HPE Operations Orchestration

Enterprise-scale IT process automation with a disciplined approach

Enterprise-scale IT automation

Data centers continue to grow in size and complexity and look to deploy technologies such as virtualization and expand into cloud delivered IT services to meet ever increasing demands from business. With the rise in heterogeneous infrastructure, platforms, and applications, IT has seen a proliferation of scripts and point tools for run book automation within the data center. Each of the server, network, storage, database, and application dev-test and release teams operate in their own silos with limited collaboration and rely on error-prone manual execution and handoffs. CIOs are mandating better collaboration and investment in orchestration tools that bridge these IT silos and enable consolidation of tools and scripts.

As a result, enterprises will need to rely upon next-generation IT process automation (ITPA) solutions. IT process automation is evolving to a broader enterprise-scale orchestration approach and includes more than just run book or IT task automation and process automation. With next-generation ITPA you can quickly, simply, and reliably develop, deploy, and manage automations in a disciplined approach that cuts across the entire enterprise IT environment from traditional IT to cloud-based infrastructure operations to other IT operations functional areas such as development operations (DevOps) and security operations (SecOps).
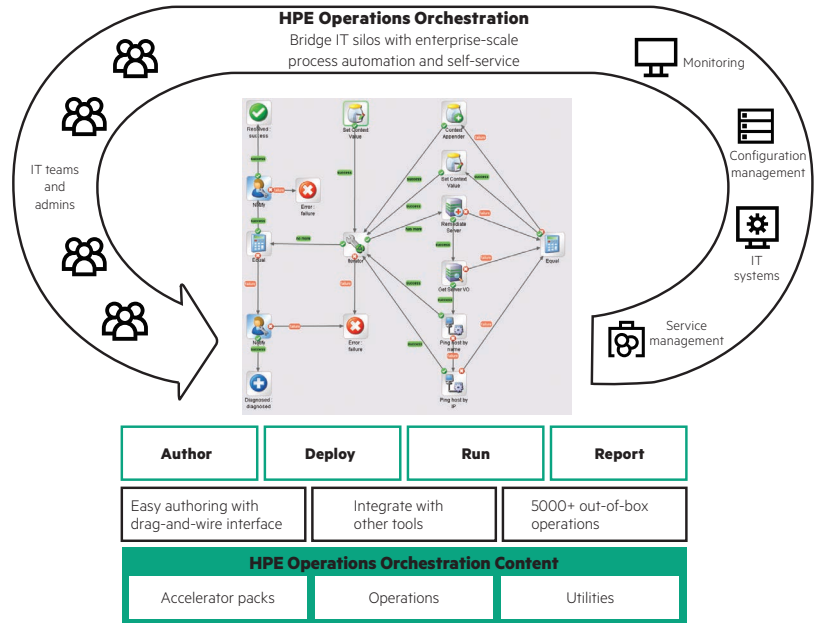
Figure 1: Process automation lifecycle using HPE Operations Orchestration

HPE Operations Orchestration—next-generation ITPA

As your IT environment becomes progressively more complex, you will need to rely upon an enterprise-scale next-generation IT process automation solution to ensure successful IT automation deployments. As you transition to IT automation software, HPE Operations

Orchestration will help you manage the automation of IT infrastructure and operations more efficiently. Refer to Figure 1 for a depiction of the process automation lifecycle using HPE Operations Orchestration.

HPE OO can be leveraged to reduce cost, improve automation deployment time. It is the perfect choice for automating IT tasks, operations, and processes and is designed with an innovative enterprise-scale automation platform that provides a stable foundation for IT to deliver services whether in a traditional data center or hybrid cloud environment. HPE OO provides for rapid automation deployment and simplified automation management culminating in an improved user experience based on automation self-service. Table 1 shows how HPE OO can seamlessly direct complex IT workflows and coordinate information sharing across disparate systems and teams.

Table 1: Common HPE Operations Orchestration usage scenarios being implemented by customer

| INCIDENT MANAGEMENT	CHANGE MANAGEMENT	VIRTUALIZATION	CLOUD SERVICE AUTOMATION
Service down in HPE Operations Manager i (OMi)	Requestor creates SM ticket to provision a server	User requests additional server capacity through self-service portal	Requestor creates a change ticket to provision additional resources (VM, storage, application stack) in the cloud
Alert launches OO flow	Change advisory board reviews and approves ticket	Request launches OO flow that prompts user for parameters	Change advisory board approves the change ticket which launches OO flow
OO flow takes ownership of alert	Ticket approval launches OO flow	OO flow opens SM change ticket to provision a new VM	OO flow checks hypervisor capacity and provisions additional storage in the cloud
OO flow opens incident ticket in HPE Service Manager (SM)	OO flow executes change operations with HPE Server Automaton (SA)	OO flow checks hypervisor capacity and provisions additional storage	OO flow triggers SA to provision the new VM and application stack
OO flow performs diagnostics and repair procedure to fix service, such as restarting the service	OO flow updates and closes SM ticket,	OO flow triggers SA to provision the VM and configure the software	OO flows adds new VM to the load balancer OO flow enables monitoring for newly
OO flow updates SM ticket with full audit trail	OO flow updates HPE Universal CMDB with accurate data center state	OO flow performs checks to confirm successful completion	provisioned storage, VM, and applications
OO flow acknowledges the OMi alert event	OO flows notifies change control board	OO flow closes SM ticket	OO flow performs checks to confirm successful completion and closes the change ticket
OO flow closes SM ticket			
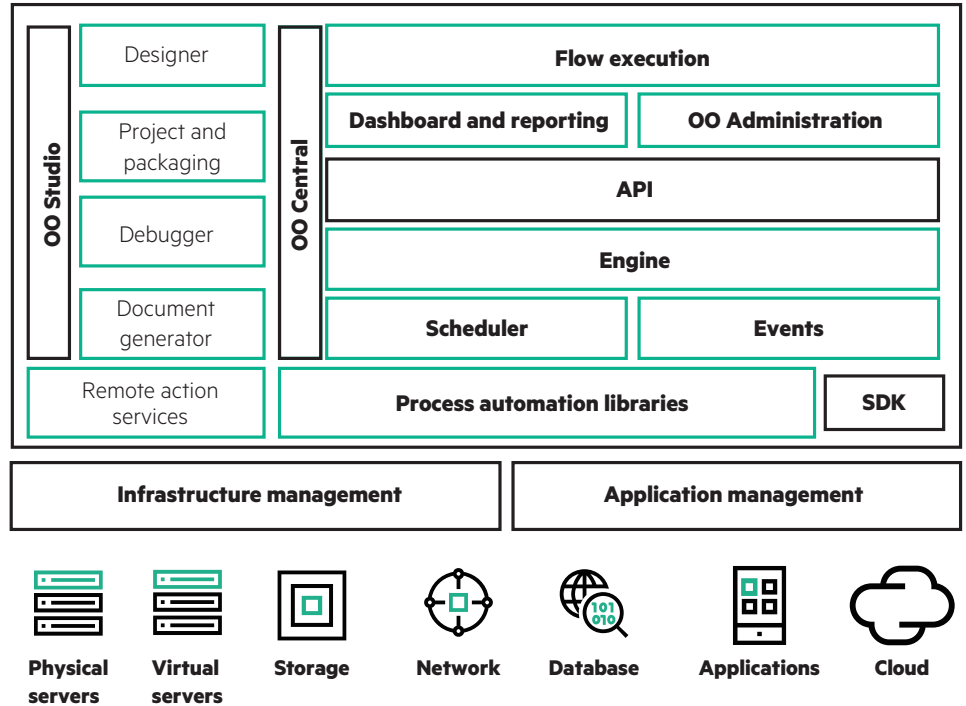
Figure 2: HPE Operations Orchestration architecture

HPE Operations Orchestration components

HPE OO is comprised of three basic components: Studio, Central, and Content (process automation libraries) in Figure 2.

HPE OO Studio

Many IT organizations create scripts to perform standard tasks. However, they use largely manual processes for task execution, and there are limits to this approach. Scripts for complex processes that touch multiple systems and applications are difficult to create. Scripts are also difficult to maintain, hard to share and re-use, cannot be validated for reliability prior to execution, and are not auditable. HPE OO addresses the limitations of scripting by helping you reduce the administrative complexity of flow creation and authoring through HPE OO Studio.

HPE OO Studio provides an easy-to-use interface using an intuitive drag-and-wire design to create and customize new flows, debug flows, and generate documents. HPE OO Studio also allows you to easily deploy flows by letting you compare and promote flows across multiple environments (development, test, staging, and production). Standard processes can be documented and structured documentation can be generated to support compliance requirements using Studio. A sample IT process automation flow is shown in Figure 3.
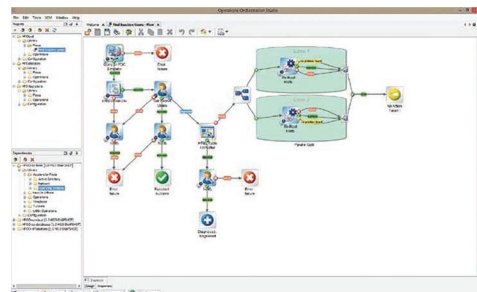

Figure 3: IT process automation flow

HPE OO Central

HPE OO Central includes the flow engine that executes the flows and provides an administrative interface to manage users and flows. It also provides dashboard and reporting for ROI and execution metrics for flows, and offers flexibility in flow execution to reduce administrative time and increase agility. You can execute flows sequentially or in parallel, which reduces the time to deploy a single change to a large group of devices or to coordinate related changes to different device types (for example, server and storage devices).

HPE OO Central provides additional capabilities such as reporting, dashboard, and documentation on your deployed flows including:

- **Execution events:** user-generated report on execution events.
- **Average execution reports:** provides the average execution time for every flow.
- **Built-in ROI calculator:** defines, computes, and reports the benefits of executing flows. The ROI for every execution and flow is calculated and presented.
- **Custom reporting:** provides ability to create custom reports for executed flows specific to user requirements utilizing filtering on the execution list.

Table 2: HPE Operations Orchestration Studio and Central

HPE OO STUDIO	FLEXIBLE FLOW AUTHORING
Easy-to-use flow authoring	Intuitive drag-and-wire capabilities to design, create, share, and customize flows with little or no programming skills
Automated flow authoring	User-friendly and intuitive wizards including PowerShell, Web Services, and SAP wizards
Powerful built-in debugger	Test flows on multiple environments that accelerate content development and validate flows for reliable execution
Collaboration between multiple authors	Provides collaborative authoring capabilities across multiple locations
Source control management	Reduces risk by providing auditability of source code changes
Offline development	Separates development environment from production environment
Documentation	Generates HTML documentation automatically based on the flows and operations

HPE OO CENTRAL	POWERFUL ENGINE THAT EXECUTES FLOWS AND PROVIDES AN ADMINISTRATIVE INTERFACE TO MANAGE USERS AND FLOWS AND SIMPLIFIED END-USER FLOW ACCESS
Execute flows in multiple modes	Provides flexibility in flow execution and reduces administrative time and increases agility • Visually guided mode • Fully automated mode • Scheduled mode • CLI and API
Execute flows sequentially or in parallel	Reduces the time to deploy a single change to a large group of devices or to coordinate related changes to different device types
Real-time inspection of step-by-step results and outcomes of flows	Improves auditing and instrumentation of flow execution
End-user self service	Simplified end-user access to automations being managed

HPE OO Content

HPE OO Content refers collectively to the integrations, operations orchestration, and process automation libraries in HPE OO. It includes over 5000 out-of-the-box operations, flows, and integration adapters, offering you tremendous flexibility in terms of supporting many different platforms and management products. The comprehensive coverage of integration adapters for systems management products offers you the freedom to use existing products without major tweaks or reprogramming. HPE OO offers content in the areas of:

• Cloud orchestration, DevOps, security operations, disaster recovery, incident automation, and service request fulfillment. It provides the most comprehensive virtualization and cloud support that covers Microsoft® Hyper-V®, VMware, Xen, KVM, Amazon AWS, Open Stack-based clouds including HPE Cloud and VMware vCloud Director.

• Tools and systems including, but not limited to, monitoring, service management, IP management, hardware interfaces, network devices, and storage.

• Applications such as SAP, Apache, IIS.

• Security products such as HPE ArcSight, HPE TippingPoint, and HPE Fortify.

Enhancements to HPE Operations Orchestration

HPE OO provides you enterprise-scale automation capabilities utilizing an innovative policy- driven process automation platform with an improved user experience. The key enhancements of HPE Operations Orchestration are:

• Quicker deployment of process flows via enhanced content.

• Ease of execution via the self-service console that enables non-admin roles to run the flows.

• Hyper-scale execution engine that can scale to support extremely high volume of flow bursts such as 100 flow triggers per second. The higher scalability a single enterprise orchestration solution that can handle executions across your disparate systems and environments including external providers. Lack of such scale will force you to operate in silos without visibility into end-to-end processes.

• HPE DMA Express Edition software will provide out-of-the-box flows, i.e., Database and Middleware automation content, which run natively in HPE Operations Orchestration (OO).

Faster flow development

HPE OO Studio functions as a standalone integrated development environment (IDE), and does not require flow authors to be connected to an HPE OO server. Multiple authors can use a standard development process across multiple geographies, including creation and deployment of modular packs across test, development, and user acceptance testing (UAT) environments. It has the ability to support 100+ authors across regions, lines of business, level of expertise, and geographies to create re-usable and pluggable automation flows.

Integration and flow generation wizards

Wizards offer your users easy-to-use and intuitive choices for automated flow authoring. The PowerShell Wizard discovers the available modules and cmdlets from a target host saving you development time. It helps you avoid having to repeat the same time-consuming process of creating flows that execute the PowerShell cmdlet and easily translates PowerShell scripts into HPE OO flows reducing your dependency on PowerShell scripting.

The Web Services Wizard helps you to integrate enterprise applications seamlessly and efficiently. It uses the standard Web Services Description Language (WSDL) of your applications and translates the described functionality to flows in HPE OO. The REST Wizard translates Swagger™ APIs to OO operations and flows. With the HTTP client library, you can also interact with non-Swagger™ RESTful services using REST APIs. You don't need to do any code development or compilation to support REST or Web Services-based integration. Integration wizards save you time.

Remote debugging capabilities

HPE OO remote debugging features remove the risks and guesswork associated with debugging flows, and allow you to deploy IT process automations faster. In Studio, you can remotely execute flows with environment-specific test, develop, and production parameters. This eliminates the need to change parameters to determine what went wrong and allows you to troubleshoot issues without introducing risk to the production environment.

Intuitive dashboards and filters speed and simplify the debugging process in HPE OO. The results from the debugging run appear in the Central web UI as part of the run history. If the run fails, you can use the run ID from Central's history to re-run the debugging in Studio.

Troubleshooting runs in HPE OO is simple too. The Central web UI offers a visual indicator for each step being taken in a flow. Filters make it possible to search for specific runs, and results include details of the specific step executions within it.

HPE DMA Express Edition software

Here are some of the possibilities this opens up by extending current use cases to include Database and Middleware:

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.

Scope of Application Release Automation software like HPE Codar can be extended to database and middleware. Release of application can be appended, without latency, with changes to the underlying schema of the middleware and database in an orchestrated manner.

Database Services can now be offered on demand. Cloud Catalog like HPE Cloud Service Automation can offer users an option to request PaaS or DBaaS. An internal private cloud used by IT for standardized, efficient, error-free, and compliant governance can carry catalog options to trigger patching and migration in a controlled manner.

Table 3: Summary of enhanced HPE OO features

Enable more users to author task and process automations	• Improved support for geographically distributed authors • Support for multiple projects • Studio separate from Central to enable offline content development • Support for standard source control management in Studio for collaborative flow development
Enable organizations to quickly deploy automations	• Improved packaging and code promotion of flows operations • Automatic distribution of content to remote action services • Support for self-contained content packs that can include a specific set of flows and operations
Broader base of IT to execute automations	• Simplified end-user focus for self-service automation • Embeddable widgets • Support for mobile/tablet devices • User-friendly audit and status • Easily control/execute/track flows
Increased scaling to support extremely high volume of flow bursts	• 4X increase in step execution rate • Improved support for highly parallel and long running executions • Improved concurrent processing • Asynchronous polling mechanism
Improved cross data center resiliency	• Zero downtime for upgrades • Live scale out (additional nodes can be added without the need to stop the system) • Support remote action services behind firewalls
Lower TCO to support multiple deployment models	• Small footprint to get started (HPE OO can run on small to medium instances on Amazon Cloud) • Smaller footprint for Central server (1/2X)
Application-centric orchestration	• Provides application-specific integrations supporting business changes • Available wizards to simplify flow creation
Security operations orchestration	• Verifies that the process is both IT- and business-compliant • Enables auto-remediation to address IT vulnerability including infrastructure and applications
DevOps orchestration	• Accelerates the release of application changes across development, test, staging, and production
Expanded infrastructure orchestration	• Provides content and integrations across the entire traditional IT and cloud fabric
Remote debugging	• Removes the risk and guesswork associated with debugging flows • Speeds deployment of process automations • Allows for troubleshooting without putting the production environment at risk

HPE Operations Orchestration ROI

HPE OO includes many tangible, industry-leading ROI results as seen in Table 4.

Table 4: Real-life customer ROI results

TASK	BEFORE HPE OO	WITH HPE OO	ROI
Incident management and resolution	5k–8k incidents per month, staff of 8	400+ flows in production, 1200+ flow executions daily	$5M annual savings, reduced MTTR
Change management	Weeks for end-to-end provisioning	12 core flows, 5k–10k flow executions weekly	• Saved $4M by automating 30+% of provisioning task • <1 day for provisioning
Disaster recovery failover	DR test requires 40–50 people, 6–7 hours of the day	Entire failover process codified in OO	80% reduction in resources required
Managing and provisioning virtualized infrastructure	Provisioning would take up to 97 days	Self-service portal for provisioning virtual data center	Provisioning time reduced to 4 hours or less, reduced errors

HPE Operations Orchestration benefits

HPE Operations Orchestration provides many key benefits including:

- Improves process adoption: improves the standardization of tools and processes aligning to the needs of the business

- Improves process quality: convinces the experts to define and agree on a single, predictable, and repeatable process that can be automated

- Reduces operational cost: automates manual, repetitive, and error-prone tasks so IT staff can refocus on strategic initiatives

- Improves service quality: reduces escalations and mean time to repair (MTTR) by automating event and incident triage, diagnosis, and resolution

- Coordinates change and tasks across siloed systems and teams: reduces inefficiency, complexity, and risk associated with manual handoffs

- Increases business agility: react more quickly to changing business needs by reducing the time to deploy new infrastructure and provision end-to-end business services

- Provides auditable processes: documents and enforces ITIL-compliant, standardized processes

- Increases time to value: leverages out-of-the-box content based upon best practices and integrations with HPE and third-party system management tools

- Eases workflow creation: reduces administrative complexity by decreasing the need for dedicated development resources to author flows

HPE Software Services: Accelerating Outcomes

HPE Software Services offers a comprehensive portfolio of services, helping you automate and orchestrate your data center and transform to a hybrid delivery service provider. We will help you accelerate your outcomes by ensuring you have the right strategy, the solution expertise and the consumption models to suit your needs.

• Our Advisory Services will set you up on the right path to success. Whether you are looking to take a transformational or incremental approach, our workshops, maturity assessments and roadmap planning services will help you drive a strategy that matches the solution to your business objectives.

• We have the expertise, experience and track record to design and implement solutions that deliver your business goals. Our Orchestrated Data Center, Automation as-a-Service and Hybrid Cloud Management services give you the flexibility to deploy on premise or consume as a service. Should you prefer to run your own projects, our Foundation Services will ensure you have a solid base to build upon.

• Value realization is not just about the technology. Our Education, Management of Organizational Change and Solution Management Services will ensure that you can drive adoption to sustain the value from our technology and services.

For more information go to **hpe.com/software/automationservices**

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