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What's Ahead In The Clouds?

According to the fourth "Future of the Internet" survey conducted by the Pew Research Center's Internet & American Life Project and Elon University's Imagining the Internet Center, a solid majority of technology experts and the general public participating in the survey expect cloud computing will mostly replace desktop computing by 2020. That is, most people will access software applications online and share and access information through the use of remote server networks, rather than depending primarily on tools and information housed on their individual, personal computers. They say that cloud computing will become more dominant than the desktop in the next decade.

"Cloud computing" is the usage of remote server-based, rather than desktop-based, tools and information. Software and data is virtually stored on the internet, meaning computer users do not need to download any software or maintain a physical database to store information.

Technology experts and the general internet-using public have virtually identical expectations of how cloud computing will develop during the next decade. When asked to agree with one of two statements regarding where computer users will "live" in 2020, 72% of experts agreed with a statement that most people won't do their work from a PC running software, but from internet- and smartphone-based applications. Another 25% agreed with a statement that most people will still do their work from a PC running software, with internet- and smartphone-based applications having some functionality. The remaining 3% did not respond.

The general respondent base responded to the two statements almost identically. Seventy-one percent agreed that internet- and smartphone-based applications will become dominant, 27% agreed that PC-based applications will remain dominant, and 2% did not respond.

Among the most popular cloud services now are social networking sites (the 500 million people using Facebook are being social in the cloud) such as:

- Webmail services like Hotmail and Yahoo mail
- Microblogging and blogging services such as Twitter and WordPress
- Video-sharing sites like YouTube
- Picture-sharing sites such as Flickr
- Document and applications sites like Google Docs
- Social-bookmarking sites like Delicious
- Business sites like eBay
- Ranking, rating and commenting sites such as Yelp and TripAdvisor

This does not mean, however, that most of these experts think the desktop computer will disappear soon. The majority sees a hybrid life in the next decade, as some computing functions move towards the cloud and others remain based on personal computers, says the report.

Many of the people who agreed with the statement that cloud computing will expand as the internet evolves said the desktop will not die out but it will be used in new, improved ways in tandem with remote computing. Survey participants said they expect that:

- A more sophisticated desktop-cloud hybrid will be people's primary interface with information
- The desktop and individual, private networks will be able to provide most of the same conveniences as the cloud but with better functionality, overall efficiency, and speed
- General-purpose in-home PC servers can do much of the work locally via a connection to the cloud to tap into resources for computing-intensive tasks

Most of those surveyed noted that cloud computing will continue to expand and come to dominate information transactions because it offers many advantages, allowing users to have easy, instant, and individualized access to tools and information they need wherever they are, locatable from any networked device. Some experts noted that people in technology-rich environments will have access to sophisticated-yet-affordable *local* networks that allow them to "have the cloud in their homes."

For many individuals, says the report, the switch to mostly cloud-based work has already occurred, especially through the use of browsers and social networking applications. Many people today are primarily using smartphones, laptops, and desktop computers to network with remote servers and carry out tasks such as:

- Working in Google Docs
- Following web-based RSS (really simple syndication) feeds
- Uploading photos to Flickr and videos to YouTube
- Doing remote banking
- Buying, selling and rating items at Amazon.com,
- Visiting with friends on Facebook
- Updating their Twitter accounts
- Blogging on WordPress

Among the defenses for a continuing domination of the desktop, many said that small, portable devices have limited appeal as a user interface and are less than ideal for doing work. They also expressed concern about the security of information stored in the "cloud," the willingness of cloud operators to handle personal information in a trustworthy way, and other problems related to control over data when it is stored in the cloud, rather than on personally-controlled devices.

A number of people said cloud computing presents difficult security problems and further exposes private information to governments, corporations, thieves, opportunists, and human and machine error.

There are also quality of service and compatibility hurdles that must be crossed successfully before cloud computing gains more adopters, concludes the report. Among the other limiting factors the expert respondents mentioned were:

- Lack of broadband spectrum to handle the load if everyone is using the cloud
- Variability of cost and access in different parts of the world and the difficulties that lie ahead before they can reach the ideal of affordable access anywhere, anytime
- Complex legal issues, including cross-border intellectual property and privacy conflicts.
- Large businesses are far less likely to put most of their work "in the cloud" because of control and security issues

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