuous integration environment.

Software: What's Inside

A container is only as safe as the software running inside it. SUSE Manager offers efficient control over software updates and sources, ensuring that your systems stay current and offering airtight control over the software that reaches the system. You can define a software channel as an exclusive source for software that will be installed on a container or container image at build time. A software channel eliminates the possibility of unauthorized software reaching the system. Software channels also adapt easily to delivery based on use case. For instance, you could define a channel for web servers to push out updates that only a web server will require.

SUSE Manager provides close integration with the Open Build Service, enabling you to create and digitally sign packages that can then be inserted automatically into container images. Once a container is up and running, SUSE Manager will continue to watch over it, auditing and reporting on any deviation from the predefined configuration.

Security

SUSE Manager watches your containerized Linux resources to ensure that security requirements and patch levels are maintained. You can even audit your systems automatically to ensure compliance with the Common Vulnerabilities and Exposures (CVE) list (see Figure 3).
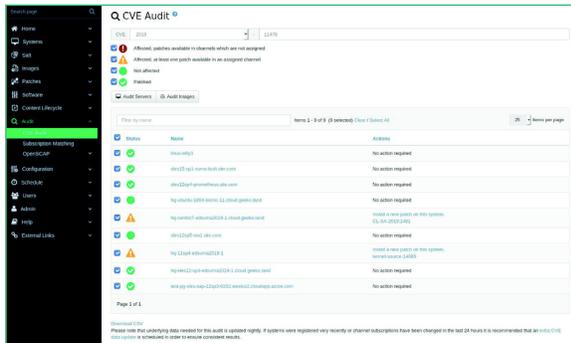
Figure 3. Running a CVE audit against servers within SUSE Manager.

The automation and control provided with SUSE Manager is another powerful form of security. The highly structured SUSE Manager environment enables you to manage your systems in a safe and systematic way, minimizing the risk of configuration error or accidental oversight.

Kubernetes Integration

The SUSE Manager environment offers close and convenient integration with the popular Kubernetes container orchestration system. SUSE Manager is the perfect counterpart for Kubernetes, providing automated configuration, auditing, and other lifecycle services for Linux containers within the Kubernetes framework. You can even use SUSE Manager to check the run-time status of your Kubernetes pods and monitor any deviation of the container image from the original image used at container creation.

Future versions of SUSE Manager will also include support for the SUSE CaaS Platform— an integrated environment that combines SUSE Manager and Kubernetes with a powerful collection of deployment, automation, and management tools.

Built for DevOps

A powerful set of Application Programming Interfaces (APIs) enables you to create scripts and custom solutions, extending the automation features in SUSE Manager to support a rich environment for rapid deployment and continuous integration. The strong support for container technology; its close integration with Kubernetes; and its built-in support for automated deployment, configuration, and auditing make SUSE Manager a powerful addition to any container-based DevOps environment.

Conclusion

Containers offer great opportunities for efficiency and security, but they also place special demands on the IT staff. SUSE Manager helps you meet the challenges of the container environment— with special support for Kubernetes and an array of powerful features for configuring and auditing container-based Linux systems—as well as managing system images, checking security, and controlling software installation.

Talk to the experts at SUSE® to learn more about how you can bring the power of SUSE Manager to your container environment.

Thank You