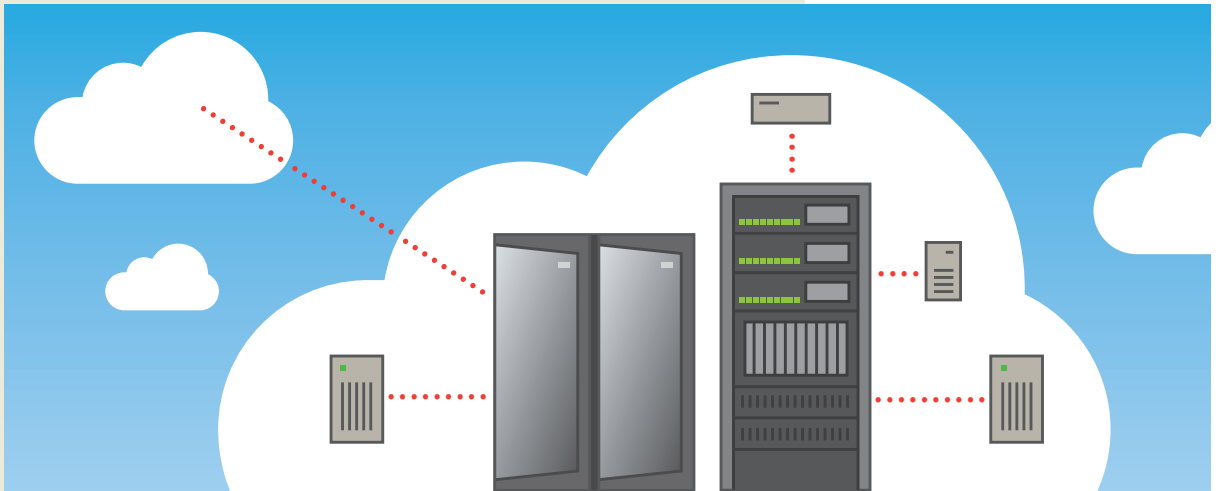


# IBM SmartCloud Foundation

Business Partner Guidebook

Your Roadmap to  
Success with  
STG Private Cloud  
Solutions



Edited by Jim Hoskins

# **IBM SmartCloud Foundation Business Partner Guidebook**

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# IBM SmartCloud Foundation Business Partner Guidebook

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First Edition

*Your Roadmap to Success with  
STG Private Cloud Solutions*

Edited by Jim Hoskins

(version 1.1e)



Clear Horizon

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# Your Five-Step Quick Start

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Take these steps to “hit the ground running” as a new IBM Business Partner.

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# Introduction

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This MaxFacts™ interactive guidebook brings together—all in one place—the resources you need to be successful as an IBM Cloud Solutions Business Partner. It contains information gathered and adapted with permission from multiple IBM and non-IBM sources. Also, there are embedded links to more-detailed information and news available on the Internet, so you always have the most current information at your fingertips. We are confident you will find this a useful reference tool.

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# 1

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## Cloud Overview

In this chapter, we cover some basics about cloud computing.

### **The Cloud Opportunity Is Now**

IBM Business Partners are vital in delivering IBM cloud technologies and in providing industry expertise and applications that solve customer problems. IBM has a role for all Business Partners in our cloud strategy, and you are key to how we go to market with cloud.

For IBM Business Partners, this means:

- As your clients' IT partner, you are in a unique position to help them understand their options and lay out a roadmap to cloud.
- And as your business partner, IBM is in a unique position to provide you with a depth and breadth of technology that is second to none in providing a low risk, highly reliable product set to take your clients on their cloud journey.

The IBM Cloud Ecosystem is an end-to-end set of elements that fully enables IBM Business Partners so that you are fully qualified and supported to drive IBM Cloud Computing sales ([Figure 1.1](#)).





IBM BP helps Government agency build private cloud for more customer responsive driver testing and more efficient centralized agency



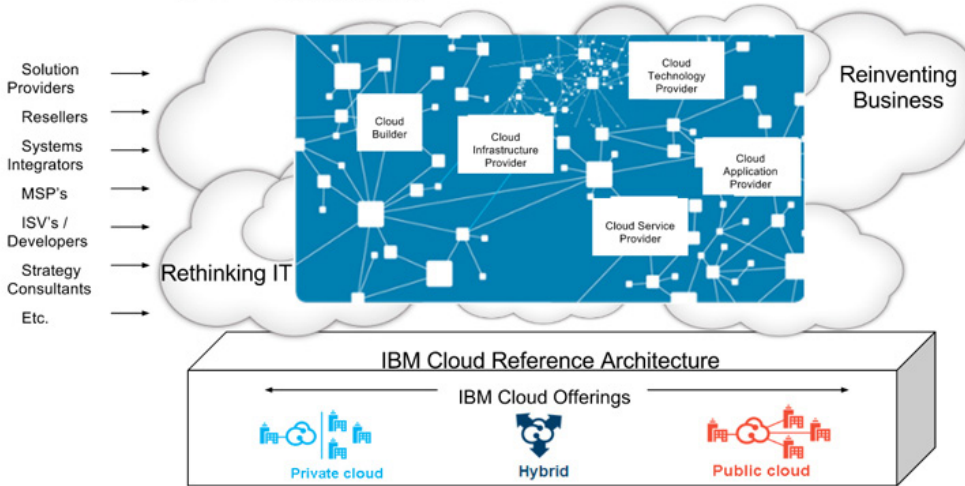
IBM BP builds cloud solution for major Financial company that increases time to market by 93% & produces additional revenue during peak season



IBM BP as a cloud provider reduces by 30% a toy Manufacturer's cost of managing business with SAP.



IBM BP helps Media firm leverage IBM public SmartCloud to deliver music solution faster and with broader reach



**Figure 1.1** IBM’s Cloud Ecosystem includes all partner types and inspires new business models that solve real customer pains.

IBM’s Cloud Ecosystem includes all partner types and inspires new business models that solve real customer pains. In addition, IBM is providing our partners with training and other enablement so that they will be able to customize IBM Cloud solutions to specific client requirements. See “The IBM Cloud Ecosystem for IBM Business Partners” for details.

## IBM Cloud Value Proposition for IBM Business Partners

Although all vendors advocate that they have the best solutions and infrastructure, IBM has the broadest vision of cloud



## IBM Business Partner Opportunity with Cloud

- Is one of the fastest growing opportunities in the IT market
- Provides you with new revenue streams from expanded solutions portfolio
- Gives you higher margin deals through services opportunities

computing, providing our Business Partners with the ability to develop a high value, high margin business leveraging their existing skills, and enabling them to guide their clients through the journey from virtualization to advanced cloud.

For IBM Business Partners who want to:

- Advise clients on cloud strategy & implementation
- Resell servers, storage, networking, and middleware to build private clouds
- Resell IBM Cloud offerings
- Leverage your value-add, line of business applications enabled for cloud.

IBM offers easy-to-sell offerings, plus the enablement that equips you for consultative solution selling of private and hybrid cloud. Let's take a look at the cloud landscape and business opportunity in more detail.



## Setting the Stage for Cloud Computing

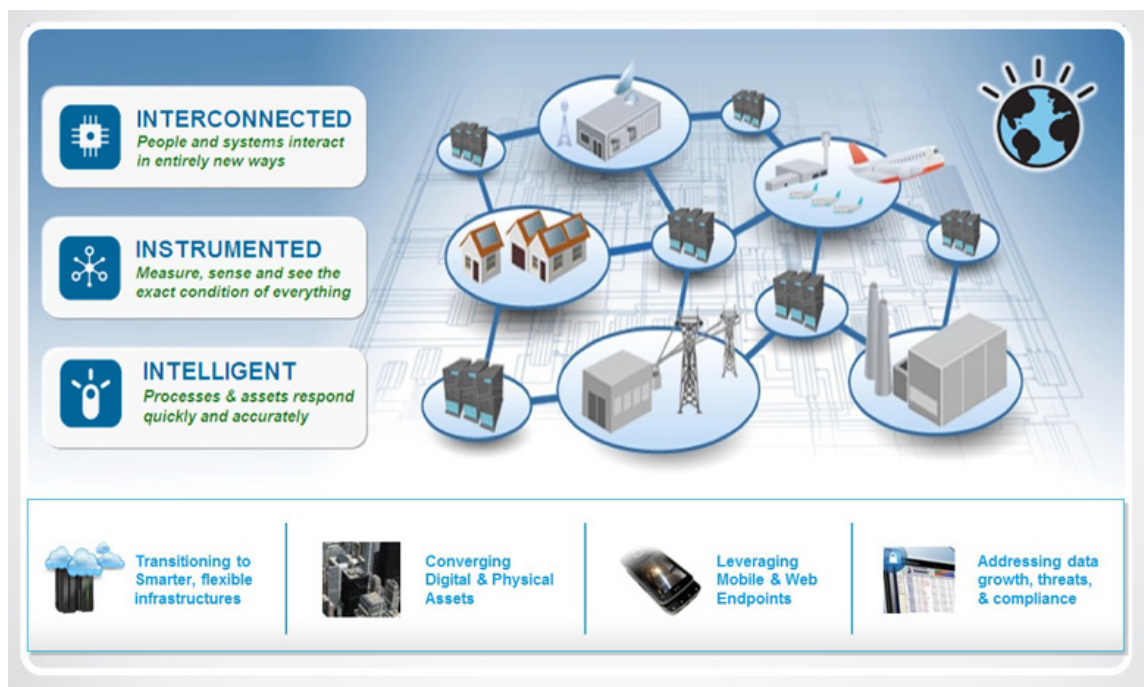
Businesses today are under tremendous pressures, driven by shifts like an increasingly mobile workforce and the need for greater productivity. Yet, companies are being asked to accommodate these increased demands without an increase in resources.

- Customer, employee, and partner expectations around self-service, personalization, access to real time information, and service innovation are escalating.
- There has been an exponential increase in data, users, speed requirements, and the number and variety of connected devices, with an over 10x growth in digital data from 2007 to 2011.
- The requirement to deliver higher value products and services more rapidly than ever before in order to remain competitive in a crowded, global market has now become imperative.

These increasing expectations and demands are having quite an impact on information technology. Consumers are driving an incredible amount of data as they continue to use new technologies that are being delivered, and this is causing a tremendous amount of stress on traditional IT infrastructures. Businesses simply cannot expect to maintain the status quo when it comes to their infrastructures and at the same time deliver all that the business landscape is demanding these days. They are going to have to fundamentally change the economics of business infrastructures and speed the delivery of innovative products & services.



To meet these increasing expectations and demands on data centers, new technologies are required, technologies that can help organizations simplify and scale the delivery and management of enterprise workloads across increasingly complex infrastructures ([Figure 1.2](#)). What does this mean? It means accelerating the delivery of new business value while fundamentally changing the economics of IT. The rapid delivery of new products and services must be embellished within new models of deployment—including self-service—providing customers with the service they want, in the manner they want, with 100% reliability.



**Figure 1.2.** Organizations must simplify and scale the delivery and management of enterprise workloads across increasingly complex infrastructures.



## The New Business Value of Cloud

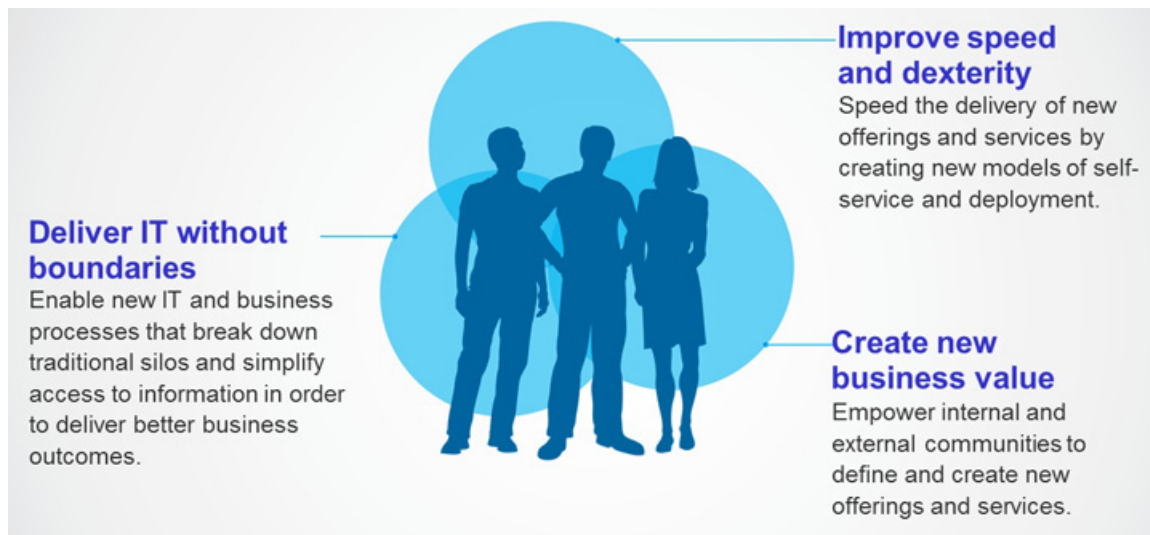
The fact is, current business infrastructures, with their evolved complexity and inherent lack of standardization, just aren't able to support this dramatic shift. That's where cloud computing offers a key approach that clients are choosing to standardize, normalize, and reduce some of that unnecessary complexity (Figure 1.3).

Cloud helps business and IT create and deliver value in fundamentally new ways. And while business and IT come to cloud for different reasons and with different goals, both roles are unified in their view of cloud's overall value: the ability to deliver IT without boundaries, improve speed and dexterity, and create new business value (Figure 1.4).



**Figure 1.3.** Cloud computing is fundamental to changing the economics of business infrastructures and speeding the delivery of innovative products and services.





**Figure 1.4.** Cloud helps business and IT create and deliver value in fundamentally new ways.

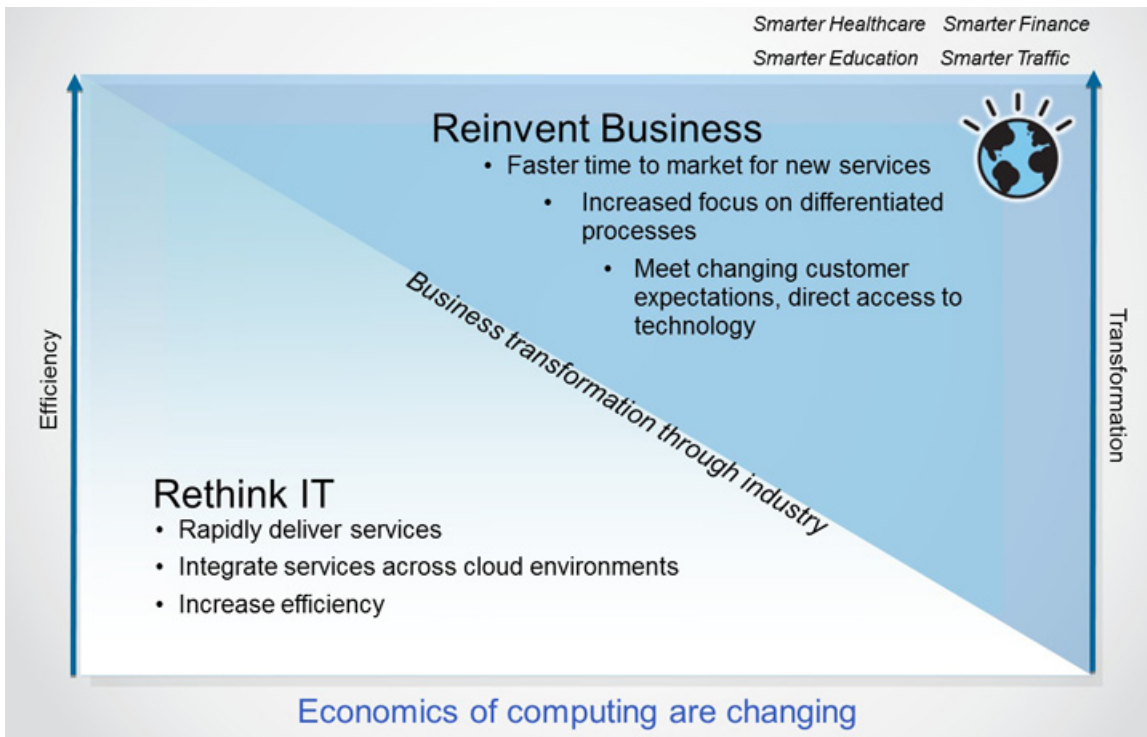
These are the kinds of value that bring participants together regardless of role. They speak to the marketplace drivers of increasing expectations, demands, and competition. And they reflect the need to both rethink IT and reinvent business.

## Reinventing Business with Cloud

Too often, though, cloud's vast potential is unmet because cloud is being used primarily to make IT easier, cheaper, and faster. While these goals are hard to argue with, it is important to remember that cloud is not just about rethinking IT; it is also about reinventing the business ([Figure 1.5](#)).

Consolidation, data center efficiency, and lower costs are just the start. Leading companies are unlocking the deeper





**Figure 1.5.** Cloud computing allows companies to rethink IT and reinvent the way they do business.

potential of cloud as a way to manage not just their IT but also their businesses. They’re discovering how cloud can help them create new marketplaces, smarter business services, and profitable new revenue streams. Providing these services to innovators can profoundly change the way a company is experienced by its customers, its partners, and society.

The true promise of cloud isn’t just about advancing IT; it’s about reinventing business. An IBM CIO Study with the London School of Economics shows that over half of business executives believe cloud enables business transformation and



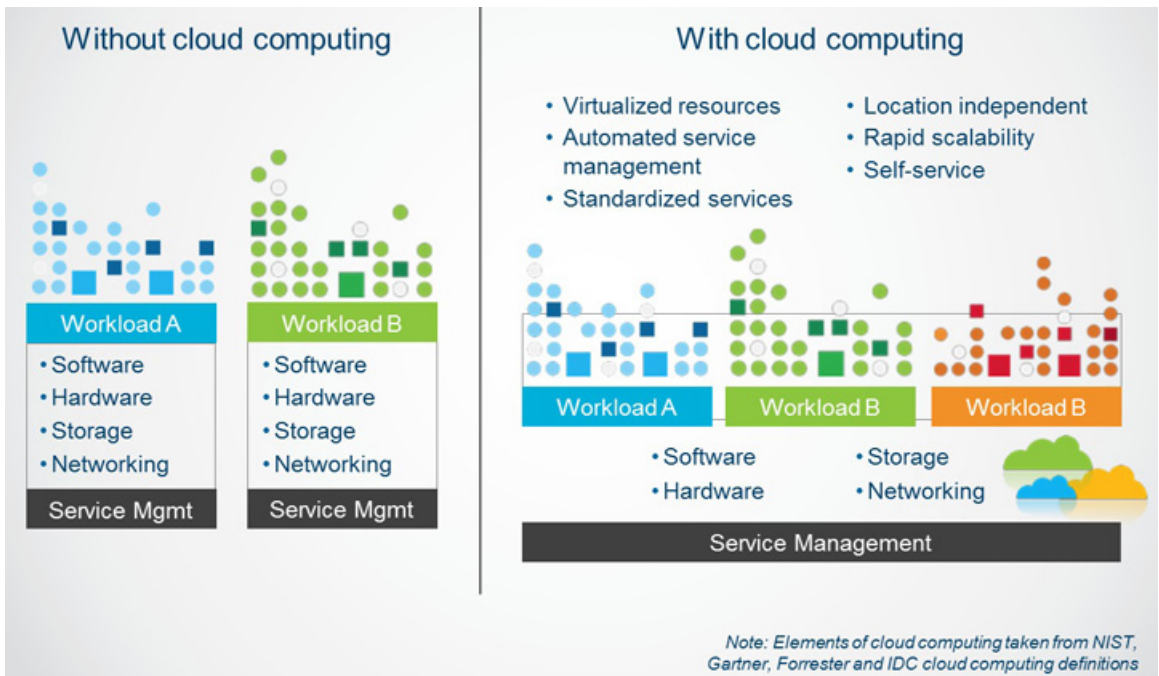
leaner, faster, more agile processes, and both business and IT execs believe that cloud will enable business transformation. In fact, 65% of business executives believe that cloud will drive down the overall cost of running applications, while 98% of IT executives believe that cloud delivers greater agility and flexibility in their IT environments.

This is strategic thinking. But organizations that approach cloud in a tactical fashion risk adding complexity and inefficiency due to fragmentation, redundancy, and operating silos. In contrast, organizations that embrace cloud strategically—from a business as well as an IT perspective—can capture new business value through innovation, flexibility, and speed, with integrity and security—while reducing cost and complexity.

## Why Infrastructure Matters for Cloud

What is really different about cloud computing? A traditional enterprise tends to pull together resources and deploy them in support of a business function workload one project at a time, or in silos. The resources are dedicated to the workload and are unable to support other workloads where they could be leveraged as added support. Cloud computing, on the other hand, leverages a pooled resources environment that uses virtualization in order for the physical assets to support multiple workloads ([Figure 1.6](#)).

Driving the efficiency of the delivery to enable the self-service, self-management of cloud computing requires standardization of the assets (hardware, software, delivery) as well as automation. This is what delivers a responsive end user experience. So from the end user's point of view, cloud is elastic in



**Figure 1.6.** What is different about cloud computing?

scalability; accessible from any device, anywhere, any time; and if charged, clients pay only for what they use during the time they are using it. From a provider’s perspective, cloud is about an environment of highly virtualized resources that are location independent and have automated service management to handle provisioning, de-provisioning, change management, security, and overall environment controls. That’s why the infrastructure is so important.

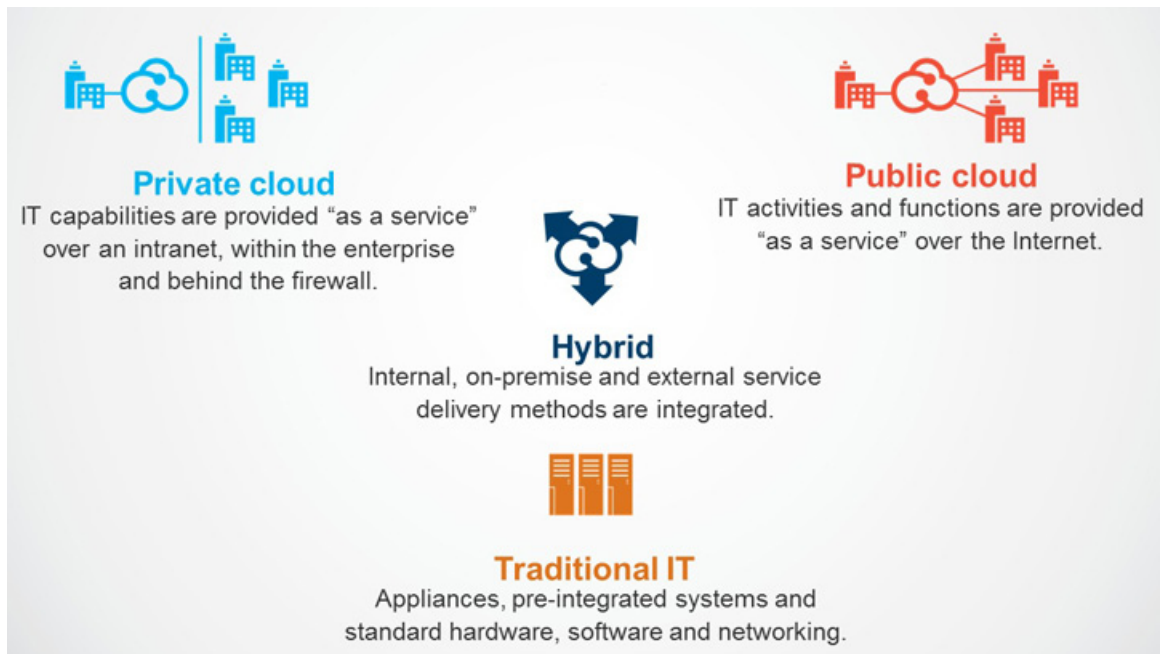
## Public versus Private Cloud

Cloud computing leverages virtualization technology to reduce costs, increase flexibility, and empower users. As depicted

in [Figure 1.7](#), there are two basic forms of cloud computing: public clouds and private clouds. These forms of cloud computing can be combined with each other and with traditional IT infrastructure as appropriate for the business need.

Public clouds are operated by companies who offer access to their computing resources (servers, storage, networks, application programs, etc.) to other businesses and individuals as a subscription service. In contrast, private cloud computing is implemented internally using computer hardware and software owned by the company that is using it.

While the concept of public cloud has gotten much of the marketplace attention, the reality of today's IT environments



**Figure 1.7.** Businesses are choosing a variety of cloud models to meet their unique needs and priorities.

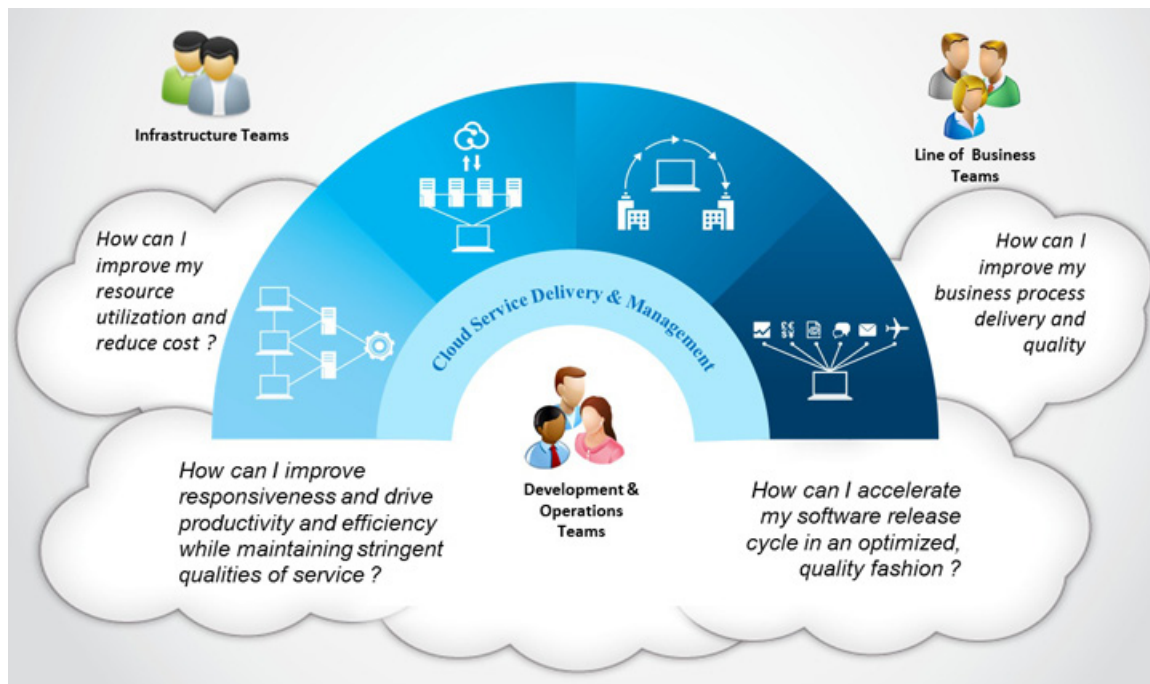


is much more heterogeneous. Companies are building private clouds for more sensitive workloads that require the elasticity of cloud but also more control and oversight. And they are retaining traditional IT investments for other situations as well. This results in a hybrid environment that must be integrated to function effectively. Hybrid cloud is the reality today and into the foreseeable future. Different patterns of IT support are appropriate for different needs and that is not going to change. So the challenge becomes one of integration, coexistence, and recognizing what model is best for a given task.

## The Client's Journey to Cloud

Today, customers are implementing administration and automation via two different customer organizations: Infrastructure Teams and Operations Teams. It is important to understand clients' concerns and be able to address their questions in a way that demonstrates the real value that IBM cloud solutions offer ([Figure 1.8](#)). For example:

- Infrastructure Teams want to know: How can I improve resource utilization and reduce cost?
- Line of Business Teams want to know: How can I improve my business process delivery and quality?
- Development Teams want to know: How can I accelerate my software release cycle in an optimized, quality fashion?
- Operations Teams want to know: How can I improve responsiveness and drive productivity and efficiency while maintaining stringent qualities of service?



**Figure 1.8** What are clients asking for today?

When clients ask these kinds of questions, you can take them through IBM's journey to cloud messaging ([Figure 1.9](#)) to demonstrate how you and IBM can help them:

- Optimize a virtualization foundation
- Take their first steps into an entry cloud
- Implement the capabilities of advanced cloud.

The key message to convey to clients is that you can be their trusted cloud advisor of choice, helping them progress from wherever they are on the journey—starting with consoli-

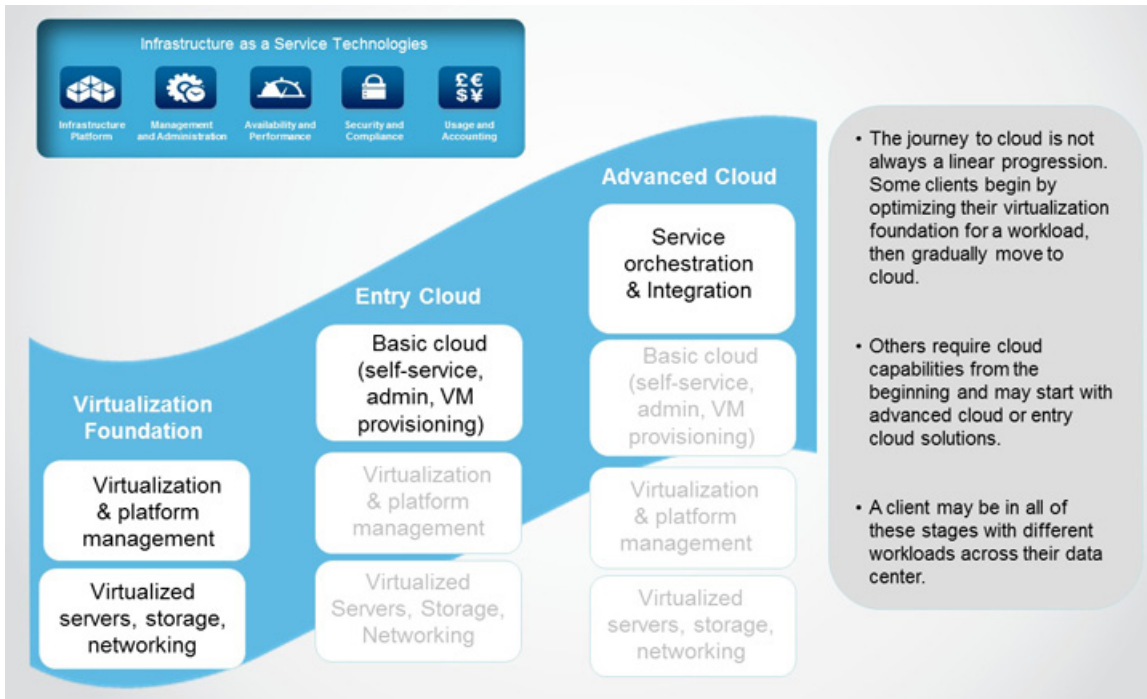


Figure 1.9. Clients are not sure where to start on the journey.

dating resources and managing workloads to establish a solid virtualization foundation, through automating processes and optimizing delivery as they move to an entry cloud solution, and beyond to an Advanced Cloud infrastructure that delivers cloud services in a secure and cost effective way.

### Client Entry Points into Cloud

A client’s journey to cloud has multiple entry points and is not always a linear progression. Many begin their journey by building an efficient IT infrastructure, and then build upon that with simplified administration and automation. For some,





the need is to go to full cloud deployment with the highest levels of orchestration. Let's take a look at each of these:

### *Step 1: Integrate*

The journey starts with the desire to streamline, simplify, and drive down costs by building a more efficient IT infrastructure. In this step, we see organizations consolidating and virtualizing their servers, storage, and networking infrastructure; implementing systems management; and reaping the benefits of reduced operating and capital expenditure. Although virtualization and consolidation on its own does not constitute cloud, it does provide part of the necessary foundation for cloud delivery.

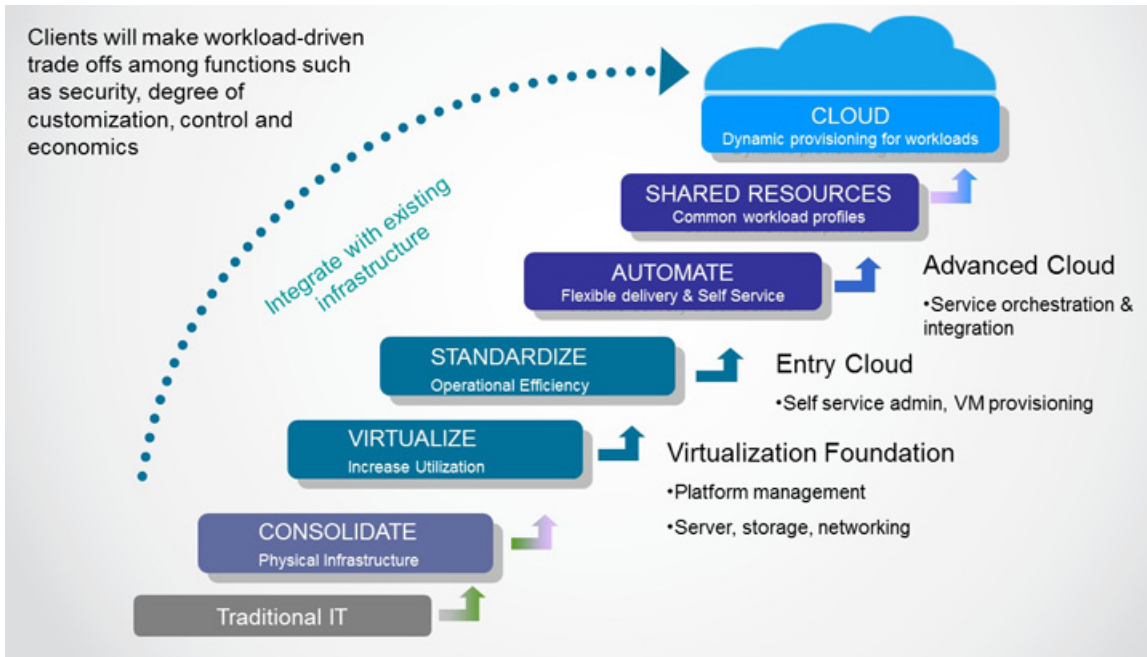
### *Step 2: Automate*

Automation allows clients to build on an integrated foundation to improve speed and dexterity and reduce application development cycles. Simplifying administration through self-service provisioning and automated IT service deployment can allow critical resources to be freed from mundane tasks and moved to projects delivering higher value products and services.

### *Step 3: Orchestrate*

Seamless orchestration of heterogeneous servers, storage, and networks allows businesses to deliver more with less by bringing diverse resources under a single point of management control. It helps guarantee service levels and improve the reliability, availability, and security of service. Orchestration helps make the right automation and prioritization decisions when different groups are competing for the same network bandwidth, data, or other computing resources.



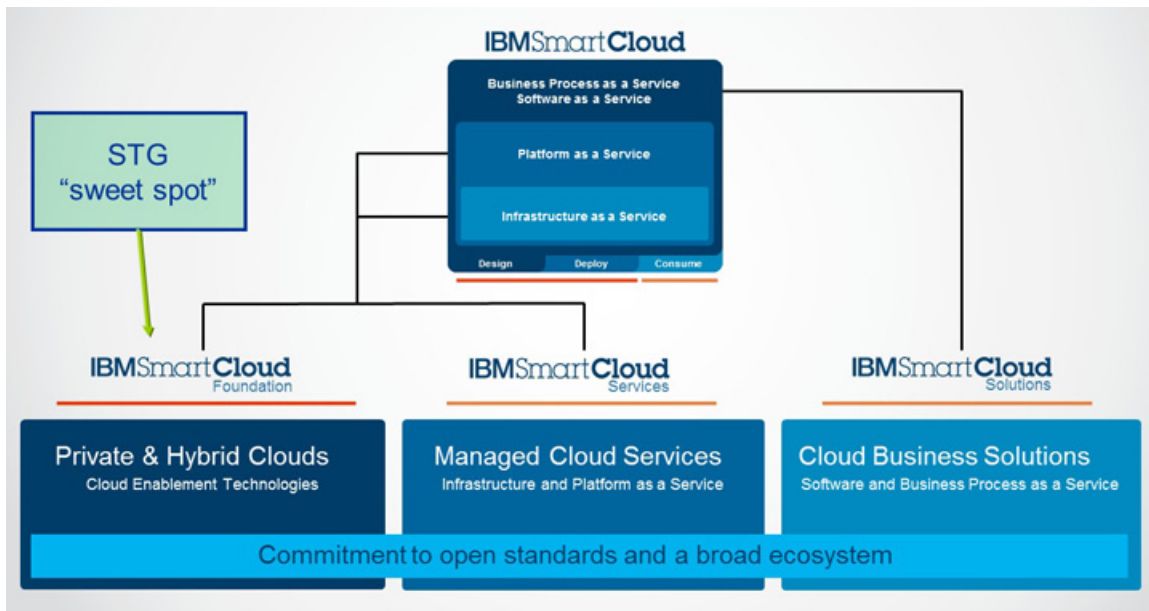


**Figure 1.10.** Partners extend clients’ options for evolving—or leapfrogging—business transformation, enabled by cloud computing.

And for many clients, moving from a traditional IT environment to a fully cloud enabled infrastructure is a journey they will take in a step-wise fashion. As [Figure 1.10](#) shows, Partners extend clients’ options for evolving—or leapfrogging—business transformation, enabled by cloud computing.

## IBM SmartCloud Differentiation

What is IBM’s response to the challenge of developing cloud offerings that meet clients’ needs? In October 2011, we defined our cloud offering—the IBM SmartCloud ([Figure 1.11](#)).



**Figure 1.11.** IBM SmartCloud Foundation capabilities built on our common cloud architecture.

We are focused on capturing the market across three primary segments:

- **IBM SmartCloud Foundation** is an integrated set of cloud enabling technologies for private and hybrid clouds. It allows clients to easily build and rapidly scale private cloud environments with unparalleled time-to-market, integration, and management.
- **IBM SmartCloud Services** provide a platform designed for enterprise-class service delivery with PaaS/IaaS managed services. It gives clients unprecedented choice, security, and portability of applications on IBM's SmartCloud service delivery platform.



- **IBM SmartCloud Solutions** are new business and industry solutions on the cloud offered as SaaS. These are services coupled with deep industry insights, business process skills, and analytics.

For this guidebook, however, we are focusing on the IBM SmartCloud Foundation, because this is the IBM “sweet spot”—the hardware, management software, and infrastructure services to actually set our clients on the right path to cloud (Figure 1.12).

Regardless of where clients are on the journey, IBM’s real differentiation is this:

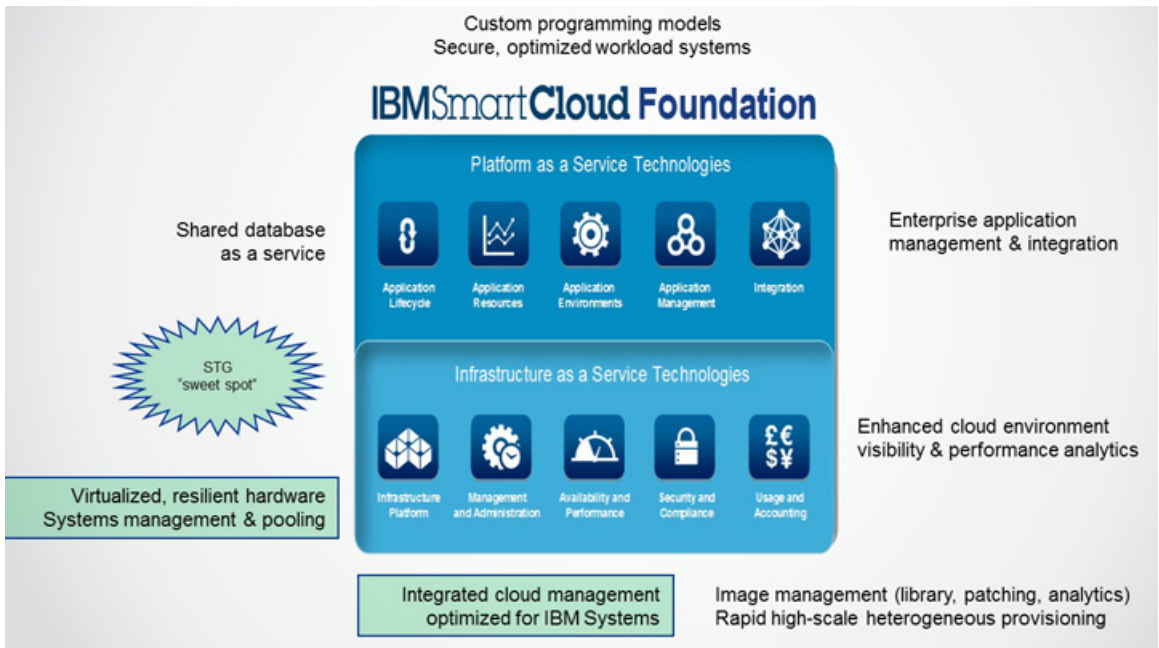


Figure 1.12. IBM SmartCloud Foundation’s infrastructure component.



- Our end-to-end cloud portfolio provides customers with offerings that can help them gain business benefit at any point in the journey: from the virtualization foundation, to entry cloud, to advanced cloud function.
- We work with clients' existing infrastructure to create a cloud environment that allows them to grow with their business needs.

IBM, the global leader in cloud, is playing a leadership role in the industry adoption of the new cloud computing delivery models:

- IBM SmartCloud accelerates the delivery of new business value, fundamentally changing the economics of IT.
- SmartCloud Foundation offerings from IBM transform the enterprise.
- IBM's end-to-end cloud portfolio delivers business benefits at any point in a client's journey to cloud.

## Compelling Reasons to Call

Business Partners are a crucial channel for IBM in cloud, and now, for the first time, all of our cloud offerings are available for our partners to sell. Our extensive cloud portfolio of offerings and services lays the groundwork for a comprehensive set of private cloud infrastructure offerings, which you can take to market to help customers at all stages of their cloud journey. We provide you with new reasons to call on clients, advise them on how to leverage cloud, sell them IBM cloud computing offerings, and assist them in integrating these



IBM cloud computing offerings into their computing environment (Figure 1.13). We used to refer to the three stages of the cloud journey as virtualization foundation, entry cloud, and advanced cloud. We have recently refined these journey points to broaden the aperture and to make them more focused on client needs. Let's take a look at this in more detail.

A client's journey to cloud can be entered through a requirement to "build an efficient IT infrastructure"—what is known as the Integrate stage. Clients usually build upon this infrastructure to "improve speed and dexterity" with in-

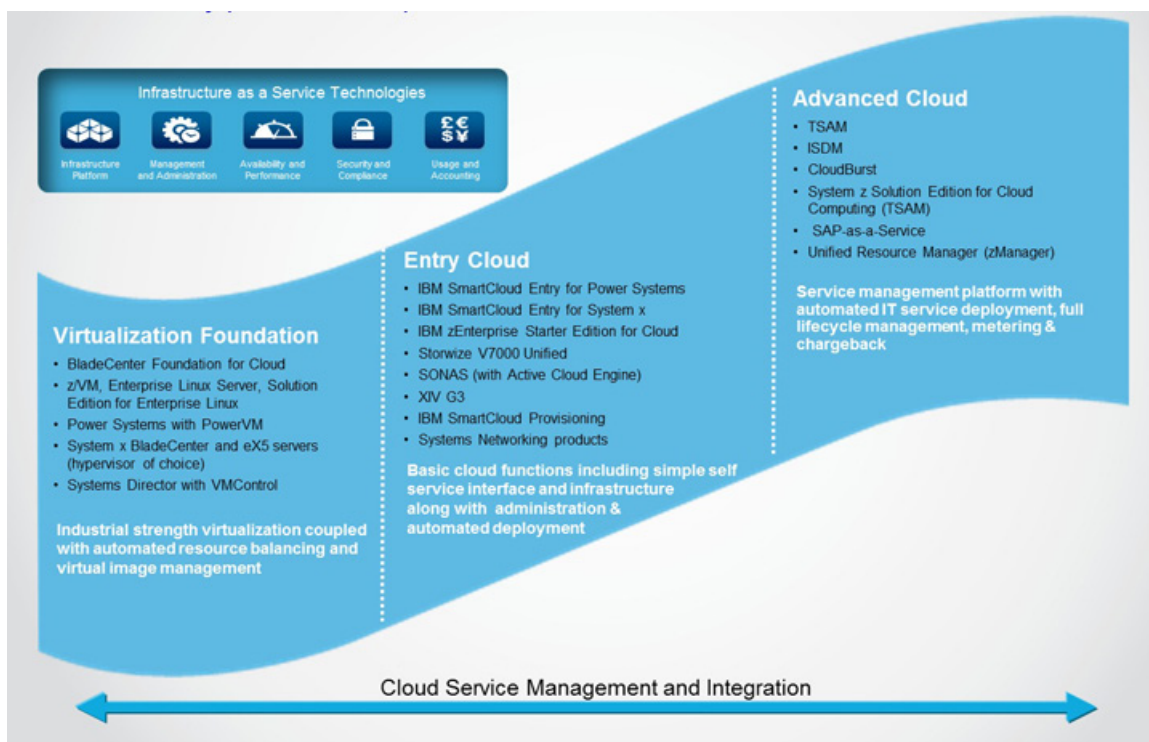


Figure 1.13. IBM SmartCloud Foundation infrastructure journey.

creased use of automation—the Automate stage. Finally, clients want to deliver on the promise of cloud and “deliver IT without boundaries” through the use of advanced technologies such as orchestration. This is the Orchestrate stage.

- **Virtualization Foundation offerings (Integrate Stage)**—(Servers, storage, and network) deliver industrial strength virtualization coupled with automated resource balancing and virtual image management. Products include IBM BladeCenter Foundation for Cloud, IBM Power Systems with PowerVM, IBM System z with zVM, and IBM Systems Director with VMControl. Complementary storage products include IBM System Storage SAN Volume Controller, IBM Storwize V7000 Unified, IBM XIV G3 Storage Systems.
- **Entry Cloud offerings (Automate Stage)**—Deliver basic cloud functions, including simple self service interface and infrastructure, along with administration and automated deployment. Products include IBM SmartCloud Entry for System x, IBM SmartCloud Entry for Power Systems, IBM zEnterprise Starter Edition for Cloud. Complementary storage and networking offerings include IBM Scale Out Network Attached Storage (SONAS) with IBM Active Cloud Engine, IBM SmartCloud Provisioning, and IBM Systems Networking products.
- **Advanced Cloud offerings (Orchestrate Stage)**—Deliver a service management platform with automated IT service deployment, full lifecycle management, metering, and chargeback. Products include IBM Service Delivery Manager (ISDM), Tivoli Service Automation Manager (TSAM), and IBM System z Solution Edition for Cloud Computing.



- **Custom Cloud offerings** open the door to higher margin sales and value added services-led opportunities for partners, while providing clients with the flexibility and customization needed for their own unique environment. Leveraging clients' existing infrastructure and using pre-tested reference configurations, these customizable offerings now include reference configurations, bills of materials, and cookbooks that speed the engagement process by providing pre-tested and suggested starting points that can be customized based on unique client requirements. We also provide partners with the ability to re-sell integrated offerings as pre-packaged offerings that bring together hardware, software, and services, allowing you to respond quickly and effectively to clients who need rapid implementation of an integrated offering.

#### MORE ON THE WEB

- [Reference configurations for cloud infrastructures](#)
- [Reference Configuration Center for Cloud](#)
- [IBM Cloud Computing Reference Architecture Webcast](#)

## Higher Success Rate and Profit Stream

Private cloud represents revenue opportunities for IBM Business Partners, including, for example: advising clients on how best to move to the cloud, assisting clients in optimizing their computing environments for cloud, and selling and deploying private cloud solutions.

Business Partners are experiencing significantly higher rates of closing deals with prospects than business as usual. Thanks to a more strategic relationship with a client, part-



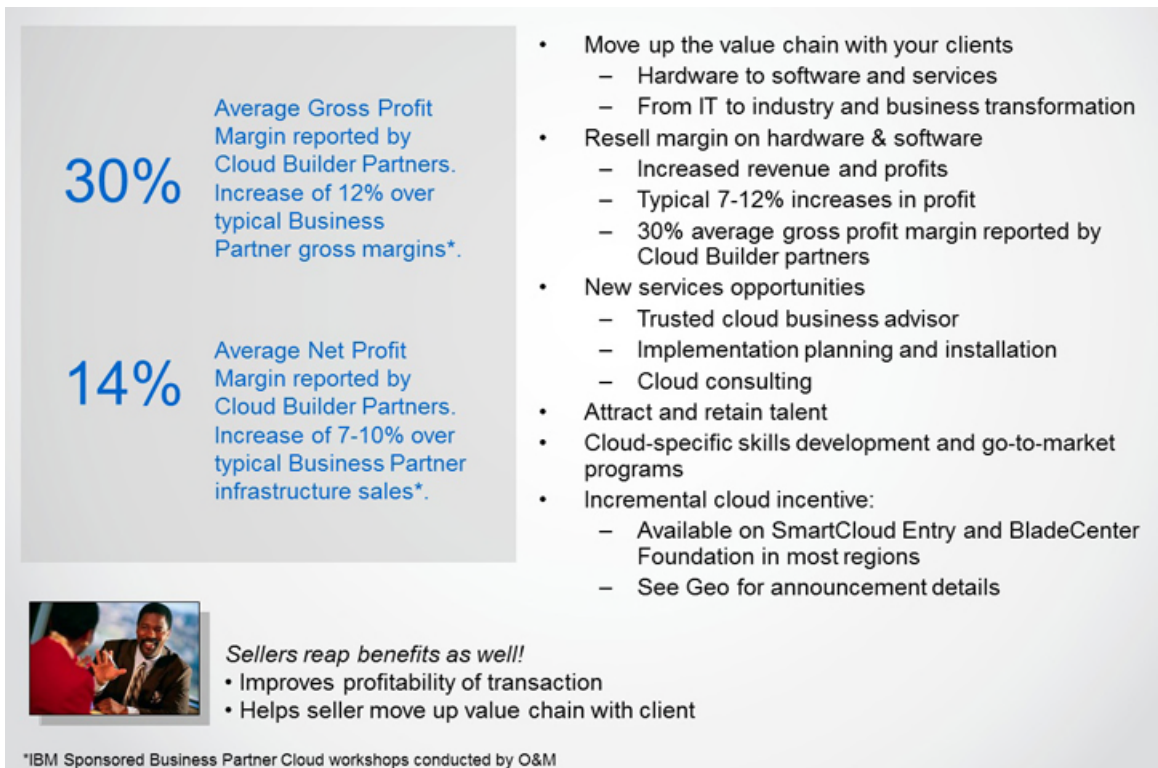


ners can also experience improved customer retention and increased loyalty. And the annuity revenue and profit streams mean that a compounding effect takes

### MORE ON THE WEB

- [How IBM SWG Business Partners profit from cloud computing](#)
- [Private Cloud Business Partner Economics web lecture](#)

place, making even the smallest transaction size a compelling business proposition for most partners ([Figure 1.14](#)).



**Figure 1.14.** What's in it for Cloud Builders?





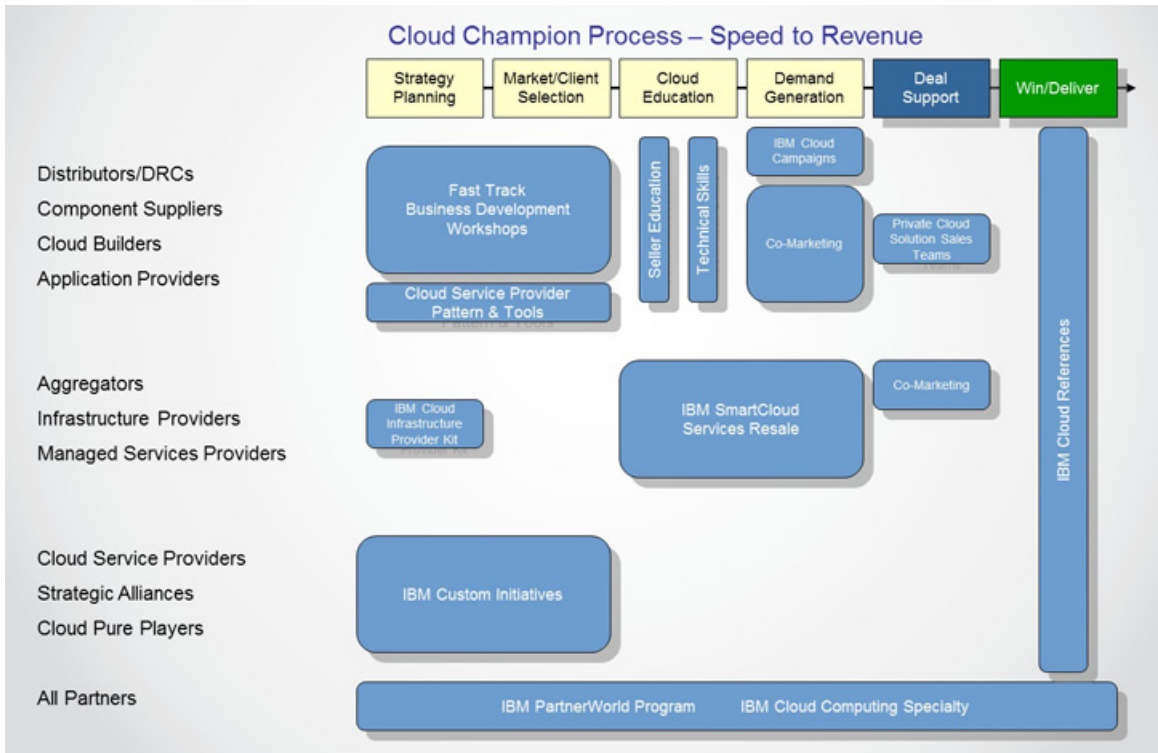
## IBM Cloud Ecosystem for IBM Business Partners

As we've already discussed, cloud is driving IBM Business Partners to adopt new business models, and IBM is providing resources to assist our partners in transforming to a cloud business model. We're committed to delivering what you need, offering:

- Deep sales, technical, and implementation training
- Cloud business planning workshops
- Cloud business model self-assessment tool
- Cloud sales assistance
- Dedicated Cloud Development Executives in most regions
- Strong value proposition
- Depth of offerings
- Cloud Computing Specialty.

Whether you are an application developer, product reseller, or solutions and services provider, IBM has a comprehensive set of resources and offerings ([Figure 1.15](#)) to help you implement a successful cloud project:

- Build clouds or provide infrastructure: Speed your cloud deployment and deliver rapid return-on-investment with industry-leading solutions from IBM. By implementing cloud-delivered solutions for your clients, you can reduce their costs, lower risk, provide higher quality services, and enable breakthrough agility. IBM solutions will help you design, build, and manage clouds that are secure, flexible, and reliable.



**Figure 1.15.** IBM is committed to the success of our Cloud Partners.

- **Deliver IBM Cloud services:** Build a recurring revenue and profit stream reselling IBM's growing portfolio of on-the-cloud services offerings. Further enhance your profit-making potential by adding these workload-based offerings to your client proposals.
- **Provide cloud-enabled applications:** Stay informed of the latest trends while developing skills, solving problems, and collaborating with others using resources from IBM developerWorks. Cloud computing lets you build, test, run, and deploy



applications securely at a fraction of the current effort; simplify IT infrastructure without sacrificing customization and integration abilities; and direct innovation efforts to core development.

#### MORE ON THE WEB

- [IBM PartnerWorld Cloud Portal resources for these focus areas](#)

## IBM Cloud Computing Specialty

*Specialize to gain enhanced benefits and take advantage of the rapidly growing cloud opportunity . . .*

In support of the growing cloud opportunity, IBM's Cloud Computing Specialty ([Figure 1.16](#)) provides a broad ecosystem for IT companies to work together and deliver a wide range of cloud computing services and technologies for clients of all sizes and industries. Designed to help IBM Business Partners engage more closely with each other and with IBM in this key growth area, this initiative creates a single program that covers the full breadth of IBM's cloud capabilities, including software, systems, and services.

#### MORE ON THE WEB

- [IBM Cloud Computing Specialty on PartnerWorld](#)
- [Seize the Cloud Computing Opportunity webcast](#)

## IBM SmartCloud Foundation—Cloud's Infrastructure Component

The IBM SmartCloud Foundation lays the groundwork for a comprehensive set of private cloud infrastructure offerings



## One program for all cloud partners

### Built on Partner Needs

#### Pick a path

- Cloud Application Provider
- Cloud Builder
- Cloud Infrastructure Provider
- Cloud Services Solution Provider
- Cloud Technology Provider

+

#### Demonstrate skills, revenue, and references



=

#### Cloud Computing Specialty



### Benefits\* to IBM Business Partners

- Differentiate your firm – cloud specialty mark
- Market development funds
- Increased revenue & higher value margin deals
- Access to the IBM ecosystem for cloud
- Access to IBM expertise on cloud
- Flexible pricing options

\* May vary by path

The IBM Cloud Computing Specialty supports five types of IBM Business Partners who demonstrate their expertise and client success in cloud computing:

- **Cloud Application Providers:** Deliver applications through the cloud, such as with Software as a Service (SaaS). Cloud Application Providers are business partners who develop business applications that they want to deliver via a cloud as a service, typically charged for on a subscription basis. These business partners may include independent software vendors (ISV) and other equipment manufacturers (OEM). In this role, the vendor relationship with the business partner is also one of typically selling components and services to the business partner so they can deliver their application or asset as a cloud service to their own customers.
- **Cloud Builders:** Engage in consultative and solution selling of multiple IBM offerings, and want to more fully participate in cloud opportunities to win higher value, higher margin deals. Cloud Builders are business partners who build clouds, typically private clouds, for their enterprise customers. Value Add Distributors (VAD), Value Add Resellers (VAR), and Systems Integrators (SI) are examples of the type of business partners most likely to help with design and delivery of private clouds, or increasingly, public cloud services for enterprise customers. In this role, the IBM Business Partner will influence and may resell the infrastructure, software, and consulting service to build that private cloud or deploy select workloads on private clouds.



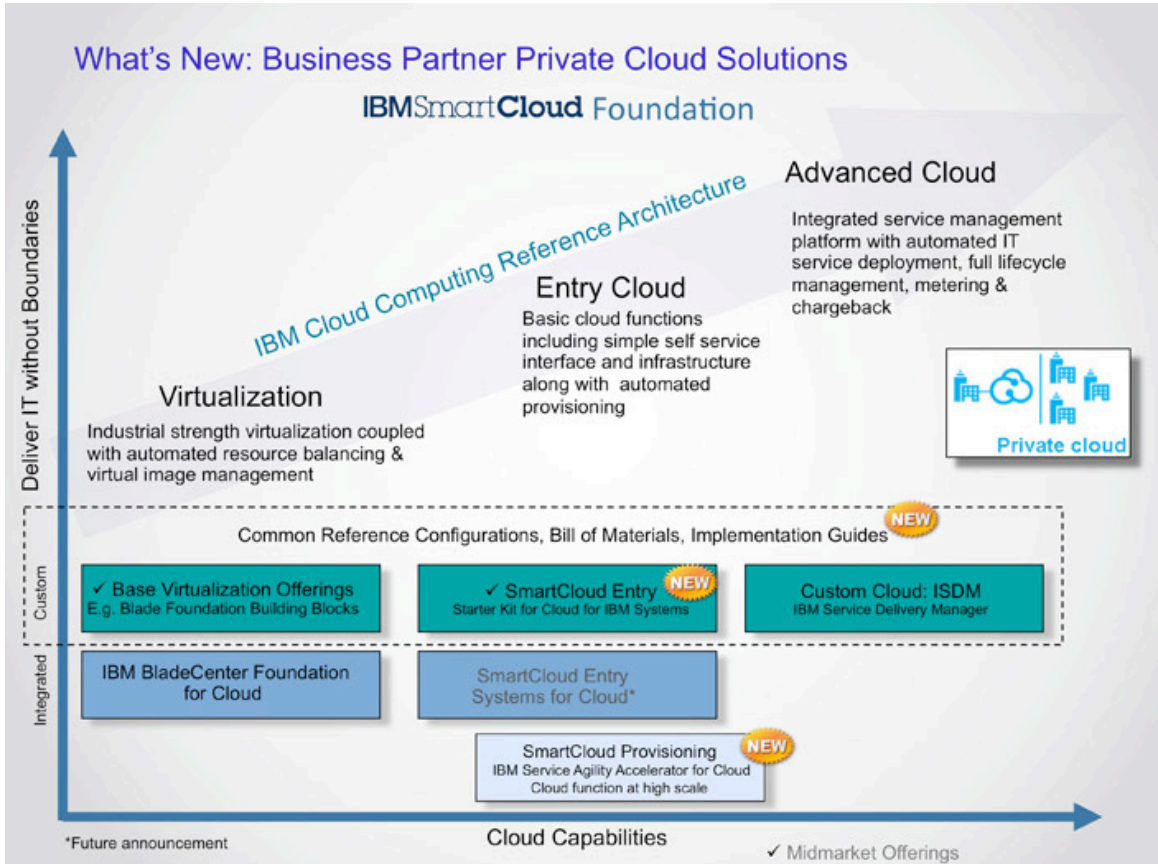
- **Cloud Infrastructure Providers:** Provide a public cloud service on which application vendors and companies can host their solutions. Cloud Infrastructure Providers are business partners who own a data center or have some IT operations skills and want to build their own public cloud from which they will offer cloud infrastructure, software, or platform services to their customers. In this role, the vendor relationship with the business partner is more one of selling components and services to the business partner so they can build and operate their own public cloud. In addition, these firms extend the value of these public cloud offerings by combining them with their own software or services.
- **Cloud Services Solution Providers:** Have an established practice, leveraging one or more IBM Cloud offerings and providing end-to-end cloud solutions to their clients. Cloud Service Solution Providers are business partners who resell services from public cloud providers. This is often a good entry point for business partners looking to play a role in bringing cloud services to their customers. VAD, VAR, SI, MSP (managed service providers), CSP (communications service providers), dealers, and manufacturer's agents are examples of the type of business partners most likely to resell public cloud services offerings. In this role, the business partner will resell the subscription access service for a fixed term and will play a role in renewing those subscriptions as they expire—presenting an opportunity for recurring, annuity-based revenue.
- **Cloud Technology Providers:** Provide the tools, services, and technologies that help other IBM Business Partners and enterprise clients use the cloud more effectively. By completing the criteria for the IBM Cloud Computing Specialty, you will earn PartnerWorld points that you can use to move to the next PartnerWorld membership level. If your company is currently enrolled in an infrastructure specialty, you are already on the path to qualifying for the IBM Cloud Computing Specialty.

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**Figure 1.16.** Make your mark—IBM Cloud Computing Specialty. *(continued from previous page)*

that IBM Business Partners can take to market to help customers at all stages of their cloud journey ([Figure 1.17](#)).

These offerings cover the full spectrum—from the virtualization foundation (preparation for cloud), to entry cloud, to advanced cloud—and include both customizable and integrated offerings.



**Figure 1.17.** What's New: Business Partner Private Cloud Solutions.

## Virtualization Foundation—Integrate Stage

*The journey starts with the desire to streamline, simplify, and drive down costs by building a more efficient IT infrastructure.*

### Seller Focus

Leverage IBM's strength in virtualization to help clients build a virtualized, managed infrastructure foundation on which to build all of their private cloud implementations.



## Offerings

Virtualization Foundation offerings start with consolidating resources and managing workloads and progress to automating processes and optimizing delivery.

- IBM BladeCenter Foundation for Cloud
- IBM Power Systems with PowerVM
- IBM System z with z/VM
- IBM Systems Director with VMControl
- IBM System Storage SAN Volume Controller
- IBM Storwize V7000 Unified
- IBM XIV G3 Storage System.

## IBM Differentiators

- For many clients, the virtualization journey begins with consolidation; IBM has designed an infrastructure that helps clients get the best out of virtualization and set the foundation for cloud.
- Many competitors collaborate with multiple vendors to provide the entire virtualization stack, or their cloud solution cannot support a heterogeneous environment; IBM does it all.

## Message to Clients

*[Partner name] and IBM are the trusted advisers who can help you progress from wherever you are on your journey...*

*starting with consolidating resources and managing workloads to establish a solid virtualization foundation, through automating processes and optimizing delivery as you move to an entry cloud solution and beyond.*

## Entry Cloud—Automate Stage

*Automation allows clients to build on an integrated foundation to improve speed and dexterity and reduce application development cycles.*

### *Seller Focus*

Help clients quickly implement rapidly scalable cloud infrastructure services and administration optimized for IBM Systems and expandable to heterogeneous environments.

### *Offerings*

Accelerate private cloud deployment with Entry Cloud offerings from IBM.

- IBM SmartCloud Entry for System x
- IBM SmartCloud Entry for Power Systems
- IBM zEnterprise Starter Edition for Cloud
- IBM Scale Out Network Attached Storage (SONAS) with IBM Active Cloud Engine
- IBM SmartCloud Provisioning
- IBM System Networking products.





## IBM Differentiators

- IBM's end-to-end cloud portfolio provides customers with solutions that help them gain business benefit at any point in the journey: from the virtualization foundation, to entry cloud, to advanced cloud function.
- We work with clients' existing infrastructure to create a cloud environment that allows them to grow with their business needs.

## Message to Clients

*Entry Cloud offerings enable you to move beyond a strong virtualization foundation to entry cloud through a simple deployment, delivering easy-to-use cloud administration and management systems from IBM . . .*

## Advanced Cloud—Orchestrate Stage

*Seamless orchestration of heterogeneous servers, storage and networks allows businesses to deliver more with less by bringing diverse resources under a single point of management control.*

## Seller Focus

Help clients embrace visibility, control, and automation of cloud services from deployment to service availability and assurance, with security, usage accounting, governance, and compliance; customizable for individual client needs.



## Offerings

Integrated service management platform with automated IT service deployment, full lifecycle management, metering & chargeback.

- Tivoli Service Automation Manager
- IBM Service Delivery Manager
- System z Solution Edition for Cloud Computing
- IBM Unified Resource Manager
- IBM Active Cloud Engine.

## IBM Differentiators

- IBM has implemented thousands of successful cloud engagements in the past two years
- 50% of Fortune 50 companies are working with IBM on private clouds
- 80% of Fortune 500 companies are using IBM cloud capabilities
- IBM teams with the broadest range of partners to create a complete ecosystem.

## Message to Clients

- You are ready to integrate and optimize
- You realized improved efficiencies when you consolidated and virtualized your servers



- Now your business goals have directed you to implement an Advanced Cloud infrastructure to deliver cloud services in a secure and cost effective way.

## Implementing a Successful Cloud Project

So how do you get started with cloud computing? At IBM we believe that to best leverage cloud computing as a viable delivery model is to lay out a clear path that is grounded in integrating cloud with your overall IT delivery strategy. You can build and deliver cloud services, or you can acquire and deliver cloud services, but both should appropriately start with your planning stage where you align the cloud-based services with your overall strategic direction, you've analyzed which workloads are appropriate for cloud delivery, and have at least a preliminary business case to support an implementation.

The best way to start is here:

- Learn more about IBM's cloud offerings at the [IBM Cloud Portal](#) and the [IBM Cloud Computing launch page](#).
- Build your cloud skills at [IBM Systems College](#).
- Join the [IBM Cloud Computing Specialty](#) program.
- Build your cloud pipeline using the [Cloud Opportunity Support](#) process to drive deals to closure.

# 2

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## Cloud Resources

This chapter provides you with some general information and valuable resources that will help you as you sell IBM cloud solutions.

### How to Engage and Assess Your Clients

Here are some tips for engaging your clients:

- Identify clients who can benefit from cloud.
- Talk to these clients about the overall IBM cloud strategy, as well as the specific value that IBM offerings bring to the cloud.
- Use the IBM Cloud Whiteboard to tell IBM's cloud story.
- Understand where your clients are on the journey to cloud, and identify opportunities to sell infrastructure solutions.
- If a client wants to know more about private cloud, use the IBM Private Cloud Whiteboard.
- If a client is interested in cloud but you are in a competitive situation, consider using the Alinean for Cloud ROI Calculator.





- Leverage the Journey to Cloud Selling Scenarios (described later in this chapter) and the Cloud Sales Guide for IBM Business Partners to show clients how they can progress to cloud in simple, consumable steps by positioning the IBM SmartCloud Foundation as the fabric for private cloud, and IBM SmartCloud Entry for System x and IBM SmartCloud Entry for Power Systems as entry offerings.
- Plan for your first cloud pilot.

### MORE ON THE WEB

- [IBM Private Cloud Whiteboard](#)
- [Alinean for Cloud ROI Calculator](#)
- [Journey to Cloud Selling Scenarios](#)
- [Cloud Sales Guide for IBM Business Partners](#)

## Education Roadmap for Private Cloud

IBM offers a suggested education roadmap for sales and technical sellers who want to gain the fundamental skills for selling IBM Cloud Computing solutions. The curriculum is designed for developing the knowledge to sell the solution and separately defines the certification requirements for the authorization to sell specific hardware and software components to ensure a successful solution sale ([Figure 2.1](#)).

## Cloud Selling Scenarios

Targeted private cloud selling scenarios help sellers understand how to:

- Position IBM virtualization offerings as the solid foundation upon which to build a cloud-enabled data center.



Country/region [ change ]

Systems College [ dropdown ] Search

Home Solutions - Services - Products - Support & downloads - My IBM - Welcome Mr. Jim Hoskins [Not you?] [ IBM Sign out ]

Systems College >

## Smarter Planet Solutions

What's New | Roadmaps | Smarter Planet Course Catalog | Quick links & Resources

Business Analytics | **Cloud Computing** | Smarter Computing | Roadmap Overview

These are suggested roadmaps for learning IBM Cloud Computing offerings for sales and technical sellers who wish to gain the fundamental skills for selling the IBM Cloud Computing solution. The curriculum is designed for developing the knowledge to sell the solution and separately defines the certification requirements for the authorization to sell specific hardware and software components to ensure a successful solution sale.

Legend | Expand all | Collapse all

- Introduction to IBM Cloud Offerings
  - Overview
  - Introduction to IBM Cloud Systems
- IBM Cloud Offerings
  - Power Systems
  - System x
  - System z
  - Services
- Selling IBM Cloud Offerings Electives
- IBM Cloud Skills Validation

Note: Completions of learning activities marked will be updated automatically when you complete the survey at the end of the lecture. You may add your own check marks next to the other learning activities when completed.

About IBM | Privacy | Contact | Terms of use

- [Cloud Computing Education Roadmap](#)
- [IBM Cloud Certification](#)
- [IBM Cloud Computing Specialty](#)
- [IBM Cloud Computing Specialty for Cloud Services Solution Provider](#)
- [IBM Cloud Computing Reference Architecture Webcast](#)
- [IBM Cloud Sales Simulator](#)
- [Training and Education for Cloud Services](#)
- [Know Your IBM \(KYI\) module](#)

**Figure 2.1.** Examples of courses included in the cloud computing roadmap.



- Position the IBM SmartCloud Entry (System x and Power Systems) and zEnterprise Starter Edition for Cloud as Entry Cloud offerings.
- Position Tivoli Service Automation Manager (TSAM) and IBM Service Delivery Manager (ISDM) as the core products for implementing an Advanced Cloud infrastructure.

## MORE ON THE WEB

- [Journey to Cloud Seller Scenarios](#)
- Virtualization Foundation Selling Scenario
  - [Five-page “Overview” presentation](#)
  - [Two-page “At-a-Glance” snapshot](#)
  - [Virtualization Foundation Scenario Webcast](#)
- Entry Cloud Selling Scenario
  - [Five-page “Overview” presentation](#)
  - [Two-page “At-a-Glance” snapshot](#)
  - [Entry Cloud Scenario Webcast](#)
- Advanced Cloud Selling Scenario
  - [Five-page “Overview” presentation](#)
  - [Two-page “At-a-Glance” snapshot](#)
  - [Advanced Cloud Scenario Webcast](#)

Regardless of where clients are on their journey, these three scenarios can help sellers demonstrate value at each entry point into the cloud. Each scenario is comprised of two documents:

- A five-page “Overview” presentation that includes the primary value proposition, entry points, key differentiators, client profile, selection criteria, pain points, offerings, benefits, conversation starters, a case story, and sales engagement resources



- A two-page “At-a-Glance” snapshot of the particular entry point into the cloud.

Additionally, three webcasts guide sellers on when and how to use each scenario.

## Cloud Opportunity Identification and Deal Progression Resources

Whether you are an application developer, product reseller, or solutions & services provider, IBM has a comprehensive set of resources and tools to help you identify, progress, and implement successful cloud projects (Figure 2.1).

### Private Cloud Opportunity Support

Additional support, tailored to specific opportunities or client situations, is available to drive key opportunities to closure. This support leverages IBM’s expertise available through 17 IBM Technical Centers worldwide and includes the following:

- Loaners
- Virtual loaners
- Briefings
- Workshops
- Benchmarks
- Full proof of concept
- Try & buy

#### How to Engage

1. Go to the [PW Cloud](#)
2. Complete Cloud Opportunity Support template
3. Nomination reviewed by BPO IOT cloud leader
4. Participate in discovery call
5. Outcome of call—tailored plan for sales situation





- Competitive support
- Technical consulting
- Demos
- Proof of technology.

Examples of key opportunities to nominate for support include the following:

- Significant competitive cloud opportunity
- Large cloud revenue opportunity
- Strategic account cloud sale (e.g., large follow-on business, competitive take-out).

## Expanded Cloud Technology Access

Cloud technology access is available at five IBM Innovation Centers selected by IBM Developer Relations based on cloud skills, geo coverage, and potential for success. The Innovation Centers complement other IBM Centers and provide access to cloud-configured IBM hardware and software.

## Alinean for Cloud ROI Calculator

The Alinean Tool for Cloud offers a great way to accelerate sales. It contains a template customized specifically for IBM cloud offerings. Using actual data provided by clients, the tool projects both ROI and TCO benefits of an IBM cloud solu-

### MORE ON THE WEB

- [Alinean for Cloud ROI Calculator](#)

tion over several years, helping sellers gain instant credibility with valid financial projections.

## IBM Private Cloud Master Sales Kit

The IBM Private Cloud Master Sales Kit is your one-stop shop for access to resources that are designed to help you understand the fundamentals of IBM's private cloud growth initiative; IBM's cloud infrastructure journey (virtualization foundation, entry cloud, and advanced cloud) and the offerings within each part of the journey; IBM's value proposition; how IBM's offerings play in a private cloud implementation; and how the right infrastructure is

required to help clients realize the

### MORE ON THE WEB

- [IBM Private Cloud Master Sales Kit on PartnerWorld](#)

full benefits from cloud computing. This kit includes links to information to help sellers identify and progress private cloud opportunities. [Figure 2.2](#) lists some other tools to help you identify, progress, and implement successful cloud projects.

## Cloud Infrastructure Reference Configurations

Due to the complexity of cloud and the vast amount of products involved, IBM has developed a reference architecture referred to as the IBM cloud computing reference architecture (CCRA). This CCRA is a blueprint to guide you in the development of private and public cloud solutions. It represents the aggregate experience across hundreds of cloud client engagements and the implementation of IBM-hosted clouds and pro-



## Sales Guides

- [4Q11 Entry Cloud Solution overview on PartnerWorld](#): On October 12, IBM announced the latest set of capabilities that can help clients unlock the deeper potential of cloud computing.
- [IBM SmartCloud Entry Enablement Assets](#): Quick links to key SmartCloud Entry enablement for IBM sellers and Business Partners.
- [Reference Configuration Center for Cloud](#): These reference configurations are designed specifically for IBM Business Partners to help you build customized cloud solutions for your clients based on IBM technology.

## Sales Kits

- [IBM SmartCloud Entry for System x Sales Kit](#): Data sheets, frequently asked questions (FAQ) list, presentation (external).
- [IBM SmartCloud Entry for Power Systems Sales Kit](#): Designed to enable clients to start moving mission-critical workloads to the cloud, while leveraging the unique performance, scalability, and RAS capabilities of IBM Power Systems.
- [Power Systems Cloud Solutions Sales Kit](#): Presentation (external), sales guide, white paper.
- [IBM System z Cloud Computing](#): What cloud computing is all about and why the IBM System z mainframe is the best foundation for cloud initiatives.
- [IBM BladeCenter Foundation for Cloud Sales Kit](#): Data sheets, frequently asked questions (FAQ) list, market analysis, presentation (external), resource kit, video.
- [Cloud for Service Provider Platform \(CSP2\) Sales Kit](#)
- [IBM Systems Director and Plug-ins Sales Kit](#): Data sheets, frequently asked questions (FAQ) list, presentation (external), sales guide, sales tools, white paper.

## Sales Plays

- [Building Cloud Infrastructure Advantage Sales Play](#): Focuses on IBM's infrastructure solutions both for private cloud deployments at LE accounts and building platforms for cloud service providers.
- [Power Cloud for Large Enterprise Sales Play](#): Designed to enable customers to start moving mission-critical workloads to the cloud, while leveraging the unique performance, scalability, and RAS capabilities of IBM Power Systems.

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**Figure 2.2.** A listing of tools to help you identify, progress, and implement successful cloud projects. (continued on next page)



## Sales Tools for Getting Started

- [Cloud Adoption Advisor](#): One of the biggest obstacles to utilizing cloud computing in your organization is knowing where to start and how to focus your efforts. This 20-minute assessment will help you identify and prioritize areas to achieve your cloud adoption goals.
- [Cloud Computing Asset Library](#): A comprehensive set of cloud computing materials including contact, brochures, flyers, education, and more.
- [IBM Cloud Sales Simulator](#)
- [Private Cloud Whiteboard](#): Use this module to tell your clients IBM's private cloud solution story in a consultative, interactive way. Show them how IBM private cloud solutions

## Sales Tools for Opportunity Identification & Deal Progression

- [Private Cloud for IBM Business Partners Quick Reference Guide](#): Private cloud represents revenue opportunities for IBM Business Partners including for example: advising clients on how best to proceed, assisting clients in extending their computing environments through virtualization, and selling and deploying private cloud solutions for clients.
- [Private Cloud Selling Scenarios](#): Regardless of where clients are on their journey, these three selling scenarios can help sellers demonstrate value at each entry point into the cloud.
- [Alinean Tool for Cloud](#)
- [Quick Proposal Process Templates](#): Looking for a quick way to deliver a high quality proposal? Techline has designed "Quick Proposal Process" (QPP) templates to assist you in preparing high-quality proposals for your sales opportunities. Simply download any QPP content document and customize it for your opportunity.

## Cloud Sales Proposal Templates and Content

- [IBM SmartCloud Entry for System x Sales Proposal](#): Sample proposal you can customize and use in connection with your proposing IBM product to end user customers.
- [IBM SmartCloud Entry for Power Systems Sales Proposal](#): Sample proposal you can customize and use in connection with your proposing IBM product to end user customers.
- [zEnterprise Starter Edition for Cloud Quick Proposal](#): Sample proposal you can customize and use in connection with your proposing IBM product to end user customers.

**Figure 2.2.** A listing of tools to help you identify, progress, and implement successful cloud projects. (continued from previous page)



vides an architect with the guidance to build a cloud solution from a business and operational perspective, as well as guidance on which products to use.

Reference configurations are a great way to help you build customized cloud solutions for your clients based on IBM technology. The Reference Configuration Center for Cloud (PW ID required for access) is a one-stop-shopping page on the PartnerWorld Techline Web site. It contains a valuable repository of reference configuration materials spanning virtualization foundation, entry cloud, and advanced cloud—for both hardware (System x and Power based) and software (system software and service management).

#### MORE ON THE WEB

- [Reference Configuration Center for Cloud](#)

## Cloud Client References

It is often helpful to make prospective customers aware of other businesses that have successfully implemented solutions based on IBM Cloud solutions. For this reason, IBM maintains a database of existing customer success stories, complete with company profiles, identified needs, solutions, and resulting benefits.

IBM Business Part-

ners can use these success stories with customers to advance the sell cycle.

#### MORE ON THE WEB

- [IBM Cloud Success Stories](#)
- [Rethink IT. Reinvent Business. Cloud Computing](#)
- [Cloud Computer Client References](#)



## Social Media

Social media is quickly growing in importance for businesses of all sizes. Whether you are already involved in social media or just getting interested, the “More on the Web” box provides some links that will be of interest to you.

### MORE ON THE WEB

- [IBM Cloud Computing Community](#)
- [IBM PartnerWorld communities](#)
- [Search Twitter for mentions of your business or competitors](#)
- [Google blog search results for IBM System x or BladeCenter](#)
- [Search blog for mentions of your business or competitors](#)
- [LinkedIn social network \(has an IBM Business Partner Group\)](#)
- [Use Twitter to Grow Your Business \(IBM Software Business Partner Blog\)](#)

## Content Syndication

IBM Business Partners who market and sell IBM offerings can improve their Web presence for FREE by leveraging syndicated Web content from ibm.com to their own Web sites. IBM has teamed with WebCollage, Inc. to provide the capability for Premier, Advanced, and Member level PartnerWorld participants to receive Web content dynamically delivered into their Web sites.

### MORE ON THE WEB

- [Web content syndication](#)

## “Know Your IBM”

IBM offers eligible Business Partners some “quick-learn training modules” under the name “Know Your IBM (KYI),” which



can help you learn what you need to know about IBM offerings. You can earn points by completing these modules and then redeem the points for merchandise at participating retailers. You can earn additional points for reporting sales through KYI.

#### MORE ON THE WEB

- [“Know Your IBM” training modules](#)

KYI is more general training that will give you a “high-level” view of IBM offerings. The roadmaps provided by IBM will guide you to more-detailed training opportunities.

## Competitive Information

IBM delivers unique value at every stage of cloud adoption without the disadvantages that come with competitors’ platforms. IBM is the only vendor who:

- Delivers industry leading performance benchmarks for reliability, scalability, and serviceability with eX5, POWER7, and mainframe
- Delivers virtualized solutions on the platform best able to run demanding production workloads; not a one-size-fits-all x86 approach
- Delivers solutions optimized for virtual environments with pre-integrated infrastructure, provisioning, and management; without locking customers into a proprietary protocol that limits future choice and interoperability.

IBM maintains a Web site called “Comp,” which is a world-wide portal for information that will help you win in competi-



tive marketing situations. It includes a searchable set of reports, presentations, and quick reference cards about the marketplace,

competitors, and competitive products. You will find materials developed by IBM as well as outside sources such as Gartner, IDC, DH Brown, and IDEAS International.

### MORE ON THE WEB

- [IBM “Comp” Web site](#)
- [IBM TechLine Competitive Center](#)
- [Cisco Cloud Competitive Overview](#)
- [Cloud Competitive Overview Covering Cisco and HP](#)
- [Cisco UCS Manager Short Overview](#) (not directly cloud related but an enabler for Cisco cloud)

## Help from IBM

Technical sales support from IBM provides Business Partners with extensive pre-sales support through the PartnerWorld program online via the Web and by voice. Voice support can be accessed via PartnerWorld Contact Services, the single point of entry to all key support organizations. PartnerWorld Contact Services provides access to Techline for hardware and software technical sales support, as well as Competeline for win strategies and competitive information.

- Remote solution design assistance/review
- Technical marketing assistance
- Product and promotion information
- Configuration assistance
- Competitive product information





- Sales strategy information
- Solution assurance assistance.

### **MORE ON THE WEB**

- [Local IBM Cloud leaders for Business Partners](#)
- [Contact Techline](#)
- [Technical Sales Library](#)
- [PartnerWorld technical resources and support](#)

# 3

## Cloud Offerings

IBM's focus in cloud computing is on helping clients build private clouds. Our end-to-end cloud portfolio delivers value that helps clients gain business benefit at any point in the journey to cloud: from Virtualization Foundation to Entry Cloud to Advanced Cloud. We and our Business Partners work with clients' existing infrastructure to create a cloud environment that allows them to grow with their business needs.

### MORE ON THE WEB

- [Cloud Computing info on PartnerWorld](#)
- [IBM Systems for Cloud Computing on IBM.com](#)
- [IBM SmartCloud info on IBM.com](#)
- [IBM SmartCloud Enterprise info on IBM.com](#)
- [Cloud Computing Reference Architecture presentation](#)

Products and offerings start at the infrastructure. The following sections contain offering descriptions, features, and benefits, all mapped to the three entry points in the cloud: Virtualization Foundation, Entry Cloud, and Advanced Cloud.

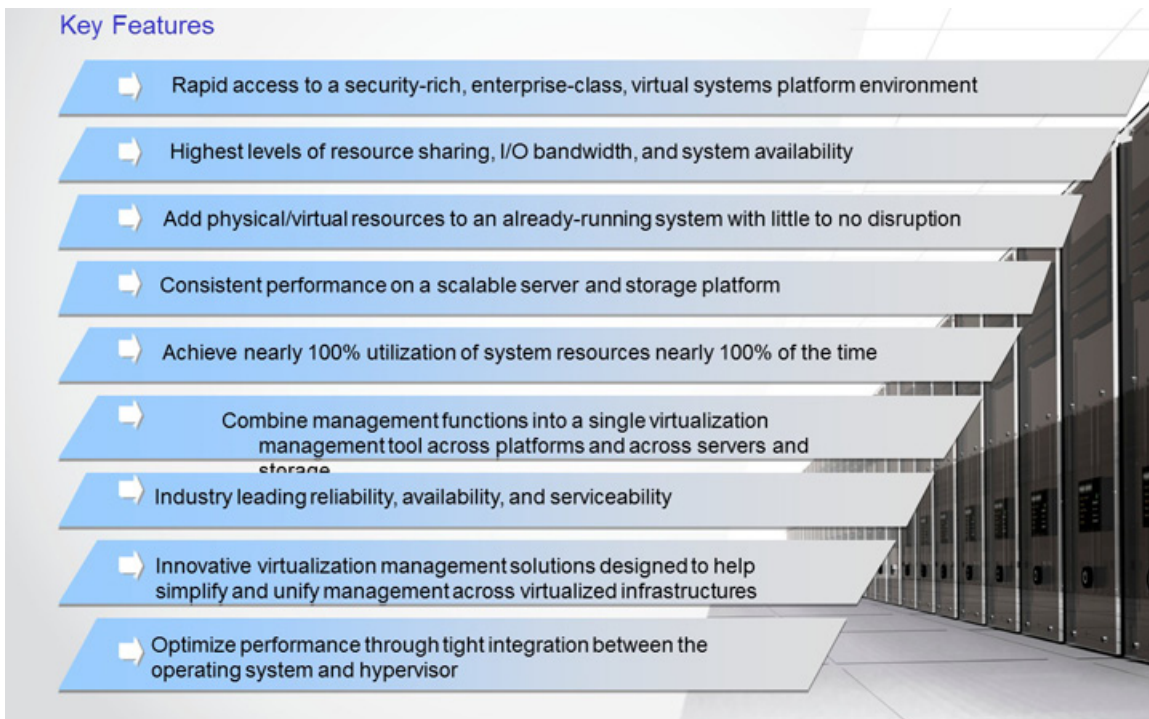
## XaaS—Why Infrastructure Matters

*Products and offerings start at the infrastructure—and infrastructure matters . . .*





XaaS is everything or anything as a service. It is a collective word to describe the multitude of service deployment methodologies (PaaS, SaaS, etc.). Whatever type of cloud deployment—private, public, or hybrid—and whatever the type of service being deployed—Infrastructure as a Service (IaaS), Software as a Service (SaaS), Platform as a Service (PaaS)—how the infrastructure is constructed and deployed, and what it is deployed upon, is of great concern ([Figure 3.1](#)).



**Figure 3.1.** Key infrastructure considerations in XaaS. Enterprises are looking for dependable, scalable, flexible, resilient hardware and software on which to build their private cloud.

Cloud deployments increase the need for security, resiliency, and 24/7 availability. Having the right systems, networking, middleware, and OS is a requirement. IBM's infrastructure solutions are designed to optimize the IT infrastructure to enable secure, scalable, flexible, and resilient infrastructures on which to build clouds.

We and our Business Partners work with our clients' preferred hardware platform to build a solution that they have the skills to support. Each platform offers unique, quantifiable benefits:

## System x

- IBM BladeCenter has no single point of failure, unlike the competition
- HS22V supports 35% more VMs per blade than standard competitor blades for better TCO
- More memory on eX5 architecture delivers 60% more VMs for the same license
- BladeCenter H provides 67%—250% more Ethernet uplink bandwidth than competitor blades, which is critical for VM movement (vMotion) and delivering workloads through the wire.

## Power Systems

- Enjoy Live Partition Mobility with VMs of any size or the entire system; easily move between POWER6 and POWER7 systems, providing flexibility to allocate work when/where it's required



- Scale seamlessly from 1/10 of a core to 256 cores, and use all resources of the host server, allowing easy, rapid response to workload spikes
- Make dynamic changes to any IT resource without taking the system/image/workload down.

## System z

- Achieve nearly 100% utilization of system resources nearly 100% of the time for industry-leading TCO
- Enjoy the highest levels of resource sharing, I/O bandwidth, and system availability
- Add hardware resources to an already running system without disruption.

## IBM Storage

- Thin provisioning for high degree of storage utilization
- External virtualization for maximum storage efficiency
- Best of breed ease of installation and management for quickest time to value
- True linear scalability of performance and capacity to accommodate business growth
- SAN Volume Controller: links the compute cloud to the existing SAN
- SONAS: Policy-driven, massively scalable



- XIV: Consistent performance and scalable storage platform
- Storwize V7000: Modular, cost effective, and powerful.

## Virtualization Foundation Offerings—the Integrate Stage

In this section, we cover offerings that address clients' requirement to “**build an efficient IT infrastructure**”—what is known as the **Integrate** stage.

Offerings at this stage are designed to help clients consolidate and virtualize their servers, storage, and networking infrastructure; implement systems management; and reap the benefits of reduced operating and capital expenditure.

### IBM BladeCenter Foundation for Cloud

Virtualizing your data center offers many potential benefits including reduced upfront capital and operating costs. Yet the challenges of installing and configuring a virtual environment can sometimes be overwhelming. Reduce complexity and risk with IBM BladeCenter Foundation for Cloud ([Figure 3.2](#)). It provides the flexibility needed to make this easy with preintegrated systems and a preloaded management system. Comprehensively designed with everything needed to deploy a high-performance, reliable and scalable fully virtualized data center, it comes with converged networking, virtualized servers, storage, and available start-up services to help you take the guesswork out of establishing a virtualized data center environment.

**Specifications**

Virtualization management and compute nodes	IBM BladeCenter H and HS22V blades with dual-socket Intel Xeon 5649 2.53 GHz 6-core processors, 96 GB memory
<b>Interconnects</b>	
Ethernet switches	10 Gb Ethernet switch for normal operations and 1 Gb Ethernet switches, for out-of-band management: <ul style="list-style-type: none"> <li>• Redundant BNT Virtual Fabric 10 Gb Switch Modules, 8 Gb SAN Switch</li> <li>• Redundant QLogic Virtual Fabric Extension Module</li> </ul>
Converged network adapter	10 Gb Virtual Fabric converged network adapter with support for FCoE included on each blade
<b>External Storage</b>	
Storage servers	IBM System Storage DS352
Storage expansion	EXP3000 storage expansion unit
<b>Software</b>	
Blade operating system	VMware vSphere 4.1 Enterprise Edition IBM System x3550 M3 preloaded with the following:
Server management node	• Systems Director 6.2 • Active Energy Manager • Storage Manager • ToolCenter
Server management node software	Microsoft Windows 2008 R2 Standard Edition 64-bit; IBM Systems Director including Active Energy Manager; BladeCenter Open Fabric Manager
Virtualization management node software	VMware vCenter Server 4.1 U
<b>Scalability</b>	
Small	4 compute blade server
Medium	14 compute blade server
Large	28 compute blade server
Expansion nodes	Additional compute blade servers or chassis with converged networking can be added after installation
Services	Hardware and software are preintegrated in the factory or from IBM Business Partners. Additional optional setup and other services from IBM Lab Services or Business Partner provide the initial setup in customer environment and provide on-site training. Optionally, IBM System Storage SAN Volume Controller implementation provided as an onsite service.

- [BladeCenter Foundation for Cloud info on IBM.com](#)
- [White Paper: IBM BladeCenter Foundation for Cloud vs. Cisco UCS](#)
- [BladeCenter Foundation for Cloud blog search](#)
- [BladeCenter Foundation for Cloud Twitter search](#)
- [Talk to BladeCenter Foundation for Cloud Expert: Srihari Angaluri](#)
- [Talk to BladeCenter Foundation for Cloud Expert: Marco Rengan](#)

**Figure 3.2.** IBM BladeCenter Foundation for Cloud at a glance (and links to more detail).

BladeCenter Foundation for Cloud can help you get up and running in days, not weeks. This solution is built by combining the strength of the IBM System x platform and the advantages of the latest BladeCenter capabilities in the virtualized environment—including great performance, unmatched reliability, rapid scaling, high resiliency, and leading network bandwidth capacity as well as industry-leading virtualization technology from VMware. BladeCenter Foundation for Cloud is available in multiple configuration sizes to meet your organization's specific needs.

Virtualized data centers built upon the BladeCenter Foundation for Cloud can help drive down your total cost of ownership by enabling you to more effectively manage and leverage your capital investments in IT assets. Based on BladeCenter systems, it provides a large network bandwidth capacity that exceeds competitor offerings and enables the rapid movement of virtual machine images, combined with a reduced cost of connectivity by up to 44 percent compared to traditional rack servers.

Here are some quick BladeCenter Foundation for Cloud facts:

- Comprehensive virtualization platform with converged networking, servers, storage, and management
- High return on investment platform, large virtual machine capacity in a simple-to-manage package
- Fast and easy to order and deploy with tested configurations





- Reduce complexity and risk with best practices high availability designed in
- Energizes new performance and technology into existing data centers and opens easy pathway to cloud.

## **IBM Power Systems with PowerVM**

Power is virtualization without limits. Businesses are turning to PowerVM virtualization to consolidate multiple workloads onto fewer systems, increasing server utilization and reducing cost ([Figure 3.3](#)). PowerVM provides a secure and scalable virtualization environment for AIX, i, and Linux applications built upon the advanced RAS features and leading performance of the Power Systems platform.

Here are some quick PowerVM highlights:

- Reduce IT costs by consolidating diverse workloads onto Power Systems platforms
- Optimize utilization of enterprise IT resources to improve service levels and boost ROI
- Minimize the complexity of systems administration and automate standard processes
- Rapidly scale to deliver maximum system resources to the most demanding mission-critical workloads
- Maximize availability by moving live workloads between servers to eliminate planned downtime.



**Express Edition** is designed for users looking for an introduction to more advanced virtualization features at a highly affordable price. With PowerVM Express Edition, users can create up to three partitions on the server, leverage virtualized disk and optical devices VIOS, and even try out the Shared Processor Pool.

**Standard Edition** is for users ready to get the full value out of their server, providing the most complete virtualization functionality for AIX, IBM i, and Linux operating systems in the industry. PowerVM Standard Edition is supported on Power Systems servers and includes features designed to allow businesses to increase system utilization, while helping to ensure applications continue to get the resources they need.

**Enterprise Edition** includes all the features of PowerVM Standard Edition plus two new industry-leading capabilities called Active Memory Sharing and Live Partition Mobility. Active Memory Sharing intelligently flows system memory from one partition to another as workload demands change. Live Partition Mobility allows for the movement of a running partition from one server to another with no application downtime, resulting in better system utilization, improved application availability, and energy savings. With Live Partition Mobility, planned application downtime due to regular server maintenance can be a thing of the past.

- [PowerVM resources on PartnerWorld](#)
- [PowerVM info on IBM.com](#)
- [eBook: IBM Power Systems Business Partner Guidebook](#)
- [PowerVM competitive info on COMP](#)
- [Competitive analysis vs VMWare](#)
- [Competitive analysis vs x86 based virtualization](#)
- [PowerVM Redbooks](#)
- [PowerVM developerWorks Wiki](#)
- [Virtualization Impact on UNIX and Linux Infrastructures](#)

**Figure 3.3.** IBM PowerVM editions (and links to more detail).

Complexity can work its way into any IT infrastructure, driven by the rollout of new applications and unanticipated change. However, adding servers in response to each de-



mand for new workloads drives the need for more data center space, power, cooling, network cabling, data storage, and administrative resources. Such complexity leads to inefficiency. The answer is virtualization, which allows organizations to consolidate multiple operating systems and software stacks on a single platform.

PowerVM provides the industrial-strength virtualization solution for IBM Power Systems servers and blades. Based on more than a decade of evolution and innovation, PowerVM represents the state of the art in enterprise virtualization and is broadly deployed in production environments worldwide by most Power Systems owners.

The IBM Power Systems family of servers includes proven workload consolidation platforms that help clients control costs while improving overall performance, availability, and energy efficiency. With these servers and IBM PowerVM virtualization solutions, an organization can consolidate large numbers of applications and servers, fully virtualize its system resources, and provide a more flexible, dynamic IT infrastructure. In other words, IBM Power Systems with PowerVM deliver the benefits of virtualization without limits.

PowerVM provides industrial-strength virtualization for AIX, IBM i, and Linux environments on IBM POWER processor-based systems. IBM Power Systems servers integrated with PowerVM technology are designed to allow clients to build a dynamic infrastructure that will help them to reduce costs, manage risk, and improve service levels.

PowerVM also offers a secure and resilient virtualization environment, built on the advanced RAS (reliability, avail-



ability, and serviceability) features, extreme scalability, and leadership performance of the IBM Power Systems platform, based on the industry-leading POWER6 and POWER7 processors.

Operating system versions supported include:

- AIX 5.3, AIX 6.1, and AIX 7
- IBM i 6.1 and IBM i 7.1
- Red Hat Enterprise Linux 5 and Red Hat Enterprise Linux 6 (when announced by Red Hat)
- SUSE Linux Enterprise Server 10 and SUSE Linux Enterprise Server 11.

Hardware platforms supported include IBM Power Systems with POWER5, POWER6, and POWER7 processors.

## **IBM System z with z/VM**

The z/VM hypervisor is designed to help clients extend the business value of mainframe technology across the enterprise by integrating applications and data while providing exceptional levels of availability, security, and operational ease.

z/VM virtualization technology is designed to allow the capability for clients to run hundreds to thousands of Linux servers on a single mainframe running with other System z operating systems, such as z/OS, or as a large-scale Linux-only enterprise server solution. z/VM V6.1 and z/VM V5.4 can also help to improve productivity by hosting non-Linux workloads such as z/OS,



z/VSE, and z/TPF on the same System z server or as a large-scale enterprise-server solution.

## IBM Systems Director with VMControl

Designed for innovation and transformation, IBM Systems Director ([Figure 3.4](#)) is the platform management foundation for achieving Smarter Systems. An integral component of the IBM Smarter Systems portfolio, IBM Systems Director enables integration with Tivoli, and third party management platforms, providing the building block for virtualization and integrated services management.

### MORE ON THE WEB

- [z/VM info on PartnerWorld](#)
- [z/VM competitive info on COMP](#)
- [z/VM info on IBM.com](#)
- [z/VM Case Studies and Customer References](#)
- [z/VM General Information Guide](#)
- [z/VM Redbooks](#)
- [Linux on System z with z/VM Quick Reference](#)

Here are some quick Systems Director highlights:

- Automate data center operations
- Unify the management of IBM servers, storage, and network devices
- Simplify the management of physical and virtual platform resources
- Reduce operational complexity and provide a view of the relationships and health status of IT systems

**Express Edition** provides an affordable foundation for systems management. It provides the integrated tools needed to efficiently visualize and communicate the relationships of physical and virtual systems that are discovered, monitor their health, define and receive threshold alerts, and update system firmware and operating environments. Built-in automation capabilities enable IT administrators to schedule updates and configuration changes to proactively avoid problems, and reduce the administrative burden of routine maintenance.

**Standard Edition** includes all of the capabilities of the Express Edition, and adds advanced deployment, monitoring, and management features under the same console. With Systems Director Standard Edition, you can create and deploy virtual images that encapsulate an operating environment as well as any middleware and applications, while automatically configuring the storage attached network. **Enterprise Edition** includes all of the capabilities of the Express and Standard editions plus adds tools for more comprehensive availability and performance management. It also provides more options for rapidly deploying and maintaining virtual server environments. With the Enterprise Edition, clients have the flexibility to deploy workloads in virtual machines as well deployment into a pool of virtual system resources across multiple physical servers (called “system pools”). System pools can be managed with the simplicity of managing a single system.

**VMControl** helps you gain more from infrastructure wide virtualization, with cloud-ready management. The combination of IBM Systems Director and VMControl allows you to reduce the total cost of ownership of your virtualized environment—servers, storage, and networks—by decreasing management costs, increasing asset utilization, and linking infrastructure performance to business goals. VMControl simplifies the management of virtual environments across multiple virtualization technologies and hardware platforms, freeing you from “silos of virtualization” and delivering enterprise-wide visibility and control. VMControl is a leading multi-platform virtualization management solution that is included with IBM Systems Director Editions, or available separately as a plug-in option for IBM Systems Director.

- [Systems Director info on PartnerWorld](#)
- [Systems Director info on COMP](#)
- [Systems Director info on IBM.com](#)
- [Systems Director detailed info on Infocenter](#)
- [IBM Systems Director Wiki](#)
- [Systems Director Redbooks](#)
- [Systems Director on FaceBook](#)

**Figure 3.4.** IBM Systems Director editions (and links to more detail).



- Obtain a single view of the actual energy usage throughout your data center.

IBM Systems Director provides systems management personnel with a single-point-of-control, helping reduce IT management complexity and cost. With IBM Systems Director IT personnel are able to optimize compute and network resources, quickly respond to business requirements with greater delivery flexibility, and attain higher levels of services management with streamlined management of physical, virtual, storage, and network resources.

Key IBM Systems Director capabilities include:

- Simple Lifecycle Management of your Platforms with intuitive usability and reduced complexity—IBM Systems Director eliminates layers of management duplication through a single, unified, view of the total IT environment, reducing system management complexity, cost, and time to problem resolution, while improving visibility, availability, and service. IBM Systems Director can help you dramatically reduce operational complexity and costs, significantly increase agility and efficiency, and optimize for maximum resource utilization.
- Integration—with Tivoli, and third party management platforms, provides the foundation for virtualization and integrated services management. With an extensive suite of available platform management tasks and automated tools, IBM Systems Director assists systems management personnel in increasing productivity, resulting in improved responsiveness and service.

By integrating management of your IT operations with your business processes, Systems Director can help you meet your business goals and objectives.

## IBM System Storage SAN Volume Controller

IBM System Storage SAN Volume Controller (SVC) (Figure 3.5) is a storage virtualization system that enables a single point of control for storage resources to help support improved business application availability and greater resource utilization. The objective is to manage storage resources in your IT infrastructure and to make sure they're used to the advantage of your business—and do it quickly, efficiently, in real time, while avoiding increases in administrative costs.

SVC is designed to deliver the benefits of storage virtualization in environments from large enterprises to small businesses and midmarket companies.

Here are some quick SAN Volume Controller facts:

- Web-based storage administration from a single point of control simplifies management
- Move data among virtualized storage systems without disruption to applications
- 10 Gbps iSCSI server attachment supports high performance at lower cost
- IBM System Storage Easy Tier optimizes solid-state storage deployments simply and automatically





### Specifications

Shared SMP processor	Intel Xeon 5600 Series quad core
Processor memory for cache	24 GB per engine
Host adapter interfaces	Four 8 Gbps Fibre Channel Two 1 Gbps iSCSI Two 10 Gbps iSCSI (optional)
Number of disk drives	Up to four SSD devices per SVC node
Maximum storage capacity	Internal: Up to 1.2 TB raw SSD capacity per I/O group or up to 4.8 TB in an 8-node cluster External: Up to 32 PB usable capacity
Internal SSD sizes	146 GB
RAID levels for internal SSD	0, 1, 5, 6, and 10

- [SAN Volume Controller Sales Kit on PartnerWorld](#)
- [SAN Volume Controller info on PartnerWorld](#)
- [SAN Volume Controller info on IBM.com](#)
- [SAN Volume Controller interactive demo](#)
- [SAN Volume Controller competitive info on COMP](#)
- [SAN Volume Controller blog search](#)
- [SAN Volume Controller Twitter search](#)

**Figure 3.5.** IBM System Storage SAN Volume Controller (and links to more detail).

- Non-disruptive scalability from the smallest configuration to the largest
- Stretched configurations support high availability and data mobility between data centers

- Fresh new user interface based on IBM XIV systems helps speed deployments and improve productivity.

## IBM Storwize V7000 Unified

The IBM Storwize V7000 Unified Midrange Disk System ([Figure 3.6](#)) is a virtualized storage system that complements virtualized server environments and provides unmatched performance, availability, advanced functions, and highly scalable capacity never seen before in midrange disk systems.

Storwize V7000 Unified is a powerful midrange disk system that has been designed to be easy to use and enable rapid deployment without additional resources. Storwize V7000 Unified is virtual storage that offers greater efficiency and flexibility through built-in solid state drive (SSD) optimization and thin provisioning technologies. Storwize V7000 Unified advanced functions also enable non-disruptive migration of data from existing storage, simplifying implementation and minimizing disruption to users. Storwize V7000 Unified also enables you to virtualize and reuse existing disk systems, supporting a greater potential return on investment (ROI).

Here are some quick Storwize V7000 facts:

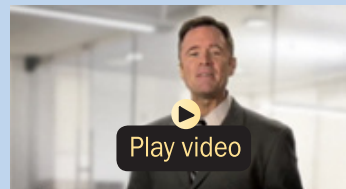
- Delivers sophisticated enterprise-class storage function for businesses of all sizes
- Supports your growing business requirements while controlling costs
- Provides up to 200 percent performance improvement with automatic migration to high-performing SSDs



### Specifications

Host interface	SAN-attached 8 Gbps Fiber Channel (FC) host connectivity, 1 Gbps iSCSI and optional 10 Gbps iSCSI, NAS-attached 10 Gbps Ethernet
User interface	Graphical User Interface (GUI)
Supported drives	3.5-inch disk drives: • 2 TB, 3 TB 7.2k Near-Line SAS disk 2.5-inch disk drives: • 146 GB, 300 GB 15k SAS disk • 300 GB, 450 GB, 600 GB 10k SAS disk • 1 TB 7.2k Near-Line SAS disk 200 GB, 300 GB, 400 GB 2.5" E-MLC (enterprise-grade multilevel cell) solid state drive (SSD)
RAID levels	RAID-0, -1, -5, -6, -10
Maximum drives supported	240 per control enclosure; 480 per clustered system
Fans & power supplies	Fully redundant, hot-swappable
Rack support	19" industry standard
Management software	IBM Storwize V7000 Software
Cache per controller/ cache total	8 GB/16 GB/32 GB
Advanced features (standard)	IBM System Storage Easy Tier, IBM FlashCopy, Thin Provisioning
Advanced features (optional)	Remote mirroring, external virtualization, IBM FlashCopy Manager, IBM Tivoli Storage Productivity Centre Midrange Edition, Tivoli Storage Manager, Tivoli Storage Manager FastBack, IBM Systems Director, IBM Active Cloud Engine
Replication services	FlashCopy, FlashCopy Manager, Metro Mirror (Synchronous), Global Mirror (Asynchronous) local and asynchronous remote file-based replication
Warranty	Hardware: three-year limited warranty, customer-replaceable units and on-site service, next business day 9x5, service upgrades available Software: software maintenance agreement available

- [Storwize V7000 portal on PartnerWorld](#)
- [Storwize V7000 Express details on IBM.com](#)
- [Storwize V7000 competitive info on COMP](#)
- [Storwize V7000 blog search](#)
- [Storwize V7000 Twitter search](#)
- [FastBack for Storwize V7000](#)



IBM Storwize V7000 overview (6:27)

**Figure 3.6.** IBM Storwize V7000 Midrange Unified at a glance (and links to more detail).

- Consolidates block and file storage in a single system for simplicity and greater efficiency
- Enables near-continuous availability of applications through dynamic migration
- Supports faster and more efficient data copies for online backup, testing, or data mining
- Offers flexible server and storage management.

## IBM XIV G3 Storage System

The IBM XIV Storage System ([Figure 3.7](#)) is a groundbreaking, high-end, open disk system designed to support business requirements for a highly available information infrastructure. The XIV architecture is a grid of standard Intel and Linux components connected in any-to-any topology by means of massively paralleled, non-blocking Gigabit Ethernet. This architecture is designed to support outstanding enterprise-class reliability, performance, and scalability. IBM XIV is a core component of the IBM Information Infrastructure and can help you address your needs for data availability, security, compliance management, and information retention.

Here are some quick XIV Storage System highlights:

- A revolutionary, high-end, disk storage system with a virtualized grid architecture designed to eliminate the complexity of storage administration and make managing storage easy
- High reliability and data availability via active-active N+1 redundancy of all key components, partition mirroring, unique self-healing, rapid rebuild times, and non disruptive upgrades



- Unmatched total cost of ownership and environment-friendly attributes, with dramatic efficiencies in capacity, power, and space
- Enterprise-level, consistent performance through massive parallelism, disk utilization, and unique caching mechanisms



- [XIV details on PartnerWorld](#)
- [XIV Sales Kit on PartnerWorld](#)
- [XIV details on IBM.com](#)
- [XIV competitive info on COMP](#)
- [XIV configuration and functionality table](#)
- [XIV blog search](#)
- [XIV Twitter search](#)

**Figure 3.7.** IBM XIV Storage System at a glance (and links to more detail).

- Open and integrated system, offering strong interoperability with open system servers and technologies.

## Entry Cloud Offerings—the Automate Stage

In this section, we cover offerings that build upon their virtualized infrastructure to “**improve speed and dexterity**” with increased use of automation—the **Automate** stage.

Offerings at this stage are designed to help clients build on an integrated foundation to improve speed and dexterity and reduce application development cycles, simplifying administration through self-service provisioning and automated IT service deployment.

### IBM SmartCloud Entry for System x

IBM SmartCloud Entry for System x (formerly IBM Starter Kit for Cloud—x86 Edition) is an entry-level software offering that takes your virtualized environment from “cloud-ready” to “cloud.” Users can request and provision an environment quickly through an easy-to-use Web-based interface. IT managers can monitor and manage this environment for improved efficiency and utilization of the data center. IBM SmartCloud Entry for System x works with the IBM BladeCenter Foundation for Cloud virtualization platform in addition to select IBM System x and BladeCenter servers.

Here are some quick IBM SmartCloud Entry for System x facts:

- Cloud software stack delivers fast time to value



## MORE ON THE WEB

- [SmartCloud Entry for System x info on PartnerWorld](#)
- [SmartCloud Entry for System x info on IBM.com](#)
- [SmartCloud Entry for System x competitive info on COMP](#)
- [Twitter search results for IBM SmartCloud Entry on System x](#)
- [Google blog search results for IBM SmartCloud Entry on System x](#)

- Simple to deploy, easy to use, works with existing infrastructure
- Easily integrates with BladeCenter Foundation for Cloud
- Optimizes the data center with increased automation, structured security, comprehensive management, and resource sharing
- Scales to improve quality and meet demand for continuous availability
- Offers metering tools to develop usage and billing models to track ROI.

## IBM SmartCloud Entry for Power Systems

IBM SmartCloud Entry for Power Systems (formerly IBM Starter Kit for Cloud on Power Systems) is an entry private cloud offering that is simple to deploy and easy to use. It works with a client's existing Power Systems infrastructure, enabling data center managers to quickly deploy self-service provisioning of virtualized workloads with a simple interface

that provides oversight while increasing IT efficiency and lowering administration costs.

IBM SmartCloud Entry for Power Systems is a solution that builds upon IBM PowerVM virtualization and IBM Systems Director VMControl. It enables rapid scalability by allowing additional servers or blades to be added to the cloud infrastructure. It also includes basic workload metering to support a “pay-per-use” business model. Clients can also progress from SmartCloud Entry for Power Systems to IBM’s more advanced cloud offerings such as IBM Service Delivery Manager. SmartCloud Entry for Power Systems allows Power Systems clients to quickly and easily start the transition to a cloud-based infrastructure and prove the benefits of a cloud delivery model.

Here are some quick SmartCloud Entry for Power Systems facts:

- Self-service portal for workload provisioning (create/replicate assets, manage deployments, and monitor activity)
- Virtualized image management with library for standardized images

## MORE ON THE WEB

- [SmartCloud Entry for Power Systems info on PartnerWorld](#)
- [SmartCloud Entry for Power Systems info on IBM.com](#)
- [Announcement letter: SmartCloud Entry for Power Systems](#)
- [SmartCloud Entry for Power Systems competitive info on COMP](#)
- [Twitter search results for IBM SmartCloud Entry for Power Systems](#)
- [Google blog search results for IBM SmartCloud Entry for Power Systems](#)





- Administrative controls for secure operation of a persistent cloud
- Basic metering (automated collection of resource usage metrics), authentication, and authorization.

## **IBM zEnterprise Starter Edition for Cloud**

IBM zEnterprise Cloud Starter Edition is an entry-level cloud offering for deploying an Infrastructure as a Service Cloud delivery model for Linux on System z environments. It enables the provisioning of Linux on System z images under z/VM using Tivoli Provisioning Manager. The offering includes provisioning software and IBM lab services to provide the client with implementation services.

IBM zEnterprise Starter Edition for Cloud is an entry-level offering that extends Linux on System z into a highly available and secure private cloud. It features basic server image management and service level monitoring, deployment of standardized server images specific to a business's need, and is highly automated and consistent in deployment. The Starter Edition offers the following features competitively priced for mid/large-scale cloud deployments: advanced automation and optional monitoring, which dramatically speeds new service provisioning (measured in minutes) reducing data center operations costs, high RAS and efficient virtualization to ensure multi-tenancy cloud deployments which are continuously available, a very secure platform (EAL 5) protecting customer and corporate data in a shared cloud infrastructure, and instant cloud capacity growth on-demand with a pay-as-you-grow model.



## MORE ON THE WEB

- [zEnterprise Starter Edition for Cloud info on PartnerWorld](#)
- [zEnterprise Starter Edition for Cloud info on IBM.com](#)
- [zEnterprise Starter Edition for Cloud competitive info on COMP](#)
- [Twitter search results for zEnterprise Starter Edition for Cloud](#)
- [Google blog search results for zEnterprise Starter Edition for Cloud](#)

Here are some quick zEnterprise Starter Edition for Cloud facts:

- Provides an easy-to-deploy, highly scalable, highly secure, highly resilient offering for rapidly deploying an IaaS Cloud on the System z platform
- Ensures success in deploying an automated solution for provisioning zLinux under z/VM.

## IBM Scale Out Network Attached Storage (SONAS) with IBM Active Cloud Engine

IBM Scale Out Network Attached Storage (SONAS) is designed to embrace and deliver cloud storage in the petabyte age. SONAS can meet today's storage challenges with quick and cost effective IT-enabled business enhancements designed to grow with unprecedented scale ([Figure 3.8](#)).

SONAS can also deliver storage services that make the supporting technology almost invisible. It allows applications and services to be uncoupled from the underlying infrastructure, enabling businesses to adjust to change quickly. As a



**Specifications**

Host interface	CIFS, NFS, FTP, HTTP
Supported drives	SAS: 600 GB (15K rpm), 900 GB (10K rpm) Near-line SAS: 2 TB , 3 TB (7200 rpm)
RAID levels	RAID 6
Maximum drives supported	7200
Fans & power supplies	Fully redundant, hot-swappable
Rack support	42 Electronics Industries Alliance EIA units
Management software	SONAS software
Warranty	One year 9 × 5 next business day, upgrade to 24 hour × 7 days a week × 4 hour response

- [SONAS details on PartnerWorld](#)
- [SONAS details on IBM.com](#)
- [SONAS competitive info on COMP](#)
- [SONAS blog search](#)
- [SONAS Twitter search](#)

**Figure 3.8.** IBM Scale Out Network Attached Storage (SONAS) at a glance (and links to more detail).

result, SONAS can easily integrate with your organization's strategies to develop a more dynamic enterprise.

Here are some quick IBM SONAS facts:

- Provides extreme scalability to accommodate capacity growth
- Enables ubiquitous access to files from across the globe quickly and cost effectively with IBM Active Cloud Engine
- Achieves operational efficiency with automated, policy-driven tiered storage
- Lowers TCO by up to 40 percent with automated life-cycle management and migration to tape
- Satisfies bandwidth hungry applications with scale-out performance
- Supports both random access and streaming workloads
- Enables disaster recovery and business continuity.

## **IBM SmartCloud Provisioning**

IBM SmartCloud Provisioning provides businesses with a true infrastructure-as-a-service (IaaS) cloud, reducing costs and providing a highly scalable, rapid deployment environment for running applications and reacting to dynamic changes in user resource demands. It works behind the scenes to prevent service outages by automatically working around hardware failures and supporting in-place adding, removing and upgrading of physical servers—all without configuration changes. SmartCloud Provisioning also provides an easy first step toward cloud computing, providing a hardware- and



hypervisor-agnostic approach and integrating with other IBM products to provide a comprehensive service management infrastructure.

SmartCloud Provisioning is a breakthrough entry-level platform that allows companies to get cloud-enabled within a few hours. It allows standardization of IT processes for new levels of operational efficiency, and it serves as a foundation for adding advanced cloud capabilities, including cloud orchestration, as needs change in the future.

#### MORE ON THE WEB

- [SmartCloud Provisioning details on PartnerWorld](#)
- [SmartCloud Provisioning details on IBM.com](#)
- [SmartCloud Provisioning competitive info on COMP](#)
- [SmartCloud Provisioning blog search](#)
- [SmartCloud Provisioning Twitter search](#)

With SmartCloud Provisioning, IT organizations can rapidly implement the specific type of cloud environment they need, whether small, medium, or large. It provides rapid deployment of virtual systems as well as network and storage virtualization with preconfigured images that help organizations get the cloud up and running quickly.

Companies can then start taking immediate advantage of the increased flexibility and performance that cloud computing offers. Accelerating the delivery of computing resources in turn speeds the delivery of innovative products and services, enabling companies to respond faster to market challenges and opportunities.

This low-touch private cloud environment offers near-zero downtime with automated capabilities that can recover from storage or compute node failures while the cloud continues

to run. Patches and upgrades can be applied to the cloud without taking it down. New tasks such as power/restarts and configuration settings can be performed within minutes through an intuitive interface. And highly fault-tolerant parallel deployment of virtual machines allows organizations to improve performance against the most stringent service level agreements.

Here are some quick SmartCloud Provisioning facts:

- Improve time to value with a reliable, non-stop cloud capable of automatically tolerating and recovering from software and hardware failures
- Reduce IT costs and complexity by enabling self-service requests and automating operations
- Create rapid scalability to meet business growth with near-instant deployment of hundreds of virtual machines.

## IBM System Networking Products

The combination of powerful systems for virtualization and converged networks will greatly optimize data center efficiency. However, it requires a closer collaboration in the entire solution stack, including network switching. For years, IBM has been a trusted vendor for enterprise-class servers, and we are now pleased to offer a broad range of networking switches.

### MORE ON THE WEB

- [Overview of IBM System Networking on IBM.com](#)



Networking is an essential element in a dynamic infrastructure and an integral part of the strategy to reduce costs, improve services, and manage risk. Organizations must continue to focus on server and storage hardware optimization, technology enhancements, service management improvement, security, resiliency, and integration projects between IT and extended business assets. However, it is important to realize that the network is essential to support these initiatives and to ensure that the maximum benefit is derived.

**MORE ON THE WEB**

- [System networking info on PartnerWorld](#)
- [System networking info on IBM.com](#)
- [System networking Sales Kit](#)
- [System networking RackSwitch Sales Kit](#)

Five important trends are reshaping today’s data center networks:

1. Expanding system virtualization (e.g., VMware, Microsoft’s Hyper-V, Xen, and KVM): Organizations of all sizes are enhancing their IT agility through the use of cloud-service architectures to enable rapid deployment of new services and to support rapid growth in any particular service. Additionally, organizations are improving their return on their IT investments through the use of virtualization to support server consolidation. It has been estimated that, in distributed computing environments, up to 85% of computing capacity sits idle. Server virtualization and consolidation, however, also consolidates network traffic, resulting in very different network traffic characteristics—driving up bandwidth requirements, starting at the server adapters, and continuing through network access and into the network core.

2. **Increasing Virtual Machine (VM) mobility:** Once virtualized systems have been implemented, it is only natural to want to take advantage of VM-mobility capabilities (such as VMware's VMotion) for higher service availability and performance. Because of the way IP routing protocols work, however, in order for a VM to successfully move from one system to another, both systems must be on the same IP "subnet," driving the need for fundamental changes to data center network designs—also called "flatter" networks. In addition, however, many organizations use Virtual LANs (VLANs), Access Control Lists (ACLs), and Quality of Service (QoS) settings in the network to enforce systems security and improve service performance. Consequently, when a VM moves, the network must be "VM aware" in order to move those network settings along with it.
3. **Growth in distributed application models:** Network traffic to and from transaction-based applications historically flowed into the data center directly to the server that would respond to the transaction and the response would flow straight back to the requester (often called "North/South" traffic). With today's distributed application environments such as Web services, service oriented architectures, and scale-out application environments, however, a single request can result in many sub-requests flowing back and forth between back-end systems ("East/West" traffic). It has been estimated that today, 80% or more of data center traffic is East/West traffic. And, because that traffic is between computing systems, the overall responsiveness of the IT service is extremely sensitive to network latency. Consequently, in order to deliver





satisfactory IT services, organizations must focus on very-low-latency switching at the server network edge switches.

4. Pressure to support network convergence: Storage networks have grown to where the costs of running separate networks are significant—and an attractive target for IT operational cost-cutting initiatives. Likewise, “lossless” Ethernet technologies (e.g., data center bridging standards) are getting to the point that they can provide a viable converged alternative to separate storage and data networks. And, with the pressures to increase bandwidths—for both storage and data network—being driven by virtualization and consolidation, storage and data network convergence seems inevitable. Network upgrades, particularly for the server network edge switches, will be required in order to deliver those lossless Ethernet capabilities.
5. Increasing energy costs and constraints: Data center energy costs are significant and, in some cases, constraints on available power have prevented organizations from meeting growing IT service requirements. It has been estimated that networking equipment uses about one-sixth of a data center’s overall power requirements, making energy efficiency a key requirement for all new networking equipment. In addition, many data centers are adopting “Hot-Aisle/Cold-Aisle layouts” in order to improve cooling efficiency; consequently, it is important to ensure that the air flow of networking switches matches that of the rest of the systems in the rack.

Seeing that those trends all intersect at the data center server-access switches and recognizing that those switches can either facilitate or inhibit success in responding to those trends, IBM has made a significant investment in its System Networking portfolio. IBM offers:

- A portfolio of server-access switches from IBM System Networking (2010 BNT acquisition) with 1 Gb, 10 Gb, and 40 Gb Ethernet, delivering:
  - Substantially better price/performance
  - Virtual machine awareness through VMready technology
  - Low-latency
  - Lossless Ethernet support
  - Industry-leading energy efficiency
- Data center core and wide-area network access switches
- Switches supporting Fiber Channel Over Ethernet and connectivity to the leading Fiber Channel SANs
- Campus networking switches with robust support for Power Over Ethernet (for devices such as IP telephones, wireless access points, and security cameras).

## Advanced Cloud Offerings—the Orchestrate Stage

In this section, we cover offerings for clients who want to deliver on the promise of cloud and “**deliver IT without boundaries**” through the use of advanced technologies such as orchestration. This is the **Orchestrate** stage.



Offerings at this stage provide seamless orchestration of heterogeneous servers, storage, and networks by bringing diverse resources under a single point of management control, and deliver a service management platform with automated IT service deployment, full lifecycle management, metering, and chargeback.

## Tivoli Service Automation Manager (TSAM)

Tivoli Service Automation Manager assists in the automated provisioning, management, and deprovisioning of cloud resources, comprised of hardware servers, networks, operating systems, middleware, and application-level software. Several virtualization environments (hypervisors) are supported in the process of individual virtual server provisioning.

Tivoli Service Automation Manager also provides management support for services consisting of a specific set of middleware, in combination with AIX and Linux (System x and System z). IBM provides many automation and best-practice service definition templates, including specialized job plans or workflows. Tivoli Service Automation Manager makes use of the entire spectrum of Tivoli process automation engine tools.

### MORE ON THE WEB

- [Tivoli Service Automation Manager info on PartnerWorld](#)
- [Tivoli Service Automation Manager info on IBM.com](#)
- [Tivoli Service Automation Manager competitive info on COMP](#)
- [Twitter search results for Tivoli Service Automation Manager](#)
- [Google blog search results for zEnterprise Starter Edition for Cloud](#)



Tivoli Service Automation Manager helps you define and automate services that are lifecycle oriented, for example, a service to establish and administer an IT server network for a limited period of time, to satisfy increased demand for processing capacity or to serve as a test environment. Predefined service definitions determine the overall framework for the services. The actual service instances are requested using these service definitions. The Self-Service Virtual Server Management environment is used by cloud users to request provisioning and manage the virtual environments.

Here are some quick Tivoli Service Automation Manager facts:

- Lowers cost of service delivery through automation and reduced skill requirements
- Deploys IT services faster to meet the increased need for development, test, preproduction, and production systems
- Delivers a higher degree of standardization and automation for deployment and management of IT services while reserving skilled IT staff members' time for other high-value tasks
- Provides traceable processes and approval routings to serve as audit trails, and integrates with process governance
- Offers an integrated management capability that addresses the lifecycle changes of a cloud service
- Provides adaptable and automated best practices for building and managing IT infrastructures



- A structure built upon Tivoli's service management platform, leveraging existing investments in service management capabilities.

## IBM Service Delivery Manager (ISDM)

IBM Service Delivery Manager (ISDM) is a pre-integrated software stack, deployed as a set of virtual images that automate IT service deployment and provide resource monitoring and cost management in a cloud. IBM Service Delivery Manager is a cloud management platform that enables the data center to accelerate the creation of service platforms for a wide spectrum of workload types with a high degree of integration, flexibility, and resource optimization.

### MORE ON THE WEB

- [Service Delivery Manager info on PartnerWorld](#)
- [Service Delivery Manager info on IBM.com](#)
- [Service Delivery Manager competitive info on COMP](#)
- [Twitter search results for IBM Service Delivery Manager](#)
- [Google blog search results for IBM Service Delivery Manager](#)

Here are some quick Service Delivery Manager facts:

- A self-service portal interface for in-advance computing reservations of virtualized environments, including storage and networking resources
- Automated provisioning and de-provisioning of resources
- Real-time monitoring of physical and virtual cloud resources



- Integrated usage and accounting chargeback capabilities that can help system administrators to track and optimize system usage
- Built-in high availability of the cloud management platform
- Prepackaged automation templates and workflows for most common resource types
- Can leverage existing hardware for the cloud infrastructure.

## **IBM System z Solution Edition for Cloud Computing**

The Solution Edition for Cloud Computing is an aggressively priced integrated solution offering for transitioning to cloud computing. It includes IBM System z hardware, Tivoli software and IBM services to deliver a cloud computing foundation that can be used to accelerate the business value of workloads.

This solution is designed for the customer who is seeking the benefits of cloud computing, such as the promise of cost reduction and operational efficiency. Operational efficiency is delivered through the standardization, automation, and virtualization of services.

Many enterprises are not prepared to assume the risk associated with adopting workloads from a public cloud and have focused on harnessing the value of cloud computing behind their firewall. This solution creates private cloud service automation and management capability on System z, enabling enterprises to harvest the efficiencies and virtualization capability provided by the platform.



With this offering, IBM can transform new or existing mainframe resources into cloud computing infrastructure that can be used to provide value add services to the enterprise.

The Solution Edition for Cloud Computing provides a foundational framework for cloud computing that can be used as the foundation for broad workload optimized cloud offerings, such as virtual Linux infrastructure services, application development testing platform services, and business critical software services.

### MORE ON THE WEB

- [Solution Edition for Cloud info on PartnerWorld](#)
- [Solution Edition for Cloud competitive info on COMP](#)
- [Solution Edition for Cloud info on IBM.com](#)
- [Solution Edition for Cloud Redbooks](#)
- [Solution Edition for Cloud blog search](#)
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## About the Editor

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Jim Hoskins is the founder of Maximum Press, a premier publisher of books, ebooks, and rich media that help businesses apply technology profitably. Jim has been involved with computer technology design, implementation, and education for over 30 years. He is the author of many articles and books covering a wide range of technology and Internet business topics. Jim spent a decade with IBM designing computer systems and directly helping businesses of all sizes design and implement real-world solutions. He is the author/editor of the popular *Exploring IBM* series, which has sold over 350,000 copies in 12 languages. Jim has a degree in electrical engineering from the University of Florida and resides in Gulf Breeze, Florida, with his wife and five children. You can reach Jim via email at [jimh@maxpress.com](mailto:jimh@maxpress.com).