

An Oracle White Paper  
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# A Comprehensive Solution for API Management

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## Executive Summary

The digital business ecosystem is expanding in many directions. Applications and business processes are moving to the cloud, but not always in a consistent way or under the auspices of the IT department. As organizations deploy new mobile applications, instigate business-led development projects, and integrate on-premises applications with cloud applications, IT leaders are forced to rethink traditional technology boundaries. The enterprise software landscape has become much more diverse. Today's applications not only access data and functions from internal systems of record. They also increasingly use Application Programming interfaces (APIs) to manage the links between critical back-end business processes. APIs also move data among these processes, with standard interfaces to help application developers make the connections and utilize essential runtime services.

Meanwhile, the development community has grown rapidly to include not only the IT department, but also mobile app developers, line of business (LoB) developers, and third-party developers that might work for a vendor, partner, or other external constituency. In many instances, this diverse group needs to be able to easily identify and access an organization's software assets to build or extend applications, but they don't necessarily want to deal directly with a complex IT infrastructure. Today's APIs facilitate connections from many types of devices and computing platforms, from mobile phones and tablets to household devices to personal health trackers and automotive systems. As the number of devices in the emerging Internet of Things grows and expands, APIs become increasingly important to the applications that are produced.

As API use increases and the development community expands, the management and visibility of these APIs becomes increasingly important. Forward-looking organizations have discovered a new, all encompassing approach known as Application Programming Interface (API) Management to simplify these activities. When properly deployed, API Management solutions hold the key to unlocking a diverse set of enterprise software assets, resulting in more efficient and manageable development projects, faster time-to-market for new solutions, lower administrative costs, and improved returns on enterprise architecture investments.

This white paper considers the essential ingredients of a complete API management solution and divulges best practices for how to use APIs within on-premises, mobile, and cloud development scenarios. Read on if you want to learn how to:

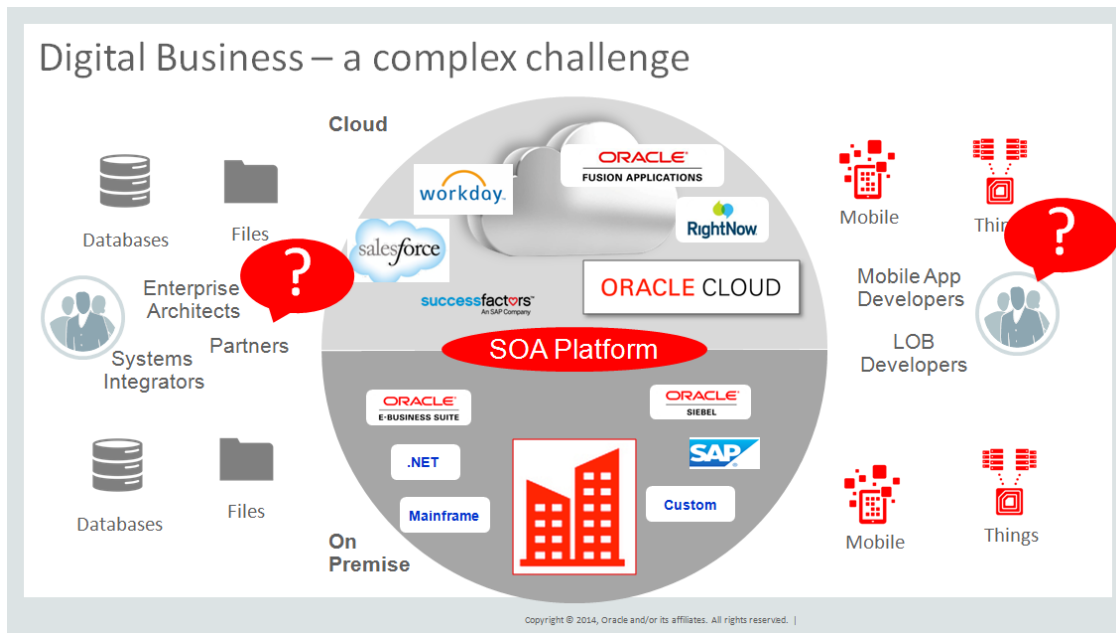
- Collect, annotate, and publish key APIs for easy discovery and use by your development community
- Reduce development costs and time-to-market for new business initiatives that depend on those APIs
- Enhance the value of Service-Oriented Architecture (SOA) projects with a catalog of links to business processes, applications, functions, and services.

## What is API Management?

Application Programming Interfaces (APIs) provide access to Web services and business processes, along with information about those processes. They typically take the form of annotated REST and SOAP services.. When properly constructed with robust APIs, these services are easily interchangeable. For example, any application that requires weather related functionality can utilize a weather service, automatically pulling in weather details for specified cities and locales. Internal business functions within enterprise applications can also be called via APIs, from checking inventory levels to reporting on the status of purchase orders. Each of these services can be “called on” to supply information or functionality to a larger application or business process.

Organizations vary widely in their expertise with API Management. They also have widely different motivations behind their API Management strategies. To better understand your own motivations, ask yourself these questions:

- What back-end business processes do you want to expose to new and existing applications?
- Will those applications be developed in-house, or by partners and third party development communities?
- Do you want to expose APIs to the public to create a development ecosystem related to schedules, product catalogs, current deals, or other types of information?
- Do you use service-oriented architecture (SOA) as part of your integration strategy?
- Have you implemented an Enterprise Service Bus or other virtualization layer?

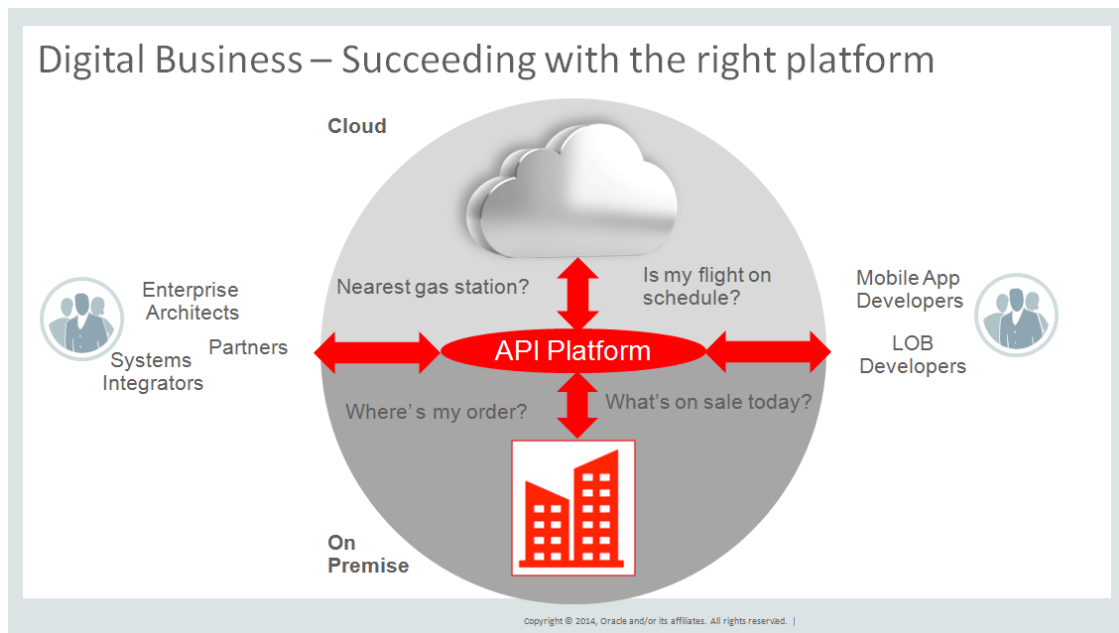


## Defining an API Management Strategy

Before evaluating the types of API Management solutions available, let's define just what such a solution should include. Many organizations wish to expose and monetize their software assets through multiple channels—Web, mobile, social, and otherwise. APIs enable them to externalize these assets via standard interfaces. The development community expects easy access to these APIs. In most cases, it should be easier to access a standard API than it is to access a SOA service. Knowledge of your company's software integration infrastructure should not be required.

An API is a valuable asset that can be shared with internal developers, external developers, and partners. API Management allows organizations to realize the value of these assets by unlocking their potential. A good API Management system provides a simple yet robust platform for creating, annotating, and publishing APIs. It also simplifies the process of finding, understanding, and using APIs along with the processes and services behind them. Such an API Management solution facilitates the connection of data and business functions so that organizations can enable access to applications via mobile, cloud, and on-premises environments. It can automate a variety of integration scenarios via standard interfaces based on SOAP, REST, B2B, and Managed File Transfer. It also permits lifecycle management of the APIs with integrated facilities for development, monitoring, management, and end-of-life maintenance.

API Management solutions typically provide tools to foster a developer community including a portal where people can connect with each other and exchange best practices. This allows organizations to unlock the potential of their enterprise software assets by using API Management to mask complexity from developers and expose the functions that are needed by end users. Instead of worrying about the details of technical interfaces, solution developers should be able to search for business functions and quickly learn how to incorporate them into their own applications.



Most API Management products available on the market today focus on the creation, deployment, publishing, discovery, and tracking of secure REST and SOAP services. API Management vendors typically claim that they can make mobile-to-ERP and other integrations painless. Who needs SOA, they ask? For that matter, who needs IT? Business leaders may be easily seduced by this reasoning. After all, they simply want to get new business solutions to market quickly. They have seen how some LoB solutions are increasingly implemented outside of IT. Perhaps a simple API Management solution is all they need.

However, keep in mind that many of these implementation teams do not have deep knowledge of back-end applications or integration architecture. Thus a workable API Management solution should rest on a complete middleware foundation that can ensure adequate security, performance, and scalability as the digital business ecosystem evolves.

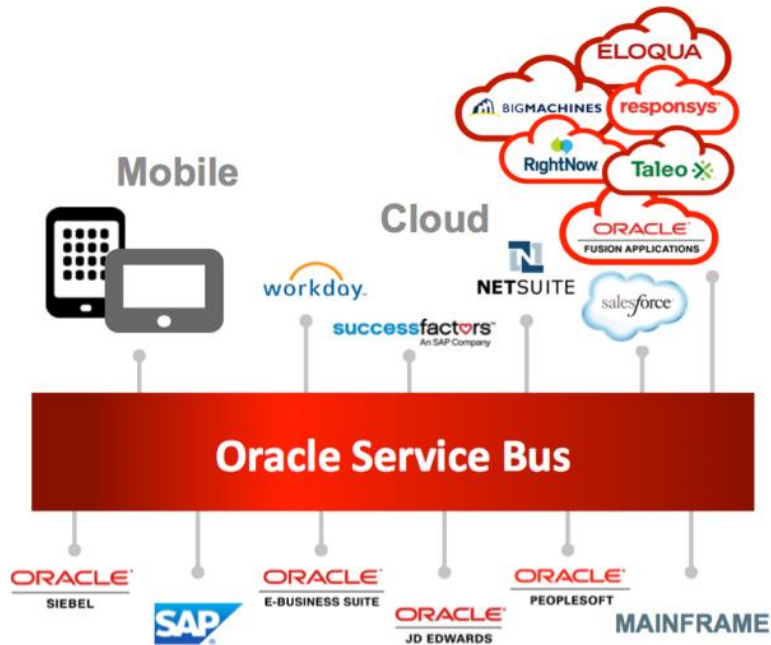
## API Management Solutions from Oracle

Oracle's API management solution expands on the proven Oracle SOA Suite integration platform to address the challenges of the digital business landscape. It streamlines the process of finding, understanding, and using APIs and helps developers build new applications and enhance existing ones. It includes an enterprise-grade service virtualization platform as a foundational component of the architecture. Let's look at some of the individual components.

### Oracle Service Bus

Oracle Service Bus is an enterprise-grade service virtualization platform for high-volume, mission critical SOA environments. It leverages broadly accepted industry standards, including SOAP and

REST, to connect, mediate, and manage interactions among heterogeneous services, legacy applications, packaged applications and multiple enterprise service bus (ESB) instances across an enterprise-wide service network. Oracle Service Bus also includes built-in management and monitoring capabilities and supports out-of-the-box integration with SOA Governance products. As a core component of Oracle SOA Suite, Oracle Service Bus is the backbone for sending and receiving messages among enterprise, mobile, and cloud applications. It supports API creation, deployment, management, and security policies.



### Oracle API Manager

Oracle API Manager extends the Oracle Service Bus platform with a developer portal which eases the discovery, testing, registration and subscription of REST and SOAP proxy services by application developers. It provides simple API annotation and publication of services to the developer portal and offers run-time metrics and analytics to both service consumers and administrators to monitor API usage and performance. Attributes of APIs published in the developer portal include technical information such as endpoint URL and WSDL locations, links to documentation, test URLs, API descriptions, lifecycle information such as version and deployment status, security policies and performance data.

### Oracle API Gateway

Oracle API Gateway is a standards-based, policy-driven, standalone API security and management solution that enables organizations to securely and rapidly adopt cloud, mobile and SOA Services by bridging the gaps and managing the interactions between all relevant systems. Oracle API Gateway secures, accelerates, integrates and routes XML and other types of data in a simple, easy-to-use manner

to minimize integration costs, lower cost of ownership, and reduce deployment risks associated with SOA and cloud infrastructures. It serves as a control point for managing how internal users and application assets are exposed, including perimeter security and integration with other facets of the Oracle Fusion Middleware security architecture.

## Oracle API Catalog

Oracle API Catalog is a straightforward, easy-to-use governance tool for capturing services, describing what those services do, and explaining how they can be consumed by internal and external applications. Customers An “auto-harvesting” feature can automatically populate the catalog with existing SOAP and REST services. A pre-built metadata model provides the information and specifications that developers need to discover, understand, and use APIs, without getting bogged down in their complexity. Once the metadata for an API is complete, the API can be easily published from the API Editor, making that API available for developers to discover and use. Oracle API Catalog also includes a JDeveloper plug-in that makes it easy for developers to view and consume services using one of the world’s most popular application development environments. Developers can easily locate, understand, and consume APIs from directly within JDeveloper.

## Conclusion

Business leaders expect new software applications to be delivered quickly, yet they also expect those applications to support the information management and security policies of the enterprise. However, many of today’s applications are not implemented by the IT department, nor are they developed by people with much knowledge of back-end system connections, security, and other essential IT policies.

Developers and enterprise architects need tools to expose data and legacy applications to a variety of information systems, on-premises and in the cloud. They need to efficiently manage data from multiple locations and provide a single view of digital assets to internal developers and external partners. This need becomes even more critical as the explosion of mobile devices motivates developers to extend access to digital assets in new ways.

Today’s organizations should not have to invest in multiple third-party integration technologies to solve the various aspects of the API integration puzzle. As a complete integration platform, Oracle SOA Suite and Oracle’s API Management products provide all of the elements these organizations need as part of a larger service-oriented integration framework. This robust API foundation simplifies all aspects of creating, integrating, managing, and exposing APIs in conjunction with a common identity management infrastructure to ensure enterprise-grade security.

Oracle’s API management solution leverages other components of the Oracle Fusion Middleware family to give developers what they need to find APIs, identify their value, catalog those APIs, interface with them, and establish reusable connections across a secure, high performance, and scalable runtime infrastructure. For example, Oracle Enterprise Repository simplifies API lifecycle management and Oracle SOA Management Pack correlates API activities to help monitor their adoption and measure their business value. Oracle’s mature API Management foundation is essential to organizations that wish to integrate new and old digital assets into their evolving application strategy.





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