



agility PLATFORM™

Product Whitepaper

An enterprise-grade cloud management platform that enables on-demand, self-service IT operating models for Global 2000 enterprises

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Executive Summary

This whitepaper describes key product capabilities of the ServiceMesh Agility Platform, which is an enterprise-grade, cloud management platform that enables on-demand, self-service IT operating models for Global 2000 clients. The Agility Platform enables enterprise customers to automate the deployment and management of enterprise applications and platforms across private, public and hybrid cloud environments. It provides a unified control point for governance, compliance and security across the customer's cloud applications and environments, empowering the business with fully governed, self-service access to applications, platforms, and services.

The Agility Platform is a fully integrated platform consisting of multiple product modules, cloud adapters, and a robust API. The core, underlying platform includes governance, security, and orchestration capabilities that are consumed by each product module, exposed via API, and implemented via adapters for all the cloud workloads and environments under management. The Agility Platform also includes five product modules; Planner, Designer, Store, Release Manager, and Operations, to provide end-to-end lifecycle management of cloud workloads.

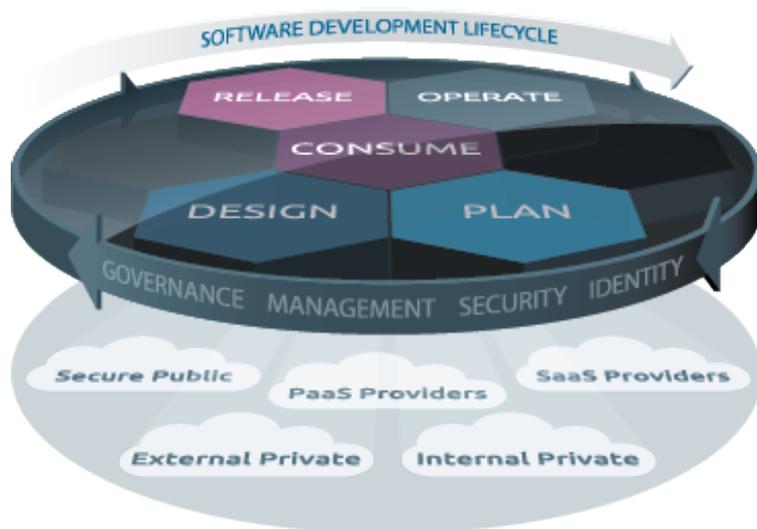
Target Audience

This document is intended for IT leaders responsible for enterprise cloud strategy, as well as IT practitioners involved in cloud management platform evaluation and related cloud projects.

Agility Platform Overview

The ServiceMesh Agility Platform enables enterprises to adopt cloud-based, everything as a service IT operating models to compress IT service delivery time and lower costs throughout the enterprise. The Agility Platform includes policy-based governance, security, and lifecycle management capabilities that allow customers to accelerate the adoption of cloud services and speed the delivery of business applications into the cloud with governance and control.

Agility Platform automates the deployment and management of cloud applications, development platforms, and a broad range of other cloud services across private, public, and hybrid cloud environments. Agility Platform ensures the portability of these services throughout their lifecycle independent of the underlying cloud environment.



An integrated platform for the governance, orchestration, security, and lifecycle management of enterprise cloud services.

Agility Platform enables IT organizations to empower their business unit customers with fully governed, self-service access to the standardized and customizable applications and platforms they need. IT organizations use the Agility Platform not just to manage cloud infrastructure, but to transform their IT operating model with on demand applications and platforms that can provide significant cost and time-to-market advantages while meeting requirements for governance, compliance, and security through flexible policy definition and enforcement.

At a Glance

- A single, consolidated platform for the consistent management, governance, orchestration, and delivery of enterprise cloud applications and service portfolios.
- An extensible policy engine that enables the creation and enforcement of an unlimited range of custom governance, compliance and security policies.
- Portability throughout the lifecycle of enterprise cloud applications and platforms independent of the underlying private, public or hybrid cloud environment.
- Empowers the business with fully governed, self-service access to standardized and customizable applications, platforms, and services.
- A solution to migrate existing business applications and virtual machines to fully governed hybrid cloud environments in an automated, systematic manner.
- Integrated application release automation to increase the speed and frequency of software releases and accelerate DevOps initiatives.
- Rapid deployment and time-to-value.

Agility Platform is a fully integrated platform with multiple product modules. The rest of this whitepaper is organized into the following sections:

- Core platform capabilities
- Lifecycle management product modules
 - Planner
 - Designer
 - Store
 - Release Manager
 - Operations

Core Platform Capabilities

The core, underlying platform includes governance, security, and orchestration capabilities that are consumed by each product module, exposed via API, and implemented via adapters for all the cloud workloads and environments under management. These core Agility Platform capabilities include:

- An extensible policy engine enabling the creation and enforcement of an unlimited range of custom governance, compliance and security policies.
- An end-to-end security model spanning network, instance, data, and access levels including federated identity management.
- An orchestration engine for deploying complex, multi-tier business applications across heterogeneous private and public clouds.
- An API, integrated event bus, and workflow automation capabilities to extend cloud operating model capabilities to existing IT ecosystems.
- Proven scalability to supports ten's of thousands of workloads under management.

1) Extensible Policy-Driven Governance

Organizations require fine-grain cloud governance controls to manage the complexity and regulatory and compliance risk inherent in global enterprises today. There are countless potential permutations of policy controls required for cloud applications and platforms that address ownership, user permissions, regulatory compliance, operating parameters, service level agreements, financial controls, geographic constraints, and more. Enterprises need the ability to rapidly create and enforce new cloud governance, compliance, and security policies to address both current and future needs.

Single, Consolidated Control Point for Cloud Governance

The Agility Platform is unique in its ability to deliver robust policy-based governance and security controls based on an extensible meta-model, enabling the creation and enforcement of an unlimited range of custom policies. The result is fine-grain control over users, groups, projects, workloads, environments, schedules, quotas, billing, security, and any other parameter in the meta-model.

Agility Platform uses declarative policies that can be applied at any level across an organizational

hierarchy model, and includes policy conflict resolution capabilities and visibility/accountability through policy auditing and reporting.

Drag-and-Drop Visual Policy Editor

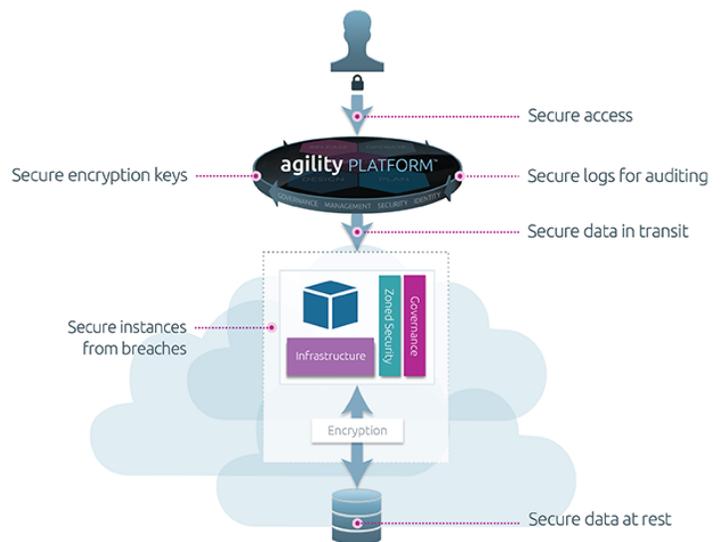
Agility Platform’s visual policy editor makes it faster and easier to create and manage complex business-level policies. The easy to use, drag-and-drop editor can be used by IT Analysts and other roles that lack programming knowledge, making it easier to codify policy controls from Business Units, Corporate Compliance offices, and other stakeholders. More sophisticated users can toggle between synchronized graphical and XML policy views.

Advanced SLA management

Agility Platform monitors the runtime health of multi-tier application workloads and dynamically responds to changes in demand or performance with SLA policies based on thresholds and compound rules. These policy controls enable multi-tier application workloads to dynamically respond to changes in demand, including auto-scaling precisely across each application tier (database, app server, web server, etc.) for optimal performance without wasting or overcommitting resources.

2) End-to-end Cloud Security

Cloud-based IT operating models require that cloud workloads and environments operate as a trusted extension of the enterprise. The Agility Platform provides end-to-end cloud security that leverages automated security policies and zoned security models to ensure security and minimize/eliminate manual configuration errors. This includes capabilities to secure and isolate virtual networks, encrypt persistent data, harden machine instances, leverage internal and external encryption key stores, and enforce fine grain access controls.



Federated Identity Management

Agility Platform incorporates federated identity management to allow organizations to leverage existing authentication and authorization directories for “single sign-on” across the full range of private and public cloud services under Agility Platform management. This includes support for Microsoft Active Directory, LDAP and X.509 directories along with standards-based protocols such as Kerberos, WS-TRUST, X.509, and OpenID.

Application-Level User Permissions Model

Agility Platform’s role-based access controls encompass native application-level permissions. For example, existing application specific permissions such as “User”, “Power User”, or “Administrator” for MS SQL Server, can be passed through automatically to self-service provisioning users. This

improves instance security, rather than providing default root access to the machine, and enable more sophisticated IT services to be offered on an automated, self-service basis.

3) Application Orchestration and Cloud Portability

Agility Platform enables cloud workloads to be portable across a broad range of private and public clouds. This applies to cloud workload ranging from simple stacks to the most complex, multi-tier application topologies. Agility Platform policy controls can be leveraged to automate and optimize cloud workload placement decisions based on costs, geographic location, regulatory constraints, and a wide range of other parameters, helping to ensure vendor contestability and prevent vendor lock-in.

Application-Centric Orchestration and Delivery

Agility Platform orchestrates the deployment of complex, multi-tier topologies which can include diverse application components, load balancers, firewalls, virtual networks, DHCP, dynamic DNS, encryption key stores, persistent data storage, registration with third-party system, and more.

Portability Across Diverse Private and Public Clouds

Agility Platform enables hybrid cloud strategies with support for the following cloud service providers: *VMware vCloud Director, VMware vCenter, Microsoft System Center, Microsoft Azure, Amazon EC2, Fujitsu, Terremark, Savvis, CSC, Dell, OpenStack, CloudStack, HP Cloud, Rackspace, and Eucalyptus.*

4) Extend and enhance existing IT ecosystems

The Agility Platform integrates across an ecosystem of third-party products and service providers both within an enterprise's existing IT organization, and out to external cloud service providers.

Comprehensive REST API

Customer use Agility Platform's API to access cloud services from existing IT products and tools; including developer tools, continuous software build tools, third-party portals, IT ops dashboards, and more. Agility Platform's API is as full-featured as the Agility Platform user interface, and every capability exposed via the API goes through the same policy-driven governance and security controls.

Complex Event Processing

Agility Platform is designed to capture a broader array of real-time events and respond with pre-programmed notifications and responses – either within Agility Platform or to third-party offerings. This enables a wide range of responses to changing application needs, such as updating CMDBs, automating ticket submission into incident management systems, activating third-party application performance management tools to gather detailed forensics, or using email and SNMP to generate custom alerts when monitoring thresholds are exceeded.

Workflow Automation

Agility Platform provides workflow automation capabilities to streamline workload migration planning and approvals, automate workflows across SDLC tool chains, and provide application release automation to cloud environments.

5) Platform Scalability

The computational demands of large enterprises can fluctuate dramatically and ultimately encompass 10's of thousands of workloads. The Agility Platform is built on a cloud-native architecture that dynamically scales to meet system demand, using only the amount of resources needed. The Agility Platform provides this scalability to rapidly execute provisioning requests, orchestrate auto-scaling operations, and perform other resource intensive management functions.

Support 10's of thousands of workloads with a single instance

The Agility Platform has been proven to support the concurrent provisioning and management of 10's of thousands of workloads with one Agility Platform instance. Organizations can also deploy multiple instances of the Agility Platform as desired.

Distributed Reporting Architecture

Agility Platform's distributed reporting architecture dramatically reduces report creation time and bandwidth consumption. This is especially useful when aggregating reports over thousands of workloads and environments where users are charged for network bandwidth. Traditional aggregate report collection methods become costly and unresponsive at these volumes.

Planner

Planner provides a systematic, disciplined approach to profile, score, approve, and migrate existing applications and virtual machines to fully governed hybrid cloud environments.

Enterprise application portfolios can be quite large and diverse, containing several thousand different types of applications and workloads. Planner imports existing application information from sources such as CMDBs, and combines this with cloud service provider capabilities to analyze, classify, and score workloads according to a programmable criteria set. Planner generates Cloud Readiness™ and Cloud Value™ scores for each workload and systematically compares and provides recommendations for a best fit cloud environment.

The resulting scores and any remediation actions are then tracked in a customizable approval workflow, and upon approval, seamlessly promoted to Designer (the next lifecycle stage) where they are assembled and configured for cloud deployment. Planner also captures initial policy parameters during workload profiling including workload sizing and placement criteria, security parameters, operating limits, and regulatory restrictions. These policy definitions are retained for later refinement and enforcement when end users provision these workloads later in the lifecycle.

At a Glance

- Evaluate and prioritize workloads for cloud migration.
- Import configurations from CMDBs and other sources.
- Automatically discover and import virtual machines.
- Generate Cloud Value™ and Cloud Readiness™ scores.
- Model dependencies in complex topologies.
- Customize and automate migration approval workflows.
- Capture initial governance policy requirements.

Planner also enables you to automatically discover and import existing virtual machines (VMs) deployed from other third-party provisioning tools. Upon VM import, the Agility Platform enforces the specified policies on those VMs to ensure governance, security, and control. These existing VMs can be imported in bulk, with governance and security policies applied systematically upon import, or manually applied after import is complete. Once imported, these VMs can be published through Store, monitored via Operations, and otherwise leverage the full range of capabilities provided by the Agility Platform.

Designer

Designer is a graphical workbench to assemble portable stacks, templates, blueprints, and multi-tier application topologies for deployment across hybrid clouds.

Organizations need the flexibility to deploy their cloud workloads to whatever cloud delivers the best combination of price, performance, compliance, security, and service levels that they need. Designer enables the rapid assembly of everything from simple stacks to highly complex multi-tier application blueprints and topologies, and enables these workloads to have the cloud portability that enterprises need for vendor contestability, combined with the business agility provided by on-demand provisioning.

Designer provides a graphical environment to accelerate the design and assembly process of complex cloud workloads. Using Designer, workloads such as development platforms, custom business applications, and packaged applications are outfitted with application configuration controls, auto-scaling rules, security settings, governance controls, and embedded with operating environment agents and utilities. To accelerate design and assembly, Designer includes a version-controlled library for reusable base images and deployment accelerators including customizable templates, scripts, blueprints, policies, packages, and more.

Designer allows developers and architects to construct a versatile “everything-as-a-service” portfolio that is policy-compliant and portable across heterogeneous cloud. Once these cloud workloads are assembled, they can be seamlessly promoted to the next lifecycle stage for publishing and end user consumption – Agility Store.

At a Glance

- Graphical workbench to assemble stacks, templates, blueprints, and topologies.
- Version-controlled library of pre-built, re-usable assets.
- Assemble highly complex, multi-tier platforms and apps.
- Fine grain configuration, security, and governance

Store

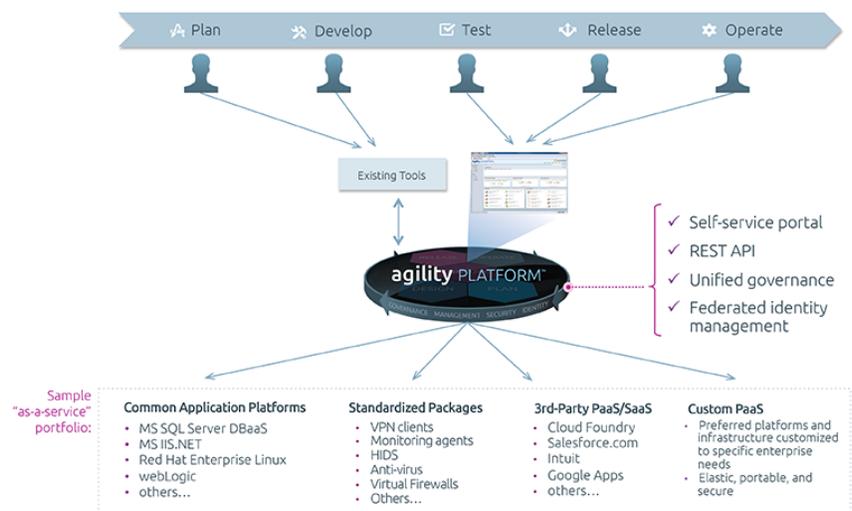
Store is a fully governed, self-service portal to access standardized and customizable applications, platforms, and other “as-a-service” offerings for on-demand deployment.

Global enterprises may have several hundred development, testing, staging, and production teams, including external contractors and outsourcers. Providing these teams with self-service access to all the applications, platforms, and IT infrastructure needed to do their work can drive tremendous time and cost savings across the enterprise, but requires on demand provisioning combined with sophisticated governance and security controls.

Agility Store provides a fully governed, self-service portal for a broad portfolio of business applications, software development platforms, and third-party SaaS, PaaS and IaaS. Agility Store features an easy-to-use interface to support users ranging from developers needing complete dev platforms, to non-technical users accessing third-party SaaS and desktop resources.

At a Glance

- Easy-to-use portal with 1-click cloud service deployment.
- Fully governed, self-service access to IT resources.
- Central catalog of standardized and customizable resources
- Accessible via Agility Platform’s governance-enforced API.



Store users can conduct detailed searches for IT resources, and customize and re-publish assets where appropriate. When offering self-service capabilities in Store, you’re also provided with the option to collect user feedback, reviews, and ratings to provide a feedback loop for service portfolio optimization. Store keeps track of resource consumption including customizable chargeback and cost center assignment features. All Store resources and assets are also accessible via Agility Platform’s governance-enforced API.

Release Manager

Release Manager increases the speed and frequency of software releases by promoting software builds and environments across the SDLC.

In order to keep up with rapidly changing business needs, IT organizations need to streamline the software development lifecycle (SDLC) for faster software releases into production. Release Manager increases the speed and frequency of software releases with an easy-to-use visual dashboard and workflow automation

capabilities to promote software builds and deployment environments across each stage of the application delivery lifecycle.

Release Manager allows you to customize software lifecycle stages to reflect each organization's SDLC and establish role-based permissions to promote, accept and approve software builds at each stage. With Release Manager, you can incorporate release automation and policies for straight through processing, or introduce manual release approval processes with integration into existing SDLC tool chains and approval workflows.

Release Manager accelerates broader enterprise initiatives for DevOps, continuous delivery, and continuous integration. This includes on-demand platform provisioning with embedded standard operating environments, automated software build and integration, automated application and service configuration, and management of security and operational SLAs across each role in the SDLC. By leveraging these high fidelity, production-like runtime environments across the entire lifecycle, significant cycle time reductions are achieved as well as preventing the introduction of configuration errors and other defects downstream into production.

At a Glance

- Visual dashboard to promote software releases and environments.
- Customize lifecycle stages and approval processes.
- Comprehensive governance, compliance, and security.
- Integrates into existing tool chains.

Operations

Operations consolidates all cloud environments managed by the Agility Platform into a single runtime management console with visibility into costs, resource consumption, workload performance, and more.

IT operation groups need to have line-of-sight visibility from applications to their underlying infrastructure to provide the availability, performance, and service levels demanded by business application owners and end users. However, this end-to-end contextual view is nearly impossible to achieve using traditional operations monitoring tools in dynamic cloud-based operating environments.

Operations greatly simplifies and makes transparent IT operations management functions across private and public cloud environments by consolidating a number of important monitoring, reporting and benchmarking capabilities. Operations abstract the technical and operational differences between cloud providers for uniform visibility into resource consumption, performance, costs, availability, and other metrics. Agility Operations also provides

At a Glance

- Consolidated runtime monitoring and reporting.
- Complete line-of-sight visibility.
- Benchmark the performance of private and public clouds.
- Comprehensive drill-down and roll-up reporting.
- Access reports via graphical user interface or API.
- Create and collect custom reporting metrics.
- Monitor thresholds and generate responses.

capabilities to benchmark the performance of your private and public cloud providers. You can compare cloud provider performance across different operational parameters and limits, such as average VM provisioning time, number of failed or degraded instances, max. number of concurrent provisioning requests executed, and others.

Operations provides role-based access to custom reports that can quickly drill-down or roll-up across clouds, organizations, projects, topologies, instances, and more. Reports can be accessed from Operation's graphical user interface or via a comprehensive API for integration with accounting/billing systems, third-party portals, existing ITOM dashboards, and other applications.

Operations allow for the creation and collection of custom reporting metrics, enabling new business-relevant reports on their cloud workloads to be captured and delivered to application owners and other enterprise stakeholders. Business and IT users can also define monitoring thresholds for their cloud workloads and select policy enforcement triggers and alerting mechanisms including email and SNMP when thresholds are exceeded.

Summary

Global enterprises use the ServiceMesh Agility Platform to empower their business units with fully governed, self-service access to the standardized and customizable cloud applications, platforms, and services they need. Enterprises are using the Agility Platform not simply to manage cloud infrastructure, but to transform their IT operating model with cloud-based applications and platforms that provide significant cost and time to market advantages while meeting their requirements for governance, compliance, and security through flexible policy definition and enforcement. By providing a single, integrated platform for lifecycle management and governance, organizations can accelerate their adoption of cloud-based services while ensuring compliance across hybrid clouds. Some of the world's largest and most sophisticated companies in financial services, health care and other highly regulated industries rely on the Agility Platform to deliver applications and services at the speed of market change, streamline inefficient IT operating models, and transform IT into a strategic business enabler and competitive advantage.

To learn more, visit www.servicemesh.com.