



## Digital Music Moves to the Cloud

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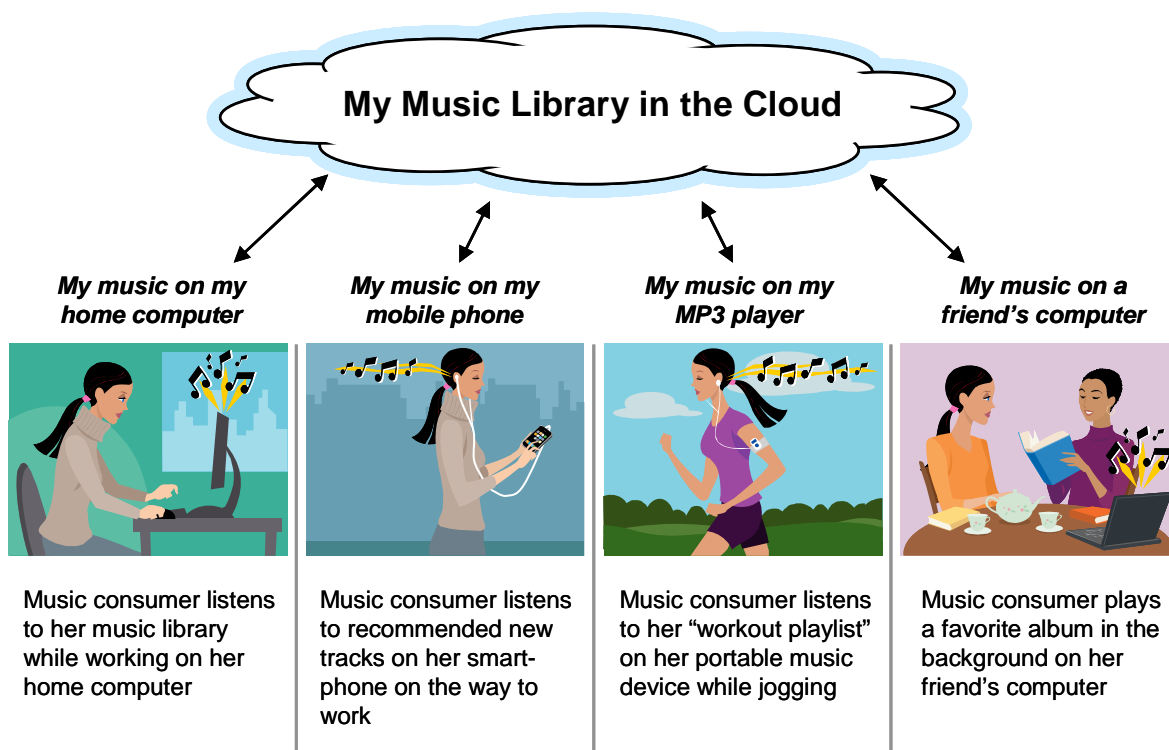
As the digital music industry continues to evolve, we see a significant shift towards the remote online storage and management of consumer's digital music libraries. Users would host their complete digital music library "in the cloud" rather than locally, and then stream their music over the internet or wireless network directly to their computer or personal media player. This development offers several library storage and user experience benefits, as well as benefits for industry players. In addition, it would facilitate the proliferation of applications and services integrated into users' online music libraries. Companies offering Online Library Management services are likely to be startups and peripheral players initially, followed by major digital music retailers. A key barrier to the emergence of this model, currently pursued by small players, is the required buy-in and willingness to experiment from artists, record labels, publishers, and other key content owners.

### Ubiquitous Access to Digital Music

The rapid growth in consumer's digital music libraries, coupled with the proliferation of personal media devices, has created a nearly ubiquitous music consumption culture. Between existing CD collections, inexpensive digital music retailers, and P2P networks, music consumers have amassed sizeable personal music libraries they are enjoying via their computers, portable music players, car stereos, and mobile devices. In short, consumers increasingly expect instant access to their digital music wherever they are, via the device of their choice. This trend will likely continue and drive the emergence of new music library management and delivery models. Specifically, we believe consumer digital music libraries could move online as companies increasingly offer library hosting, management, and access as a cloud service.

### Music Libraries in the Cloud

A cloud service is a product or service that is accessed and consumed in real-time over the internet. In the context of digital music, cloud computing would allow consumers to host their entire digital music library online and stream it in real-time from a computer or internet-enabled device. Where network coverage doesn't allow for real-time streaming, the library could be synched or the selected music could be preloaded before play. These Online Library Management services would store and organize a user's existing digital music library and seamlessly integrate new purchases and uploads. It is important to note that consumers would still own their digital music; it would just be stored and managed remotely rather than locally on their own personal computers and various media devices.



There are several disruptive players in the digital music industry today that are driving music consumption towards this innovative new model. For example, Pandora's PC and mobile online streaming radio has found notable success, showing that consumers are willing to listen to music over the internet. In addition, we speculate that Apple may be taking steps towards an Online Library Management offer based on recent patent filings for a service that allows users to stream their computer's media library directly to their Apple device over wireless networks. Finally, online digital music retailer LaLa has taken the largest step towards this new model by offering a legal service where consumers can purchase, store, and stream music all from LaLa's cloud.

The evolution from the local storage of personal media to an Online Library Management model is not unique to the music industry and has already begun in several other types of consumer digital media. For example, Amazon.com's recently launched Video on Demand service allows users to store, manage, and access their digital movie and TV purchases in Amazon's cloud. This is an improvement over Amazon's original Unbox video service which required users to download large video files to their local hard drive for viewing and storage. In digital photography, consumer's personal photo libraries have also moved online as a result of successful photo library storage and management services such as Snapfish and Flickr. Where this Online Library Management model has been successful in other personal media industries, we believe it can also work in the music industry.

## Consumer Benefits

There are several consumer benefits to the Online Library Management model that address current music consumer pain points and improve the user experience:

- **Library Backup:** Many consumers have gone through the immensely frustrating process of losing all or part of their digital music library due to a hard drive crash or lost media device. With an Online Library Management model, library security and integrity would be 100% guaranteed, as it would be stored and backed up remotely.
- **Reduced Personal Storage Needs:** As digital music libraries continue to grow, consumers find themselves requiring increasing amounts of storage space to accommodate their entire music library. Today's popular personal media devices have storage capacity of up to 120GB and external hard drive makers such as Seagate and Western Digital have thrived by offering additional storage for consumer's rapidly expanding media libraries. Online Library Management would inherently reduce the amount of hard drive space needed since consumers could access their entire music collection without the requirement of storing it locally on their device. Furthermore, the ability to wirelessly update music that is stored locally would increase the functionality of devices with limited hard drive space. Online Library Management would also help de-emphasize storage space as a key device value driver, promoting product evolution as new designs, features, and applications emerge to take its place.
- **Seamless Music Library Experience:** Many music consumers today find it difficult to keep their music library updated and synched across several disparate media devices. For example, a music fan who downloads a new album on their home computer must then manually add it to their iPod Shuffle, mobile phone, and work computer to have seamless access to their new music. As a result of this laborious process, consumers often have out-of-date or incomplete music libraries across their various devices, which results in a frustrating user experience. With an Online Library Management model, there would be one master library stored online and any changes or updates would be instantly reflected across all devices and consumption channels.
- **Sharing Capabilities:** Introducing friends to new music is currently a major pain point for consumers. Aside from restrictive DRM challenges, users need to employ various creative methods just to show a friend a new song or album. These methods often include emailing digital music files, transferring them from computer to computer via flash drive, burning them to CD, or adding them to a friend's portable media device directly from one's own computer. These arduous methods hinder the open sharing and discovery of music between users. If music libraries move to the cloud, it would be much faster and simpler to share a song, album, or playlist directly from an online library by sharing a unique hyperlink that directs users to the hosted online music.

## Music Library Applications and Services

An Online Library Management model would also create an opportunity for players to develop new applications and services that function on top of a user's music library. These applications would leverage extensive user data to offer highly personalized services and increased functionality. For example, as users access their online library over time, the listening data generated could be analyzed to create playlists of new music recommendations. Users could also select branded applications created by prominent music

brands, such as Rolling Stone and Pitchfork Media, that “push” music reviews and content to their library’s inbox. In addition, Online Library Management would create opportunities for social networking applications, as well as smart advertisements for artist merchandise, live shows, and artist endorsed products. The revenues generated from a wide array of new applications and services could be used to subsidize the storage and access costs of offering Online Library Management, thereby lowering the price to consumers and helping the service reach mass market adoption.

## Music Industry Benefits

There are also several music industry benefits to the Online Library Management model that could drive industry interest:

- **Additional Revenue:** By offering applications and services on top of consumer’s online libraries, music industry players across the value chain will be able to target music consumers in new ways and realize additional revenue opportunities. Content owners may also have an opportunity to share in potential advertising revenue from various types of ads integrated into user’s online music libraries.
- **Better Control of Piracy:** Several aspects of Online Library Management would also help reduce music piracy among consumers. As the legal sharing of music between consumers becomes easier, users may rely less heavily on illicit methods like P2P networks to gain access to new music. Additionally, as music libraries are increasingly stored online, consumers will have fewer incentives to illegally download digital music files to their own hard drives.
- **Viral Marketing:** One of the biggest benefits to the music industry would be Online Library Management’s facilitation of viral marketing. Users would be able to introduce friends to their favorite music much more easily, spurring additional fans and additional music sales. Several TV studios have cited this type of promotion as a huge benefit of their ongoing Hulu.com venture, where popular TV shows are viewed online and easily shared between friends.

## Challenges and Barriers to Adoption

While the Online Library Management model has many benefits for both consumers and the music industry, there are several challenges that will need to be overcome to reach mass market success. First, persistent internet access via wireless networks will likely be necessary to offer an optimal user experience. Today’s less than perfect 3G network coverage may be acceptable to early adopters, as Pandora’s online streaming radio service is currently one of the top downloaded applications for the iPhone; however, for the mass market, better coverage may be required. A second barrier to adoption will likely be consumer reluctance to surrender their music libraries to third parties for remote storage and management. Many consumers like to own their music, and the idea of Online Library Management may feel like a threat to their ownership. Finally, there is likely to be resistance from established music industry players who are unaccustomed to this new model.

## Conclusion

We believe digital music libraries will continue to evolve, likely moving music storage, management, and access online and enabling a variety of new players and services. While dependent on the continued improvement in wireless services, we already see movement towards Online Library Management in the digital music market today. Several players have begun to offer nascent solutions, but these types of services are likely to remain peripheral until adoption by major digital music retailers such as iTunes and Amazon. Success would also require buy-in and a willingness to experiment from artists, record labels, publishers, and other key content owners.

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