

Computing

Battle of the clouds

The fight to dominate cloud computing will increase competition and innovation



THERE is nothing the computer industry likes better than a big new idea—followed by a big fight, as different firms compete to exploit it. "Cloud computing" is the latest example, and companies large and small are already joining the fray. The idea is that computing will increasingly be delivered as a service, over the internet,

from vast warehouses of shared machines. Documents, e-mails and other data will be stored online, or "in the cloud", making them accessible from any PC or mobile device. Many things work this way already, from e-mail and photo albums to calendars and shared documents. This represents a big shift. If you store more and more things online, and access more and more software through an ordinary web browser, it suddenly matters much less what sort of computer you have, and what kind of software it is running. This means Microsoft, which launches the newest version of its Windows operating system this month, could lose out—unless, that is, the software giant can encourage software developers and users to migrate to its new suite of cloud-based services. Its main rival is Google, which offers its own range of such services, and continues to launch new ones and interlink them more closely. Yahoo!, which is allied with Microsoft, and Apple also offer cloud services for consumers; specialists such as Salesforce and NetSuite do the same for companies. Amazon has pioneered the renting out of cloud-based computing capacity. Some firms will offer large, integrated suites of cloud-based services; others will specialize in particular areas, or provide the technical underpinnings necessary to build and run clouds. But battle has been joined (see page 80).

Life among the clouds

The new approach has great promise. It makes life easier for consumers (no need to install any software) and cheaper, too: many cloud services are free, supported by advertising or subsidized by a minority of users who pay for a premium service. Using a cloud-based e-mail service means you do not have to worry about losing all your e-mail if your laptop dies, and you can access your mail from any web browser. As cloud services expand, the same will be true for other documents and data.

There are also benefits for companies. By switching to cloud-based e-mail, accounting and customer-tracking systems, firms can reduce complexity and maintenance costs, because everything runs inside a web browser. Providers of cloud services, meanwhile, can benefit from economies of scale. Why should every company or university set up and maintain its own mail server, when Google or Microsoft can do it more efficiently? Companies are already happy to rely on utilities to provide electrical power, after all. Cloud computing will do the same for computing power.

The ability to summon computing capacity from the cloud when needed will also give the software industry a shot in the arm. During the dotcom boom, the first thing a start-up had to do was raise the money to buy a room full of servers. If a web-

site experienced a sudden surge in popularity, more servers were needed to meet demand. Today a capacity can be rent as needed, allowing cloud services to scale up smoothly. This lowers barriers to entry and promotes innovation and competition. It also presents an opportunity to Microsoft, Amazon and other companies that are hoping to create the cloud platforms on which other firms will offer services.

To anyone familiar with the history of computing, then an obvious concern: that one company will establish a dominant position and attract the attention of antitrust regulators. What IBM did in the mainframe era, and Microsoft did in the PC era, one of the new challengers may succeed in doing in the cloud.

Regulators are already acting to head off incipient problems. They are signalling worries about, for instance, overlapping board members at Apple and Google, or the indefinite retention of search histories by search engines. So far none of these skirmishes has led to a big court battle—something technology firms, which are keenly aware of the industry's history are anxious to avoid. But there are three areas where users of cloud services should be vigilant, and providers must be responsive, or regulators may yet step in.

A Storm Brewing?

First is the familiar risk of technological lock-in, as rival companies promote their own, mutually incompatible, standards and formats, as they have done in the past. Moving data from one cloud-based storage system to another, for example, is not always easy. Buyers of cloud services must take account of the dangers of lock-in, and favour service providers who allow them to switch between services without too much hassle.

Second, storing so much personal information, and using it to target advertising, has privacy implications. Consumers who are unwilling to pay for cloud-based services will have put up with some advertising based on their online activities since it pays the bills. Most users will be happy to trade some privacy for free services, but they should have control over their personal data, and be able to amend the profiles which service providers compile and use to target advertising.

Third, data stored in the cloud may not be safe. This month tens of thousands of people using Sidekick smart-phones, for example, lost their address books, calendars, photo albums and other personal data, all of which were being stored in the cloud by Danger, an aptly named subsidiary of Microsoft. But a disaster on this scale is unusual: occasional outages are more common. Ensuring that cloud-based systems become more reliable is in the best interests of the firms that provide them if they want to attract and retain customers.

Prodded by users and regulators, providers of cloud services are gradually moving towards new standards and greater transparency and reliability. If they do not move fast enough, regulators may yet have to intervene more forcefully. But cloud computing's advantages already outweigh its drawbacks for many consumers and business users. In contrast with previous computer-industry battles, a single victor seems unlikely this time around. May the best clouds win.