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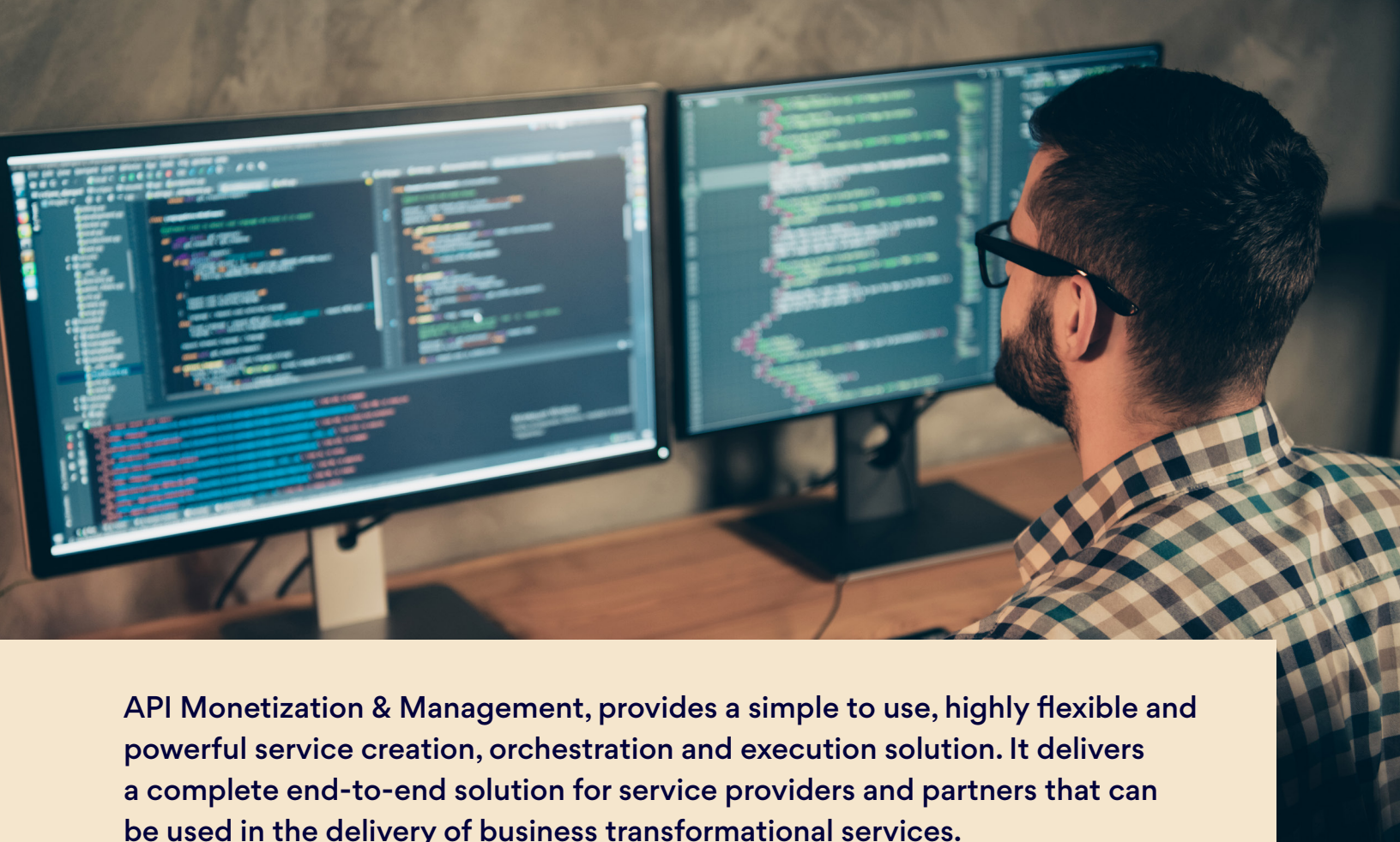
API Monetization & Management

Creating services for business transformation

API Monetization & Management, provides a simple to use, highly flexible and powerful service creation, orchestration and execution solution. It delivers a complete end-to-end solution for service providers and partners that can be used in the delivery of business transformational services.

Product highlights

With the dramatic growth in devices, data and connectivity — commonly referred to as the Internet of Things (IoT) — enterprises, partners and service providers across many industry segments have a need to create business transformational services. Such services increase productivity, improve efficiency, provide greater insights, and enrich the experiences and services made available to customers and other users, at the same time offering an opportunity for the service providers themselves to open up new commercial opportunities.

Open, extensible, and modular

Providing re-usable service-oriented components alongside an ability to create bespoke business logic that can be used in the creation of service workflows suitable for any use case or industry.

Robust API and SLA management

Services created can be exposed via APIs and combined with robust API and SLA management. Access and use of services can be targeted towards a developer / 3rd party program, tailored and customised according to service providers needs.

Visual workflow design

Rapidly realise new services and policy-controlled workflows through simple configuration, maximizing re-use, driving down time-to-market and reducing barriers of complexity and expertise necessary to create new services.

Easy deployment with scalability

From simple edge-based and standalone, to clustered and distributed across enterprise data-center or cloud.
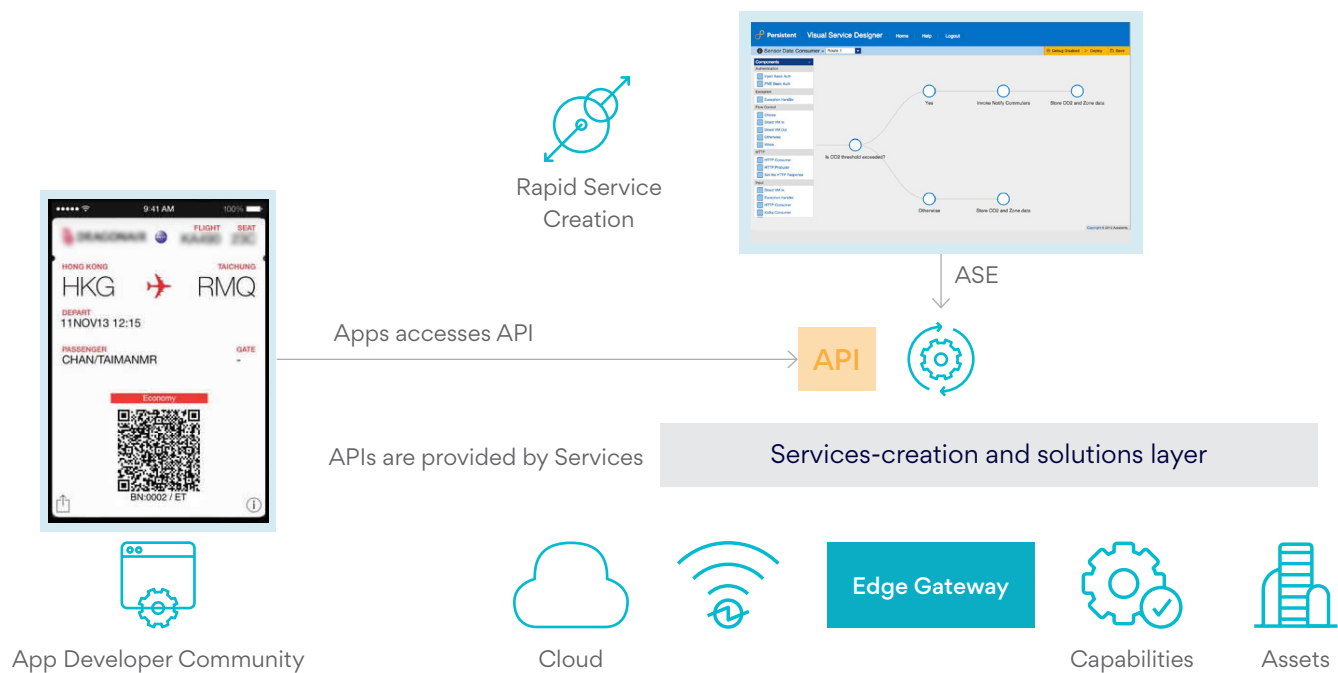
Figure 1: Service Creation - Realizing the potential to innovate

Simple yet powerful Service Creation

Getting new services to market faster, and realizing the immense potential of an ever increasing number of intelligent and connected "things" requires the ability to create, orchestrate and assemble services using the data, assets and capabilities that may be available. The solution provides a rich service creation framework that supports doing so using the flexible combination of familiar softwareindustry developer tooling, service oriented componentry that drives increased re-use and a visual design solution that facilitates workflow creation as a series of simple drag-and-drop steps. In opening up service creation to software developer and IT literate users, a wider range of more timely and cost effective options for creating services is provided to avoid dependency on expensive proprietary lock-in. In addition, the platform also streamlines and simplifies administrative and operational tasks such as registration, provisioning, and deployment- all necessary to take a service from development into production, to greatly reduce the time-to-market for new service introduction.
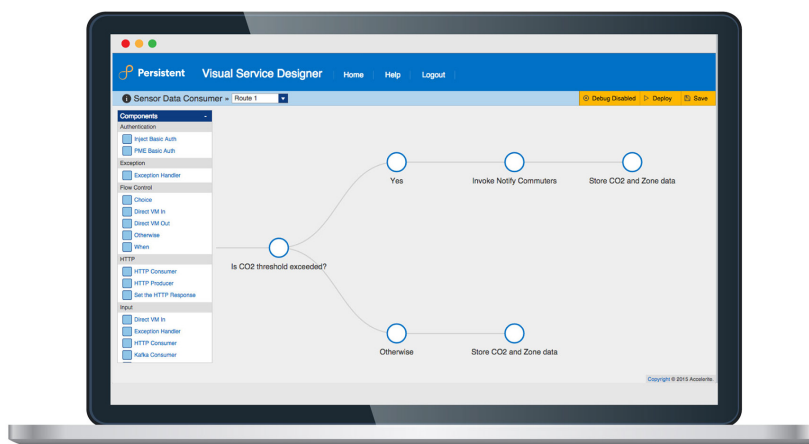

Figure 2: Creating new services using Visual Designer

The combination of power and simplicity within the solution allows customers and users to focus on creating value added services that can be assembled from the underlying data, assets and legacy systems that exist in their networks and businesses. By combining their domain-specific expertise with business value, and not merely providing a dumb pipe to access the data, transformational services and solutions can be created that support the business model or strategy required in any given industry vertical.

Fundamental to the solution, is the concept of openness. Through adoption of best of breed, open, community-endorsed technologies, a flexible service creation framework is provided. This not only provides out-of-the-box service components, tooling and workflows, but also encourages expansion and customization of the platform. Users, systems integrators, vendors and other partners are able to innovate and create new service components and solutions, creating a virtuous cycle of partnership and re-use. Service components can integrate and consume services executing native to the platform runtime itself, and can also be integrated with external assets, capabilities and business processes through the suite of communication and messaging components. It provides the service orchestration solution, capable of chaining together and brokering services and mashups, applying runtime service controls and policies, and supporting rapid integration of dispersed assets as end-to-end service oriented solutions.

In addition to providing the ability to easily create, deploy and operate rich services and solutions, it can also be used to open up service enablement to 3rd party application developer engagement. By publishing APIs to the the services created and providing policy-controlled, and managed access, to these services and APIs, a multi-sided ecosystem that unlocks the potential of a rich community of innovation, partnerships, and API and service monetisation can be supported. The platform includes a flexible partner management solution that supports administration of all service and policy controls for all services and any partners or client applications that may be consuming the service via a published API. Furthermore the partner management solution itself provides a developer outreach API Portal, or a suite of API based services that can be used to create and customise an API portal that is specific to the needs and business workflows of a service provider.

The solution provides a graphical administrative portal for complete administration of the services and APIs, and any partner etc. that may be using them. Service transaction logs, created as part of the service transaction workflow, are used to support time-series service and API metrics and analytics that can be provided to adminstrators and, if desired, partners using the services. In addition to the native management dashboard, the open plug-in solutions and use of Web Service APIs that underpin the plaform supports flexible data integration to remote network management, reporting, OSS or BSS systems.

API Monetization & Management

Developer Portal	Administrative Portal

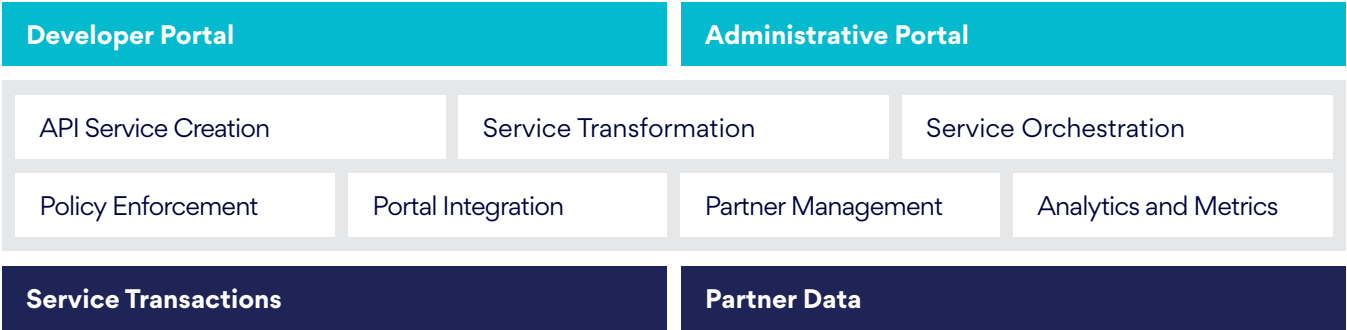| API Service Creation	Service Transformation	Service Orchestration
Policy Enforcement	Portal Integration	Partner Management	Analytics and Metrics

Service Transactions	Partner Data

Figure 3: Aepona Agile Service Enablement

Service Creation: At the Heart of Business Transformational Solutions

API Monetization & Management provides a general purpose service creation solution that, combined with suitable domain expertise and business acumen, can be applied to a wide variety of use cases. A sample of use cases spanning multiple addressable markets include:

Smart Living: Providing intelligent services that improve experiences for citizens. Whether smart traffic flow controls, air quality monitoring, intelligent parking, lighting, re-cycling etc., providing solutions that can be tailored to local needs, yet scale to solve the challenges of metropolitan planners, requires the ability to innovate and customise in a truly connected manner.

Industrial: Additional value can be realised through improved data capture and analysis that enhances operational efficiency (i.e. pervenative maintenance). This may extend the lifetime of existing assets, reduce costly outages, optimize use of existing resources and to deliver added service benefits to users. For example providing smart services for utilities such as heating, charging etc.

Government: With life-expectancy in many populations rising, there is increasing demand for age friendly solutions, particularly in areas such as healthcare and assisted living that can lower the cost burden to the state through more effecient and timely delivery of services. Similarly, there is a tremendous opportunity to greatly expand the range of services such as learning, welfare, taxation, arts etc., that can be delivered with enhanced user experience and at lower cost to an increasingly connected society.

Retail: Whether on-line, in-store, automated vending or otherwise, traditional retailing solutions are subject to continuous challenge and the need to change and adapt. Adopting a flexible service-oriented approach allows all those taking part in the value chain,

suppliers, distributors, retailers, payment processors etc., to form part of the end-to-end retail service solution. By taking into account detailed metrics, flexible payments processing and discounting, targeted/localised advertising, intelligent signage and ordering/distribution, loyalty programs and cross marketing, retailsolutions that can be fully optimsed and specifically targeted towards consumers can be provided.

Communication: As revenues from traditional service bundles diminish and are under threat of further erosion from Over-the-Top (OTT) providers, communication providers are looking to their network assets and capabilites as a means to drive incremental traffic whilst maintaining subscriber stickiness, in addition to creating new categories and types of service that offer additional revenue opportunity. The use of service creation and APIs opens up existing assets to new business models, and through delivery of value added content, connectivity and networking solutions such SDN/NFV service providers have the opportunity to open up to new services and solutions to gain market share and revenue.

Ultimately all of the examples above may be considered as domain specific examples of "IoT" enabled services and follow a similar pattern.

Through data acquisition, or integration of assets or capabilities via networks or communication channels, the creation of a service that provides additional policy controlled business logic results in the ability to deliver business transformational solutions.

Service Creation for the Internet of Things will transform many industries:

Retail · Transport · Communications · Medical · Industrial · Energy

API Enabled Services and Solutions

Configure and Manage · Analytics and Insights · Service Enablement via APIs · API · Rapid Service Creation
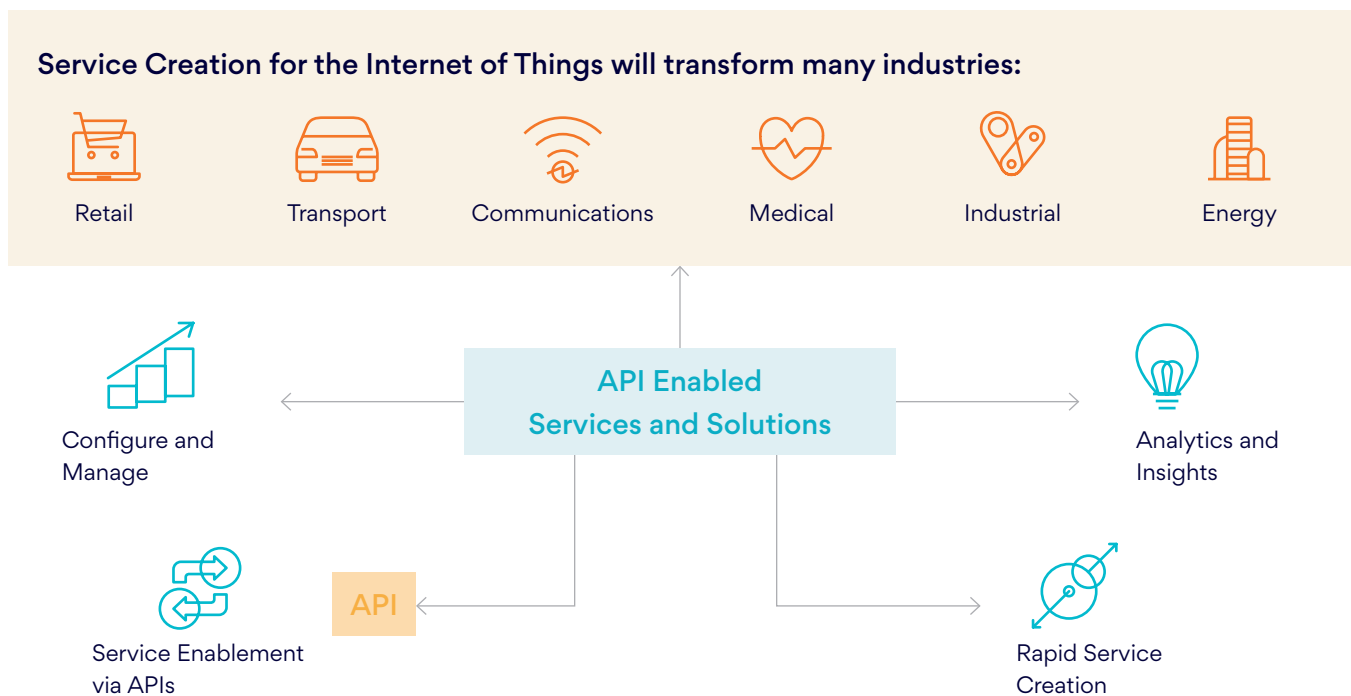
Figure 4: Delivering business transformation across many industries.

Metrics and analytics from the service, combined with further API management and exposure to other partners as part of an integrated service ecosystem, can be used to deliver additional solutions, either directly within the provider's business domain or alternatively through integration as part of a broader cloud service offering.

In so doing, the service provider is free to choose from a wide variety of commercial business models and strategies that can be supported through adopting service creation. Whether directly charging for services or transaction usage; providing wholesale access to underlying data or capabilities, efficiency savings and reduction in capital and reduction in capital and operational costs opening up additional adjacent incremental revenue streams or enabling completely new revenue channels through marketing, loyalty programs, couponing or other services that may be derived by treating the data analytics as a service itself. The service provider is free to combine the service creation strategy with the most appropriate mix of commercial considerations.

Flexible Deployment and Scalability: API Monetization & Management is not limited to a specific set of use cases, nor does it impose any restriction on deployment configuration. The software platform provides a simple automated installation mechanism that enables users to install and grow their use of the platform, and is capable of deployment across the range of Intel processor chipsets and form factors needed to realise any service solution or use case. From simple stand-alone deployment on Quark based edge devices right up to the multi-core compute capabilities of Xeon servers in a data centre or distributed cloud, the solution can be configured to grow and expand to meet both the functional and operational needs of the solutions reqired. This flexible allows the end-to-end service to be created and orchestrated between edge devices and servers residing in the cloud or data-centres in a truly distributed fashion, allowing efficient, optimum use of available compute resources and communication bandwidth.

Simply Enhance or Extend to Realize Maximum Value: In addition to the core API Monetization & Management platform itself, the open and modular architecture that it provides enables the solution to provide a range of supplementary solutions that provide additional value and further fast-track service providers in the realization of their end-to-end service creation and solutions strategy.

Domain specific service bundles and components that provide additional out-of-the box service workflow implementations can be provided, such as those for communications services providers that support GSMA OneAPI, OpenStack and OpenNetworkFoundation SDN/NFV RESTFul APIs. The services creation platform also includes an eventprocessing component that can be included in any service workflow, generating events on service and API transactions for purpose of metrics and reporting. These same events can be ingested by the

solution's Payments and Settlement Engine (PSE), in order to provide a powerful and flexible service and API monetisation solution. PSE further extends the range of service solutions to include a flexible payment capability with gateway connectivity to a wide range of payments processors.

The solution can also be further supplemented through the use of additional platform plug- ins that integrate to additional Intel® products in an extended end-to-end solution. Whatever the industry, business domain, or use-case; service creation lies at the heart of enabling new services, solutions and revenues that will be possible through the explosion in devices and things, ubiquitously connected and providing data, and with the ability to control and be controlled. The solution provides a complete flexible platform solution for service creation and service delivery across compute platforms whether resident in the the edge or the cloud.

Service creation lies at the heart of enabling new services, solutions, and revenue opportunities for any industry, business domain, and use-case all possible from the explosion in devices and things — ubiquitously connected, creating and providing data, with the ability to control and be controlled. The solution provides a complete, and flexible platform for service and service delivery across compute platform at the edge or in the cloud.

Capabilities	Benefits
Web Based Visual Service Design	\ Quickly compose and deploy everything from simple proxy APIs to more powerful service workflows and mashups — with no programming required. \ Drag & Drop, expandable and customizable service palette
Wide Range of Service Creation Flexibility	\ Support for multiple languages including Java, JavaScript, Groovy etc. \ CAMEL framework (http://camel.apache.org/components.html) \ ESB integration support with external system \ Plug-in approach allows expansion to support further languages, components, solution bundles
Service Monetization	\ Flexible monetization supports business value – much more than simple API usage tracking \ Tailored business relationships, manage bespoke and group wide plans with same flexibility and ease \ Powerful multi-party settlement support

Capabilities	Benefits
Partner Management	\ Support Partner usage of Services and APIs with flexible self-service & on-boarding \ Intuitive Portal with CMS support allowing customization of content and experience \ API based integration with external systems \ Service Contract Management — service, policy and commercial governance \ Enterprise User Security providing tailored access to domains, groups, users
API Management	\ Total control over access to APIs with a broad policy and authorization framework \ Create and manage internal / private APIs as well as external 3rd party partner APIs from a single solution \ Implement multiple layers of security, including WS-*, Oauth, AAA, ACL \ Expose and manage existing APIs created previously \ Provide multiple routing options to expose the existing API in its original format and in mashups with policy enforcement and authorization \ Protect data with centralized policy enforcement that includes authentications, authorization and governance for all API interactions \ Preserve peace of mind as customers, partners, users, devices and cloud providers consume and deploy data over APIs
Reporting & Analytics	\ Flexible and configurable event generation \ Multiple event processing options, queues, consumers \ On-platform event details storage, time-series metrics and analytics + upload to cloud/BI
Flexible Deployment	\ OSGi container framework — monolithic, clustered, distributed \ Quark to Xeon support; Edge to cloud \ On-premise, hosted \ Platform Management including SNMP, traps, metrics, detailed logs
Expandability	\ Supplementary service bundles supplied on request

About Persistent

With over 15,500 employees located in 18 countries, Persistent Systems is a global services and solutions company delivering Digital Engineering and Enterprise Modernization. We combine deep technical expertise and industry experience to help our clients anticipate what's next and develop solutions that create unique competitive advantage. Persistent was named to the Forbes Asia Best Under a Billion 2021 list, representing consistent top-and bottom-line performance as well as growth.

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