Cloud computing in the media and entertainment industry

Viewpoint paper

OPEN

new opportunities across the value chain.

By carefully evaluating the benefits and challenges associated with cloud computing, content developers and distributors can capitalize on this powerful technology to reengineer their operations and launch new business models.

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Media and entertainment companies are racing to keep up with growing consumer demand for content—wherever, whenever, and however they want it. Technology innovations continue to expand the array of media and devices for content consumption. And ongoing economic pressures amplify the need for companies to achieve greater operational efficiency and cost containment. Cloud computing holds significant promise to help companies thrive in this challenging environment.

Introduction

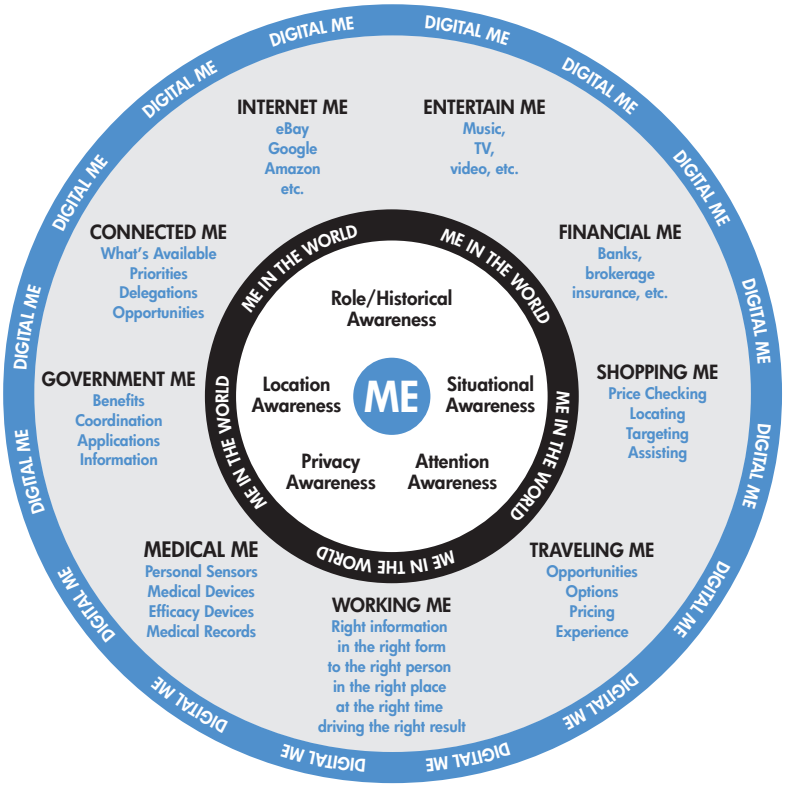
Expanding consumer demands and rapidly evolving technology are thrusting content creators and distributors into a new world. Development and distribution of digital content is exploding. Consumers now expect programming of unprecedented quality across multiple viewing and listening platforms, anytime and anywhere they want it. And, they want to continue receiving the best in traditional premium, scheduled content.

Accompanying this strong consumer "pull" is an equally robust technology "push." Mobile and broadband technologies have opened the floodgates for diverse types of media use. New technology-enabled content forms include streaming and on-demand video; Internet, TV, and radio; social networks; user-generated content; and music and mobile applications on smartphones and other multifunction devices. Technologies enabling this shift in content consumption include advanced compression and streaming protocols, next-generation networks, and broadband technologies such as fiber to the home (FTTH).

The transition has profound organizational and technology implications for companies across the entertainment value chain. Studios, networks, cable operators, program originators, and distributors are all trying to identify and capitalize on emerging—and yet to be created—business models and services.

As they scan this new landscape, media and entertainment companies are realizing cloud computing will be a potentially disruptive technology that could transform how they meet growing consumer expectations, while addressing the imperative to control operational costs in the midst of today's extraordinary global economic environment. This viewpoint provides an overview of cloud computing, the opportunities it presents for content, post production and distribution companies, and issues to be considered in creating and operating a cloud environment.

Figure 1
The Digital Me



Understanding the Digital Me

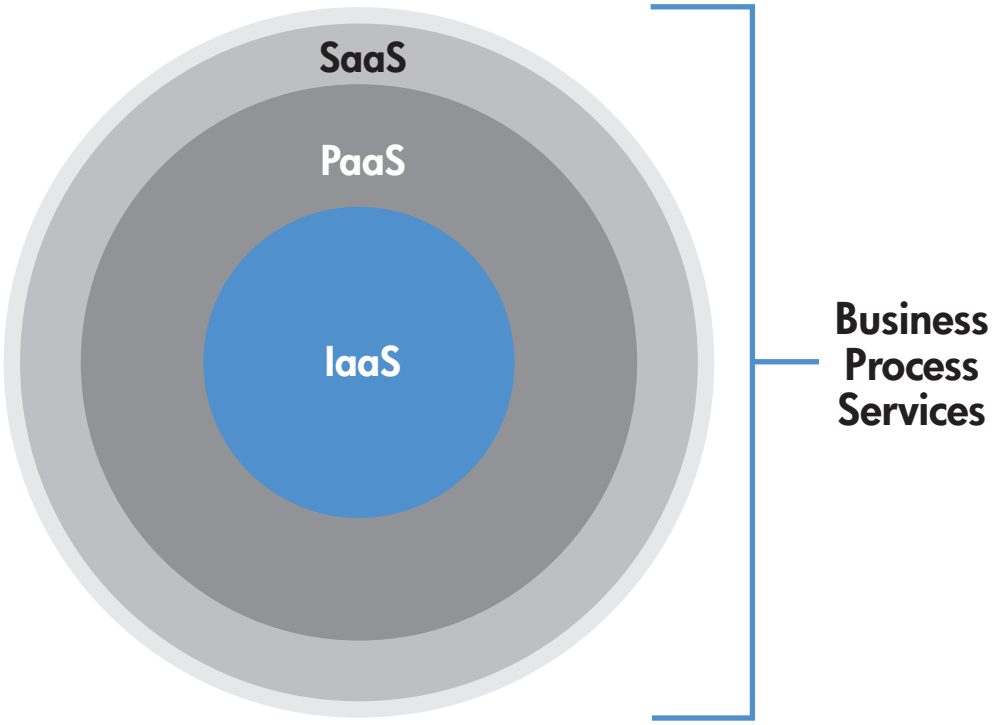
The media and entertainment industry has moved on from the content-is-king era. Today, the path to value creation lies in creating and managing experiences. To understand the significance of this shift, it is helpful to view consumers within a "Digital Me" framework (Figure 1).

The Digital Me is propelling the convergence of devices, software, and connectivity. It is a vision in which content is digitized, securely stored, and made available—anywhere, anytime, in any format—to the right person. Each person decides who should have access to what pieces of his or her personal information and when.

The Digital Me has four major components:

- Historical awareness—Keeps track of consumer habits and captures important, useful data for recommending activities or designations.
- Situation and attention awareness—Captures a consumer's current situation to inform certain actions, such as enabling only certain phone calls to connect.
- Location awareness—Acts as a "personal assistant" to evaluate all relevant information and relate it to the consumer's preset preferences.
- Privacy awareness—Protects the consumer's digital image against unauthorized access through three-factor identification and advanced measures such as brainwave activity and blood vessel diagrams.

Figure 2
Layers of cloud computing



What is cloud computing?

While interpretations vary, cloud computing can be defined as an environment in which highly scalable and flexible services are easily consumable over the Internet through a low-touch, as-needed, pay-per-use business model. The true value of cloud computing lies not in the technology that underlies it but in its pay-as-you-go, service-based nature. In cloud computing, both service providers and service users (whether consumers or businesses) have roles and perspectives distinctly different from those in a traditional IT model.

The cloud service provider is responsible for all the details of providing a complete solution, at an attractive price, on a cost structure that supports a profitable business model. The cloud service user is only concerned with the functionality, characteristics, and quality of the services being consumed, not the underlying software, hardware, and technical knowledge required to achieve a requested function. The user also doesn't have to worry about predicting volumes or usage patterns.

The core service components of a cloud computing environment fall into four broad categories: compute, storage, network, and applications. The provider owns and manages all the IT assets and assumes the costs and risks specific to the service components.

Cloud computing has multiple layers (Figure 2), with Infrastructure-as-a-Service (IaaS) at its core. IaaS contains the leveraged hardware resources that can be billed on a consumption basis. Platform-as-a-Service (PaaS) adds a layer of flexibility and abstraction that usually hides the underlying infrastructure. Software-as-a-Service (SaaS) usually builds on the flexibility of the PaaS environment, but the delivery of the underlying infrastructure is transparent since only software interfaces are exposed. SaaS is usually billed on a transaction or user access basis. The outermost layer, Business Process Services, conforms to the basic requirements to be a "cloud" offering. It is multitenant and billed on a usage basis.

The growing use of cloud computing

The market for cloud services is estimated to grow from $46.6 billion in 2008 to $150.1 billion in 2013, with an overall compound annual growth rate of 26.5 percent.[1] Much of that growth represents a transfer of traditional IT services to the new cloud model. At the same time, it also reflects substantial opportunity for creation of new businesses and revenue streams.

Although still in its early stages, cloud computing is already demonstrating its potential through an array of consumer- and business-focused services. Services benefiting consumers include:

- Online digital photo services—Services such as Snapfish provide photo printing, photo sharing, and personalized photo gifts. Users can upload and then share photos via email, URLs and links to web-based services such as FaceBook and MySpace. Cloud services also allow users with web-connected printers to print maps and directions, up-to-date weather information, puzzles, and games.
- On-demand printing—Print-on-demand publishing is allowing readers to obtain the books they want via the Web, small publishers to focus on acquiring new titles instead of stocking inventory, and authors to self-publish. BookPrep and similar services enable book publishers to digitize existing titles in their catalog and turn them into virtual assets that can be sold over the Internet and printed on demand—either as is, or personalized by the consumer. Such services make it possible for consumers to potentially access every book ever published as a high-quality replica of the original.
- On-demand publishing—Services such as MagCloud allow small-scale magazine publishers to bypass traditional large-scale printing services and publish their own high-quality magazines by simply creating the layout and uploading it as a file. Customers can purchase magazines from the service, which outsources the printing. The printer ships the magazine to the buyer.
- Streaming and downloaded video—Recent research revealed that over a month's time more than one-quarter of Americans with online access streamed a full-length television show, more than double the rate a year earlier.[2] A growing number of services are providing video over the web employing a variety of business models. Hulu and YouTube are examples of services that integrate commercials into free streaming feeds of entertainment content or post site-based advertisements. iTunes and similar services offer downloadable videos for purchase.

Businesses also are capitalizing on cloud services in various configurations to streamline operations. Deployments include:

- Computing-as-a-service (CaaS)—Offerings such as Verizon's CaaS solution and Amazon Web Services provide companies of all sizes with cloud-based services to help them efficiently and securely manage IT resources including servers, networks, and storage to meet day-to-day business demands. Customers use a web-based portal to employ computing resources in the quantities and duration required to meet business needs.

1 Gartner Dataquest, "Forecast: Sizing the Cloud; Understanding the Opportunities in Cloud Services," March 18, 2009.

2 MOTION Study, Ipsos MediaCT, http://www.ipsosna.com/news/pressrelease.cfm?id=4481

- Software-as-a-service (SaaS)—HP and other providers offer services in which software is developed, hosted, and operated for use by customers over the Internet. The service provider remotely manages the performance and availability of business-critical applications, allowing the customer to forego long-term investments in technology infrastructure and staff training, freeing scarce IT resources for other priorities.
- Specialized applications—Applications such as Ribbit for Salesforce support various enterprise functions and technologies in a cloud environment. Ribbit for Salesforce links mobile voice communications and CRM sales productivity. Voice-to-text conversion capability allows salespeople to dictate notes and memos using their mobile phones, which automatically flow directly into salesforce.com and their email inbox, eliminating the need to type updates.

HP also has launched a series of cloud services including:

- Tabblo—An online collaboration application that enables users to combines photos and words with styled templates that can be customized to tell a story.
- CloudPrint—A web-based print network that enables mobile users to share, store, and print documents to any printer, anywhere in the world.
- Cloud Assure—A service that enables an IT organization to take advantage of the speed, flexibility, scalability, and cost-effectiveness of cloud services. This service focuses on three key requirements for reliable cloud computing: security, performance, and availability.

Cloud opportunities for content companies

Cloud computing can help content creators and distributors do what they do today better, as well as expand their offerings and revenue opportunities.

Some companies see pay-per-use cloud computing resources as an attractive mechanism to shift management and operation of established data center systems to a more economical structure. Companies looking to save money are drawn to the prospect of accessing CPU power at pennies per hour and storage at pennies per month.

Indeed, such savings are possible. But they're not guaranteed. Moving to the cloud is not a cost-free transition or a straight one-for-one resource replacement. Plus, the dynamic nature of business needs can eventually require reconfiguration of cloud services, leading to additional expenses.

Content companies considering cloud utilization as a cost-arbitrage play must carefully evaluate all of the factors in making such a move. They should view it as a business transformation opportunity, rather than simply taking an existing process model out of the building to capture savings.

Potentially more exciting than the notion of offloading data center functions to the cloud is using it to do things not possible with traditional technologies.

For example, in the past, if circumstances required a sudden change in production locales, the entire operation would have to be uprooted and moved, at potentially budget-busting expense. Today, a lone producer can go to the new location, hire a local shooting crew, and shuttle dailies back and forth through the cloud.

Or consider the constant challenge and expense that television networks and stations face in creating visually appealing graphics for news, weather, and sports programming. Through services now available, networks can use cloud services to centrally generate and store graphics for all of their affiliates, enabling the sharing of high-production-value content, while reducing affiliates' graphic production expenses.

The cloud can also help enhance creative collaboration and use of creative talent. Entertainment companies can make the cloud the focal point for creative collaboration, allowing them to more easily schedule, organize, and assemble teams of freelance talent.

In addition, cloud computing can help generate new revenue streams. One of the most widely used and recognized cloud services, iTunes, began as a tool to support iPod hardware sales, but quickly became a popular consumer offering in its own right.

Production collaboration in the cloud: the Shrek saga

One exciting example of cloud computing's potential for content production is its use in the development of the box-office smash animated feature "Shrek the Third." DreamWorks Animation essentially created the film "in the cloud" using HP's Halo Collaboration Studio offering.

Halo Collaboration Studio enables people in different locations to communicate in real-time within a vivid, face-to-face environment. Users are able to see and hear one another's physical and emotional reactions to conversation and information as it is being shared, whether they are across the country or around the world. DreamWorks Animation used the system to connect "Shrek the Third" teams in Glendale and Redwood City, Calif., as well as international team members, enabling them to review computer-generated characters using the system's high-definition collaboration screen.

These innovative technologies made it possible for DreamWorks Animation teams to work more collaboratively, while saving time and travel costs, helping DreamWorks achieve its goal of producing two animated films per year.

Efficiency and creativity opportunities in animation and postproduction

The color and imagery of leading-edge animation dazzle audiences, especially in high-definition and emerging 3D formats. But the considerable cost of the processing power needed to create those images can be dizzying.

Animation creation is a narrow, specific stage of movie production. While critical to the finished product, the technology assets required for the task are used sparingly, making it difficult to generate a favorable return on them.

Cloud computing-based animation solutions offer an alternative to the significant capital investment that studios have had to make in animation gear. And they reflect a useful guideline for identifying a cloud business opportunity by a key asset that cannot be sweated to its fullest extent within current production cycles.

Postproduction processes offer similar opportunities. Review of a typical booking sheet in a post house is likely to reveal that some gear and gizmos are used consistently, while other items are needed specifically because a particular production wants them. The cost-benefit equation for items in the latter category is unfavorable, as the cost must be applied to a much smaller revenue stream.

As with animation technology, the use of pay-as-you-go cloud solutions for low-utilization postproduction technologies may be a highly attractive proposition. Again, the value of cloud computing is its service-based nature—and its ability to reduce traditional capital investment headaches for post companies—rather than where the operation is hosted.

To whatever extent a studio or production house uses cloud computing, doing so can be a liberating force for the freelance market. Establishing a cloud environment can allow producers to focus more on drawing in creative talent, when it's needed. It may also allow them to invest more in assembling a higher-quality creative team. They can also focus on optimizing processes and workflow to deliver creative result rapidly and cost-effectively, without having to worry about or compromise around the technology investment that sits behind it.

Opportunities in content storage and distribution

Just as it offers tremendous potential for content production, cloud computing provides a powerful platform for content storage and distribution.

One such promising application is disaster recovery. It's common practice to store key IT data off-site. It's a much different challenge to keep a broadcast on the air in the event of a major disaster. The cloud helps resolve the broadcaster's desire to keep backup far enough away to be safe from the original incident, yet close enough for staff to access it easily. This resiliency can make the difference in keeping an outage from disappointing and driving off viewers.

Large, global production companies can benefit from "virtualizing" their production space. Such companies can shift production resources to the cloud, then pull them down to different play-out centers, as needed.

The cloud is also opening the door for cable television operators to provide more customers with digital recording capability using the cloud. U.S. operators won a key legal battle in mid-2009 when the Supreme Court declined to block a new cloud-based digital video recording system. This "DVR in the sky" is expected to substantially increase the number of American homes with digital recording capability.

Back to the future

On the one hand, there is the bright vision of content being ingested into the cloud, efficiently manipulated and managed as production workflow, and then scheduled for transmission. On the other hand is the stark fear that a service provider will mishandle it, destroy it, or allow it to fall into the wrong hands. Such fears are often cited as reasons for resisting a move to the cloud.

To overcome such fears, it's instructive to recall some movie and television history. Back in the 20th century, all content was outsourced—to film labs. Negatives were typically kept in the lab until prints were needed.

Today, shifting production to the cloud is not that dissimilar—in a sense, it's back to the future. Plus, the potential for security and backup of digital content not tethered to a specific building far exceeds that of physical film, with the added ability to deploy low or high-resolution versions, as needed.

And the savings can be substantial. Deploying cloud computing for content ingest, scheduling, program management, and central casting to local markets can yield potential savings of 20 to 30% in production costs.

Some considerations in cloud deployment

Content companies thinking about utilization of cloud resources can benefit from considering several key issues:

- Quality of service—QoS considerations arise in both production and distribution. High-definition footage, which is fast becoming standard fare, needs to remain uncompressed until editing is completed. Cloud computing must provide substantial bandwidth to accommodate this requirement. For content distribution, networks need to be responsive, resilient, and secure. Service providers are now offering virtual POP (point of presence) to POP services over disparate networks with full quality of service.
- Metadata—One potential advantage of putting content in the cloud is the opportunity to make it available to other people within the organization and to third parties. To the extent that intellectual property and artistic integrity considerations allow this, providing such access will require metadata that enables people to identify the content appropriate to their needs.
- Back-office requirements—Many content companies make extensive use of freelancers. Because of this, it's likely that many software assets—word processers, spreadsheets, presentation software—are used intermittently. Meanwhile, the companies pay hefty licensing fees. Significant potential savings may be available by shifting office applications to the cloud as well as production and distribution resources.

Content in the cloud

Cloud computing holds significant promise for improving content production quality and efficiency, unleashing creative talent, and opening the door to new business opportunities. By carefully evaluating the benefits and challenges associated with cloud deployment, content developers and distributors can capitalize on this powerful technology resource to reengineer their operations and launch new business models.

About the authors

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Kevin Newport leads HP Enterprise Services' EMEA Media & Entertainment Strategic and Business Consulting Practice, specializing in corporate advisory, strategic, and transformation management. Previously, a successful company director, Big 4 executive management consultant, and business developer, Newport is experienced in strategic problem-solving in an international context, business process reengineering, and change management, as well as post-merger integration for both large and small companies. He has held executive positions with Siemens Business Services, Cable & Wireless, and Cap Gemini Ernst & Young and was an award-winning producer and executive producer for the BBC.

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