



Build a Better DRM Content Service

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Chapter I: Consumer-friendly DRM

Digital Rights Management (DRM) is a set of technologies which allow content owners and distributors to control how their content is used and protect it from illegal distribution. DRM should never be intrusive. A consumer-friendly DRM content service strikes a balance between providing a convenient, valuable service to consumers and protecting the content.

In this document, AuthenTec leverages its experience in developing DRM solutions to identify common problems in designing DRM content services and how to avoid them

Intended Audience

The intended audience of this document is content owners or distributors who are deploying a content service using DRM. For the sake of brevity, only the term content distributor is used in the rest of the document. It is assumed that readers are familiar with basic DRM concepts and terminology like usage rights and licenses, but not with the details of specific DRM technologies.

Chapter 2: Common DRM Problems

In this section we look at different types of content services and common DRM problems in each type.

“Rental” Services

In a rental service, the consumer purchases the right to use content for a fixed period of time. In a rental service like video on demand (VOD), the content lifetime is usually short (e.g. 24 hours) and the content is viewed on a single device. This is the simplest type of service to implement in a consumer-friendly way.

In a subscription rental service, the consumer can access a substantial library of content. In a streaming video subscription service, for example, a subscriber pays a monthly fee to access a variety of movies or TV programs. In a subscription rental service, consumers get access to content for a longer period of time so issues like the portability of the content (moving content between devices or accessing it multiple times on different devices), device upgrades and updates to the DRM technology must be considered.

New licenses must be issued to subscribers to allow access for the next subscription period. This process should be as seamless as possible and not cause any disruption in accessing subscription content.

“Purchase to Own” Services

In the “purchase to own” model, the consumer purchases the right to consume the content in perpetuity. A common requirement in this type of service is the ability to backup content and licenses in case a device is damaged, stolen or upgraded. Upgrades of the DRM technology may also need to be handled so that new content can be purchased after the upgrade but previously purchased content can still be used. Consumers will often expect to access the content on multiple devices.

Device Type

Some DRM content services only deliver content to one type of device. More commonly content distributors want to deliver content to a range of different devices, e.g. Android phones and iPhones. Multiple implementations of the same DRM technology are required for different devices and operating systems. The DRM client must be integrated with a media player, download manager, file system and other components on the device. As a result DRM clients are often installed on the device during manufacture or provisioning. A [Microsoft Playready](#) DRM client for example, may not be available on all the devices used by the content service’s target consumers.

For exactly this reason, AuthenTec provides the [DRM Fusion downloadable DRM agent](#) for iOS and Android. The agent is pre-integrated with a media player and can be downloaded after device purchase. Content distributors merely customize the media application and user interface.

Most DRM technologies bind licenses to a particular device. This means that a new license must be issued to each device on which the consumer wants to play the content and it may be necessary to track the devices owned by a particular consumer.

Content Delivery Type

Content can be downloaded or streamed. Streaming content is often only stored on the server side and not on the client device. This has the advantage that device upgrades or updates of the DRM technology are less problematic since older DRM content does not have to be ported to the new device or DRM version.

Content Service Examples

Figure 1 shows some examples of content services and the typical DRM problems associated with them.

Service Example	Service Characteristics	DRM Problem
Video on demand	<ul style="list-style-type: none"> – <i>Service Type:</i> Rental. 24-hour access to films and TV programs – <i>Content Delivery:</i> Download or streaming – <i>Devices:</i> PCs, connected TVs. 	<ul style="list-style-type: none"> – This type of service has few DRM usability issues as long as DRM clients are available for all target device types.
“All you can eat” video subscription service	<ul style="list-style-type: none"> – <i>Service Type:</i> Subscription rental – <i>Content Delivery:</i> Streaming – <i>Devices:</i> PCs, connected TVs, tablets, mobile phones. 	<ul style="list-style-type: none"> – <i>Availability on multiple device types:</i> Making DRM clients available for all target device types may require additional development. – <i>Seamless Subscription Renewal:</i> Subscription renewal should be as transparent as possible and the user should not encounter any interruptions in content access. Features like license pre-delivery and silent license delivery facilitate “invisible” subscription renewal.
Video download to own	<ul style="list-style-type: none"> – <i>Service Type:</i> Purchase to own. – <i>Content Delivery:</i> Download – <i>Devices:</i> PCs, connected TVs, tablets, mobile phones 	<ul style="list-style-type: none"> – <i>Backup:</i> Content and licenses should be backed up on the server-side to allow users to move them when devices are lost or upgraded. – <i>DRM Technology Updates:</i> When updating the DRM technology, older content must still be playable. In major upgrades, a new version of previously purchased content may need to be delivered to subscribers.

Figure 1: Content Service Examples and DRM Usability Problems

Chapter 3: DRM Problem Solutions

Considered usage of DRM features can counteract some of the problems outlined above.

Allow Consumption on Multiple Devices

Supporting a large range of devices possible will make your service more attractive to consumers. AuthenTec's [downloadable DRM agent](#) facilitates this by providing a mobile application which can be downloaded on to a range of devices like mobile phones and tablets. Content services can issue multiple protected copies of the content, i.e. a copy for each appropriate device. Some DRM technologies also provide features like domains, which allow protected content to be transferred locally between devices.

Make DRM Usage Transparent

Consuming DRM content should be as easy and the technical details should be hidden from consumers. For example, Microsoft's PlayReady DRM provides a silent license delivery feature, where a license is issued without prompting the consumer. When renewing subscriptions, new licenses should be delivered slightly ahead of the license expiry time to ensure that access to content is not temporarily interrupted.

It is also better to avoid using terms like DRM, content protection or license which are unfamiliar concepts to many consumers and may be confusing. We suggest using terminology like "locked" and "unlocked".

Offer a Content Backup Service

In "purchase-to-own" services where the content has a long lifetime, the service provider should provide facilities to recover DRM protected content and licenses when devices are lost or upgraded. Typical examples of where recovery may be needed are as follows:

- The customer accidentally deletes a license
- The customer has a new device and wishes to transfer content and licenses to the new device
- The customer has lost his existing device and wishes to re-obtain content and rights.

AuthenTec's [DRM fusion server product](#) offers a license transactions feature which stores the details of previously issued licenses and allows them to be easily recovered.

Upgrade DRM Technology Responsibly

Updates to the DRM technology should not interfere with content consumption. This is more difficult when the DRM client is pre-installed on the device since the device may need to be returned to the manufacturer or service provider in order to upgrade the DRM client. Using a downloadable agent like AuthenTec's downloadable DRM agent avoids this problem. Upgrades should also be handled in such a way that access to older purchased content is never lost. Major upgrades may even require older content to be re-protected and re-issued to customers.

Chapter 4: Build a Better DRM Service

Good service design can make a DRM content service considerably more attractive to consumers. The following measures apply to most types of DRM content services and technologies.

Keep Purchase Options Simple

DRM is still a new concept to many consumers and they will not be familiar with complex usage rights. DRM content services are therefore advised to offer a limited set of simple purchase options.

Fully Explain Purchase Options

DRM content services should make enough information available to consumers for them to make informed product choices. Using simple purchase options as advised above is a good first step. Customers should be informed about the devices on which they can play the content and any restrictions regarding content transfer. For example, unlimited play rights are not the same as unlimited sharing of content.

Offer Consumers Incentives to use DRM content

The service should be designed to make DRM content at least as attractive to consumers as unprotected content. Accessing the service must be very convenient. Incentives such as discounts for heavy users and rewards for super distribution (distributing protected content between users) can be offered to encourage usage.

Provide Additional Customer Care

Consumers may encounter technical problems related to DRM usage, e.g. license delivery failed, the content format of super distributed content is not supported by the receiving device or the content can no longer be rendered because the license has expired. The potential problems for a particular service need to be enumerated and they must be handled by the customer care provided with the content service.

Do Not Reduce Usage Rights after Purchase

DRM content services should never reduce the consumer's purchased usage rights after purchase, e.g. reduce the number of devices on which the content can be played. This is technically possible with many DRM technologies, e.g. the original license which allows content to be played on seven devices can be replaced with a license which can only be played on five devices.

Respect Consumer Privacy

The DRM technology should not record content usage information without user consent. In general, tracking of the consumption of individual users' should only be enabled when it is required to implement the service's core business model, to offer additional benefits to consumers or for billing purposes.