Accelerating business service delivery through platform automation

Using HP Database and Middleware Automation software
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Are you automating your IT business services?

Are you looking to improve your delivery of business services or the applications that drive your business? Then automating all technology layers supporting these services is critical. Business services rely on storage, networking, operating systems, databases, and Web and application servers to support applications. Any complete automation strategy includes automation of all of these layers.

In a utopian world, production environments are provisioned, properly configured, fully patched, and meet compliance auditing requirements in hours. Most organizations are not living in this utopian environment, with many struggling to optimize workloads using nonintegrated, policy-based automation tools. These challenges are especially true in highly virtualized environments.

This white paper discusses how HP Database and Middleware Automation solution can help you improve your business services by automating how database, Web and application servers, and application updates are provisioned, configured, patched, validated, and managed.

Figure 1. Automate everything through the application layer

Are you keeping up with technology challenges?

As virtual machines continue their proliferation and application numbers increase but head count remains constant, increasing the pressure to improve efficiencies in building and maintaining this technology stack. Cloud initiatives, with their elastic footprint demands and rapid self-service delivery expectations, add additional stress to staff and processes. Some organizations are looking to public cloud providers as an alternative delivery vehicles to their own internal IT departments due to lower cost or time to value. IDC estimates that IT the business service automation trend will continue unabated for at least the next 4 years, with compound annual growth at over 16 percent.¹

Unless they enforce standards, modify processes, and adopt scalable and proven automation capabilities, most organizations will continue to struggle. Automation tools must support heterogeneous platforms, be highly customizable, and inherently support industry-standard best practices. Common approaches like writing custom scripts or using various ad hoc tools will not address these fundamental issues since the complexity, scope, and scale is daunting.

IT process automation of application infrastructure layers provides proven benefits. Relational database technologies host and secure data that is critical to the business while application and Web servers manage the applications and network connectivity that users rely upon. The complete lifecycle of these database and middleware components must be managed as well, from provisioning through retirement. This is typically where processes slow down as many of the management activities are manual, error-prone, and time consuming.

¹ IDC 2012 Software Taxonomy, IDC study, June 2012.
Most of the automation tool solutions on the market today are focused on building and maintaining the network and server infrastructure, basically supporting hardware provisioning, by installing an operating system and managing the server. There are very few solutions that support the complete lifecycle management of database and middleware components.

Most organizations face the following challenges:

• How can we improve our application release schedules and dev/ops initiatives?
• How do we improve our quality and minimize helpdesk calls?
• How can we manage more with the same number of people?
• How can we reduce our cost of operations?
• How do we maintain compliance?
• How do we implement PaaS?
• How can we mitigate application outages due to human error?

Automation tools that provision, patch, properly configure, perform compliance checking, and simplify application updates are a key ingredient for enforcing standards, reducing errors, and streamlining operations. They also serve as a centralized point of control for managing large numbers of heterogeneous database, middleware, and OS platform configurations. Without centralized control and consistency, chaos reigns.

How can HP DMA help?

HP DMA automates over 60 percent of the daily administrative tasks required to manage the lifecycle of complex, often manual and typically time-consuming and error-prone tasks required to manage the lifecycles of relational databases and J2EE applications servers. DMA improves the efficiency of these administrative tasks by 70 percent, enabling administrators to deliver change faster, with higher quality, better consistency, and improved reliability. Organizations with 10 or more administrators benefit from DMA, and typically improve administrator ratios by a factor of 10.

Built over the past 10 years by database and middleware SMEs, DMA simplifies administration and operations, providing integrated, out-of-the-box industry-standard best practices. The following is a subset of DMA capability:

• Relational database and application server provisioning and patching for popular relational database management systems (RDBMS) and J2EE-compliant Application Servers
• Optimal configurations tailored to application requirements
• Relational database compliance based on PCI, SOX, and Center for Internet Security (CIS) standards
• Application code release management to databases with rollback of changes should problems arise
• Heterogeneous support for popular operating systems like Linux, Windows®, Solaris, and AIX
• Database migration from legacy OS platforms to alternative platforms like Linux
• Database refresh of testing data from production data sources
• Integrated database and application server discovery

2 Stratavia DBA managed services, data compiled from January 2001 to January 2011.
What is HP DMA?

There are two important components to the DMA solution:

- **Solution packs**—Deliver out-of-the-box, pre-tested automation content containing industry-standard best practices that enable administrators to deliver database and middleware automation rapidly and reliably, usually within the first 90 days.

- **DMA platform**—A highly scalable, secure, and reliable infrastructure platform that at its core is a workflow engine for automation content.

**DMA solution packs deliver rapid time to value**

One of the key differentiators of the DMA solution and the most important part of the solution is the broad and deep library of automation content that comes in the DMA solution packs. Figure 3 highlights a subset of the out-of-the-box use cases that are supported.

**Supported technologies**

- Oracle
- IBM
- DB2
- WebSphere
- SQL Server
- Sybase
The DMA automation platform is equally important

The DMA platform provides the means for building, testing, executing, and monitoring workflow success using an agent-based infrastructure. This platform is secure, scales to large environments, and supports failover and high availability.

DMA’s Web Services API can be called to integrate with self-service portals or other external processes to securely drive DMA workflows; in essence, automating the DMA automation engine.

HP DMA is a key component of HP Converged Cloud strategy and capabilities, synergistically integrating with HP Software products: HP Server Automation, HP Operations Orchestration, HP Cloud Service Automation, and HP Continuous Delivery Automation.

**DMA delivers proven customer ROI**

Organizations that have implemented DMA typically see ROI in under a year. Efficiencies introduced by DMA expand beyond the database or middleware administrators as new automation is integrated with other systems to drive end-to-end processes; cascade from administration through day-to-day operations; streamline operations, improve administrator-to-platform ratios to 200-to-1 or more; and fundamentally change organizational structures to be more effective. Here are some examples:

**Figure 5. Proven customer success and ROI**

<table>
<thead>
<tr>
<th>Environment</th>
<th>Pain Points/Drivers</th>
<th>Results</th>
</tr>
</thead>
</table>
| Bank | • 15,000 database servers  
• 660 DBAs  
• Database and third-party app config took 5–7 days  
• Patching 6–9 months behind  
• Reduce database Ops costs by 20% | • Database and third-party app config <1hr  
• Over 50% efficiency gain in first quarter  
• Production rollout in 4½ months |
| Telco | • 3,470 databases  
• 140 DBAs  
• 70% off-shore  
• Oracle 10>11 migration  
• Application code release management  
• Oracle compliance | • 60% efficiency gains  
• Improved compliance efficiency over 90%  
• Reduced offshore by 37,000 hours annually |
| Health Care | • 2,100 databases  
• 1,900 WebSphere Servers  
• Oracle 10>11 migration  
• Application code release management  
• Oracle compliance  
• Oracle compliance  
• Oracle compliance | • App deployment now <4 hours  
• Eliminated ad hoc scripting |
| Health Care | • 80 prod databases  
• All Oracle RAC  
• Oracle 10>11 migration  
• Application code release management  
• Oracle compliance  
• Oracle compliance  
• Oracle compliance | • Patching times 4 DBAs 2 weeks  
• Database patching annual savings of $650,000 USD |

**Figure 4. Database and middleware are integral components of cloud service delivery**
How does DMA work?

DMA requires an agent infrastructure to be deployed to managed servers. This infrastructure is delivered with DMA media, as are solution packs that contain the built-in intelligence and processing required to perform the major product functions like provisioning, patching, compliance testing, and application code release management. This architecture makes it easy to manage servers in local or remote locations, dispersed geographically, or across DMZs.

**Infrastructure**
- Communications are secure, authenticated, and encrypted
- Near real-time synchronization between all HP DMA Infrastructure Cores
- Enables remote management, disaster recovery, and global visibility without single points of failure
- Replicated database, software, user directory for redundancy
- Routes workflow requests to correct locations

**Agents**
- Lightweight, idle until activated to run a workflow
- Supported on Red Hat, SUSE, and Oracle Enterprise Linux, Windows, Solaris, AIX, and HP-UX

**Solution packs**
Solution packs are the heart of the DMA value proposition. Solution packs are HP-tested and typically updated several times a year, with new DMA releases adding new or updated capabilities and platform coverage. They are hosted on the HP Live Network and can be downloaded when desired.

Solution packs contain workflows and workflows are comprised of steps. Like interchangeable blocks, steps can be arranged into workflows to create powerful and repeatable deployments to one or more database or middleware servers. It is the inherent intelligence in these steps that implement DMA automation using popular scripting languages.
Workflows inherently contain best practices and can be deployed as-is or configured to support specific organizational standards. Composite workflows can call other workflows to automate lifecycle processes. Solution packs can be deployed in minutes and are customizable to meet specific and complex use cases. This content has been developed based on industry and vendor best practices and real-world experience.

There are two primary solution pack types: Database Solution Pack and Application Server Solution Pack. Each solution pack supports multiple RDBMS or Applications Server platforms and versions. They also support multiple operating systems and versions on Linux, Windows, Solaris, AIX, and HP-UX.

A sample of Database Solution Pack capabilities:
• Deployment and installation of standalone or clustered relational databases
• Configuration of ports, listeners, and the like
• Cloning and upgrading
• Patching and compliance checking
• Application code release management (DDL/DML)
• Change security validation (for example, GRANTS)

A sample of Application Server Solution Pack capabilities:
• Deployment and installation of popular J2EE Application Servers
• Application Server configuration
• Patching and upgrading
• Clustered server support

DMA content is frequently customized to meet organizational standards and processes, like adding pre/post processing steps. Leveraging DMA’s powerful automation platform, administrators or SMEs can easily address additional use cases by creating new steps and workflows that add to the global library shared by the entire organization. In-house written scripts written in popular scripting languages (for example, Perl, Jython) can be easily integrated. Everyone benefits and there is no loss of “tribal knowledge” due to attrition or other factors. DMA ships over 1,200 reusable steps and workflows that function across multiple RDBMS, middleware platforms, operating systems, and platform versions.

When a new platform is provisioned or a vendor patch must be deployed, a DMA workflow is chosen to perform the task as a DMA deployment. A deployment integrates the required and optional parameters with the chosen workflow and schedules the workflow to be executed on the targeted systems. Default parameters are typically chosen and most workflows can be run by providing less than 10 parameters. Smart groups simplify this process by allowing an SQL query against DMA inventory and metadata configuration information to select targets that meet the criteria specified. For example, target the list of Oracle databases that do not have the latest patch applied and run the patch upgrade.

**Who uses DMA?**

DMA frees administrators from mundane tasks to concentrate on high-impact issues. Through the DMA automation platform, administrators update and maintain content to assure adherence to organizational standards.

Application and helpdesk teams can leverage DMA on a daily basis to provision new installs, release application code, configure systems with proper settings, reset user passwords, or address a myriad of other issues supported by the DMA platform.
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Table 1. Who uses DMA and key use cases

<table>
<thead>
<tr>
<th>Role</th>
<th>User examples</th>
<th>Skills required?</th>
<th>Key use cases</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td>• App teams</td>
<td>• Limited flexibility during execution</td>
<td>• Request a new database</td>
<td>Daily</td>
</tr>
<tr>
<td></td>
<td>• Helpdesk operators</td>
<td>• No environment knowledge required</td>
<td>• Release code into DEV, UAT</td>
<td>100’s–1,000’s uses/month</td>
</tr>
<tr>
<td></td>
<td>• NOC personnel</td>
<td></td>
<td>• Refresh PROD into DEV</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Reset a user password</td>
<td></td>
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<td></td>
<td>• Tier 1–2 (Jr) DBAs</td>
<td>• Application owner</td>
<td>• Applies config and compliance standards</td>
<td>Weekly</td>
</tr>
<tr>
<td></td>
<td>• Low-mid level admin</td>
<td>• Working knowledge of process</td>
<td>• Deploys new patches to their functions</td>
<td>10’s–100’s uses/month</td>
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<td></td>
<td></td>
<td></td>
<td>• Registers DBs for self service actions</td>
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<td></td>
<td></td>
<td></td>
<td>• Enables users to execute automation</td>
<td></td>
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<tr>
<td></td>
<td>• SME’s</td>
<td>• Detailed process knowledge</td>
<td>• Full process architect</td>
<td>Monthly or quarterly</td>
</tr>
<tr>
<td></td>
<td>• Tier 3 DBAs</td>
<td>• Defines automation</td>
<td>• Ensures process compliance</td>
<td>10–20 uses/month</td>
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<td></td>
<td></td>
<td>• Defines policy</td>
<td>• Identifies OOTB vs. company gaps</td>
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<td>• Identifies self-service automation</td>
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<td></td>
</tr>
<tr>
<td>Operators</td>
<td>• Tier 1–2 (Jr) DBAs</td>
<td>• Detailed process knowledge</td>
<td>• Full process architect</td>
<td>Monthly or quarterly</td>
</tr>
<tr>
<td></td>
<td>• Low-mid level admin</td>
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DMA workflows can enable PaaS offerings through self-service portals in a private or public cloud.

DMA and HP Cloud Automation solutions

HP Software products work together to provide complete end-to-end application lifecycle management, including infrastructure, PaaS, and SaaS requests. DMA seamlessly integrates with HP products like Server Automation, Operations Orchestration (OO), Cloud Service Automation (CSA), and Continuous Delivery Automation (CDA).

DMA business services are easily built into HP CSA as Cloud Maps that enable lifecycle management of database and application server instances directly from the CSA self-service portal. For example, users can provision and patch instances directly through CSA, enabling PaaS, yet enforcing standards while bypassing database and middleware administrator intervention. Organizations hosting their own portal or other automation tools can also invoke authorized DMA workflows by calling DMA Web Services API.

When database or application server updates are required by an application, DMA can be invoked from CDA (or directly) to perform the required updates to the database or application server.

Integrations with service and asset management products like HP Service Manager, HP Asset Manager, or other third-party products can be made through HP OO or other popular automation products.

Figure 8. Integration with HP Software automation products
Summary

In short, DMA is the key solution that helps you automate the “last mile” of the data center and those mission-critical business applications that run your business. Whether you are trying to just automate your current data center, or move to an internal private or hybrid cloud architecture, the benefits will remain limited if you stop at the infrastructure or server layer.

Ask yourself and your team, “What is the primary reason driving provisioning of infrastructure and servers faster, with less manual effort?” If the answer is to provide compute resources to the business teams so they can deliver new business services or expand existing business services, then ask “What are the key next steps and level of effort required to get the business service up and operational once the servers and infrastructure are in place?” By today’s industry standards, it is likely that there is 8–10 business days of work required to get the business service up and running.

What is involved in this additional effort?

1. Provisioning, configuring, patching, and preparing the database platform (as much as 5–7 days)

2. Provisioning, configuring, patching, and preparing the Application Server platform (as much as 2–3 days)

3. Finally laying down the rest of the business application and all its configuration files and components (as much as 2–3 days).

If this is what you discover, then ask, “What can we do to automate the effort of last two weeks, or the last mile of the business service?” And then when you take a look at HP DMA solution, you will discover why our customers are seeing the huge value and benefits they are experiencing with the solution.

Organizations seeking to improve the full, end-to-end delivery of business services should consider DMA as the management platform for their databases and middleware automation.
HP Services

Get the most from your software investment. We know that your support challenges may vary according to the size and business-critical needs of your organization.

HP provides technical software support services that address all aspects of your software lifecycle. This gives you the flexibility of choosing the appropriate support level to meet your specific IT and business needs. Use HP cost-effective software support to free up IT resources, so you can focus on other business priorities and innovation.

HP Software Support Services gives you:

• One stop for all your software and hardware services saving you time with one call 24x7, 365 days a year

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• Fast answers giving you technical expertise and remote tools to access fast answers, reactive problem resolution, and proactive problem prevention

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For more information

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