

MN Open API Implementation Guide

Part One: Features and Business Rules

June 2010

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Audiences for this Document

The MN Open API Implementation Guide is composed of three parts:

1. The MN Open API Implementation Guide Part One: Features and Business Rules (this document), which provides an overview of features and the options for engagement.
2. The MN Open API Implementation Guide Part Two: Technical Details of the MN Open API, which includes API definitions, extensive technical guidance, and use cases.
3. The MN Open API Implementation Guide Part Three: Sample Code, which includes API sample code and snippets to help jumpstart development.

The MN Open API Implementation Guide is written for two Customer audiences: business decision makers and technical implementers. Part One is applicable to both groups, while Part Two contains the technical details required for a successful implementation, and is intended for a technical audience. As such, the second section assumes a certain level of proficiency with web technologies to include HTTP, HTML, and JavaScript, as well as with at least one programming language; e.g., PHP, Java, ASP, JQuery, etc. Part Three contains example code snippets.

Customer Support for the MN Open API

To ask questions about and receive support for the MN Open API, please contact apisupport@mndigital.com. This is a MediaNet distribution list monitored by subject matter experts around the company. Support will be provided within 24 hours during regular business hours 9AM to 5PM (Pacific Time).

With any correspondence, please include:

- Name of the MN Open Customer entity
- Issue Description including expected and actual results
- Repro Steps
- API call(s) and response(s)
 - URL(s) with query string(s)
 - POST body content if applicable
 - Complete response

Please visit www.mndigital.com for more information.

Part One: Features and Business Rules

The MediaNet MN Open API is an easy-to-use interface, providing Customers with rich functionality for music discovery and fulfillment. Technically it is similar to APIs offered by Internet leaders like Google, Flickr, Facebook, and others. Customers who have worked with any of those APIs will find the MN Open API immediately familiar. The MN Open API gives access to over eight million MP3 tracks from all major music labels and thousands of independent labels. The entire catalog of MP3 tracks is available for purchase download and includes sample streams, artist and album cover art, and a rich set of metadata. Full-length streaming is also available for most of the catalog.

US and International Territories/Catalogs: In June 2010 MediaNet added support for multiple territories, and catalogs for Canada and the UK. Customers of MN Open Standard choose one territory. Multiple territories require an MN Open Plus Agreement. MN Open Plus Customers will have a default territory, plus one or more additional territories. MediaNet addresses all territory-specific differences including: rights, pricing, currencies, publishers, etc. The MN Open Ecommerce solution addresses the differences in territory-specific tax rules, reporting requirements, Terms of Use, consumer protections, and payment methods.

Catalog Access via API vs. Feed: Instead of the default practice of acquiring metadata through the API dynamically, Customers can subscribe to the MediaNet XML Content Data Feed (one per territory/catalog). For MN Open Standard Customers, subscription is a value-add that requires additional terms and fees; the feed is included in MN Open Plus Agreements. The feed provides everything Customers need to know about the MediaNet catalog, allowing Customers to flexibly program content as necessary. The feed is an XML Schema (XSD) -based file published five days a week, generally M-Th and Sat. Content Partners provide new release content in advance, which appears in the feed with future dates so programming staffs can feature these releases on the street date, or promote them ahead of time. (Please note that retail pricing and MN Open wholesale pricing information is not in the feed. These must be obtained in real-time from the API.) If interested, please contact MediaNet Business Development.

Transaction Processing: Customers can utilize their own existing ecommerce solutions or choose to use ecommerce provided by MediaNet:

- Credit card payments: using the MN Open APIs to bill end-user's credit cards for purchases. In this model, the retail price is set by MediaNet and Customers receive a revenue share on all transactions (deposited into the Customer revenue share balance).
- Account balance payments: deducting the MN Open wholesale cost from the Customer account balance. In this model, Customers set the retail price while the MN Open wholesale content cost is deducted from the Customer account balance.

Please see the "Transaction Options" section below for more information. API Customers can even use one or both of the MediaNet Media Purchase (aka Shopping Cart) Web Component and Download Manager if this aids in integration and launch. (Please note that use of the Shopping Cart requires use of the Download Manager.)

Technology: The MN Open API is a REST-based¹ HTTP service that is built on top of the MN Open Platform, our enterprise-class media delivery technology enabling access to a rich media catalog. The API is stateless, easy to work with using any programming language, returns responses as XML or JSON, and includes all the transactional capabilities Customers need to create a complete music application.

¹ Representational State Transfer; please see <http://en.wikipedia.org/wiki/REST>

In a nutshell, interacting with our API consists of:

1. An HTTP request, and
2. An HTTP response returned to the caller as either XML (the default) or JSON².

At a more detailed level, it consists of:

- Appropriate HTTP actions supported by the API:
 - GET to make calls where all parameters are provided in the URL (query string format³)
 - POST to make calls requiring large/complex data sets that cannot be provided in the URL
- Parameters (scoping) will be specified in the query string and must be URL-encoded⁴
 - Complex data will be sent using JSON or XML in the body of a POST.
 - URL (query string) parameter names and values are not case-sensitive. Element names for XML-formatted POST bodies are case-sensitive.

Example -- parameters are in bold:

`http://api.mndigital.com?method=search.gettracks&artist=Pearl+Jam&page=1&pageSize=1`

- An HTTP response consisting of XML (MIME type text/XML) or JSON (MIME type text/javascript).

Errors, if any, are indicated within the HTTP response inside an XML- or JSON-formatted Error node (not to be confused with HTTP response codes). The Error node will contain a relevant MN Open API error code and human-friendly message. Please refer to "Common Errors" in Part Two: Technical Details of the MN Open API.

For clarity: since the service is HTTP-based, all responses will have both an HTTP protocol response code and status message⁵ in addition to the API response success and error messaging.

Security: Customer Authentication and Encryption

MediaNet will assign each Customer an API Key and a Shared Secret.

- API Key: This unique identifier will be required for all API calls. MediaNet will use this to authenticate and identify each Customer's account.
- Shared Secret: This will be required for many API calls. It will be used to create a Signature: an HMAC-MD5 hash⁶ of the query string. The Shared Secret should be kept highly secure. **Never send it via email.**
- SSL: This will be required for any API calls with sensitive or transaction-related data. It will be implemented simply by calling the command using https:// instead of http://.

Keep the API Key and especially Shared Secret secure. The Shared Secret is used to generate a signature for each API call. Please see "Generating Signatures with the Customer Shared Secret" in Part Two for more detail. Note that some client-side implementations may expose the API Key. If such an implementation would disclose the Shared Secret, it is not allowed.

Important Note: If a Customer's API Key and/or Shared Secret become compromised, new ones will need to be issued, which may result in a service interruption.

For more information, please see "Generating Signatures with the Customer Shared Secret" in Part Two: Technical Details of the MN Open API.

² JavaScript Object Notation; please see <http://en.wikipedia.org/wiki/JSON>.

³ Query String; please see http://en.wikipedia.org/wiki/Query_string.

⁴ Also known as Percent Encoding. Please see http://en.wikipedia.org/wiki/URL_encoding.

⁵ For details on HTTP status codes, see http://en.wikipedia.org/wiki/List_of_HTTP_status_codes

⁶ Please see <http://en.wikipedia.org/wiki/HMAC-MD5>

Transaction Options

As mentioned above, Customers may use their own ecommerce solutions or use MediaNet's -- or both. And Customers may use their shopping cart and/or download manager -- or MediaNet's. MN Open Plus Customers may mix and match across multiple territories. This section describes in greater detail how credit card payments and account balance payments work. There is also discussion about pricing and tax collection and reporting. Customers may use both options.

Credit Card Payments

To offer conventional credit card payments to end users, Customers can use the MN Open Provisioning APIs, which features support for all major credit cards (see next for territory breakdown), industry-standard encryption and security, shopping cart functionality, a la carte transactions, and more. The complexity is handled by MediaNet. Transactions will appear on end user credit card statements as "<CustomerName> MP3" (limited to 25 characters).

Credit Cards by Territory:

- US: Visa, MasterCard, Discover, and American Express
- Canada: Visa, MasterCard, and American Express
- UK: Visa, MasterCard, Diners, and Maestro

When using the MN Open Ecommerce solution, the retail price for each item is returned in the Content Discovery APIs. Each purchase made using MediaNet credit card processing will earn a revenue share. Customer revenue shares are based on the retail cost for each item sold, excluding taxes and other fees. The credit card processing transaction fees are absorbed by MediaNet.

The revenue share earned on each transaction is deposited into Customer revenue share accounts (maintained separately from Customer regular account balance). MediaNet applies a 30-day hold on all revenue share transactions to protect against fraud; e.g., to ensure that an end user does not issue a chargeback for a transaction. After the 30 days, the revenue share is available for Customers either to transfer into the regular account balance or for withdrawal.

Customers can optionally create users in the MN Open Platform, including storing their credit card number for future purchases. (The default usage is to not store credit card numbers.) Credit card payments for a given territory are currently available only for card holders residing (billing address) in each territory. For example, a resident of the United States can purchase only from the US catalog.

Account Balance Payments

A second option for processing transactions is to use the MediaNet Account Balance payment model. Customers can deposit funds into their account balance using a credit card at initial set up or any time thereafter via the Partner.RefillBalance API, or by check. To fund or refill by check, please contact ApiSupport@mndigital.com directly. There is a 3% processing fee when refilling by credit card. Funding or refilling by check can take up to 30 days before the funds are reflected in an account balance.

With this payment model, every purchase transaction is deducted against the Customer Account Balance. The amount deducted for each transaction is the MN Open Wholesale Cost for the content that is exposed within the Content Discovery APIs. MediaNet also offers a Management API that allows Customers to retrieve account balances at any time: `Partner.GetBalance`.

Customer Account Balances and Revenue Share Balances are viewable in the MN Open Customer Portal. Starting July 2010 it will be possible to register credit cards and set auto-refill thresholds per territory in the Customer Portal. To obtain login credentials for the Customer Portal, please contact MediaNet Business Development.

With this payment model, combined with a Customer's own commerce system, Customers are free to set the end-user retail price at any amount, with certain exceptions described under "Pricing, Required Retail Price and Tax Handling," next.

Important Note: The Account Balance model is required in order to offer Full-length Streaming.

Pricing, Required Retail Price and Tax Handling

When Customers retrieve metadata via the Search APIs, it will be accompanied by the MN Open Wholesale Cost and a Suggested Retail Price (SRP). When Customers use their own commerce system (per the discussion above), generally Customers may set retail prices. However, some content is accompanied by a Required Retail Price (Sony, WMG, and/or UMG)⁷, as well as the requirement in the US to collect and report tax in certain states (Sony only). The Required Retail Price will be indicated in Search responses as the element: `IsSetPrice=True`. Recommendation: implement in code that any appearance of `IsSetPrice=True` must be observed.

Example

```
"PriceTag": {  
  "Currency": USD,  
  "Amount": 1.29,  
  "IsSetPrice": true,  
  "Wholesale": 1.02  
},
```

When present, the value from the Amount element must be used.

Sony Agency Model (US Only)

In the US, two additional requirements must be met for Sony content (indicated by `LabelOwnerId=3`):

- Customers must report the end user's city, state, and zip code, as well as the amount of tax collected with any purchases of such content
- Customers can use the `Label.GetLabelOwners` API call to get a current list of Label owners. Please see the `Label.GetLabelOwners` definition as well as Appendix B in the MN Open API Implementation Guide Part Two: Technical Details of the MN Open APIs.
- Customers must add to any checkout page, receipt pages, and receipt emails that contain Sony content the following text string **exactly as written** -- no changes are acceptable:

"Any permanent downloads of Sony Music Entertainment products are sold directly by Sony Music Entertainment Digital LLC via MediaNet Digital, Inc. as its agent."

At the time of writing, tax must be collected for such content only from residents of Texas (and again, only for Sony content). Please see "Appendix A: Sony Agency Model Nexuses and Tax Rates" in the MN Open API Implementation Guide Part Two: Technical Details of the MN Open APIs.

In the credit card payment model, MediaNet handles the tax calculation and rule enforcement, and any tax collected will be excluded from revenue share calculations. In the Account Balance payment model, taxes owed (Texas; only for Sony content) will be further deducted from the Customer Account Balance. In this case, Customers collect taxes directly from end users and MediaNet will deduct the tax from the Customer Account Balance to be passed through to the appropriate content owner.

Please note that any other tax collected (i.e., from within their own state or other obligations) does not need to be reported via MN Open APIs. Please see the Notes under the `Purchase.UseBalance` definition MN Open API Implementation Guide Part Two: Technical Details of the MN Open APIs for more information.

⁷ In Canada and the UK this applies to any content owned by Warner/WMG (`LabelOwnerId=1`) and UMG (`LabelOwnerId=5`) and may apply to others in the future. In the US this also applies to Sony (`LabelOwnerId=3`).

Full-length Streaming Overview

In early 2010 the MN Open Platform added Non-DRM full-length streaming to its offering, complementing the purchase downloads already available. Full streams are available *A La Carte*; i.e., there is no subscription required by end users. Customers must use the Account Balance transaction model: Customers fund balances upfront, and then buy streams for end users as needed. Each purchase debits the Account Balance with the wholesale cost of a stream (this includes the MediaNet delivery fee plus fees owed to labels and publishers). Please contact MediaNet Business Development for any questions about business and financial terms.

Full streams are available in three codec/bitrate options:

- High Bitrate 256/320kbps MP3 (Sony and WMG content is 256kbps; that of all others is 320kbps)
- Standard Bitrate 128kbps MP3
- Alternate Bitrate 64kbps AAC+ aka MP4 (value-add intended for delivery to Mobile platforms)

Full streams may be delivered via two mechanisms:

- Adobe Flash Media Server (RTMP)
- HTTP Progressive Download ("HPD") (value-add intended for delivery to Mobile platforms⁸)

With these six permutations, all manner of platforms, clients, and browsers are supported.

Territory Restriction: Catalogs by Country/Territory

Each country (territory) has its own catalog. All content available via the MN Open APIs for a particular territory (catalog) is available for sale only in that territory. For business models that involve gifting or code redemption -- where the purchaser and recipient may be different entities -- both must reside in the same territory. For example, the default MN Open catalog is for the US. Purchaser and recipient must be in the US. To aid in enforcement, MediaNet makes an API available (Search.GetGeoLocation) that returns an end user's country/territory based on their IP address.

US and International Territories/Catalogs: In June 2010 MediaNet added support for multiple territories, and catalogs for Canada and the UK. Customers of MN Open Standard choose one territory. Multiple territories require an MN Open Plus Agreement. MN Open Plus Customers will have a default territory, plus one or more additional territories. MediaNet addresses all territory-specific differences including: rights, pricing, currencies, publishers, etc. The MN Open Ecommerce solution addresses the differences in territory-specific tax rules, reporting requirements, Terms of Use, consumer protections, and payment methods.

From a technical integration perspective, MN Open Standard Customers will always work by default with their chosen catalog. No additional steps are required. In the case of MN Open Plus Customers that have multiple territories configured, to access and work with their non-default territories, application code must be modified to include with API calls the target country (the "country code" parameter: &cc) so that appropriate rights, pricing, and reporting are obtained.

Availability of Beatles and AC/DC and Some Others

Please note that a few artists, notably both the Beatles and AC/DC, have elected not to offer their catalogs for digital distribution for sale by digital music retailers. Only karaoke and tribute band material for both these bands is available.

⁸ **Important Note:** use of the HPD option requires that the Customer application ensures the local file is not persisted/cached or otherwise savable by the end user. Use of HPD for delivery to non-Mobile Platforms must be cleared with MediaNet; please contact MediaNet Business Development.

Album / Track Revocation

From time to time, the full set of albums and tracks that are available through the API may change as albums and tracks are added to, or deleted from, the full catalog offerings. MediaNet receives content rights updates and requests for content removals on a daily basis and every Customer application must take this into account. Reasons for this include rights changes by content owner(s) or ownership conflicts.

Bitrate Information

All content available via the MN Open APIs is 320kbps except for Sony and Warner content, which is 256kbps. In other words, over 90% of the MediaNet catalog is at the higher-quality 320kbps bitrate.

MN Open API Best Practices Checklist

The following list of MediaNet Best Practices comes from a decade of experience working with Customers to build and deploy successful music services. Observing these practices will help shorten the time to launch, and result in fewer defects along the way.

1. **Design then build:** Architect and design application functionality and then code a prototype.
2. **Authentication:** Keep the API Key and especially Shared Secret secure. Note that some client-side implementations may expose the API Key or Shared Secret. If the API Key and Shared Secret become compromised, new ones will need to be issued, which may result in a service interruption.
3. **Scenarios:** Review the "Use Cases" section of the MN Open API Implementation Guide Part Two: Technical Details of the MN Open API to help envision the use cases that end users may have.
4. **Required Retail Price:** observe the IsSetPrice flag.
5. **Sony Agency Model:** For Sony content in the US:
 - a. Collect tax where appropriate (Texas).
 - b. Report City, State and Zip in Cart and Purchase API calls.
 - c. Include in checkout pages, receipt pages, and receipt emails the Sony Agency text.
6. **Caching Guidelines:** If a Customer application uses caching for a portion of the catalog, refresh the cache at least once a day to avoid any issues with Album or Track Revocation.
7. **Artist Images:** be sure to test for any 404s in case the image is not yet available.
8. **Bundles:** Observe the AlbumPurchaseOnly flag. Some tracks are available only as part of an album.
9. **Search:** For more exact searches of Albums, include Search.GetAlbums mainArtistOnly flag, otherwise karaoke and/or tribute will be returned.
10. **AMG Data Guidelines:** Customers using Partner.GetAMGData must always use the Google Analytics snippets returned by the API.
11. **Catalog Access via API vs. Feed:** Instead of the default practice of acquiring metadata through the API dynamically, Customers can subscribe to the MediaNet XML Content Data Feed (one per territory/catalog). For MN Open Standard Customers, subscription is a value-add that requires additional terms and fees; the feed is included in MN Open Plus Agreements. The feed provides everything Customers need to know about the MediaNet catalog, allowing Customers to flexibly program content as necessary. The feed is an XML Schema (XSD) -based file published five days a week, generally M-Th and Sat. Content Partners provide new release content in advance,

which appears in the feed with future dates so programming staffs can feature these releases on the street date, or promote them ahead of time. (Please note that retail pricing and MN Open wholesale pricing information is not in the feed. These must be obtained in real-time from the API.) If interested, please contact MediaNet Business Development. MediaNet generates a FULL feed once monthly. The feed is delivered via a Secure FTP (SFTP) transfer and the files are in UTF-8. For more information on loading the XML feed into a Customer's database application, that database's documentation regarding XML Bulk Loading, UTF-8, and DTD schemas.

12. **Catalog Availability by Label:** The entire catalog of over eight million MP3 tracks from all labels is returned in the MediaNet Integration Environment ("IE") for optimal development and testing. To learn whether all content from all labels is available also in the MediaNet Production Environment ("PROD"), please contact MediaNet Business Development.

Searching by Genre

Customers can use the following Genres in calls to Artist.GetTracks, Artist.GetAlbums, Search.GetAlbums, Search.GetArtists, and Search.GetTracks:

1. Alternative/Indie
2. Blues
3. Cast Recordings/Cabaret
4. Children's
5. Christian/Gospel
6. Classical/Opera
7. Comedy/Spoken Word
8. Country
9. Electronica/Dance
10. Folk
11. Instrumental
12. Jazz
13. Latin
14. New Age
15. Pop
16. Rap/Hip Hop
17. Reggae/Ska
18. Rock
19. Seasonal
20. Soul/R&B* *the ampersand in "R&B" must be URL-encoded; i.e., represented as %26*
21. Soundtracks
22. Vocals
23. World

Genre classifications are maintained and published by the record labels; i.e., not maintained or edited by MediaNet. Please note that a track may appear in one or more Genres and an album may have different genres for each of its tracks. In general using Genre along with other keywords and search terms will result in narrower search results. Using multiple Genres in the same query is not supported; however, integrators can concatenate search results from one or more Genres. The result set of a genre search is already sorted by popularity ranking.

Important Note: The result set may include items that have genres different from the one searched; this is expected as many assets have both primary and secondary genre classifications.

Searching by Label

Using the API dynamically it is not possible to compose searches by label; i.e., with label as an input parameter. Instead, all Search and Get responses include <Label> and <LabelOwnerId> (the latter being more significant) in the metadata returned. Customers thus can perform searches and then process the results. This scenario is well-served by subscription to the MediaNet XML Content Data Feed; see Best Practice #11 above.

Launch: Going Live with End Users

The moment that a Customer is onboarded into the MN Open Platform and has received their API keys, etc., then that Customer may launch as soon as their integration is complete -- but only from PROD, the MN Open Production environment. Customers are not allowed to launch from IE, the MN Open Integration Environment, which is intended solely for development and testing. Specifically, sample streams and metadata including album and artist art may only be presented to end users when accompanied by purchase opportunities; i.e., a Buy button. In IE, no live download locations are returned (except for four tracks in one album of "sample content intended for low-cost testing"), which means that Buy buttons would not function.

In IE, content from all labels is available -- again for development and testing purposes. In PROD, initially only about 80% of the Indies is available. The Major Labels and the larger Indies and Aggregators are filtered out. Please work with MediaNet Business Development on Submission to Labels, and the Label Review Process.

To launch, Customers must comply with the MN Open Terms of Service (visit <http://www.mndigital.com/legal/> for territory-specific versions) and the MN Open Basic Service Guidelines (PDF). Please contact MediaNet Business Development for a copy.

MN Open API Metadata

The following pieces of metadata are exposed via the MN Open API. Most are common across methods, but some come back only from one or a handful of the API.

Metadata Item	Description	Notes (page nums in API doc)
Album Art URLs	Paths to album images	
Album MnetID	Unique identifier for an album	MnetID is our catalog primary key for everything
Album Reviews	From Allmusicguide.com	Value-add with add'l terms and fees
Album Title	Name of an album	
Artist	Name of an artist	
Artist Art URLs	Paths to artist images	
Artist Bio	From Allmusicguide.com	Value-add with add'l terms and fees
Artist MnetID	Unique identifier for an artist	
Bitrate	Purchase files: 256 or 320kbps Stream files: <ul style="list-style-type: none"> • 256 or 230 kbps MP3 • 128 kbps MP3 • 64 kbps AAC+ 	See section "Bitrate Information"
DiscNumber	To account for sets of discs	
Duration (track)	Track time in minutes and seconds	
Duration (album)	Total time for an album	
Explicit Lyrics	(Boolean)	
FeaturedArtists	Secondary artists for a work	
Genre	MediaNet tracks 23 genres. Please see discussion following this table.	Please see list following this table
Label	The string representation of the Content Provider name	
LabelOwnerID	Numeric representation of Content Provider	Some Content Providers are owned by other Content Providers. This field shows which company is the ultimate "parent" owner.
Mp3Rights, containing: <ul style="list-style-type: none"> • CanSampleStream • CanPurchaseDownload • AlbumPurchaseOnly • CanStream 	(Boolean) (Boolean) (Boolean) (Boolean)	
NumberOfTracks	Total number of tracks in an album	
PopularityRanking	Rank of a work in the catalog	Updated weekly
PriceTag, containing: <ul style="list-style-type: none"> • Currency • Amount • IsSetPrice • Wholesale 	(Boolean)	See section "Pricing, Required Retail Price and Tax Handling" for more information about IsSetPrice=true case
ReleaseDate	The digital release date	Not the same as the original, physical release date
ReleaseDate (at track level)	The digital release date	
SampleLocations, containing: <ul style="list-style-type: none"> • MediaLocation • MnetID • Location • Resource 	The path to the sample for a track	See section "Streaming Samples with Flash: RESOURCE and LOCATION" for more information.
Track MnetID	Unique identifier for a track	
Track Title	Title of a track	
TrackNumber	On a given disc	Example: Track 3 of 8 total on album

Appendix A: Change History / Errata

April 2010

- Created Parts One, Two, and Three as individual documents.

June 2010

- Added Multiple Territories/Catalogs.