Deploy SAP Hana in a single click with Ansible

Standardization and Automation

Digital transformation requires the standardization of IT landscapes and the automation of processes - and this applies to the SAP ecosystem as well. With standard tools like Red Hat Ansible, it is possible to achieve quick wins.

By Peter Körner, Red Hat, and Thomas Bludau, SVA

IT departments face a common set of problems. The current situation at most of them involves a wide array of different applications and tools, and IT silos are widespread. Company departments often act independently and are not subject to control, which leads to the development of shadow IT. This results in inflexible, slow, and error-prone processes as well as high security risks. What are the options available to address these challenges?

Automation is a hot topic in this area. Companies want—or rather need—to automate. The driving factors are gains in efficiency as well as reliable, standardized reproducibility and traceability. In addition, automation is meant to provide the basis for DevOps and self-service models.

It is imperative that you view automation as a comprehensive approach, because automated silos are still silos and do not lead to the desired results. The stated task is to consistently automate previously fully separate, stand-alone tools. This requires a great deal of independent specialist know-how, which is usually found within a number of different departments and employees. Coordination problems, delays, and incompatibility issues are bound to happen. Red Hat Ansible Automation provides the perfect solution to meet these challenges, which significantly reduces costs in workflow management.

Ansible can combine many different playbooks and roles in a single workflow. This way, every unit of an IT department can map its specific competencies in matching playbooks that can then be integrated into complex processes without affecting other units.

The possibilities available are best demonstrated by the automation of Hana deployments and configurations. The Hana in-memory database provides precise set-up requirements that are documented in SAP Notes. SAP defines all set-up guidelines for all platforms in SAP Notes, which contain many manual steps. This creates the risk that one or more system-specific notes may be missed or misinterpreted. In addition, SAP only supports production systems if the steps outlined in SAP Notes are consistently observed and documented.

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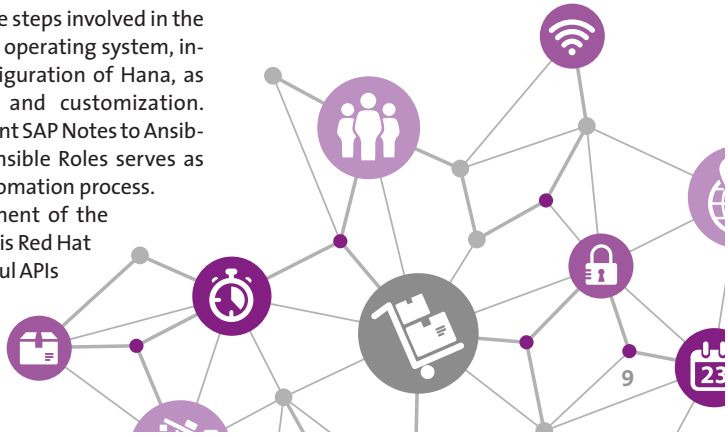
Here are the basic steps involved in the standard installation process for Hana: provision of hardware and/or setup of a VM; installation and configuration of the basic operating system Red Hat Enterprise Linux; installation and configuration of Hana; and system validation and customization. The application can then be incorporated into the regular maintenance cycle.

Automation with Ansible can significantly improve this time-consuming and complex process. It is possible to reduce the time required to set up a Hana system from days to minutes. Ansible can be used to fully automate the steps involved in the configuration of the operating system, installation, and configuration of Hana, as well as validation and customization. Migrating the relevant SAP Notes to Ansible Playbooks and Ansible Roles serves as the basis for the automation process.

The core component of the automation process is Red Hat Ansible Tower. RESTful APIs and a self-service portal are used to integrate the solution into existing tools and processes, making it suitable for use across the entire company. In addition to automating complex workflow scenarios, Ansible Tower offers the central management of inventories, playbooks, and credentials, role-based access control, and an end-to-end audit trail.

Red Hat Ansible is suitable for smaller environments or systems as well as for complex environments. This means the solution supports the dynamic addition of new machines and, with just a few changes, larger environments can be set up and configured. Other Ansible roles let users install scale-up and scale-out environments with Hana system replication and an accompanying high-availability connection via Pacemaker.

In addition to fully automated deployment, Ansible, in combination with Red Hat Satellite, supports configuration management during operation as well as patch and release management. Red Hat Ansible is designed to deliver the best results in terms of user-friendliness and security. Getting started with Ansible playbook development is quick and easy. Changes made to the playbooks are continuously tested using a developer platform. Every change likewise generates multiple scenarios, such as scale-up, scale-out, system replication, and pacemaker, and tests whether the process is being successfully carried out. Along with this, staging methods are supported. For example, identical environments can be set up in the cloud for error-free configuration and quality assurance or for testing patches, upgrades, and migrations.



Molecular Health supports SAP clinical data warehouse with Red Hat solutions

Digital Stability and Innovation

Molecular Health, a biomedicine company, uses analytics to provide comprehensive medical and therapeutic services. The company previously used a Suse Linux platform to support its SAP Hana environment for its clinical data warehouse but faced availability issues.

By deploying Red Hat Enterprise Linux for SAP Hana - supported by backup software from Bacula Systems, a Red Hat partner - Molecular Health gained a high- performance, cost-efficient solution that helps doctors create individualized cancer therapies. In addition, the company simplified operations and management for its IT department.

Molecular Health provides comprehensive medical and therapeutic services to a variety of customers - including physicians, hospitals, research networks, labs, regulators, and pharmaceutical companies - using big data insight.

Its data analytics product, Molecular Health Guide (MH Guide), supports decision-making related to cancer treatments with a highly reliable knowledge database, Dataome. This database hosts curated biomedical data from 26 million scientific and medical publications, as well as data on 273,000 drug interactions, 7,000 biomarkers for drug efficacy and safety, 85,000 gene variants, 56,000 drugs, 126,000 clinical trials, 270,000 protein interactions, 9 million patient medical records for drug safety, and more.

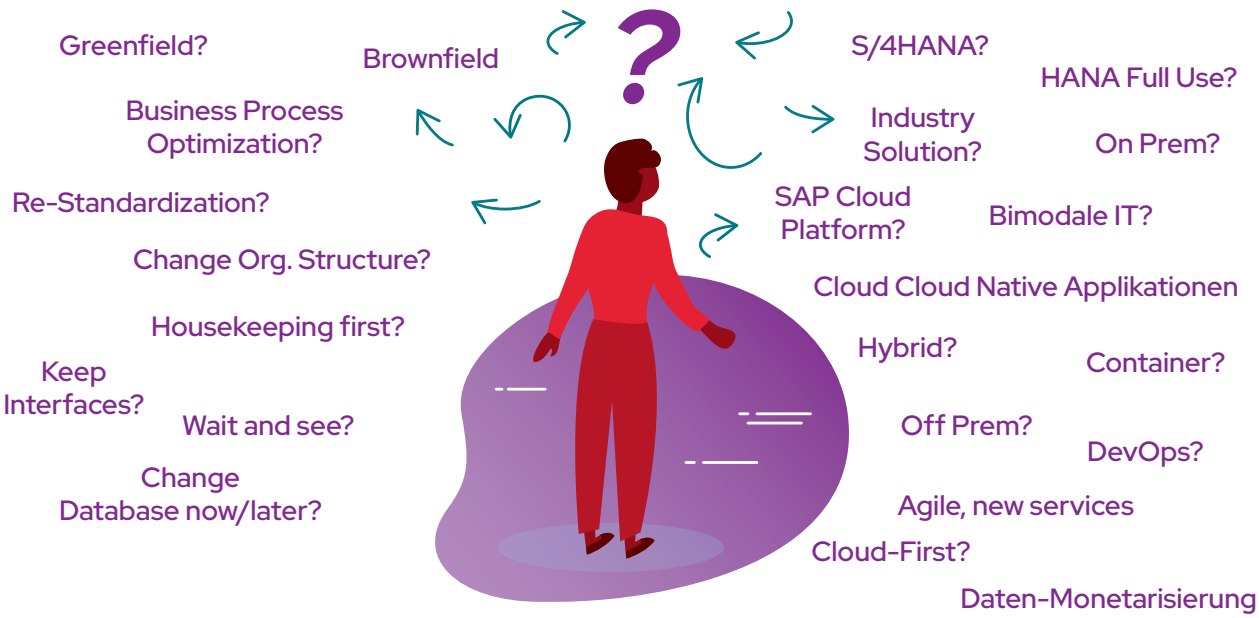
Open Hybrid Cloud

MH Guide connects individual patient data with this body of relevant biomedical knowledge through a cloud-based interface tailored to the needs of various target groups - such as clinical interpretation and recording genetic changes in next-generation sequencing (NGS) at laboratories and hospitals.

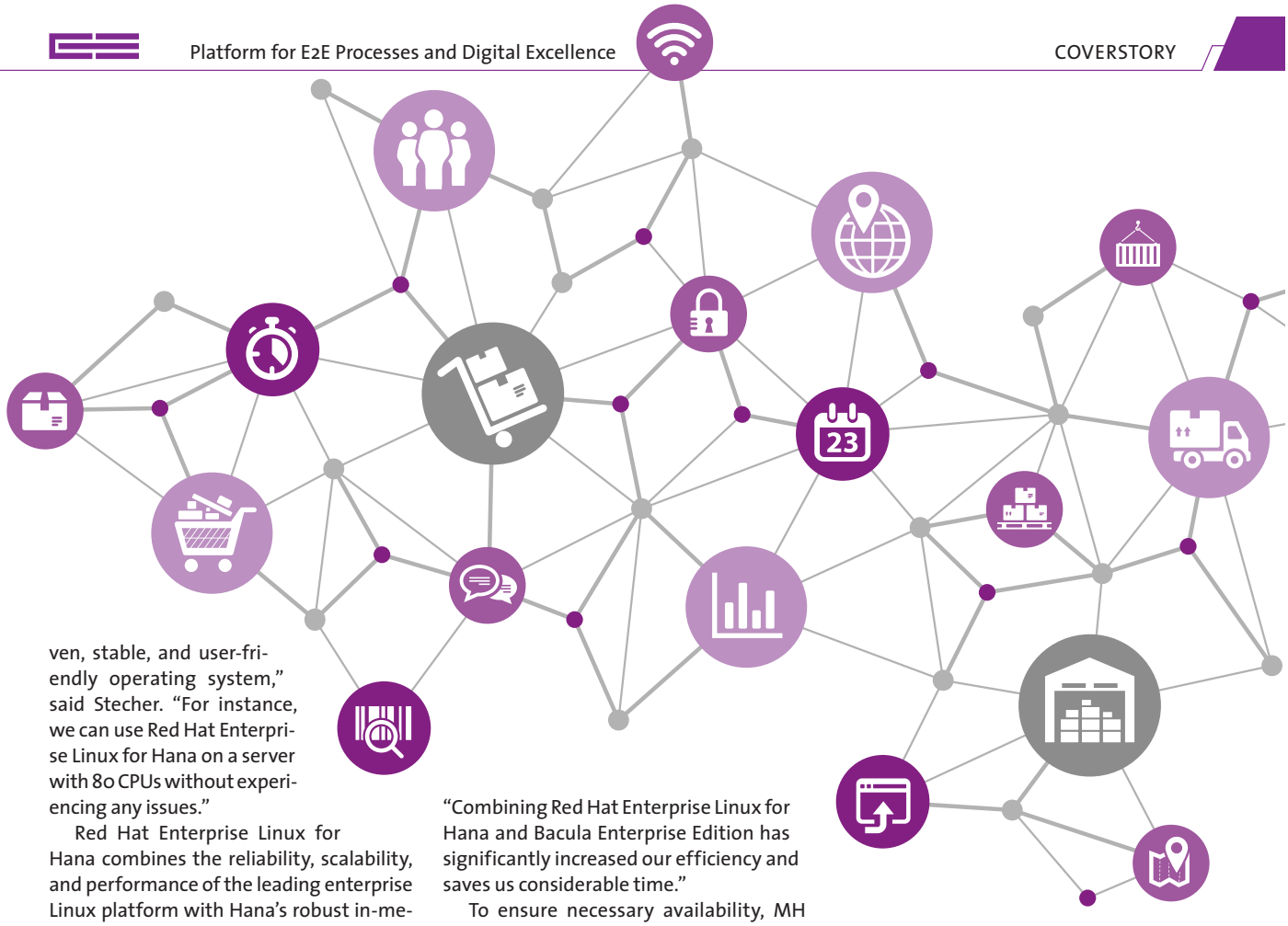
Ensuring the stability and consistency of its operating system and backup environments is key to completing long-term batch processing and data storage for Molecular Health's complex IT environment, including its cloud environment. "We use a diverse range of processor and memory configurations for physical and virtual servers," said Ralf Stecher, senior database administrator at Molecular Health in Heidelberg, Germany. "Depending on the dynamic application profile, we use various databases like PostgreSQL or Hana and run various cluster setups for genomic interpretation. All of these processes need a reliable system foundation." Molecular Health had used Hana on Suse Linux Enterprise Server to process clinical and medical data. Due to occasional availability issues and challenges with consistent operation, the company sought out a new solution for its Hana environment that would offer greater stability and simplify operations and management for its small IT department. Because they specialize in precision medicine and operate a heterogeneous IT system environment, Molecular Health considered many criteria to select a solution. After comprehensive testing using existing data, the company replaced its Suse solution with Red Hat Enterprise Linux for Hana and Bacula Enterprise Edition, an open source backup software from Bacula Systems, a Red Hat partner.

Red Hat Enterprise Linux and Hana

"We chose Red Hat because our tests showed that it was the most technically pro-



Challenge: Modernize processes and technologies. How can you move from a long-established SAP landscape to digital excellence?



ven, stable, and user-friendly operating system," said Stecher. "For instance, we can use Red Hat Enterprise Linux for Hana on a server with 80 CPUs without experiencing any issues."

Red Hat Enterprise Linux for Hana combines the reliability, scalability, and performance of the leading enterprise Linux platform with Hana's robust in-memory database. With this technology, Molecular Health created a high-performance, open environment that offers the necessary consistency and security for its critical data analysis and treatment proposals.

New data warehouse improves support for clinical analysis

Server stability and security are critical to the IT environment that hosts and manages Molecular Health's patient data. With the new Red Hat and Bacula solution, the company can ensure critical reliability and stability for current application scenarios—such as clinical decision-making processes—as well as new use cases, such as collecting, integrating, and analyzing molecular patient results from peer-reviewed publications.

For example, MH Guide provides an overview of potentially effective treatment options, including potential risk of undesired side effects and reactions. It also provides patient-specific, clinically relevant data and treatment options - including reports on clinical and evidence-based treatment options, clinical studies, as well as medication interaction data and other supplementary data. "Red Hat and Bacula's solution offers an organized and stable operating system with markedly lower maintenance overhead," said Stecher. "Combining Red Hat Enterprise Linux for Hana and Bacula Enterprise Edition has significantly increased our efficiency and saves us considerable time."

To ensure necessary availability, MH Guide requires backup support that includes the option to secure data on different media types, such as disks or tapes. With Bacula Enterprise Edition, Molecular Health can quickly back up its network file systems (NFS) as well as its physical and virtual Windows and Linux servers. In addition, Molecular Health uses this solution to remotely monitor and control data backup at its other locations, ensuring users can recover data at any time and that company-wide data backup policies are followed. As a result, Molecular Health can effectively recover data on demand, faster and more reliably than before.

Lower IT Operational Costs

With the Red Hat and Bacula solution, Molecular Health can streamline its IT environment to reduce ongoing operational expenses and other related costs. Previously, the company's R&D employees used Hana on servers with 128 CPUs and maximum main memory, but these highly integrated servers were costly to operate. The company primarily uses servers with just 24-30 CPUs now. Red Hat Enterprise Linux for Hana, combined with Red Hat Virtualization and Bacula Enterprise Edition, have proven to be an efficient, easy-to-manage, and highly stable operating system for Molecular Health. Thanks to this powerful solution, the company is positioned to continue supporting an increasing number of healthcare patients, professionals, and organizations with timely, relevant data and analysis.

About Molecular Health

Molecular Health is a computational biomedicine company focused on big data curation, integration, and analytics to enable precision medicine. The company has developed Dataome, a top-quality curated, interoperable technology system comprising a large set of databases and analytics that allow the integration and referencing of clinical-molecular drug and disease data to generate novel and actionable insights on drug outcomes for stakeholders across the healthcare ecosystem. These include physicians, hospitals, research networks, commercial labs, regulators, and pharma companies. The company is compliant with all relevant regulatory certification and accreditation standards. Molecular Health's scientific and commercial teams are based in Heidelberg, Germany, and Boston, MA, USA.