For the last several years, Cloud computing has been transforming the ways we do business.

Thanks to new Cloud architectures, which in turn rely on the ubiquity of the Internet, the information technologies on which we depend have become less costly, more accessible, and easier to use than ever before.

Cloud computing is quickly bringing revolutionary mobility to our working and personal lives, and it offers small businesses an unparalleled opportunity to use information technology to compete effectively with much larger, more powerful rivals.

Quest wants you to know about both the benefits of Cloud computing and the challenges you'll encounter as you seek to achieve those benefits ...
Cloud computing addresses an old problem built into traditional data centers: Their silo-like architectures, where too often applications, data, and storage devices can’t interact.

This has produced “you-can’t-get-there-from-here” IT environments burdened by wasted resources and complex management hassles that often lead to risky administrative lapses. According to a Cisco forecast, data center complexity will increase fivefold between 2010 and 2015.¹

The result: IT infrastructures that are too unwieldy, too expensive, and too slow at a time when agility and responsiveness are essential for success.

So what exactly is Cloud computing?

Plenty of descriptions of cloud computing have been bandied about over the last several years. The one from the National Institute of Standards and Technology², has become the most definitive:

“A model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.”

Cloud computing has five essential characteristics that distinguish it from other ways of building and operating information technology infrastructures:

1. **On-demand service** confers the ability to provision, monitor, and manage computing resources as needed without the help of human administrators.
2. **Broad network access** enables computing services to be delivered over standard, ubiquitous networks (like the Internet) and heterogeneous devices.
3. **Rapid elasticity** makes it possible to quickly and automatically scale out and scale in IT resources as needed.
4. **Resource pooling** means IT resources can be shared in non-dedicated ways across multiple applications and/or tenants.

**Getting the Most from Cloud Computing**

A three-part Executive Brief series from Quest

Cloud computing is quickly changing the ways we do information technology — and the ways we do business. Under the hood, Cloud computing is arcane and complicated and requires deep expertise. But when it’s done right, it delivers sleek, simple-to-use, and very cost-efficient IT that can smooth business processes and make your enterprise more competitive.

To get the most from Cloud computing, you need to know something about it, which is why Quest offers three complementary Executive Briefs:

1. **The Benefits and Challenges of Cloud Computing** (this Brief)
2. **The Value of Shaping Your Own Cloud**
3. **5 Cloud Computing Best Practices**

All three of these Executive Briefs are available at [www.questsys.com](http://www.questsys.com) — or for the asking when you call 800.326.4220.

And if you have any questions about Cloud computing, please don’t hesitate to contact us. We’re here to help you.
5 Measured services means IT resource utilization can be tracked in terms of each application and/or tenant, generally for purposes of billing or chargeback.

These five capabilities add up to more efficient, less costly, easier to manage, and easier to deliver information technology — so very sophisticated technology can be rented to even the smallest enterprises at affordable prices.

That’s because Cloud computing infrastructures are built on a new kind of IT architecture based on virtualization, which enables servers to run many more workloads than traditional architectures allow. Moreover, Cloud architectures integrate server, network, and storage access resources into a physically-distributed, centrally-managed system.

Cloud computing leverages the abstraction provided by virtualization of the application or service layer from the underlying infrastructure or resource layer to provide a much more scalable, efficient, and elastic model for delivering IT services. This new model ...

- Abstracts the configuration, connectivity, and personality of server and I/O resources from the underlying infrastructure so these can be automatically programmed,
- Unifies model configuration with system resources to consistently align policy, server personality, and workloads,
- Decouples scale from complexity and accelerates reliable, secure, end-to-end provisioning and migration support, and
- Implements a united fabric technology that reduces costs by eliminating need for multiple sets of network adapters, cables, and switches.

Cloud computing: By any measure, a game-changer

The potential of Cloud computing is unquestionably a game changer. Cloud providers make much more efficient use of servers, and the right Cloud providers operate Cloud infrastructures that boost IT performance while containing costs.

By 2015, the number of workloads per installed Cloud server will reach 7.8 — but the number of workloads per traditional server will be just 2.0

Because applications are hosted on centralized virtual servers in a Cloud data center …

- Each department or end-user no longer needs their own copy of the app,
- There’s just one version of the app, designed to be sufficiently flexible and customizable so all can use it on a variety of devices, and
- Services are easily scalable, more secure, and more reliable.

Applications can be quickly and automatically provided on demand wherever they’re needed, so …

- IT resources are optimized, since automation built into Cloud infrastructures improves visibility and security and reduces IT management burdens,
- The entire IT environment is more responsive and flexible without adding work or cost,
- Access to resources improves without new implementation/deployment risks, and
- End-users and their departments — as well as trusted partners — can be networked far more cost-effectively, regardless of location, via a standardized platform that enables integration and process automation between internal departments and partners.
Cloud cost efficiencies abound

When hosted Cloud services replace on-premise IT operations, the expense shifts from the capital budget to the operating budget. And, of course, significant cost savings are achieved (and passed on by Cloud services providers) because IT resources can be securely polled and shared. The result:

- You pay only for what you use.
- Your total cost of ownership (TCO) plunges.
- Your return on investment (ROI) and time-to-value accelerate.

One Quest client recently reported that he had cut his overall IT spend by 66 percent with a customized Cloud. He has also reduced his maintenance costs by 99 percent — yes, you read that right: He reduced his maintenance costs by 99 percent. Plus, he has seen a year-over-year CapEx savings of $200,000.

And best of all — his IT staff is now focused, as he says, “where IT should” — on supporting his company’s end-users.

Security improves in the Cloud (yes, really)

The centralization of apps, data, and management that’s an essential part of well-conceived and well-managed Cloud environments also helps make them more secure.

Why? Because security policy is easier to enforce, threats to apps and data are easier to detect and address.

Since Cloud data and apps are centralized in a data center, it’s actually easier (as compared to traditional siloed IT infrastructures) to establish effective security policy, monitor compliance, and intervene quickly and often preventatively when there are issues. And since no data is stored on end-user devices, if a device fails or is lost or stolen, data remains safe and secure.

Note, too, that host Cloud services providers invest in and maintain leading-edge security technologies and capabilities, and employ experienced security experts — something that sometimes lapses in organizations’ IT departments, where there can be pressure to control costs and meet need-it-yesterday deadlines.

Compliance gets easier in the Cloud

In a traditional heterogeneous IT environment where, typically, multiple instances of the same data resides in siloes, enforcing compliance policy and tracking down the information required for compliance is often difficult and sometimes impossible.

By contrast, well-constructed and well-managed Cloud environments function as centralized, 24/7 application and data repositories, so enforcing compliance policy and retrieving compliance-related data is straightforward, making compliance stronger and auditing easier and more efficient.

Why Cloud computing really is inevitable

IBM’s 2011 Tech Trends study\(^3\) shows where the improvements that Cloud offers are occurring first: In flexibility, scalability, and efficiency — as well as reducing costs and
providing the ability to ensure business continuity in the face of unanticipated disruption.

Those same benefits are evidenced in another study done for a venture capital firm. This study also attempts to peer out ahead a few years. And what’s visible on the horizon? That cloud computing increasingly will be driven by the needs of the business — for competitive advantage, innovation, and mobility.

This is spectacularly evident in a recent Microsoft survey of small and midsize businesses, where concern for competitive advantage is intense.

We also can glean from this Microsoft survey the diversity of ways that SMB decision-makers see Cloud computing contributing to the competitive advantage they crave … from saving money to boosting productivity, flexibility, innovation, and responsiveness.

Chief benefits of Cloud computing for SMBs surveyed by Microsoft:

- Save money .......... 54%
- Be more productive 47%
- Be more flexible ..... 40%
- Be more innovative 33%
- Be more responsive 27%

Mobility and the Cloud

The ability to communicate and coordinate the files and apps that a single individual uses during an average day requires a Cloud. Without Cloud computing, mobility as we know it is impossible.

And there’s no question that businesses of just about all types and sizes see immense opportunities for growth and profit in enabling the mobility of their employees.

Already, three-quarters of workers in North America are mobile and will continue to expand the number and types of mobile devices they use.

44% of SMBs that are growing in size (rather than shrinking) believe Cloud computing can make companies more competitive

32% worry competitors may be making better use of technology than they are

60% don’t have sufficient resources to implement new technologies and apps
Mobility on the march:

Billions of mobile devices by 2015
(2.5 billion users with 10 billion devices\textsuperscript{6})

Create immense demand
(8X storage capacity, 16X network capacity, 20+X compute capacity of 2010\textsuperscript{6})

... That cost-intensive traditional IT data centers cannot hope to meet

According to market analyst firm IDC, by 2015, more U.S. Internet users will access the Internet through mobile devices than through PCs or other wireline devices.\textsuperscript{7}

So as people all over the world go online via mobile devices, IT shops everywhere will have to ramp up to cope. Few organizations, large or small, can afford to grow their IT capabilities as they’ll certainly need to by means of traditional, siloed IT data center architectures. Instead, they’re turning to virtualization and Cloud computing because it is far more cost-effective to implement.

Smaller and midsize organizations are no exception.

71\% of SMBs need technology that enables staff to work anywhere anytime\textsuperscript{6}

75\% of North American workers were mobile in 2010; by 2015, the number of mobile workers in North America will increase 16\% (to 212+ million)\textsuperscript{8}

Nearly 70\% of Internet users will utilize more than 5 network-connected devices in 2015 — up from 36\% in 2010\textsuperscript{1}

Twice as many end-user devices will have to be supported by the average business in 2015 as in 2010, and the diversity of these devices will continue to grow\textsuperscript{1}

The effects of all this on how we do business also bears a closer look …

• End-user mobility increases because each end-user can access their personal desktop image/profile for use on a wide range of devices from anywhere within range of a 3G wireless network.

• Thus far-flung end-users and offices can be connected easily and in ad hoc ways to function as a cohesive, responsive unit.

• End-users can synchronize their emails, files, and calendars between their various devices — and share these with others. So wherever they are, end-users can collaborate far more effectively and creatively with each other and interact with customers more efficiently, too, since they can access and work with files in real time without the hassle of endless emails and attachments.

• Employees can access apps and data and do their work without needing to be at their desks in the office. Once your employees are untethered, it’s a whole new ballgame, since businesses need less office space, so office costs can be reduced, less time wasted on commuting to offices they no longer need means more time for work (and family and play).

Mostly this adds up to more positive and profitable interactions with customers and prospects even for the smallest businesses.

That’s because Cloud computing enables any business to employ home-based workers, afford small branch offices, and deliver seamless customer service without significant (or, in some cases, any) capital investment.
So the rush to the Cloud is on. In just a few years, most small and midsize businesses will have begun their commitment to Cloud computing.

And yet …

Cloud computing represents a big change in how IT does things — and by definition, change carries a friction quotient. What’s the friction quotient when it comes to Cloud computing? Here are a couple of takes, where you’ll notice a few common themes:

This one, from IBM’s 2011 Tech Trends study, shows that concerns about security are top-of mind for those moving to Cloud computing …

So what’s inhibiting the shift to Cloud computing?

- Security
- Compatibility with existing applications
- Privacy
- Performance
- Extendibility of existing apps to the Cloud

10% 20% 30% 40% 50% 60%


Similar concerns show up in other research. And still other research has additionally pointed to lack of customization and an excess of Cloud capacity.
Overall, the themes here are apparent: Those venturing into Cloud computing are worried chiefly about …

- Security.
- The ability to sustain a consistently-performing technology infrastructure. That’s what compatibility and interoperability concerns are really about … it’s also what performance, reliability, complexity, extendibility, and lack of customization concerns are really about.
- Privacy and compliance.
- And cost, which is where vendor lock-in, pricing, and expense come in.

### Finding the kind of Cloud computing that’s right for your business

Given the hesitations some have about Cloud computing, it’s worthwhile to consider that their problems might be addressed with the right kind of Cloud computing.

Because Cloud computing is far from monolithic. In fact, there are many types of Clouds. Today, three major approaches to Cloud computing dominate …

### Public Cloud services

Don’t cost much, but customers pay in other ways: The commoditization that’s the essence of public Clouds means customers get little or no control over where their data resides, or how it’s transmitted, or how it’s secured.

What’s more, take-it-or-leave-it service-level agreements aren’t negotiable and do not ensure high availability or reliability. Those dark tales of compromised security and extended downtimes come from public Clouds.

### Private Clouds

Are the ones customers develop for themselves solely for their own use. A private Cloud is, in effect, an on-demand, resource-pooling data center customized to the needs of the corporation it serves.

When a customer opts for a private Cloud, they take on all the hassles and headaches of understanding, designing, testing, and deploying not just some new apps, but a whole new IT infrastructure unlike anything they have now.

That means all the CapEx, all the struggles to get the right people with the right expertise, all the project delays, all the sleepless nights …

- And then there are Hybrid Clouds. These combine — and take advantage of — the best of public and private Clouds …

Analysts at Gartner see a world of hybrid IT architectures. Their view is that IT organizations are becoming brokers of IT services, some of which are hosted internally, some of which reside in externally hosted Clouds. As the intermediary of IT

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**Another view of what’s inhibiting the shift to Cloud computing**

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**QUEST EXECUTIVE BRIEF: THE BENEFITS AND CHALLENGES OF CLOUD COMPUTING**

[Visit us at www.questsys.com](http://www.questsys.com)
services, IT organizations can exploit external Cloud pricing, capacity, and speed-of-provisioning while maintaining required security and governance — and reducing IT service costs. 

For many organizations — even small ones — Cloud computing functions most cost-effectively when it’s a hybrid that’s been specifically customized by a Cloud services provider with skill, expertise, and experience that’s both broad and deep.

Such versatile, customization-oriented Cloud services providers enable you to shape your own Cloud, so you get precisely what you pay for precisely when you need it. And as your requirements change, it’s easy and simple to scale your customized Cloud accordingly — because that’s what Cloud computing is all about.

For more information about how customized, shape-your-own Clouds offer more than other approaches, see Quest’s Executive Brief, The Value of Shaping Your Own Cloud, the second in Quest’s three-part Executive Brief series on Getting the Most from Cloud Computing.

And to learn about how to figure out the best ways to approach implementing Cloud computing in your organization, see Quest’s Executive Brief, 5 Cloud Computing Best Practices, the third in Quest’s three-part Executive Brief series on Getting the Most from Cloud Computing.

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The complete Cloud services provider

**Consulting**
Assesses current customer Cloud-readiness, then reliably recommends a cost-effective Cloud services plan, including migration, training, and deployment

**Engineering**
Defines/designs requirements for performance, security, scalability, SLAs, etc.

**Aggregation/integration**
Makes disparate Cloud services work together and/or with legacy solutions

**Implementation**
Deploys Cloud services and migrates customer data and applications via state-of-the-art unified virtual data center networks designed for Cloud services

**Customization**
Adds functionality to aggregated/integrated Cloud services

**Support**
Provides ‘a single throat to choke’

**State-of-the-art Cloud infrastructure**
Fields virtualized, Cloud-enabled data center resources available via customizable SLAs
References:


ABOUT QUEST

A trusted technology management company delivering successful solutions for clients ranging from the Fortune 50 to Fortune 500 small and medium-sized businesses, Quest offers a portfolio of professional, cloud, and managed services either on-site or from its secure network of global service delivery centers. Quest is ranked #9 on the Global Managed Services Cloud Providers Top 100 by MSPmentor, is ranked among the top 500 technology firms by VARBusiness, is among CRN’s top 250 Tech Elite, and is included in CRN’s designation of Cloud Elite.


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