Imagine how frustrating it would be if you brought your car into a dealership for service and the car wasn’t ready until three hours after they told you to pick it up. Assume that this is a very busy place that offers a broad array of services. In fact, they frequently expand their services with new options, such as a free car wash, shuttle service while your car is being serviced, and car detailing. But as they deliver these new services, they often don’t have the right processes and systems in place to support them. The shuttle driver’s schedule isn’t integrated with the shop’s delivery schedule, so the driver picked you up far too soon. They offer detailing but don’t have the car wash on site. Cars have to go to another car wash down the street, which adds to the wait time. Get the picture? Adding new services without integrating processes is chaotic — and it can have a real negative impact on customer satisfaction.

IT organizations in many companies may experience chaos similar to that which this dealership faces. They have to deliver a growing number of services — across traditional, virtualized, or cloud-based environments — with an IT infrastructure that is becoming increasingly complex and dynamic. They must find a way to manage this environment so they can effectively continue to deliver services at required performance and availability levels.

Data center automation is helping these organizations cope with this challenge. The problem is that the automation tools and solutions most organizations have implemented are typically siloed to specific IT infrastructure domains or IT disciplines. Consequently, it is extremely difficult to move up to higher levels of automation, such as the end-to-end automation of processes that span multiple domains and disciplines.

Moreover, many tools require specific skill sets and are not friendly to all users, especially not to business users.

The solution lies in creating a pragmatic data center automation environment that satisfies the needs of both IT users and business users. With such an environment, IT can keep the data center running in optimal fashion, closely aligning IT resources with the needs of the business.

The Automation Evolution
IT organizations are evolving data center automation to keep pace with the growing complexity of the IT infrastructure and the increasing dependency of the business on IT services. They usually begin by automating low-level tasks. As they mature, these organizations automate higher-level workflows with both

BRINGING ORDER FROM CHAOS THROUGH COMPREHENSIVE DATA CENTER AUTOMATION

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workload automation and IT process automation. They then progress to end-to-end automation of business and IT processes.

WHERE WORKLOAD AUTOMATION FITS IN
Today’s complex business processes typically require the interoperation of multiple application programs/APIs that are scattered across the enterprise on a variety of platforms and devices. For example, an online customer order transaction may involve a Web server, an order-entry system, a customer database, an inventory system, a shipping system, and a billing system. It may also involve externally provided services, such as credit card verification. Some of these components provide batch services that must be triggered at a specific time and monitored for completion. Virtualization and cloud computing add complexity in that workloads may be moving about the physical infrastructure due to changing conditions.

Manually sequencing operations across the many and varied application components in this complex and highly dynamic environment is not feasible. That’s where workload automation comes in.

Workload automation provides the management necessary to ensure that all business transactions are completed correctly, completely, and at required performance levels. For example, the replenishing of inventory of a coffee retailer can include pulling information from the store database, sending a file to headquarters, pulling the next day’s weather forecast from a Web server to assess conditions that may impact buyers, running an application program that provides a prediction of needed inventory, and finally, sending the information back to the store. All of the above needs to happen within a very short time frame to ensure that proper inventory gets to the store, and everything in the chain of events needs to happen in sequence to ensure data integrity.

THE ROLE OF I.T. PROCESS AUTOMATION
In addition to shepherding workloads through the IT infrastructure with workload automation, IT has to keep the infrastructure itself optimized to meet the needs of the business. That means ensuring that services continually adhere to performance and availability requirements as specified in service level agreements (SLAs). It also means keeping the infrastructure in compliance with internal policies and external regulations.

Over the years, IT has developed best-practice operations and service management processes to provide this assurance. Manual execution of these processes in today’s highly dynamic IT environment, however, is cumbersome and risky. That’s why IT is increasingly automating these processes.

IT organizations have typically begun by automating routine, repetitive administration tasks such as backup, end-of-day application tasks, and basic troubleshooting steps. They then move up to automating end-to-end IT service management processes that accomplish such tasks as enriching incident tickets, performing automated corrections, providing change management approval, and escalating issues for remediation.

Siloed tools, however, make it extremely difficult to implement end-to-end automation of processes that span multiple domains and disciplines. Additionally, many tools require skills that are unique to a particular domain or discipline. As a result, many people who have to rely on these tools do not have the requisite skills to use them effectively.

The Next Step: Unification
The highest level of automation maturity culminates in the linkage of business process automation with IT workload automation. That requires integrating workload automation with IT operations and IT service management process automation. At this level, automation enables IT to keep the IT infrastructure optimally matched to the business so that it continually delivers the services that the business needs at the agreed-upon service levels.
Reaching this level requires an approach to automation that unifies and integrates all tools onto a single comprehensive and integrated platform. That platform must offer easy access to IT services for all users, regardless of their roles or skill levels. Business users should be shielded from the complexity of the underlying IT infrastructure. On the other hand, highly skilled IT users, such as database administrators, should be provided the right tools to perform highly technical tasks.

The automation system must meet three important requirements:

- Self-service interfaces for business users
- A strong underlying automation engine
- Comprehensive, integrated automation tools

**SELF-SERVICE INTERFACES FOR BUSINESS USERS**

Users should be empowered to request services and check the status of their requests on their own, without involving the service desk. That increases efficiency, eliminates delays, and reduces costs.

Self-service is certainly not a new concept. Travelers routinely book flights and obtain boarding passes using airport kiosks. Bank customers make deposits and withdrawals through ATMs. Customers order products from online retailers or trade stocks from their Web browsers.

The automation system should permit all users to request services and check the status of their requests through a single portal. The portal should present services in a way that the users can easily understand. Business users should be able to access IT services without having to speak the language of IT. Likewise, IT users should have services presented to them in a manner and at a level appropriate to their skills.

Some automation tool vendors have attempted to provide a single console through which users can access services. Too often, however, these vendors have taken a one-size-fits-all approach to the user interface and have typically targeted the technical user. Consequently, the console is not friendly to business users — and it still lacks appropriate functionality for technical users. That’s the equivalent of having an airline ticket kiosk simply extending the ticket agent interface to passengers instead of presenting ticketing services in a manner that passengers can understand.

The service catalog gives IT a whole new way of presenting itself as a provider of services to users. In essence, the service catalog becomes the face of IT. The service catalog is the foundation of any enterprise-level self-service implementation. IT can use the catalog to tailor the presentation of services to the user based on role and skill set so that services are presented in a meaningful form to each user. Business people can access the services they need without having to understand what goes on under the hood. Using the same portal, highly skilled IT professionals can perform low-level functions. The catalog also gives IT strong control over access in that users see only the services that they are authorized to use and only at the access level permitted to their role. Another major advantage of the service catalog is that it is highly portable and can be accessed from a variety of devices, ranging from desktops to smartphones.

**A STRONG UNDERLYING AUTOMATION ENGINE**

Self-service must be backed by extensive automation that spans a wide variety of business and IT processes. Here’s an example. An application developer requests a particular database server to use with an application he is developing. The underlying automation has to provision the complete stack, including the virtual or physical server, the operating system, and the database engine. It has to ensure that only standard configurations are deployed and that they include the necessary level of software updates to meet regulatory requirements. It also has to ensure that the change is performed using the proper change management process. That means generating a change request ticket, gathering the necessary approvals, rolling out the change, verifying that the change has been completed successfully, and logging all activities for auditing purposes.

This high level of automation requires a strong automation engine, one that permits true end-to-end
automation of high-level business and IT processes. It also has to provide an automation framework that is intelligent enough to adapt to the complexity of the environment, while not requiring the customer to invest massive amounts of time configuring the automation platform. That investment of time would severely reduce the expected return on investment.

**COMPREHENSIVE, INTEGRATED AUTOMATION TOOLS**

Building a holistic, business-centric data center automation system requires a well-stocked tool kit that meets three major requirements:

1. The tools must provide a wide breadth of coverage so they can be used to build extensive automation in all domains and disciplines.

2. Each tool must also have proven, in-depth functionality in the area of its intended use, which usually requires that it has been built from the ground up for certain tasks. Some vendors have attempted to extend the use of certain tools to tasks other than those for which they were originally intended. The result is limited capabilities in these other tasks, which limits their effectiveness. A smartphone, for example, is intended for communicating but also has built-in word processing functionality. That functionality is limited, however, so the phone is not the right tool for creating large documents. Likewise, an automation tool that has been created for one task and then extended with limited capabilities to accommodate other tasks may not be the right tool to perform those other tasks.

3. The tools must be integrated into a platform that allows for seamless interoperability, end-to-end process integration, and integration into a configuration management database (CMDB). A typical approach in the past has been to pick the best-of-breed tool for each function. Doing so, however, puts the onerous burden of integration on the IT organization. Few, if any, IT organizations today can afford that investment or have the skills to match the complexity. So, with respect to automation, best-of-breed takes on a new meaning. Here, best-of-breed tools are those that not only have industry-leading functionality but also integrate onto a common platform.

**Into the Future**

By taking a comprehensive, integrated approach to data center automation, IT organizations strongly position themselves for cloud computing. These organizations will be able to manage the continual acceleration of IT activity driven by these new and disruptive technologies, and they will be able to take full advantage of that acceleration to add considerable business value.

For more information about data center automation, visit [www.bmc.com/dca](http://www.bmc.com/dca).