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Broker Software and Cloud Services with IBM Cloud Brokerage

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Cloud

IBM

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Executive overview

Many enterprises are adopting hybrid cloud to accelerate innovation and to create new business models and revenue streams. They are modernizing their existing IT environment and taking advantage of newer, cost-efficient consumption models. However, as they adopt a hybrid cloud, they become increasingly aware of their reliance on multiple providers, and they struggle to maintain consistent management across the cloud and traditional IT platforms.

At the same time, line of business (LOB) executives and users are aggressively pursuing cloud computing solutions (from a variety of suppliers), resulting in inefficiencies, risk to the business, and loss of insight across the organization, potentially affecting business results. Also, these renegade cloud environments introduce financial and security risks and additional complexity into the business. Situations that arise from installing these IT environments outside the norm include:

- Increased cost and security risks
- Underutilized and non-compliant IT environments
- Siloed systems that are not integrated properly with mainstream business applications and data sources

IBM® Cloud Brokerage (formally known as *IBM cloudMatrix*) is a cloud brokerage software as a service (SaaS) that enables your business to plan, buy, and manage cloud services using a single dashboard. This solution provides your business with the ability to make better informed decisions when moving to a hybrid cloud environment. With it you can plan, provision, and manage IT resources across multiple cloud and traditional IT models. Cloud Brokerage gives you greater visibility and control of your overall IT environment, enabling you and your IT team to effectively manage costs and compliance.

You can think of Cloud Brokerage as a way of centralizing the IT supply chain throughout the cloud, while relying on your enterprise's policies and allowing your IT team to control where applications execute be it on or off premises.

This IBM Redguide™ publication introduces Cloud Brokerage and highlights the business value of the solution. It provides a high-level architecture, identifies key components of the architecture, and discusses the hybrid cloud implementation framework, which includes other IBM product offerings. The guide describes example scenarios that use Cloud Brokerage to resolve common business problems.

Overcome hybrid cloud inhibitors

Chief Information Officers (CIOs) must have visibility into all IT environments within the enterprise, and their IT team needs to have ultimate control over all IT systems. With visibility and control, IT can ensure that the systems meet the organization's compliance standards and performance requirements. A conflict arises when LOB executives (charged with improving the bottom line) need access to IT resources quickly; however, these executives can be frustrated by the IT process and slow turnaround. In some instances, LOB executives take matters into their own hands and take advantage of a public cloud environment to get the software and resources they need to accomplish their goals. What might be good for the immediate bottom line can then cause trouble for the CIO and the IT team, because as they need to ensure that all IT environments operate according to the organization's compliance standards and in a cost effective manner.

Cloud Brokerage is *cloud brokerage as-a-service* software that enables organizations to broker (that is plan, buy and manage) cloud services from multiple providers throughout hybrid clouds using a single dashboard. Cloud Brokerage enables enterprises to adopt a new hybrid IT and multi-sourced operating model. Enterprises can personalize IT service consumption and unify delivery through the Cloud Brokerage self-service store, dynamic marketplace, and continuous delivery engine.

Cloud Brokerage addresses issues that the hybrid cloud has introduced, including:

- Lack of visibility and control for a growing numbers of service providers
- Shadow IT environments with LOBs using the cloud and bypassing central IT
- Non-compliant IT environments with multiple providers providing IT services
- Complex integration of a multitude of cloud computing service models, such as infrastructure as a service (IaaS), platform as a service (PaaS), and SaaS, from cloud service providers
- Complexity in supporting and managing a multi-sourced IT Infrastructure

In addition to resolving these issues, Cloud Brokerage provides value to your organization in the following ways:

- Enables self-service IT across environments and deployment models in a policy-driven model.
- Aggregates, compares, estimates, provisions, integrates, manages, and tracks cloud services and the associated costs for multiple providers.
- Reduces the cost of cloud services by embracing shadow IT, providing visibility and control, and managing costs and implementation policies.

Cloud Brokerage provides many services, including:

- Application assessment
- Cloud compare
- Estimate billing
- Cost management
- Financial reporting

All of these services bring hybrid cloud environments within an organization under the central IT organization's control. By incorporating this solution with existing IBM cloud products, you can unify all your technology resources and provide the choice, agility, control, and compliance that you require.

For the CIO and central IT organization to ensure the reliability of the organization's IT environment, they need:

- Visibility and control for growing numbers of service providers
- Cost effectiveness procurement of cloud services for selected providers
- The ability to scale with consistency
- Security compliance
- The capability to ensure that proper governance, risk management, and compliance to the organizations policies and standards are in place

However, developers and LOBs also need:

- Flexibility so that they can pursue or create solutions that meet immediate business demands
- Choice in the cloud solutions to meet their particular needs
- Speed and agility to respond quickly to change
- Ability to handle variable costs
- Options for managed services

Cloud Brokerage handles the needs of both the CIO and central IT organization and developers and LOBs. With Cloud Brokerage and its value proposition, you can meet the following objectives:

- Reduce shadow IT by providing flexibility of choice for users within the organization's compliance framework.
- Provide rapid financial decision making for the CIO by consolidating all cloud services on a single dashboard.
- Negotiate better Terms and Conditions with cloud providers based on their performance and increased visibility.
- Enforce organizational policy compliance for service selection based on cost, location, workload, or performance requirements.
- Integrate service management throughout traditional and cloud IT services by enabling a virtual data center.

Consider the following overall benefits of Cloud Brokerage:

- Provide the ability to assess current applications for their cloud readiness.
- Realize a likely 30 to 40% reduction in the cost of cloud services:
  - Provide visibility to shadow IT and idle services.
  - Establish a centralized supply chain with chargeback and financial reports, purchasing power, and estimated billing.
- Enable self-service *IT as a Service* for the IT supply chain:
  - Plan (assess, compare, design, and estimate).
  - Buy and manage cloud services on premises and off premises for IaaS, PaaS, and SaaS cloud computing service models.
- Provide a policy-based services catalog that is pre-seeded with select cloud platforms. The choices can be customized to include only enterprise-selected cloud services, helping to ensure enterprise compliance.
- Integrate multiple IT environments (existing and cloud environments) to establish hybridity and integrate SaaS from multiple cloud providers.

IBM Cloud Brokerage high-level architecture

For the majority of enterprises, the first step in hybrid cloud adoption is taking advantage of the cost and the performance advantages of cloud computing. However, this step at the same time is the most challenging step. You have to decide which workloads would most likely benefit from moving to the cloud. How much configuration and modification is needed to ready the workload for migration to the cloud?

Figure 1 illustrates the movement (from left to right) through the three main phases of the lifecycle to adopt and provide a hybrid cloud environment. Those main phases are:

- Plan
- Buy
- Manage

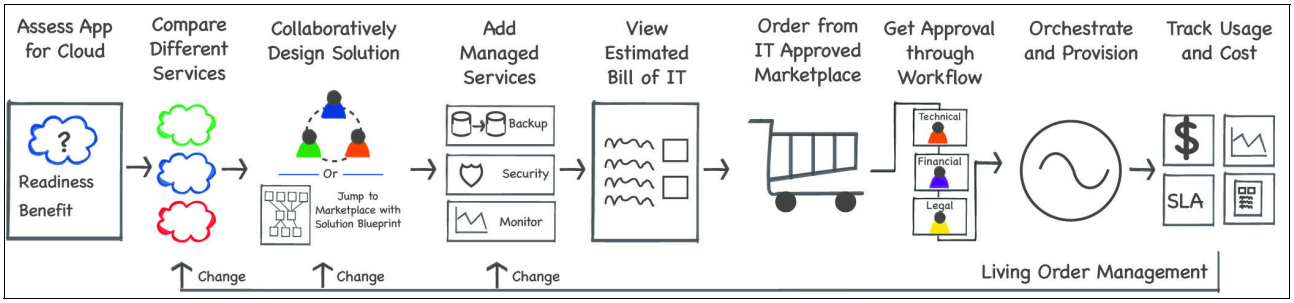

Figure 1 Implementing a hybrid cloud environment

Let's take a closer look at each of the phases shown in Figure 1 (moving from left to right):

- *Plan* your cloud environment by completing the following activities:
  - Assess applications for cloud viability.
  - Compare different services to determine which services best fit your needs.
- *Buy* the appropriate software from approved providers as follows:
  - Order from an IT-approved marketplace to ensure fully vetted software and providers are used.
  - Get approval through workflow processes to ensure that all necessary signoffs are provided.
  - Collaboratively design solution blueprints as necessary to customize them to your environment.
  - Add managed services to your hybrid cloud environment.
  - View an estimated bill of IT to control costs and to ensure services provide expected benefits.
- *Manage* the hybrid cloud environment to ensure financial, security, and compliance needs are met, which includes:
  - Arrange and provision the software to the hybrid environment, and ensure updates and changes are applied as needed.
  - Track usage and cost to ensure software is used efficiently and costs are contained.

Cloud Brokerage supports this lifecycle and helps IT manage the hybrid cloud environment by providing the following capabilities:

- *Application assessment* considers both the technical readiness and business benefits when selecting the most appropriate target infrastructure.
- *Cloud compare* performs cost normalization for cloud providers with side-by-side comparison of cost, service level agreements (SLAs), provisioning, and support.
- *Discover and sync* enables you to import existing resources from multiple cloud accounts into a single hybrid cloud environment.
- *Visual solution design* enables the categorization and viewing of cloud resources by application, application layer, virtual data center, or environment.
- With a *bill of IT*, you can view estimated and actual content and costs of the bill of IT for your complete cloud services.
- *Solution blueprint* lets you design a solution that includes managed services and makes the solutions available as a standard, predefined architecture.
- The *IT as a service* (ITaaS) catalog is a collection of public, private, virtual, and managed services that is available to enhance your cloud environment.
- *Fulfillment and integrations* consist of an open architecture that can be customized to match the services and delivery ecosystem you define.
- *Billing and cost management* allow you to view bills and provide views from the dashboard that show costs by virtual data center (VDC), organization, or application.
- *Governance* provides a workflow-based approval flow and integration with identity management software.

Think about Cloud Brokerage as centralizing the IT supply chain throughout the cloud stack with an enterprise's own policies and allowing this combination control over where applications run on or off premises.

Figure 2 illustrates a hybrid cloud implementation framework with associated IBM products identified.

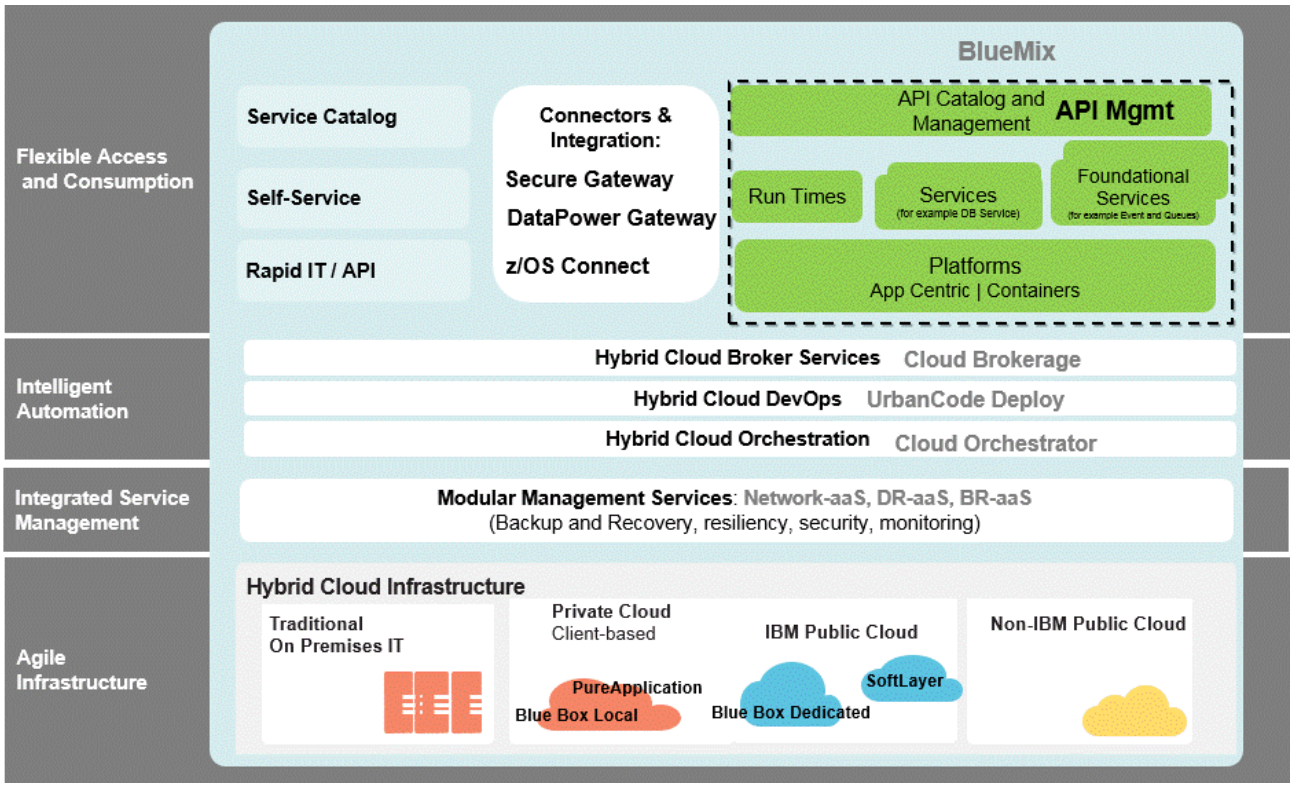

Figure 2 Hybrid cloud implementation framework

Let's explore the hybrid cloud implementation framework shown in Figure 2 more closely (starting from the bottom layer and moving to the top layer).

- Agile infrastructure

  The *agile infrastructure* provides the foundation IT environment that supports the middleware, applications, and services. The following various infrastructure options make up this layer:

  - Traditional on-premises IT environments that support your business and business processes
  - Private cloud (client-based) infrastructure
    - IBM Blue Box® Local offers a turnkey private-cloud as a service (PCaaS) that is delivered to your in-house or colocation data center in a streamlined process so that you can quickly use the service. It provides a dedicated, converged infrastructure that delivers the performance, security, cost predictability, and administrative control that is critical to meet the needs of a larger enterprise.
    - IBM PureApplication® is a hybrid cloud application platform for deploying applications and middleware quickly and repeatedly, with enterprise-grade services.
  - IBM Public Cloud
    - IBM Blue Box Dedicated is powered by OpenStack and can be delivered to you through IBM Cloud data centers around the world on a dedicated IBM Cloud infrastructure.

- IBM SoftLayer® gives you one of the highest performing cloud infrastructures available. It is a platform full of the widest range of cloud computing options and integrates and automates everything.

– Non-IBM Public Cloud

Various vendors provide public cloud offerings that you can choose from to incorporate the cloud into your IT environment.

► Integrated service management

Integrated service management provides key services, such as backup and recovery, resiliency, security, and monitoring. These services are vital to ensuring IT services are available 24 hours, 7 days a week, year around.

► Intelligent automation

Intelligent automation simplifies the activities performed by the IT professional. This layer provides self-service and advanced seamless services, making it possible for users to do much of the work themselves to set up their cloud environment.

The following intelligent automations are included in intelligent automation:

– Hybrid cloud broker services provided by Cloud Brokerage

Cloud Brokerage is SaaS that enables organizations to easily broker software and cloud services from multiple suppliers across hybrid clouds from a single dashboard.

– Hybrid cloud DevOps provided by IBM UrbanCode™ Deploy

UrbanCode Deploy is a deployment automation tool that provides push button releases of complete applications from development to production.

– Hybrid cloud orchestration provided by IBM Cloud Orchestrator

Cloud Orchestrator provides cloud management for your IT services, allowing you to accelerate the delivery of software and infrastructure. Based on open standards, it reduces the number of steps to manage public, private, and hybrid clouds with an easy-to-use interface.

► Flexible access and consumption

Flexible access and consumption provides the ability to add or modify applications and services provided by your hybrid cloud environment. Many of these services can be used by users without the aid of IT professionals. Three key capabilities that are integral to this layer are service catalog, self-service, and rapid IT or API development and deployment.

This layer provides various connectors and integration services, such as:

– IBM Secure Gateway

You can use the IBM Secure Gateway for Bluemix® service when you need a secure way to connect Bluemix applications to remote locations on premises or in the cloud. This secure gateway provides secure connectivity and establishes a tunnel between your Bluemix environment and the remote location that you want to connect to.

– IBM DataPower® Gateway

DataPower Gateway is a purpose-built security and integration platform for mobile, cloud, application programming interface (API), web, service-oriented architecture (SOA), business-to-business, and cloud workloads. It enables you to rapidly expand the scope of valuable IT assets to new channels giving customers, employees and partners access to critical resources. It helps you quickly secure, integrate, control, and optimize access to a range of workloads through a single, extensible gateway platform.

- IBM z/OS® Connect

  z/OS Connect Enterprise Edition extends the value of applications that run on IBM z/OS by allowing efficient and scalable APIs for contemporary mobile and cloud applications to be created easily.

- IBM BlueMix

  BlueMix is a hybrid cloud development platform used to access a catalog of services and APIs from IBM, third-parties, and customers. Based on open standards, you can use this cloud platform to build, run, and manage apps and services.

- API management provided by IBM API Connect™

  API Connect is an API management solution that addresses critical aspects of the API lifecycle for both on-premises and cloud environments. It offers capabilities to create, run, manage, and secure APIs and microservices. It also enables you to rapidly deploy and simplify administration of APIs across your organization.

The Cloud Brokerage as a Service fulfillment bridge provides a simple and open REST-based interface that can support multiple forms of integration. You can extend the Cloud Brokerage capabilities to a broader ecosystem of cloud services and providers. Agents can be written independently, in any language, and deployed anywhere.

The Cloud Brokerage offerings include the following solutions:

- IBM Cloud Brokerage Planning, Shared SaaS

  Cloud Brokerage Planning, Shared SaaS provides application screener and cloud compare capabilities for businesses accessing applications and workload readiness for the cloud. You can compare an application's price, performance, and feature coverage for multiple public and private cloud providers.

  It includes the planning capabilities, application screener, and cloud compare for 50 or more applications and provides Engagement Set Up Services.

- IBM Cloud Brokerage Planning, Dedicated SaaS

  Cloud Brokerage Planning, Dedicated SaaS has the same capabilities as Cloud Brokerage Planning, Shared SaaS except it supports a dedicated environment.

- IBM Cloud Brokerage, Shared SaaS

  Cloud Brokerage, Shared SaaS includes Cloud Brokerage Planning, Shared SaaS capabilities, plus buy and manage capabilities in a shared (public) environment, with 500 - 2,500 virtual machines (VMs), and mandatory Engagement Set Up Services used to set up and configure in shared environments. It provides up to three user training sessions.

  It provides you with access to a fully-managed IT service broker platform that is available as SaaS, enabling you to compare, buy, and manage cloud-based services from multiple vendors via a common services catalog.

- IBM Cloud Brokerage, Dedicated SaaS

  Cloud Brokerage, Dedicated SaaS includes Cloud Brokerage Planning, Shared SaaS capabilities, plus buy and manage capabilities in a dedicated environment (with 1,000 or more VMs) and mandatory Engagement Set Up Services. This SaaS offering allows you to customize your broker platform and add into your catalog items such as white label products, pricing rules, load private clouds, and products from other niche providers.

Roles and scenarios

Key stakeholders are pivotal to incorporating hybrid cloud in your enterprise and can include people in the following roles:

- CIOs, IT management, and IT architects are involved in the initial stages of determining a cloud strategy. They examine workloads for cloud readiness, fit, or feasibility. Also developers can be involved in evaluating cloud for improved app performance.

  Solution: Cloud Brokerage Planning, Shared SaaS

- ClOs and IT management spearhead IT transformation by seeking a hybrid cloud environment and want common, self-service user experiences. For example, this common user interface enables developers and LOB executives to plan, compare, estimate the bill of IT, as well as buy, charge, and manage IT from a single, policy-based broker platform.

  Solution: Cloud Brokerage, Dedicated SaaS or Cloud Brokerage, Shared SaaS

- IT support teams want to build or provide an IT services catalog that includes all of the services (including custom services) to their enterprise.

  Solution: Cloud Brokerage, Dedicated SaaS

- Systems integrators or managed services providers want to buy brokerage technology and embed it within their managed services to sell directly to their users.

  Solution: Cloud Brokerage, Dedicated SaaS

The following scenarios cover important aspects of transitioning to hybrid cloud:

- Service design and automation

  Brokerage enables clients to assess workload readiness and service design by comparing cloud providers. Brokerage, orchestration, and automation removes manual steps, saves time, and minimizes costs (for example, optimization). Cloud Brokerage is necessary to keep those services relevant.

- Automated self-service delivery

  Orchestration and automation simplify and accelerate the integration and deployment of services. Brokerage enables choice and flexibility around those services. Cloud Brokerage is necessary to keep those services relevant.

- Control and governance

  Brokerage enables visibility and governance, which facilities control. Through automation and orchestration, control and governance is realized. Cloud Brokerage helps control and manage services.

- IT service lifecycle management

  Efficient DevOps is achieved through orchestration, automation, and brokerage capabilities. Brokerage enables the deployment of new functionality quickly, reducing time to value. This increased availability of resources leads to quicker market feedback and ultimately, shortens the lifecycle and improves management of resources. Cloud Brokerage provides the needed brokerage services.

Publishing company example

A global information services and publishing company was locked into select cloud vendors based on enterprise IT. The business units were rapidly adopting public cloud service providers, such as Amazon Web Services and MicroSoft Azure. The company realized it needed to establish a shared services organization providing the following services:

- Enterprise-class cloud adoption that were secure, reliable, and tracked
- Proper governance and control of the IT supply chain and vendors
- Cost efficiencies
- Agile and safe cloud adoption

This company established the following set of requirements:

- Enable enterprise class standardized virtual data centers in the cloud.
- Standardize the different procurement, provisioning, and financial processes for providers.
- Establish enterprise network connectivity to public clouds instead of direct connects to public clouds.
- Enable standardized processes across hosted private clouds and public clouds.
- Identify a way to track solutions and aggregate spend based on resource utilization.

The solution

IBM Cloud Brokerage offered the ability to kick-start a web-based cloud brokerage portal. Cloud Brokerage provided the following benefits and advantages:

- Ready-to-use content with Amazon Web Services, MicroSoft Azure, and IBM SoftLayer
- Wizard-based tools for screening applications
- Service sizing, approval, and fulfillment workflows
- Integration with Enterprise Service Management and Financial Management systems
- Cost and capacity views in the dashboard
- The ability for business units to define cross-provider solutions and estimate cost prior to deployment

IT systems integrator example

A global IT systems integrator and IT outsourcing (ITO) provider was seeking an automated brokerage platform to capitalize on the multi-billion dollar ITO renewal market opportunity. They had the following key considerations:

- Enterprises with a hybrid IT and brokerage platform (dedicated and multi-tenant)
- New offerings for private or public cloud, PaaS, and SaaS, along with DevOps and managed services in the cloud
- Fast and easy access to solutions using ubiquitous experience (self-service IT and storefront)
- Hybrid IT models, leveraging traditional tower IT alongside cloud-based IT
- Global sourcing and continuous delivery for any cloud application with global teams via a single brokerage platform

The company identified the following challenges:

- A platform to enable the enterprises' transformation to a hybrid IT
- Limit the cost of engagement to build a brokerage platform and revenue model for the business
- Lack of experience and a short time to deliver
- Lack of a common services catalog to manage traditional tower IT and cloud services from multiple providers across market segments
- Lack of automation, centralized services integration, and API management with many cloud providers
- No tools for cloud decision-making or for provider selection
- No real-time governance of cost, usage, and SLAs

The solution

IBM Cloud Brokerage provides a full cloud brokerage platform with these capabilities:

- IT Services Catalog seeded with leading, vetted cloud infrastructure providers
- Services Marketplace that captures business relationships between the enterprise and underlying providers
- Visual Data Center Designer for architects to view and modify technology and cloud assets
- Multi-cloud Service Fulfillment and Order Management with live order capabilities
- Consolidated billing and chargeback across providers
- Cost and service monitoring and tracking providing comprehensive cost management capabilities
- List of established integrations including certified integrations with leading cloud infrastructure providers (such as Amazon Web Services, MicroSoft Azure, and IBM SoftLayer)

Conclusion: Developing your solution with IBM

IBM Cloud Brokerage helps enterprises maximize the value of the cloud and provides a path to becoming an IT as a service provider by supporting the complete IT value chain. Cloud Brokerage enables your enterprise to broker software and cloud services from multiple suppliers from a single dashboard. This brokerage enables your enterprise to make well-informed decisions when incorporating the hybrid cloud in your IT environment.

When you are ready to move to the hybrid cloud or enhance your hybrid cloud environment with a cloud broker, the Cloud Brokerage offering can help you move forward quickly. IBM has done extensive work in helping clients move to a hybrid cloud environment and enhance their hybrid cloud environment with Cloud Brokerage, and they can help you too.

IBM Global Technical Service (GTS) provides the following consulting services:

- Develop a cloud or broker strategy that fits your needs.
- Perform workload assessments.
- Analyze your environment for *Fit for Purpose*.
- Aid in any migration activities.

Also, IBM provides the following support services:

- Broker platform support, which is included in SaaS subscription.
- Engagement Set Up, where the IBM team can implement and train your team so that you manage it yourself.
- Broker operations, where IBM can operate the platform and manage fulfillment.
- IT Operations, where IBM manages the provisioned environment.
- Custom integrations, which includes IBM IT Service Management (ITSM) platform, third-party orchestration, private cloud, and nonstandard services.

For more information about Cloud Brokerage and the IBM GTS and support services, contact your local IBM representative.

Other resources for more information

For more information about Cloud Brokerage, see the following resources:

- IBM Cloud Brokerage product page

  http://www.ibm.com/software/products/en/cloudbrokerage
- IBM Cloud Brokerage announcement letter

  http://www.ibm.com/common/ssi/cgi-bin/ssialias?subtype=ca&infotype=an&supplier=897&letternum=ENUS216-170
- IBM Cloud Brokerage Solutions

  https://www.ibm.com/marketplace/cloud/cloud-brokerage/us/en-us
- IBM developerWorks® blog post: *The economics of hybrid cloud*

  https://developer.ibm.com/bluemix/2016/06/08/cloudmatrix-cloud-brokerage-platform/
- Thoughts on Cloud blog

  http://www.thoughtsoncloud.com/2016/05/role-visibility-control-hybrid-cloud-2/

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