



SNOCAP Opt-Tunz

Service Overview

April 26, 2007

Introduction

This document describes SNOCAP Opt-Tunz—a service that monitors and enables varying business models between content rights holders (“Rights Holders”) and content distributors (“Distributors”). Opt-Tunz identifies music and provides information about how that content can be used by Distributors. When Rights Holders participate in the business model facilitated by Opt-Tunz, they generate revenue from the Distributor based on the amount of their content that is consumed.

SNOCAP Opt-Tunz allows Distributors to:

- Identify music using a combination of robust identification technologies, including acoustic fingerprinting
- Obtain distribution terms specified by Rights Holders for identified content
- Use distribution information to determine how content should be treated
- Report content usage data to SNOCAP to compensate Rights Holders
- Obtain reports on content availability

SNOCAP Opt-Tunz allows Rights Holders to:

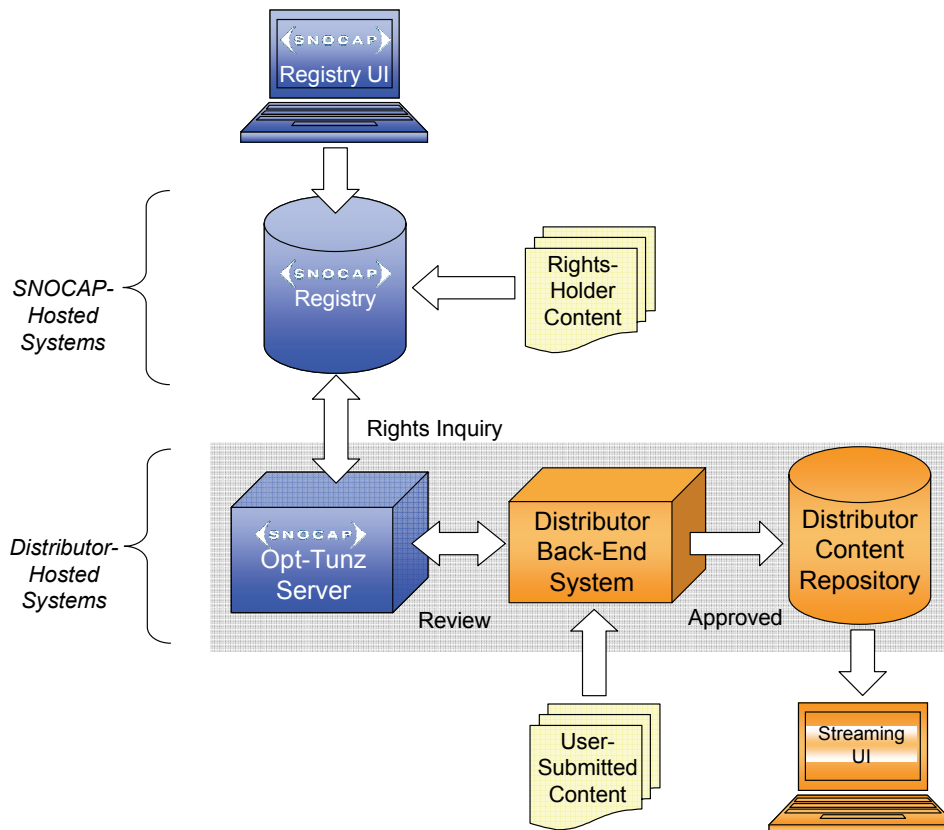
- Opt-in to revenue-generating relationships with Distributors
- Specify, on a track by track basis, which content is authorized for use by specific Distributors
- Collect payment of revenue splits based on the share of content consumed
- Obtain reports on content usage

This solution makes use of the underlying SNOCAP Rights Management Service (RMS). The SNOCAP RMS maintains content and license information provided by Rights Holders, records content distribution data, and provides accounting and reporting services to Distributors and Rights Holders. Details about the SNOCAP RMS are described in a separate whitepaper.

To describe the capabilities and functionality of SNOCAP Opt-Tunz, this overview presents an example of how the service could be used by Distributors and Rights Holders to implement a revenue-sharing business model for audio streaming of user-submitted content.

System Architecture

SNOCAP Opt-Tunz is comprised of software hosted by the Distributor that communicates with the Registry hosted by SNOCAP. The software run by the Distributor, the Opt-Tunz Server, uses multiple techniques to identify music uploaded by users of the Distributor's system. Unique signatures derived from the submitted audio files are passed to the SNOCAP Registry to obtain corresponding distribution terms specified by Rights Holders. The Distributor uses this information to determine whether the uploaded tracks have been approved by the Rights Holder for streaming to other users. When uploaded tracks are streamed by users, the Distributor logs this information and reports the aggregated stream count to SNOCAP on a regular basis. Based on this data, along with data about the Distributor's revenue, SNOCAP calculates the payment owed to each participating Rights Holder.



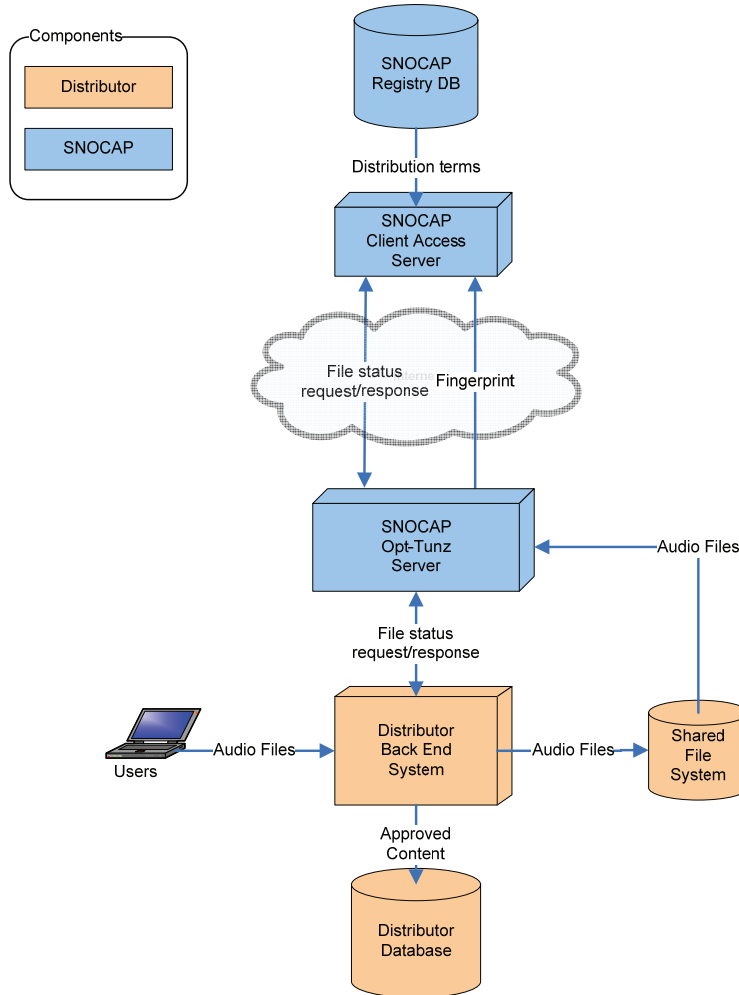
Integration Approach

This section presents one high-level system design that can be used by Distributors to perform these functions and interact with the SNOCAP services. The components that make up this design, along with the process flow used to obtain distribution terms and report aggregated stream counts are described below. While this architecture represents one possible solution, alternative approaches can be implemented by the Distributor.

System Components

The Opt-Tunz system consists of software components hosted by the Distributor along with components hosted by SNOCAP. The Distributor also provides components that participate in this solution. Each of the components in this system is described below.

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SNOCAP Registry Database

This is the core database for the SNOCAP Rights Management Service containing all data about tracks, distribution terms, organizations—everything that is needed to manage distribution terms used by Opt-Tunz.

SNOCAP Client Access Server

This is a high performance server hosted by SNOCAP for retrieving distribution terms given file identification information. This server maintains an in-memory cache of this information to improve performance, and is accessed by SNOCAP client software using a secure, proprietary binary protocol.

The Opt-Tunz Server

The components that make up the Opt-Tunz Server are hosted by the Distributor and are responsible for identifying user-submitted content and obtaining the corresponding distribution terms. File identification is performed using multiple techniques, including acoustic fingerprinting. If a match is made, the corresponding distribution terms are retrieved. If no match is made, file identification data are added to the SNOCAP Registry so that subsequent matches can be made more efficiently.

Distributor Back-End System

This is the business logic that processes content submitted by users of the Distributor's service and determines how that content can be used. This system invokes an interface exposed by the Opt-Tunz Server to obtain the distribution terms for a file. This system is also responsible for obtaining updated distribution terms at least once a day and enforcing the terms set by Rights Holders.

Distributor Database

This is a database that stores the information received from the SNOCAP Opt-Tunz Server corresponding to user-submitted content. It also stores per-track streaming statistics reported back to SNOCAP for revenue sharing calculations. How this data is stored and managed is a design decision of the Distributor, but this component is shown to represent the information that must be maintained.

Shared File System

This is a file system accessible both by the Distributor Back-End System and the Opt-Tunz Server. This is a high-performance permanent file storage system that contains the user-submitted files to be processed by Opt-Tunz.

Process Flow

The proposed system assumes a web based application run by the Distributor where users of that system are able to upload audio files for streaming. The data processing flow involved in identifying content, checking distribution terms, tracking streams, and updating the distribution information involves the following steps.

1. Files are uploaded into the Distributor's back-end file system which is accessible by the SNOCAP Opt-Tunz Server.
2. The Distributor Back-End System requests from the Opt-Tunz Server distribution terms for the file.
3. The Opt-Tunz Server performs the necessary file identification, communicating with the SNOCAP Client Access Server to obtain distribution terms.
4. The Opt-Tunz Server returns to the Distributor Back-End System the corresponding distribution terms and this information is stored in the Distributor Database.

Once files have been identified and the corresponding distribution terms obtained, the Distributor's system performs the following actions.

- If the distribution terms indicate that the file is licensed for streaming, the Distributor's system allows that action to be performed by users.
- Each time a file is streamed, the Distributor's system counts that event and stores it in the Distributor Database.
- Periodically, aggregated stream reports are generated by the Distributor and sent to SNOCAP.
- Periodically, the Distributor Back-End System requests updates for previously obtained distribution terms in the Distributor Database by invoking the Opt-Tunz Server with an update request.

Reporting the aggregated stream data back to SNOCAP

SNOCAP provides an interface for the retailer to report aggregated stream counts. The stream count data file includes information about the tracks that have been streamed, the country where the streaming occurred and the time period represented by the report.

Reports for the Distributor

SNOCAP provides reports to Distributors listing the participating Rights Holders, and for each Rights Holder, the content that has been opted-in to the service.

Rights Holder Interface

Rights Holders use the SNOCAP Registry to opt-in content to Distributors who use the Opt-Tunz service, obtain reports showing revenue accrual, and monitor how their content is being consumed in the Distributors' systems.

Opting in to Opt-Tunz-Enabled Distributors

In the SNOCAP Registry, Rights Holders are presented with information about organizations that use the SNOCAP service to sell or distribute content. Distributors using Opt-Tunz are presented, along with details about their business model and service. Rights Holders may choose to opt-in to these services, and may do so at the granularity of individual tracks. Individual artists and some independent labels are opted in to Distributors' services automatically after a 15 day period following the announcement of the Distributor in the SNOCAP system unless the Rights Holder specifically declines participation. Rights Holders may opt-out of these services at any time.

Calculating the Revenue Share

At the end of each accounting period, SNOCAP invoices the Distributor for the share of advertising revenue specified for Rights Holder payments. This revenue share is part of the Distributor's business model presented to Rights Holders, who may choose to opt-in or decline to participate.

The determination of payments to individual Rights Holders is based on a calculation of the pro-rata share of that Rights Holder's content consumed by users of the Distributor's system. For example, if the Distributor's system accounted for 100 streams of content over an accounting period, and 20 of those streams were of content owned by Rights Holder "A", Rights Holder A would be owed 20% of the revenue pool set aside by the Distributor for Rights Holder payment. If the Distributor agreed to share 30% of advertising revenue with participating Rights Holders, and the Distributor earned \$200,000 in advertising revenue for the accounting period, Rights Holder A would be paid \$12,000.

\$200,000	Distributor's total advertising revenue
30%	Percent of total revenue shared with all Rights Holders
\$60,000	Revenue shared with all Rights Holders
20%	Percent of overall streams belonging to Rights Holder A
\$12,000	Pro-rata share of revenue owed Rights Holder A

Rights Holder Reports

Rights Holders access reports through the SNOCAP Registry web interface. These reports contain the content streaming and earnings information for each track consumed by a Distributor during a specific accounting period.

Security Considerations

Opt-Tunz security considerations encompass the following:

- Fraudulent registration of audio content
- Fraudulent submission of track identification information to SNOCAP
- Fraudulent submission of track stream data to SNOCAP

Other security considerations exist for the SNOCAP Rights Management System—these considerations are discussed in the whitepaper specific to that system. The considerations specific to Opt-Tunz are discussed below.

Content Registration Security

Rights Holder accounts are tiered based on the type of organization with which the account is associated. Individual content providers have limited capabilities in the system relative to larger organizations (for example, independent and major record labels), and content they register must correspond to the artist names they represent at account creation time. Furthermore, audio content that is uploaded into the SNOCAP system is identified using the SNOCAP Content Identification System. This system identifies audio content based on its acoustic data, and therefore is not susceptible to misidentification due to erroneous metadata or changes to file format, filename or bit rate. The fingerprinting infrastructure maintains a database of fingerprints which is updated as new content is received. This system allows for the detection of content registered by multiple parties, and flags such instances for resolution based on a variety of business rules that consider the type of organizations making the claim and the order in which the claims were made.

Track Identification Security

Track identification is performed by the Opt-Tunz Server running in the Distributor's facility. It is thereby the responsibility of the Distributor to control access to the machines running the Opt-Tunz Server and the file system on which user-submitted content resides. When the Opt-Tunz Server generates fingerprints for user-submitted content, these fingerprints are sent to the SNOCAP Registry over a secure TCP/IP connection using a proprietary binary protocol. Similarly, distribution terms corresponding to the sound recording represented by the fingerprint are transferred from the SNOCAP Registry to the Opt-Tunz Server over this same secure connection. The Opt-Tunz Server and the SNOCAP Registry share a secret key that is used to authenticate this connection.

Stream Reporting Security

Aggregated stream counts are generated by the Distributor and are delivered to SNOCAP via a secure FTP site to which only the Distributor and SNOCAP have access.