



# HPE Database and Middleware Automation software

**Improve efficiencies by automating daily administrative  
tasks and simplifying DBaaS and PaaS delivery**



# 90%+

Administrator efficiency  
improvements for organizations  
using HPE DMA

HPE Database and Middleware Automation software (HPE DMA) automates daily administrative tasks required to manage the lifecycle of popular relational databases and middleware, including Java EE application servers.

Organizations using HPE DMA have experienced administrator efficiency improvements of 90% or more.<sup>1</sup> They accomplish changes faster and with higher quality.

## **Automate database and middleware provisioning and patching**

Are you meeting relational database and application server patching and compliance requirements in a consistent and timely manner? Are you planning to upgrade your relational database or application servers to newer platform releases, or to migrate or consolidate to virtualized environments? Would you like to implement a self-service end-user portal for

<sup>1</sup> Customer case studies from 2012 to 2015

database or middleware (platform as a service) that delivers platforms, patches, and application code updates in hours, not days or weeks? Do you need to drive standardization and reduce costs while significantly improving lifecycle management of your relational databases and application servers, saving up 90% or more of administrator time? If so, then consider HPE Database and Middleware Automation software.

For most organizations, database and application server administration services are in scarce. Many are straining to keep up with accelerating business demands. Day-to-day administration tasks are often manual and time consuming. Without automation, organizations will continue to struggle.

HPE Database and Middleware Automation software brings industry-standard best-practices and tools, and consolidates subject matter expertise and know-how into a single solution. It automatically recognizes and dynamically adapts to the myriad of database and application server platform and release combinations. With HPE DMA, you enable organizational standards to be enforced across the enterprise. You customize processes to meet requirements, and you simplify implementation of a self-service catalog for IT end users.

Maintaining database and middleware environments is daunting, given the accelerating rates of change driven by virtualization and new database and OS platform releases. HPE DMA was built to address the shortfalls of common approaches like custom scripting or using disparate ad hoc tools, which cannot address the fundamental issues of complexity, scope, performance, and scale in large enterprises. HPE DMA supports Linux®, Windows®, and UNIX®, and database and middleware technologies from multiple vendors.

### Database automation and provisioning delivers demonstrated ROI

Organizations that have implemented HPE DMA typically see return on investment (ROI) in less than one year. Efficiencies introduced by HPE Database and Middleware Automation software expand beyond the database or middleware administrators. As new automation is integrated with other systems to drive end-to-end processes, HPE Database and Middleware Automation software helps streamline administration and day-to-day operations. It can improve administrator-to-platform ratios to 1-to-200 or more and enables the organization to be more effective. Here are some examples:

	ENVIRONMENT	PAIN POINTS/DRIVERS	RESULTS
<b>Bank</b>	<ul style="list-style-type: none"> <li>• 15,000 DB instances</li> <li>• 660 DBAs</li> </ul>	<ul style="list-style-type: none"> <li>• DB and 3rd party app config took 5–7 days</li> <li>• Patching 6–9 months behind</li> <li>• Reduce DB ops costs by 29%</li> </ul>	<ul style="list-style-type: none"> <li>• DB and 3rd party app config &lt;1 hour</li> <li>• Over 50% efficiency gain in 1st quarter</li> <li>• Production rollout in 4-1/2 months</li> </ul>
<b>Telco</b>	<ul style="list-style-type: none"> <li>• 3470 DBs</li> <li>• 140 DBAs</li> <li>• 70% off-shore</li> </ul>	<ul style="list-style-type: none"> <li>• Oracle 10&gt;11 migration</li> <li>• DB application code release management</li> <li>• Oracle compliance</li> </ul>	<ul style="list-style-type: none"> <li>• 60% efficiency gains</li> <li>• Improved compliance efficiency over 90%</li> <li>• Reduced off-shore by 37,000 hours annually</li> </ul>
<b>Healthcare</b>	<ul style="list-style-type: none"> <li>• 2100 DBs</li> <li>• 1900 WebSphere servers</li> </ul>	<ul style="list-style-type: none"> <li>• App deployment took 12–15 days</li> <li>• Expand IaaS Cloud to PaaS Cloud</li> </ul>	<ul style="list-style-type: none"> <li>• App deployment now &lt;4 hours</li> <li>• Eliminated ad hoc scripting</li> </ul>
<b>Healthcare</b>	<ul style="list-style-type: none"> <li>• 80 prod DBs</li> <li>• All Oracle RAC</li> </ul>	<ul style="list-style-type: none"> <li>• Patching took 14 DBAs over a month</li> <li>• DB patching annual cost—\$750,000</li> <li>• New requests to patch 4X/year from 2X/year</li> </ul>	<ul style="list-style-type: none"> <li>• Patching takes 4 DBAs 2 weeks</li> <li>• DB patching annual savings of \$650,000</li> </ul>

## How does HPE Database and Middleware Automation software work?

HPE DMA supports two different infrastructures, either built on HPE Server Automation (HPE SA) which deploys agents to managed servers, or on an agentless HPE Operations Orchestration (HPE OO) infrastructure. HPE DMA Solution and Content Packs contain the builtin intelligence required to run the automation. They perform functions like provisioning, patching, migration and upgrade, compliance testing, and application code release management.

The infrastructure architecture makes it easy to manage geographically dispersed servers and is deployed in commercially hardened environments worldwide.

Solution and Content Packs are the heart of HPE DMA and can be deployed in minutes. They contain “workflows,” which are comprised of “steps.” Like interchangeable blocks, you can arrange steps into workflows to create powerful and repeatable deployments to one or more database or middleware servers. This content is built using industry standards, vendor best practices, and real-world experience, and it is the inherent intelligence in these steps that implement automation.

Workflows can be deployed out of the box or customized to support organizational standards and complex use cases. Composite workflows call other workflows to automate multi-function lifecycle processes.

### Solution and Content Packs

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You download Solution and Content Packs from the HPE customer support sites, so you have access to the latest updates such as support for new database, middleware, and OS platform versions, changes to platform patching processes, and more. Each Solution and Content Pack supports multiple RDBMS or applications server platforms and versions. Solution and Content Packs also support multiple OS versions and are typically updated several times a year.

Services listed below can be triggered centrally from the software or requested from a self-service catalog like HPE Cloud Service Automation (HPE CSA) by IT end users and application teams. HPE DMA Capsules for CSA contain pre-built Service Designs that can be downloaded from the HPE Live Network ([hpln.hpe.com](http://hpln.hpe.com)) and used in minutes.



## Key features and benefits

HPE DMA is the solution that helps you automate the “last mile” on your journey to improved IT management and the cloud. Whether you are trying to automate your current data center, migrate to a new platform release, consolidate platforms into virtual environments, or move to an internal private or hybrid cloud architecture, automating the many facets of the database and middleware platform layer is critical to meeting these objectives.

Organizations seeking to improve delivery of business services, reduce operational cost, and demonstrate compliance should consider HPE DMA for database and middleware automation.

### Database provisioning and configuration

Automating provisioning and configuration results in better adherence to service level agreements (SLAs) in delivering new databases. It enables consistent and reliable configurations, and allows administrators to spend less time on tasks such as:

- Deployment and installation of standalone and clustered databases like Oracle RAC and SQL Server clusters
- Configuration of database components like port settings, listeners, agent settings, etc.
- Database configuration cloning from a gold-standard master configuration
- Database migration and upgrades to new releases either locally or to a new server, migrating source to target with validation (e.g. Oracle 11g to 12c, SQL Server 2008 to 2012 or 2014).
- Data refresh of database copies—copies database objects as well as the data after configuring the target environment

### Database patching

Database patching automates best practices for end-to-end security and bug-fix patching across the entire database estate, with minimal effort, in fewer change windows, and with better quality. You can deliver patches in batch across many database instances in parallel. Features include:

- Patch download, delivery, and staging to a target server so you can perform staging in advance of patching
- Identification of patch candidates using current database-specific metadata
- Execution of end-to-end patching process including pre- and post- steps like stopping application services and disabling scheduled jobs
- Patch rollback any time after the patch has been applied

### Database code release management

Database code release tasks often take up to 20% of a database administrator’s day. HPE DMA enables administrators to be up to 88%<sup>2</sup> more efficient, with higher quality and better predictability. Here’s why:

- Database code syntax validation helps ensure that the update scripts will complete successfully before actually running them against the database server.
- HPE Database and Middleware Automation software can be integrated with popular source-code control systems.
- Database code version validation can be configured to enable the identical code that was tested in QA to be implemented in production.
- Database change security validation helps prevent unauthorized commands, like GRANT requests or creation of privileged users, from being run against the database.
- Database code deployment interacts with vendor-supplied utilities.



#### Database provisioning and configuration

- Enables consistent and reliable configurations
- Allows administrators to spend less time on tasks

#### Database migration and upgrade

- Quickly upgrade to current vendor releases
- Supports migration to different OS platforms

#### Database patching

- Automates best practices
- Delivers patches in parallel

<sup>2</sup> Stratavia DBA managed services, data compiled from January 2001 to January 2008.

### Database compliance

Database compliance automates industry best practices for database configuration security based on the Center for Internet Security (CIS) benchmarks. Automating compliance testing reduces risk and associated costs for failed audits and leaks of your proprietary data. And it provides on-demand visibility into the state of compliance across your database estate. Features include:

- Configuration hardening to secure database audits objects like binary permissions and user account access
- Configuration scanning and auditing that can target one or more servers in parallel for hundreds of configuration parameters
- On-demand compliance reporting based on CIS, PCI, or SOX compliance standards
- Workflows that can remediate compliance issues in misconfigured environments



### Middleware

- Maintain patch currency
- Upgrade to current vendor releases

### Middleware provisioning, patching, upgrade and configuration management

HPE DMA automates best practices for provisioning, patching, and configuration of Java EE application servers. Automation of these tasks results in higher quality deployments, properly configured environments, and security compliance. Features include:

- Installation and configuration of Java EE environments and their management components for standalone and clustered environments
- Installation and configuration of web server front ends
- Download of application server and web server binaries to any target server, creating response files based on configuration policies and automating the silent installation and post-provisioning configuration of application servers and web servers
- Addition of nodes to an existing cell or domain to expand or scale existing clustered environments
- Patch download, delivery, and staging to a target server with staging performed in advance of patching. Support for standalone and clustered “rolling patches”
- Execution of end-to-end application server patching processes, including stopping and starting of runtime components and backup and restore of application configurations
- Creation and configuration of clusters and cluster members, data sources and web server objects
- Configuration of application server log attributes and heap size for each member in the cluster
- Creation and configuration of data sources for backend database connectivity from your application to your backend database resource
- Creation and configuration of web server definitions for purposes of limited web server management and mapping of application to web server resources at application deployment time
- Upgrade of web servers and application servers to current releases

## HPE Database and Middleware Automation software infrastructure

The communication infrastructure is based on a centralized management server and agent. It provides enterprise features to function in the most demanding environments, including:

- Secure, authenticated, and encrypted communications
- Role-based access control authentication of users and workflow requestors
- Near-real-time synchronization among decentralized infrastructure components
- Remote management, disaster recovery, and global visibility with failover
- Optional replicated database, software, and user directory for redundancy
- Demonstrated scalability and high performance
- Lightweight agents that are mostly idle until activated to run a workflow
- Agent support for multiple operating systems and releases
- Optional agentless infrastructure

## HPE DMA versus in-house scripts

### **HPE DMA addresses challenges with script-based automation approaches.**

**Dynamic attributes**—The intelligence in the core platform allows decisions to be dynamic. For instance, if one or more target environments change, HPE DMA avoids the need to manually update each workflow, which reduces maintenance overhead tremendously. In large, complex environments, dynamic workflow capabilities play a significant role in enabling the success of the automation project.

**Policy definition**—The software's policy console allows administrators to specify environmental attributes that are not auto-discovered. For example, you can create centrally-defined policies that specify naming conventions and change windows. If you change a policy, all workflows that reference the policy are updated automatically. Scripts often hard code these defaults.

**Smart groups**—The software has a built-in inventory and attribute query process that can identify candidate target systems to run workflows on. For example, show me the Oracle systems that do not have the latest patch set applied, and then run the patch workflow on them.

**Tribal knowledge**—The person who writes a script knows how to use and maintain it. However, if that person is unavailable or leaves the team, the secondary person may not have the same knowledge. That person may use their own set of scripts causing failures or deviation from standards. Through pre-defined workflows, HPE DMA significantly reduces the reliance on tribal knowledge about database and middleware automation. The software allows senior administrators to define and enforce configuration standards. And finally, because HPE DMA workflows can use data discovered from the existing IT environment, fewer parameters need be entered by (and hence known to) administrators.

**Maintenance overhead**—There is generally a one-to-one correspondence between a script and a target database instance. Scripts also make assumptions about target environments. Every time a key assumption changes, you must update the scripts on each target server. That could affect thousands of instances, because the scripts are usually not managed from a centralized automation platform.

**Lack of process conformity**—Most scripts do not easily integrate with other tools such as ticketing or asset management systems like HPE Service Manager software and HPE Asset Manager software. And they do not usually accept input from monitoring tools. As a result, it can be difficult to enforce IT process standards. HPE DMA, on the other hand, allows processing standards to be accurately modeled within its workflows and reused across multiple environments. The software integrates with orchestration tools like HPE Operations Orchestration software and third-party automation tools.

**Centralization, authentication and auditability**—Because scripts are bound to a specific server, a database administrator (DBA) that can execute one script can also execute any other script on that server. That can be difficult to control per DBA per script. Also with scripts, audit tracing, if present at all, directs script output to a log file maintained on the target server. Such logs can be easily overwritten causing the audit data to be lost. In HPE DMA, all of the information (workflows, steps, scripts, rules and events, run results, etc.) are located within a central repository. Access is controlled based on environmental segregation (production versus development), user privileges and roles, and workflows. This makes deployment and control much easier to manage, and it makes audit tamper proof. Equally important, the software allows less experienced personnel to perform complex activities via a workflow—without the need to grant them local access on the target servers and databases.

**Cross-server coordination**—An automated process often has to span multiple database servers (a data migration or upgrade, for example). HPE DMA workflows easily accommodate such situations, whereas with scripts, cross-server communication and coordination (especially across disparate platforms such as UNIX and Windows) can be difficult to accomplish.

## HPE DMA users

HPE DMA is managed by subject matter experts who are responsible for the database and middleware infrastructure of an organization. They make workflows they create available to help-desk personnel, developers, IT end users, and others who manage or require database or middleware services. Role-based access controls enable authenticated access to workflows while freeing administrators to concentrate on high-impact issues.

## HPE DMA Premium and Express Edition software

HPE DMA Premium and Express Edition software provides automation content which runs natively in HPE OO, helping to simplify use case availability and improving time-to-value.

- IT can deliver IT Process Automation via HPE OO for Database and Middleware tasks. Use cases like end-to-end provisioning and service fulfilment can now extend their scope to include database and middleware provisioning and configuration.
- The scope of application release automation modeling software like HPE CODAR can be extended to database and middleware. Application releases can be appended, without latency, with changes to database schema and middleware code updates in an orchestrated manner.
- On-demand database services are more easily offered. Cloud catalogs like HPE Cloud Service Automation can offer users Database- and Platform-as-a-Service. An internal private cloud used by IT for standardized, efficient, error-free and compliant governance supporting catalog options to trigger provisioning, patching and migration using enterprise-approved standards.

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## HPE DMA

A key component of the HPE Converged Cloud strategy and HPE Data Center Automation product suites.

- HPE Cloud System Enterprise
- HPE Server Automation software
- HPE Operations Orchestration software
- HPE Cloud Service Automation software
- HPE Continuous Delivery Automation software

## Integration with other HPE solutions and third-party products

You can deploy HPE DMA standalone to automate the administration of databases and middleware, or you can integrate it with other HPE solutions to create a comprehensive, end-to-end data center automation or cloud solution. HPE DMA is a key component of the HPE Converged Cloud strategy and HPE Data Center Automation product suites. It enables platform-as-a-service synergies with:

- **HPE Cloud System Enterprise**—HPE DMA is the key enabler of platform-as-a-service for databases and middleware for HPE Cloud System Enterprise offerings.
- **HPE Server Automation software**—HPE DMA runs on HPE Server Automation software infrastructure, leveraging HPE Server Automation software's secure, authenticated, and scalable communication components and agents.
- **HPE Operations Orchestration software**—HPE DMA deployments can be displayed in the HPE Operations Orchestration software user interface and used by HPE Operations Orchestration software developers as a step to run in an HPE Operations Orchestration software workflow.

HPE DMA Premium and Express Editions deliver Content Packs flows that run natively in HPE OO. No HPE Server Automation or HPE DMA infrastructure is required to run these flows.

- **HPE Cloud Service Automation software**—HPE DMA workflows can be defined as service blueprints in HPE Cloud Service Automation software. That can simplify self-service requests for application platform as a service for databases and middleware.
- **HPE CODAR software**—HPE CODAR software application models for databases and middleware can inherently call HPE DMA workflows to provision or patch databases or middleware as part of the application management model.

HPE DMA REST API can be used to integrate with self-service portals, third-party products like process lifecycle management, ticketing and tracking systems, run-book automation tools, and other external processes to securely drive HPE DMA workflows.

## For more information

To learn more about HPE Database and Middleware Automation software and other HPE Business Service Automation solutions, visit the following links:

- HPE Database and Middleware Automation software: [hpe.com/software/dma](https://hpe.com/software/dma)
- HPE Data Center Automation: [hpe.com/software/dca](https://hpe.com/software/dca)



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