U.S. Department of Transportation Federal Motor Carrier Safety Administration

DRUG & ALCOHOL CLEARINGHOUSE Web Services Development Handbook For State Driver Licensing Agencies

Version 1.3



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# **Revision History**

Revision Number	Document ID	Description of Change	Revision Date
1	Draft 1.0	Initial Draft	March 2022
2	Draft 1.1	<ul> <li>Addition of a certificate-based option for self- generation of JWTs</li> <li>Updates to driver element</li> </ul>	April 2022
		<ul> <li>Details on elements to be included in push notifications</li> </ul>	
3	1.2	<ul><li>Updates to the driver element</li><li>Updates to push attributes</li><li>Addition of new REST actions</li></ul>	June 2022
4	1.3	<ul> <li>Minor corrections based on AAMVA feedback</li> <li>Inclusion of Rescinds element in REST request responses to bring it into alignment with push notification</li> </ul>	March 2023
		<ul> <li>Addition of an error reporting service</li> <li>Update to the pull by date service to target notification dates rather than creation dates</li> </ul>	

## List of Definitions

Term	Definition
JSON	A data interchange format used to store object data as a string.
JSON Web Token (JWT)	A token composed as a JSON object for providing user authentication.
Public Key Certificate	A file containing the public key component of the public/private key pair along with expiration and issuance data.
Public/Private Key Pairs	Also known as asymmetric keys, public/private key pairs are used for encrypting and decrypting data, as well as signing and verifying electronic signatures. Public keys can be distributed to anyone who requests them, while private keys must be kept private and secure.
State(s)All of the States, the District of Columbia, the Commonwe Rico, the Commonwealth of the Northern Mariana Islands Samoa, Guam, and the Virgin Islands.	

## List of Abbreviations

Acronym	Definition	
AAMVA	American Association of Motor Vehicle Administrators	
CDL	Commercial driver's license	
Clearinghouse	FMCSA CDL Drug and Alcohol Clearinghouse	
CLP	Commercial learner's permit	
CMV	Commercial motor vehicle	
DOT	Department of Transportation	
FMCSA	Federal Motor Carrier Safety Administration	
ICD	Interface Control Document	
JSON	JavaScript Object Notation	
JWT	JSON Web Token	
REST	Representational state transfer	
RTD	Return-to-duty	
SDLA	State Driver Licensing Agency	
SOR	State of Record	
SNS	Amazon Simple Notification Service	
UTC	Coordinated Universal Time	

## Table of Contents

Re	Revision History2		
Lis	List of Definitions		
Lis	List of Abbreviations		
Ta	ble of Contents	5	
	st of Tables		
	st of Figures		
	Introduction		
1			
	<ul><li>1.1 Purpose and Scope</li><li>1.2 About the Clearinghouse</li></ul>		
	1.3 Background		
	1.4 Roles and Responsibilities		
2	Accessing the Clearinghouse		
2			
	<ul><li>2.1 Authenticating Web Service Requests</li><li>2.1.1 Generating a JWT with Portal Credentials</li></ul>		
	2.1.1 Generating a JWT with Portal Credentials		
3			
ა	Retrieving Driver Status Data from FMCSA		
	3.1 JWT Inclusion 3.1.1 Responses		
	3.1.1 Responses		
	3.2 Driver Element		
	3.2.1 Driver Information Source		
	3.2.2 Notification Dates		
	3.3 Driver Status Requests		
	3.3.1 Search by Driver ID		
	3.3.2 Search by Country/subdivision and License Number		
	3.3.3 Search by Country/subdivision and Prohibited Status		
	3.3.4 Search by Country/subdivision and Status Date		
	3.4 Error Reporting		
_	3.4.1 Endpoint		
4	Receiving Data From FMCSA		
	4.1 POST Endpoint		
	4.1.1 Confirmation		
	4.1.2 POST Body		
	4.2 JSON Formatted Email		
	4.2.1 Commutation		
	4.2.2 Message Dody		
	4.3.1 Confirmation		
	4.3.2 Message Body		
Ap	opendix A: Additional Resources		
-	opendix B: References		
- <b>'P</b>	······		

## List of Tables

Table 1-1. Roles and Responsibilities	8
Table 2-1. Authentication Request	9
Table 2-2-2. Authentication Response	
Table 3-1. Request Response Codes	12
Table 3-2. Driver Status Element	13
Table 3-3. Search by Driver ID Request Body	15
Table 3-4. Search by Country/subdivision and License Number Request Body	
Table 3-5. Search by State and Prohibited Status Request Body	16
Table 3-6. Search by Country/subdivision and Status Date Request Body	17
Table 3-7. Error Submission Request Body	17
Table 4-1 POST Endpoint Notification (more information)	20
Table 4-2. POST Endpoint Message Body	21
Table 4-3. POST Endpoint Message Attributes	
Table 4-4 JSON Email Notification (more information)	
Table 4-5. JSON Email Message Body	27
Table 4-6 JSON Email Message Attributes	28

# List of Figures

Figure 4-1 an example subscription confirmation body	20
Figure 4-2 an example POST endpoint notification body	
Figure 4-3 an example JSON email notification body	29
Figure 4-4 an example text email confirmation	
· · · · · · · · · · · · · · · · · · ·	

## 1 Introduction

### 1.1 Purpose and Scope

This Web Services Development Handbook has been prepared by the Volpe National Transportation Systems Center (Volpe Center) for the Federal Motor Carrier Safety Administration (FMCSA) to guide and support States with the development of systems that will receive and retrieve driver status in the Drug and Alcohol Clearinghouse.

This handbook is for use by States who intend to set up a direct connection between their State IT systems and the Clearinghouse.

This handbook covers the following steps that States, or their third-party vendors, will need to take:

- Request an SDLA portal account.
- Interface with the Clearinghouse web service, which requires you to:
  - Authenticate with the service.
  - Submit requests for information.
  - Interpret service responses.
- Register for push notifications from the Clearinghouse push service.
- Receive and decode messages from the Clearinghouse push service.

#### **1.2 About the Clearinghouse**

FMCSA's Commercial Driver's License (CDL) Drug and Alcohol Clearinghouse (Clearinghouse) is a secure online database that gives employers, FMCSA, and State Driver Licensing Agencies (SDLAs) real-time information about CDL/CLP holder drug and alcohol program violations. The Clearinghouse improves safety on our Nation's roadways by making it more difficult for drivers to conceal their drug and alcohol program violations from current or prospective employers.

#### 1.3 Background

The Moving Ahead for Progress in the 21st Century Act (MAP–21) mandated that the U.S. Department of Transportation establish, operate, and maintain a national clearinghouse for records relating to alcohol and controlled substances testing of commercial motor vehicle (CMV) operators. MAP-21 also required that States request information pertaining to the individual from the Clearinghouse before completing certain licensing transactions.

The first Clearinghouse final rule entitled <u>Commercial Driver's License Drug and Alcohol</u> <u>Clearinghouse</u>, was published on December 5, 2016. This rule established the requirements for the Clearinghouse, including the requirements for reporting CDL/CLP holder drug and alcohol program violations, and requirements for employers to query the Clearinghouse to determine if a driver they hire or are considering hiring is prohibited from operating a CMV due to an unresolved drug and alcohol program violation. This rule was implemented on January 6, 2020, when the Clearinghouse became fully operational.

On October 7, 2021, the second Clearinghouse (Clearinghouse-II) final rule, entitled <u>Controlled</u> <u>Substances and Alcohol Testing: State Driver's Licensing Agency Non-Issuance/Downgrade of</u> <u>Commercial Driver's License</u>, was published. This rule established the Clearinghouse requirements for SDLAs. Beginning November 18, 2024, SDLAs must query the Clearinghouse before issuing, renewing, upgrading, or transferring CDLs and CLPs, and to review a driver's information when notified by the Clearinghouse of a status change. SDLAs will be required to remove the CLP or CDL privilege from the driver's license of an individual subject to the CMV driving prohibition, which would result in a downgrade of the license until the driver complies with the return-to-duty (RTD) requirements.

#### **1.4 Roles and Responsibilities**

FMCSA, employers, drivers, service agents, and States all play important roles in the implementation of the second Clearinghouse final rule. See the table below for a brief overview of these roles and responsibilities.

FMCSA	<ul> <li>Develop and maintain the Clearinghouse.</li> <li>Support state agencies adoption of Clearinghouse-II technical requirements.</li> </ul>	
Employers, MROs	<ul> <li>Register and create a Clearinghouse user account.</li> <li>Submit violation information, as required.</li> <li>Report negative RTD tests.</li> <li>Employers only: Query Clearinghouse to determine if a CDL/CLP holder is prohibited from operating a CMV when hiring, and at least once annually.</li> </ul>	
SAPs	Record CDL/CLP holder RTD information, including the date when a driver is eligible for RTD testing	
SDLAs	<ul> <li>Query Clearinghouse data to verify a driver is not in a prohibited status before issuing, renewing, upgrading, or transferring CDLs and CLPs.</li> <li>Query Clearinghouse data when notified by the Clearinghouse of a status change.</li> <li>Remove CLP or CDL privilege from the driver's license after receiving notification of prohibited status; record downgrade on the CDLIS driver record within 60 days of receiving notification.</li> <li>Reinstate commercial driving privilege to the driver's license and expunge the driving record accordingly when notified that an erroneous violation has been removed from the Clearinghouse.</li> <li>Reinstate commercial driving privilege to the driver's license when notified that the driver is no longer in the prohibited status (obtained negative RTD test result).</li> </ul>	
ΑΑΜVΑ	<ul> <li>Update CDLIS state procedures manual</li> <li>Define CDLIS updates to support states requesting and receiving Clearinghouse data via CDLIS</li> </ul>	
Drivers	Register and create a user account and respond to electronic consent requests from employers (consent not required for SDLA queries).	

Table 1-1. Roles and Responsibilities

## 2 Accessing the Clearinghouse

Authorized employees of SDLAs must use their FMCSA Portal accounts to access the Clearinghouse. Portal accounts are user-specific, which means that anyone logging in to the Portal should have their own unique user ID and password; an SDLA may not allow multiple users to log in using the same Portal account. Review the information below to learn about the FMCSA Portal and how to register for an account, if needed.

If you already have an FMCSA Portal account but have not yet requested the Portal Clearinghouse user role, download the <u>Portal Clearinghouse User Role job aid</u>.

You may <u>log in to the Clearinghouse</u> once you have an SDLA Portal account with the Clearinghouse Portal user role.

#### 2.1 Authenticating Web Service Requests

All requests to the Clearinghouse's representational state transfer (REST) service will be secured using a JSON web token (JWT) and bearer authentication. The JWT will be generated by submitting valid Portal credentials to a REST endpoint or using a client certificate issued to an organization by the Clearinghouse.

### 2.1.1 Generating a JWT with Portal Credentials

SDLAs may choose to forward an individual user's credentials to the service or to establish credentials to be used only by the service. The issued JWT will be valid for 20 minutes after which the client must request a new JWT from the Clearinghouse.

Note: Portal credentials expire every 60 days. Implementers should keep this in mind when designing systems that intends to make use of a service specific credential.

#### 2.1.1.1 Request Body

Name	Description	Requirements
Username	User ID for an SDLA user's FMCSA Portal account	String as defined by the FMCSA portal system
Password	Password linked to the user's FMCSA Portal account.	String with requirements defined by the FMCSA portal system

#### Table 2-1. Authentication Request

#### 2.1.1.2 Response Body

Name	Description	Requirements
Result	Status code indicating if the authentication request was successful or encountered an error	One of: Success InvalidUsernamePW Expired Locked Other UnexpectedError
JWT	If the authentication request was "Success", the JWT will be encoded and returned as a string.	String with a max length of 2000 characters

#### Table 2-2-2. Authentication Response

## 2.1.2 Generating a JWT Using a Client Certificate

SDLAs that wish to use this option will login to the Clearinghouse web interface and generate access credentials. These credentials will consist of three parts:

- 1. A unique identifier for the issued credentials.
- 2. A certificate that will be used by FMCSA to verify that messages submitted by your service are coming from you.
- 3. A private key that pairs with this certificate.

Be sure to save your private key and keep it protected as you would an account password. FMCSA will not maintain a copy of your private key. If you lose it, you will need to generate new credentials.

#### 2.1.2.1 Creating the JWT

When composing a request to the REST service, the client will need to generate a JWT with the following characteristics:

- Header must include the following claims:
  - o "alg" (Algorithm) must use the RS256, RS384 or RS513 signing algorithm
  - "typ" (Type) must be set to JWT
- Payload must contain the following claims:
  - "nbf" (Not Before) must be the current time or later with a 5 minute skew for clocks out of sync. The value must be provided as a Unix timestamp.
  - "exp" (Expiration) must be no greater than 20 minutes after the "nbf" value and must not be in the past, plus a 5-minute skew for clocks out of sync. The value must be provided as a Unix timestamp.

- "iss" (Issuer) identifier for the credentials used to sign the token that has been issued by FMCSA in the generation process described in section 2.1.2.
- Must be signed using the private key generated in the process described in section 2.1.2 of this document.
- Payload may contain the following optional claim:
  - "sub" (Subject) for tracking purposes, the client may pass a local identifier, which will be used to further identify actions performed by the service call. This value must be a URL encoded ASCII string with a maximum of 250 characters.

## 3 Retrieving Driver Status Data from FMCSA

FMCSA will provide a REST service to allow States to search for and retrieve driver status data from the Clearinghouse. The REST service will provide the ability to search for a driver or drivers by State and license number, prohibited status, and date of status change. Request and response bodies will use JavaScript Object Notation (JSON) formatting.

States will access the service using the credentials issued by FMCSA to generate a JWT and include this token in the request.

### 3.1 JWT Inclusion

The JWT defined in 2.1 should be included in all service requests using the bearer authentication header. Specifically, a header should be included in the request with the key "Authorization" and value "Bearer <JWT Token>".

#### 3.1.1 Responses

The Clearinghouse web service will notify the client of success or error using the HTTP response codes as defined in Table 3-1. Request Response Codes.

Code	Description	
200	Request was processed successfully.	
400	The format of the request was invalid. Details of the issue will be provided in a RFC 7807 compliant JSON response body.	
401	Bearer JWT token was not found or was rejected. Details will be returned in the x-amzn- Remapped-WWW-Authenticate header.	
403	User was authenticated but tried to access a resource to which they did not have permission.	
404	Requested resource was not found. In the case detail action, this would indicate that no driver information was found for the supplied ID.	
405	Incorrect verb was used when calling the action.	
415	Content type header was excluded or not set to "application/json".	
500	Internal server error. Details of the issue will be provided in a RFC 7807 compliant JSON response body.	

#### Table 3-1. Request Response Codes

#### 3.1.2 Health Check

The current health of the Clearinghouse service can be queried by performing a GET request on the path "/api/Health". A response with a status code of 200 that begins with the text "healthy" indicates the service is healthy with network and database connectivity.

### 3.2 Driver Element

All successful requests to the Clearinghouse web service will return one or more (up to 100 at a time) driver elements.

Attribute Name	Description	Requirements
ld	Unique identifier for this particular status change in the Clearinghouse	GUID in the format 0000000- 0000-0000-0000- 000000000000.
DriverId	Unique identifier for the driver in the Clearinghouse	GUID in the format 0000000- 0000-0000-0000- 000000000000.
Number	Number used to identify CDL or CLP issued by the SDLA.	Up to 25 characters in length.
State	Country and subdivision code as defined in ISO 3166-2.	Up to 6 characters using a 2- character country code, a dash, and a locality code of up to 3 characters.
FirstName	Given name of the driver.	Up to 100 characters in length.
LastName	Surname of the driver.	Up to 100 characters in length.
DateOfBirth	Date in the ISO 8601 format, including dashes to separate the components.	YYYY-MM-DD
IsProhibited	Driver status within the Clearinghouse. 'true' if the driver is prohibited from driving due to an unresolved drug and alcohol program violation, otherwise 'false.'	true/false
StatusDate	Date and time the driver status went into effect in ISO 8601 format. Date/time will be expressed in coordinated universal time (UTC).	YYYY-MM-DDTHH:mm:SSZ
Current	'true' if the returned record represents the driver's most recent status. 'False' indicates that the status has changed one or more times since the change represented by this event.	true/false
MarkedErroneousOn	Optional: If supplied, this is the date/time it was determined that the	YYYY-MM-DDTHH:mm:SSZ

#### Table 3-2. Driver Status Element

Attribute Name	Description	Requirements
	status change entry was based on an erroneous violation entry.	
	In ISO 8601 format. Date/time will be expressed in coordinated universal time (UTC).	
NotificationSentOn	If supplied, this is the date/time when the Clearinghouse sent a push notification to the State indicating the status change had occurred.	YYYY-MM-DDTHH:mm:SSZ
	In ISO 8601 format. Date/time will be expressed in coordinated universal time (UTC).	
Rescinds	Optional: This element will contain the id values (see id attribute in this table) of previously-entered status changes that have been determined to be the result of erroneous data entry. A notification containing rescinded ids indicates that the State may need to reinstate a driver's commercial driving privilege or purge data from State systems. In these scenarios, we recommend that the State review the driver's full status history to determine the correct course of action.	An array of GUID values in the format 0000000-0000-0000-0000-00000000000000
	Note: The attribute that is excluded, the attribute present with an empty value assigned, and the attribute assigned an empty array should all be treated equivalently.	

## 3.2.1 Driver Information Source

When data is entered into the Clearinghouse, the driver's license information will be checked against the State of Record using the Commercial Driver's License Information System (CDLIS). Alias information returned by the state of record (SOR) will be used to merge new and old license values into a single internal driver record. The license number, name, and date of birth values returned will represent the CDL/CLP information associated with the driver that was most recently validated successfully.

### 3.2.2 Notification Dates

Historical driver status tracking is a new Clearinghouse feature being added to support the Clearinghouse-II final rule implementation. As a result, all notification values in the system will have an epoch of <TBD> and any driver with a notification date of <TBD> can be presumed to have received that status some time prior to that date.

If a state query is conducted against a CDL/CLP which is not yet recorded in the system, the Clearinghouse will conduct a new query and assign the driver status data with the current date and time.

### 3.3 Driver Status Requests

FMCSA is currently supporting the query of driver status using 4 search functions:

- Driver ID
- Country/subdivision and license number
- Country/subdivision and prohibited status
- Country/subdivision and status date

All 4 functions will return an array of driver elements as defined in Table 3-2. Driver Element. For searches by prohibited status and date, results will be returned 100 elements at a time. A search by country/subdivision and license number or driver ID will offer the option of retrieving either the driver's current status or status history, depending on action used.

### 3.3.1 Search by Driver ID

A search by driver ID can be used to complement an email-based push notification or to quickly re-query a driver's status once an ID has previously been obtained. A driver ID will never be reused but may become inactive if the system identifies a second license number or set of license numbers which need to be merged into a single driver record. When this happens one of the driver records remains and the other is removed. A search by driver ID is guaranteed to return results for a single driver.

Attribute Name	Description	Requirements
DriverID	Unique identifier for the driver in the Clearinghouse	GUID in the format 00000000- 0000-0000-0000- 000000000000

## Table 3-3. Search by Driver ID Request Body

#### 3.3.1.1 Endpoints

Driver search by Id can return the driver's current status as well as their status history.

Current Value: https://clearinghouse.fmcsa.dot.gov/api/Driver/Byld/{DriverID}

History: https://clearinghouse.fmcsa.dot.gov/api/Driver/History/Byld/{DriverID}

#### 3.3.2 Search by Country/subdivision and License Number

A search by country/subdivision and license number is expected to return only a single driver record, as license number and State uniqueness are internally enforced.

Attribute Name	Description	Requirements
Number	Number used to identify a CDL or CLP issued by the SDLA.	Up to 50 characters in length.
State	Country and subdivision code as defined in ISO 3166-2.	Up to 6 characters using a 2- character country code, a dash, and a locality code of up to 3 characters.
		Any code defined in ISO 3166- 2:US, ISO 3166-2:CA, and ISO 3166-2:MX

### Table 3-4. Search by Country/subdivision and License Number Request Body

#### 3.3.2.1 Endpoints

Driver search by country/subdivision and number can return the driver's current status as well as their status history.

Current Value: https://clearinghouse.fmcsa.dot.gov/api/Driver/ByNumber/{State}/{Number}

History: https://clearinghouse.fmcsa.dot.gov/api/Driver/History/ByNumber/{State}/{Number}

### 3.3.3 Search by Country/subdivision and Prohibited Status

A search by country/subdivision and prohibited status is expected to return a listing of all drivers currently in a prohibited status. The results will be returned in a paged result set ordered by the date the driver status was changed to prohibited and then by driver ID.

Attribute Name	Description	Requirements
State	Country and subdivision code as defined in ISO 3166-2. Implementation will restrict access to only country subdivisions to which an organization has been granted access.	Up to 6 characters using a 2- character country code, a dash, and a locality code of up to 3 characters. ISO 3166-2:US code representing one of the 50 states or DC.
Page	Page number for the returned results were 1 is the number of the first page.	An integer value of 1 or more

## Table 3-5. Search by State and Prohibited Status Request Body

#### 3.3.3.1 Endpoint

https://clearinghouse.fmcsa.dot.gov/api/Driver/Prohibited/{State}/{Page}

#### 3.3.4 Search by Country/subdivision and Status Date

A search to return a listing of all driver status changes in a country/subdivision over a given period. The results will be returned in a paged result set ordered by the date the driver status was changed and then by driver id.

Attribute Name	Description	Requirements
State	Country and subdivision code as defined in ISO 3166-2. Implementation will restrict access to only country subdivisions to which an organization has been granted access.	Up to 6 characters using a 2- character country code, a dash, and a locality code of up to 3 characters. ISO 3166-2:US code representing one of the 50 states or DC.
NotificationDateFrom	Date and time of the driver status notification was created in ISO 8601 format. Date/time must be sent in UTC.	YYYY-MM-DDTHH:mm:SSZ
NotificationDateTo	Date and time of the driver status notification was created in ISO 8601 format. Date/time will be expressed in UTC.	YYYY-MM-DDTHH:mm:SSZ
Page	Page number for the returned results where 1 is the number of the first page.	An integer value of 1 or more

Table 3-6. Search by Country/subdivision and Status Date Request Body

#### 3.3.4.1 Endpoint

https://clearinghouse.fmcsa.dot.gov/api/Driver/ByDate/{State}/{StatusDateFrom}/{StatusDateTo}/{Page}

#### 3.4 Error Reporting

A function to allow an SDLA to submit an error report indicating they are not able to process a particular status change. Status changes which have errors will be flagged for manual follow-up.

Attribute Name	Description	Requirements
StatusChangeld	Unique identifier for this status change event that could not be processed.	GUID in the format 0000000- 0000-0000-0000- 000000000000.
Туре	High level category for the error event.	One of: InvalidFormat NotCurrentSOR InvalidDriver NotCDLCLPHolder Deceased Other
Description	Optional: Text description of the error.	String up to 1000 characters in length

Table 3-7. Error Submission Request Body

## 3.4.1 Endpoint

https://clearinghouse.fmcsa.dot.gov/api/Driver/Status/Error

## 4 Receiving Data From FMCSA

The Clearinghouse will provide States with the ability to receive push notifications on driver status change. Notifications will be delivered using the Amazon Simple Notification Service (SNS). States will be able to register to receive notifications via email (JSON or text) or POST endpoints. All push mechanisms will require a confirmation step for use. This will involve accessing a link delivered via email or POST, depending on the push mechanism selected.

Note: push notifications will only be used to send status change notifications for drivers licensed in one of the 50 states or DC. Driver status may be queried for drivers in US territories, Mexico or Canada but no status change push notifications will be sent for these drivers.

## 4.1 POST Endpoint

To receive machine-to-machine push notifications to a POST endpoint, States will need to supply a publicly accessible endpoint that is accessed over HTTPS. In addition, States may choose to implement basic or digest access authentication to secure the endpoint.

Once configured, there may be a required confirmation step before the endpoint can be activated.

#### 4.1.1 Confirmation

To begin receiving push notifications, you must be able to respond to subscription confirmation messages by accessing the link from the attribute "SubscribeURL". This may be done either within the application or via a manual mechanism and will be required for each State topic.

#### 4.1.1.1 Example

```
{
  "Type": "SubscriptionConfirmation",
  "MessageId": "769129a2-539d-4565-8455-f0587f03eed6",
  "Token":
"2336412f37fb687f5d51e6e2425dacbba931e5f40e20eb015ee444dc9207cda1135670b4c720fa896
ba92e55b95b19446517134e24c0d4cd6472f93d2d75d2b2a0880ceafeac21e13bb70ac0b7fac943267
0777317f6bc492cc0cd56c5680bf0419fca83d8c09a676582329ccbdf6c441f04610096c598fab133f
b5c63080eed",
  "TopicArn": "arn:aws:sns:us-east-1:423271844905:DACH-Dev-US-MA",
  "Message": "You have chosen to subscribe to the topic arn:aws:sns:us-east-
1:423271844905:DACH-Dev-US-MA.\nTo confirm the subscription, visit the
SubscribeURL included in this message.",
  "SubscribeURL": "https://sns.us-east-
1.amazonaws.com/?Action=ConfirmSubscription&TopicArn=arn:aws:sns:us-east-
1:423271844905:DACH-Dev-US-
MA&Token=2336412f37fb687f5d51e6e2425dacbba931e5f40e20eb015ee444dc9207cda1135670b4c
720fa896ba92e55b95b19446517134e24c0d4cd6472f93d2d75d2b2a0880ceafeac21e13bb70ac0b7f
ac9432670777317f6bc492cc0cd56c5680bf0419fca83d8c09a676582329ccbdf6c441f04610096c59
8fab133fb5c63080eed",
  "Timestamp": "2022-06-27T16:19:30.559Z",
  "SignatureVersion": "1",
  "Signature":
"ULFBcX7ljIPgwMWpiK/QDoAQAEZFyNPkRxlgYXC30sXvmA1fd7Ggabq+7pSDJ0Zt8afKaS/CFipypARLQ
Ln/IGrcJHLb9whYiF8wFMWRXluKnEk2DV7NmyeaWEYpQyZfAAEn7yvsbmYfnYVr7JfPzTQ9yhsibfZuzvd
iyBi7H2/XPIN1w/Y5GqE1Ia4WR3T4XvAAk2KTJEhX+TqQuxEzN5KjvDer1HLE2uPeZH/xYKh0jTt0nKkT7
```

```
CVcjbf2pg09HKRiZg3/yuPrboA5d6Ork24lNPSRsOGBuEKFWATXhQe0N9MAUAWb3NGZ12QPjHuPj37d/HX
pcTnUB4v5GCTumg==",
    "SigningCertURL": "https://sns.us-east-
1.amazonaws.com/SimpleNotificationService-7ff5318490ec183fbaddaa2a969abfda.pem"
}
```

#### Figure 4-1 an example subscription confirmation body

#### 4.1.2 POST Body

A driver status change message will be delivered to a subscribed POST endpoint as the message body in JSON format. The message will consist of the attributes described in Tables 4-1 and 4-2.

Attribute Name	Description	Requirements
Message	An encoded JSON string containing the attributes defined in Table 4-2.	String (JSON)
Messageld	A Universally Unique Identifier, unique for each message published. For a notification that Amazon SNS resends during a retry, the message ID of the original message is used.	GUID in the format 0000000- 0000-0000-0000- 0000000000000
Signature	Base64-encoded SHA1withRSA signature of the Message, MessageId, Subject (if present), Type, Timestamp, and TopicArn values.	String
	Details on how to verify the signature can be found in the <u>SNS Developer's Guide</u>	
SignatureVersion	Version of the Amazon SNS signature used.	String
SigningCertURL	The URL to the certificate that was used to sign the message.	Url
Timestamp	The time (GMT) when the notification was published.	YYYY-MM-DDTHH:mm:SS.sssZ

#### Table 4-1 POST Endpoint Notification (more information)

Attribute Name	Description	Requirements
TopicArn	The Amazon Resource Name (ARN) for the topic that this message was published to.	String in the format arn:aws:sns: <region>:<aws Account ID&gt;:<topic Name&gt;:<subscription id=""> Region: typically be us-east-1 but could change in the event of catastrophic AWS failure Account ID: 423271844905 Topic Name: will take the form DACH-Prod-<iso 3166-2="" state<br="">Code&gt; Subscription ID: unique id which identifies the specific user for this specific topic</iso></subscription></topic </aws </region>
Туре	The type of message. For a notification, the type is Notification.	Notification
UnsubscribeUrl	A URL that you can use to unsubscribe the endpoint from this topic. If you visit this URL, Amazon SNS unsubscribes the endpoint and stops sending notifications to this endpoint.	Url
MessageAttributes	List of message attributes containing the structured detailed data of the event.	Object as defined in Table 4-3

## Table 4-2. POST Endpoint Message Body

Attribute Name	Description	Requirements
Id	Unique identifier for this particular status change in the Clearinghouse	GUID in the format 0000000- 0000-0000-0000- 000000000000.
DriverId	Unique identifier for the driver in the Clearinghouse	GUID in the format 0000000- 0000-0000-0000- 000000000000.
Number	Number used to identify CDL or CLP issued by the SDLA.	Up to 25 characters in length.

Attribute Name	Description	Requirements
	with an empty value assigned, and the attribute assigned an empty array should all be treated equivalently.	

#### Table 4-3. POST Endpoint Message Attributes

Attribute Name	Description	Requirements
ld	Unique identifier for this particular status change in the Clearinghouse	GUID in the format 0000000- 0000-0000-0000- 000000000000.
DriverId	Unique identifier for the driver in the Clearinghouse	GUID in the format 0000000- 0000-0000-0000- 000000000000.
IsProhibited	Driver status within the clearinghouse. 'True' if the driver is prohibited from driving due to an unresolved drug and alcohol program violation, otherwise 'false.'	true/false
StatusDate	Date and time the driver status went into effect in ISO 8601 format. Date/time will be expressed in coordinated universal time (UTC).	YYYY-MM-DDTHH:mm:SSZ

#### 4.1.2.1 Example

```
{
  "Type": "Notification",
  "MessageId": "c09e706b-ad61-56f6-9fd8-2b58761b830a",
  "TopicArn": "arn:aws:sns:us-east-1:423271844905:DACH-Dev-US-MA",
  "Message": "{\"Id\":\"fdf1c846-1690-4658-b446-
80a2d5567b0b\",\"DriverId\":\"65ce3946-f3de-45c0-bf67-
24516d176f62\",\"StatusDate\":\"2022-06-
27T16:22:18.3604713Z\",\"IsProhibited\":true,\"Rescinds\":[],\"StateCode\":\"MA\",
\"Number\":\"TEST123456789\",\"FirstName\":\"Test\",\"LastName\":\"User\",\"DateOf
Birth\":\"1900-01-01\"}",
  "Timestamp": "2022-06-27T16:22:18.418Z",
  "SignatureVersion": "1",
  "Signature":
"l4BtYrE06J7chZ3LyHOtW4sewQuBoa+2aIs+p5q4fQrkQcmTA1/jpUfuhgsh2rhQqht1cyGSRlTsSjhT4
Ecxoc8+vKYdX4/Q4s+9V5vaCzAnsbjWxX5qFpwYD0vCuU4fVGmy5CQeE2IuT+L/QlTedRyTAIVs8DqufuK
o4yIbuhmA6yEsof6007bCnRU1/PtEhdnCpfIqgMrNWKWuy2rEmK9nSxt/PZ6XMYCcKmGfyy5tIjjF1qcdL
jCWsM2YZIjcp2UkhWzCIWHokqRuz4Z119ABiZqb9puSjxFTqFTBkJ9J10bwgw39/dE7nWxueEXPMZn6skJ
LuCfUHSsZfmd2zw=="
```

```
"SigningCertURL": "https://sns.us-east-
1.amazonaws.com/SimpleNotificationService-7ff5318490ec183fbaddaa2a969abfda.pem",
  "UnsubscribeURL": "https://sns.us-east-
1.amazonaws.com/?Action=Unsubscribe&SubscriptionArn=arn:aws:sns:us-east-
1:423271844905:DACH-Dev-US-MA:4c287588-4165-4e5c-b266-62619e89378e",
  "MessageAttributes": {
    "DriverId": {
      "Type": "String",
      "Value": "65ce3946-f3de-45c0-bf67-24516d176f62"
    },
    "StatusDate": {
      "Type": "String"
      "Value": "2022-06-27T16:22:18.3604713Z"
    },
    "IsProhibied": {
      "Type": "String",
"Value": "True"
    },
    "Id": {
      "Type": "Strina".
      "Value": "fdf1c846-1690-4658-b446-80a2d5567b0b"
    }
 }
}
```

Figure 4-2 an example POST endpoint notification body

#### 4.2 **JSON Formatted Email**

To receive machine-to-machine push notifications via email, States will need to supply an email address to FMCSA for subscription. Once configured, there may be a required confirmation step before the endpoint can be activated.

## 4.2.1 Confirmation

To begin receiving push notifications, you must be able to respond to subscription confirmation messages by accessing the link from the attribute "SubscribeURL". This may be done either within the application or via a manual mechanism and will be required for each State topic.

```
{
  "Type": "SubscriptionConfirmation".
  "MessageId": "64a4f9c1-1027-4662-a273-895aaf681f86",
  "Token":
"2336412f37fb687f5d51e6e2425dacbba931e5f40e20eb015eed004b14ef836fe119cfdf427118ed8
d4c5e70903c3501cb61b43769484a3419eb8acad8e68595cb65978a366429e9885c229f206b17194f3
f2f1feece40a536b2b793528c4dd45548cf8fb955aed90c877fb99f779231972fc5e8b22b81274bb24
09568f6b6f8"
  "TopicArn": "arn:aws:sns:us-east-1:423271844905:DACH-Dev-US-MA",
  "Message": "You have chosen to subscribe to the topic arn:aws:sns:us-east-
1:423271844905:DACH-Dev-US-MA.\nTo confirm the subscription, visit the
SubscribeURL included in this message.",
  "SubscribeURL":
"https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fsns.us-east-
1.amazonaws.com%2F%3FAction%3DConfirmSubscription%26TopicArn%3Darn%3Aaws%3Asns%3Au
s-east-1%3A423271844905%3ADACH-Dev-US-
MA%26Token%3D2336412f37fb687f5d51e6e2425dacbba931e5f40e20eb015eed004b14ef836fe119c
```

fdf427118ed8d4c5e70903c3501cb61b43769484a3419eb8acad8e68595cb65978a366429e9885c229
f206b17194f3f2f1feece40a536b2b793528c4dd45548cf8fb955aed90c877fb99f779231972fc5e8b
22b81274bb2409568f6b6f8&data=05%7C01%7Candrew.nagel%40dot.gov%7Cfe58b5be3bbd40
52a3bc08da585789e9%7Cc4cd245b44f04395a1aa3848d258f78b%7C0%7C0%7C637919430252739423
%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXV
CI6Mn0%3D%7C3000%7C%7C%7C&sdata=0K2VzCEP1%2B1cehtSTggSgkk7Nbl3wXQH2PEtflRbnfA%
3D&reserved=0",
"Timestamp": "2022-06-27T16:10:19.247Z",
"SignatureVersion": "1",
"Signature":
"QuJMiSgLxXPnf4umsYL0vO9030IXK9Be9m/HGSbHmoadysUmi2ZCW2apjwJc6i+n+fKN82Ro14kKMLsU2
W7G1ds3iFaTJu+/e0X2/sqv2x3hV9iniD5J1NGr0dsQ5K+p+4duC8tJ8triYGlFc1U+Iuxx1lrf/qjm9wF
hG8qfY/Hg0kGPLwZgMqpuqujmVk91Jix7E0YhmNhqyjLACICcFCbazAX56WN5n9ytwpH0T1T3nFVbVf9Qn
dKanYCMcS3RfLKtkNuF0ps105rjAHmP/n3MERO6c5MfnxQW2HxUNIsd20bmYvAvur29sG9ydYQHVApY8tk
dkDzPUC4C3eVtxA==",
"SigningCertURL":
"https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fsns.us-east-
1.amazonaws.com%2FSimpleNotificationService-
7ff5318490ec183fbaddaa2a969abfda.pem&data=05%7C01%7Candrew.nagel%40dot.gov%7Cf
e58b5be3bbd4052a3bc08da585789e9%7Cc4cd245b44f04395a1aa3848d258f78b%7C0%7C0%7C63791
9430252739423%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6
Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=oxB2f%2FpY0pTn9vw5oN1G%2B19Jva6Yr
am3bDAWJZriI1I%3D&reserved=0"
}
-

#### 4.2.2 Message Body

A driver status change message will be delivered to this email with the message body in JSON format. The message will consist of the attributes described in Tables 4-3 and 4-4. Due to the inherently insecure nature of email communication, no PII will be delivered via this mechanism. States wishing to use email for push notifications will need to pair the push receipt with a call to the driver detail REST service.

### Table 4-4 JSON Email Notification (more information)

Name	Description	Requirements
Message	An encoded JSON string containing the attributes defined in Table 4-4.	String (JSON)
Messageld	A Universally Unique Identifier, unique for each message published. For a notification that Amazon SNS resends during a retry, the message ID of the original message is used.	GUID in the format 0000000- 0000-0000-0000- 000000000000.
Signature	Base64-encoded SHA1withRSA signature of the Message, Messageld, Subject (if present), Type, Timestamp, and TopicArn values. Details on how to verify the signature can be found in the <u>SNS Developer's</u>	String
	Guide	
SignatureVersion	Version of the Amazon SNS signature used.	String
SigningCertURL	The URL to the certificate that was used to sign the message.	Url
Timestamp	The time (GMT) when the notification was published.	YYYY-MM- DDTHH:mm:SS.sssZ
TopicArn	The Amazon Resource Name (ARN) for the topic that this message was published to.	String
Туре	The type of message. For a notification, the type is Notification.	Notification
UnsubscribeUrl	A URL that you can use to unsubscribe the endpoint from this topic. If you visit this URL, Amazon SNS unsubscribes the endpoint and stops sending notifications to this endpoint.	Url
MessageAttributes	List of message attributes containing the structured detailed data of the event.	Object as defined in Table 4-5

### Table 4-5. JSON Email Message Body

Name	Description	Requirements
ld	Unique identifier for this status change in the Clearinghouse	GUID in the format 0000000- 0000-0000-0000- 000000000000.
DriverId	Unique identifier for the driver in the Clearinghouse	GUID in the format 0000000- 0000-0000-0000- 000000000000.
IsProhibited	Driver status within the Clearinghouse. 'True' if the driver is prohibited from driving due to an unresolved drug and alcohol program violation, otherwise 'false.'	true/false
StatusDate	Date and time the driver status went into effect in ISO 8601 format. Date/time will be expressed in coordinated universal time (UTC).	YYYY-MM-DDTHH:mm:SSZ
Rescinds	Optional: This element will contain the id values (see id attribute in this table) of previously-entered status changes that have been determined to be the result of erroneous data entry. A notification containing rescinded ids indicates that the State may need to reinstate a driver's commercial driving privilege or purge data from State systems. In these scenarios, we recommend that the State review the driver's full status history to determine the correct course of action.	An array of GUID values in the format 00000000-0000-0000-000000000000000000
	Note: The attribute that is excluded, the attribute present with an empty value assigned, and the attribute assigned an empty array should all be treated equivalently.	

#### Table 4-6 JSON Email Message Attributes

Name	Description	Requirements
ld	Unique identifier for this status change in the Clearinghouse	GUID in the format 0000000- 0000-0000-0000- 000000000000.
DriverId	Unique identifier for the driver in the Clearinghouse	GUID in the format 0000000- 0000-0000-0000- 000000000000.
IsProhibited	Driver status within the clearinghouse. 'True' if the driver is prohibited from driving due to an unresolved drug and alcohol program violation, otherwise 'false.'	true/false
StatusDate	Date and time the driver status went into effect in ISO 8601 format. Date/time will be expressed in coordinated universal time (UTC).	YYYY-MM-DDTHH:mm:SSZ

## 4.2.2.1 Example

\$			
"Type": "Notification",			
"MessageId": "c09e706b-ad61-56f6-9fd8-2b58761b830a",			
"TopicArn": "arn:aws:sns:us-east-1:423271844905:DACH-Dev-US-MA",			
"Message": "{\"Id\":\"fdf1c846-1690-4658-b446-			
80a2d5567b0b\",\"DriverId\":\"65ce3946-f3de-45c0-bf67-			
24516d176f62\",\"StatusDate\":\"2022-06-			
27T16:22:18.3604713Z\",\"IsProhibited\":true,\"Rescinds\":[]}",			
"Timestamp": "2022-06-27T16:22:18.418Z",			
"SignatureVersion": "1",			
"Signature":			
"SVgrDb3eeG5vcWKhTrztfPpXaDr/Tf6PXKUCn/tKapZzinE7eocwazQhHV4KsFWUn2v26NCZaIzuMytwJ			
NUQd5WzvwN3R1RWt6ZhoJX2kCEsmXdPntyzmNpZwmTplI1BEbQn+ba4EttcggJMU9Xjyl2WV/LRkiZlYrD			
ZZwpfRv1z+uZXhJy+D1GpYcJ0KjWlvF5xR/Rw1pQGwZ/C5WS3pt0V7ugQvEkLi6gfRA1trklBJnjPS+ylo			
0DygaIxrPGNTjPxxeJn/uXE/bR0Lp5E0v/glP1RCG0WPXbYTdWf5ml/0K0szYHPlnS5VhZ37+0G19CqKnG			
PR0jth5CU9auoQg==",			
"SigningCertURL":			
"https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fsns.us-east- 1.amazonaws.com%2FSimpleNotificationService-			
7ff5318490ec183fbaddaa2a969abfda.pem&data=05%7C01%7Candrew.nagel%40dot.gov%7C9			
db21696ea734ac45f3808da58593659%7Cc4cd245b44f04395a1aa3848d258f78b%7C0%7C0%7C63791			
9437424909292%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6			
Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=s00K70ws0ZUnr5x0jYqh9Dfv3C1f%2BZ1			
Iou9TirE5J58%3D&reserved=0",			
"UnsubscribeURL":			
"https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fsns.us-east-			
1.amazonaws.com%2F%3FAction%3DUnsubscribe%26SubscriptionArn%3Darn%3Aaws%3Asns%3Aus			
-east-1%3A423271844905%3ADACH-Dev-US-MA%3Ae5d6adba-a6ea-4642-8fb3-			
e55eebe2de29&data=05%7C01%7Candrew.nagel%40dot.gov%7C9db21696ea734ac45f3808da5			

```
8593659%7Cc4cd245b44f04395a1aa3848d258f78b%7C0%7C0%7C637919437424909292%7CUnknown%
7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7
C3000%7C%7C%7C& sdata=HPCn%2BkjI3uljy8bSCQ0aGlSOnp7XLcu3hsr17v%2Bz4iI%3D& re
served=0",
  "MessageAttributes": {
    "DriverId": {
      "Type": "String",
      "Value": "65ce3946-f3de-45c0-bf67-24516d176f62"
    },
    "StatusDate": {
      "Type": "String",
      "Value": "2022-06-27T16:22:18.3604713Z"
    },
    "IsProhibied": {
      "Type": "String",
"Value": "True"
   },
"Id": {
      "Type": "String",
      "Value": "fdf1c846-1690-4658-b446-80a2d5567b0b"
    }
 }
}
```

Figure 4-3 an example JSON email notification body

#### 4.3 Text Email

To receive machine-to-person push notifications via email, States will need to supply an email address to FMCSA for subscription. Once configured, there may be a required confirmation step before the endpoint can be activated.

#### 4.3.1 Confirmation

To begin receiving push notifications, you must be able to respond to subscription confirmation messages by accessing the link labeled "Confirm Subscription". This will be required for each State topic.

```
You have chosen to subscribe to the topic:
arn:aws:sns:us-east-1:423271844905:DACH-Dev-US-DC
To confirm this subscription, click or visit the link below (If this
was in error no action is necessary):
Confirm subscription
```

#### Figure 4-4 an example text email confirmation

#### 4.3.2 Message Body

When a driver's status changes, an email will be sent to confirmed addresses indicating the change has occurred. The email will include the date of the change, the ID of the driver, and a link State users can click to retrieve details of the driver record.

Note: The example email body below is intended as an example only. The exact message sent with these notifications is intended for a human recipient and may change over time for improved clarity, if you wish

to process these emails programmatically, please make use of the JSON formatted email which will have a consistent format and content.

A driver's status has been changed in FMCSA's Drug and Alcohol Clearinghouse. This may require you to update their commercial driver's license (CDL) or commercial learner's permit (CLP) privileges.

Clearinghouse ID: 65ce3946-f3de-45c0-bf67-24516d176f62

Status changed on 06/27/2022 16:22:18 (UTC).

View the details of the driver's status at https://clearingouse.fmcsa.dot.gov/SDLA/Driver/65ce3946-f3de-45c0-bf67-24516d176f62.

## **Appendix A: Additional Resources**

This section provides some of the resources and documents that are related to or referenced within this document, such as the Clearinghouse final rules.

- FMCSA Portal
- Drug and Alcohol Clearinghouse
- <u>Clearinghouse final rule</u>
- Clearinghouse-II final rule
- Guidance on developing JSON Web Tokens can be found at <u>JWT.io</u>
- Contact information for submitting questions and comments to the Clearinghouse Development Team: <u>https://clearinghouse.fmcsa.dot.gov/Contact</u>
- Amazon Simple Notification Service Developer's Guide
  - o Details on configuring an HTTPS endpoint

# **Appendix B: References**

Organization	Standard	Purpose
International Standards Organization (ISO)	ISO 3166-2	Used to define State codes in driver searches and search results.
	ISO 3166-2:US	List of subdivision codes used for US states and other subdivisions.
	ISO 3166-2:CA	List of subdivision codes used for Canadian provinces and other subdivisions.
	ISO 3166-2:MX	List of subdivision codes used for Mexican states and other subdivisions.
	ISO 8601	Format used for encoding dates
Internet Engineering Task Force	RFC 7797	Definition of the JSON Web Token used to authenticate requests.
	RFC 7807	Define standard error responses for REST API
	RFC 6750	Define details of bearer authentication process and error handling
	RFC 2617	Basic and Digest Authentication
	RFC 2616	HTTP verb and response code definitions

Federal Motor Carrier Safety Administration 1200 New Jersey Avenue, SE Washington, DC 20590

> 855-368-4200 www.fmcsa.dot.gov

Drug and Alcohol Clearinghouse Technical Support

844-955-0207 https://clearinghouse.fmcsa.dot.gov/contact

John A. Volpe National Transportation Systems Center 55 Broadway Cambridge, MA 02142-1093

> 617-494-2000 www.volpe.dot.gov

