

Commercial Vehicle Information Systems and Networks (CVISN)

Recommendations for Primary Identifiers

Baseline Version V1.0

White Paper

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Note

The Motor Carrier Safety Improvement Act was signed into law on December 9, 1999. This act established a new FMCSA within the US DOT, effective January 1, 2000. Prior to that, the motor carrier and highway safety program was administered under the Federal Highway Administration (FHWA).

The mission of the FMCSA is to improve truck and commercial passenger carrier safety on our nation's highways through information technology, targeted enforcement, research and technology, outreach, and partnerships. The FMCSA manages the ITS/Commercial Vehicle Operations (CVO) Program, a voluntary effort involving public and private partnerships that uses information systems, innovative technologies, and business practice reengineering to improve safety, simplify government administrative systems, and provide savings to states and motor carriers. The FMCSA works closely with the FHWA's ITS JPO to ensure the integration and interoperability of ITS/CVO systems with the national ITS program.

Baseline Version

Please note that this is a baseline document. This document has completed internal and external reviews of previously published drafts and preliminary versions. All comments received to date have been incorporated or addressed.

Note: This document and other CVISN-related documentation are available for review and downloading by the ITS/CVO community from the JHU/APL CVISN site on the World Wide Web. The URL for the CVISN site is: <http://www.jhuapl.edu/cvisn/>.

Review and comments to this document are welcome. Please send comments to:

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Change Summary: Version P1.0 of the document incorporated revisions related to these change requests (CR):

- CR 548 – Primary Carrier ID
- CR 549 – Transponder ID
- CR 560 – Lengthen VIN
- CR 570 – Add Jurisdiction & Plate to Vehicle ID
- CR 630 – Split country and subdivision in Driver Unique ID
- CR 631 – Clarify description of Trip/Load Number to match IEEE P1455 standard

The baseline version (V 1.0) of the document incorporates revisions related to these change requests:

- CR 87 (CR 1824 in old system) – Primary Carrier ID recommendation needs to be reviewed
- CR 704 - Update to Primary Identifiers White Paper

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CVISN Recommendations for Primary Identifiers Executive Summary

The Commercial Vehicle Information and Systems Network (CVISN) Architecture recommends that the stakeholder community adopt standard primary identifiers for carrier, vehicle, transponder, driver, shipment, and international trip in all data exchanges. In 1996, The Johns Hopkins University Applied Physics Laboratory published a preliminary version of this paper to describe the preliminary recommendations. Since then, experience with States deploying CVISN has caused the recommended standard identifiers to be modified. This revised paper explains the new recommendations.

Each of the entities (i.e., carrier, vehicle, transponder, driver, shipment, or international trip) about which CVISN stakeholders exchange information can be identified in a variety of ways using a physical identifier; that is, an identifier that supports an existing manual process. For example, the vehicle physical identifiers include license plate jurisdiction and number, vehicle identification number (VIN), or registration number. If one state chooses to develop a database that is indexed on license plate number while another state's database is based on VIN, it will be difficult for the two states to exchange information about a specific vehicle.

In order to address this problem, it is necessary for the Commercial Vehicle Operations (CVO) community to adopt a primary identifier for each entity that can act as a common way to "name" each entity about which information is exchanged. The CVISN Architecture recommends that the CVO community use the primary identifiers in all data exchanges.

The primary identifiers should be integrated into existing business processes. They are being integrated into the evolving message standards for computer-to-computer and vehicle-to-roadside exchanges.

In addition to integration into business processes, several systems are required to support a cross-reference between the primary and secondary or physical identifiers. Many of these systems already exist and are currently being enhanced. These systems include the following:

- Motor Carrier Management Information System (New MCMIS)
- International Registration Plan (IRP) Clearinghouse
- International Fuel Tax Agreement (IFTA) Clearinghouse
- Automated Commercial Environment (ACE)
- Safety and Fitness Electronic Records System (SAFER)
- Commercial Vehicle Information Exchange Window (CVIEW)
- ASPEN (Inspection System)
- State Licensing Systems
- State Registration Systems
- Commercial Drivers License Information System (CDLIS) Central Site.

An example of the use of recommended primary identifiers is shown in Figures A and B. Details on the identifiers are included in the body of this paper.

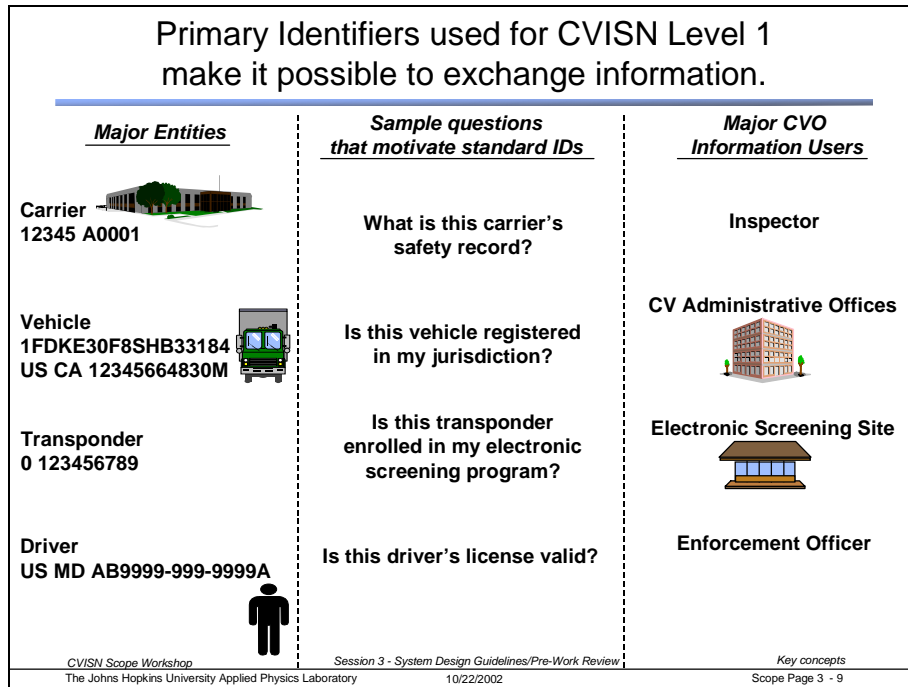


Figure A. Primary Identifiers – CVISN Level 1

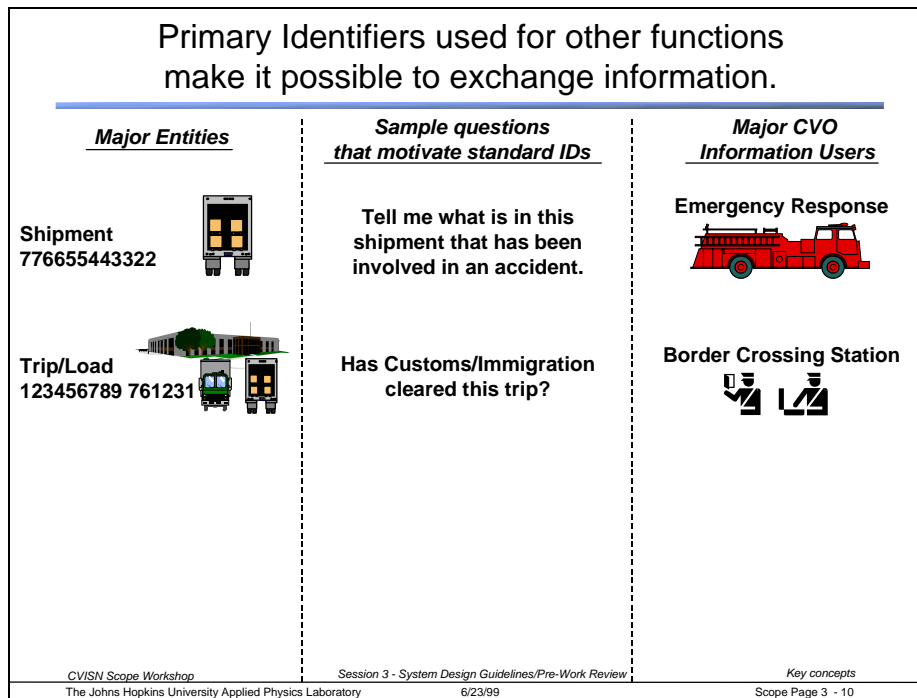


Figure B. Primary Identifiers – Other Functions

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1. INTRODUCTION

The Commercial Vehicle Information Systems and Networks (CVISN) Architecture program provides a framework for the development of public (federal and state) and private information systems (and the interfaces between them) that are critical to improving the safety and efficiency of the movement of freight across North America. A key result of the CVISN Architecture program is the development of standards. The two primary standards activities for Commercial Vehicle Operations (CVO) have focused on the development of electronic data interchange (EDI) transaction sets for computer-to-computer data exchange and dedicated short range communications (DSRC) message sets for vehicle-to-roadside data exchange. In the future, the eXtensible Markup Language (XML) may become a standard for computer-to-computer data exchange.

A more fundamental issue that must be addressed (and integrated into those EDI and DSRC standards, as well as any evolving standards, such as XML) is the standardization of the identifiers used to exchange information pertaining to the safety history, law enforcement activity and credentials of a particular CVO entity (i.e., a motor carrier, commercial vehicle, transponder, driver, shipment, or international trip). Each of these entities can be identified in a variety of ways using a physical identifier; that is, an identifier that supports an existing manual process. For example, the vehicle physical identifiers include license plate jurisdiction and number, vehicle identification number (VIN), or registration number. If one state chooses to develop a database that is indexed on license plate number while another state's database is based on VIN, it will be difficult for the two states to exchange information about a specific vehicle.

In order to address this problem, it is necessary for the CVO community to adopt a primary identifier for each entity that can act as a common way to "name" each entity about which information is exchanged. This implies that the primary identifier will permit a cross-reference between two databases that are designed around different physical identifiers. This may also require the development of a cross-reference database if one does not already exist. It does not imply that all state databases should be modified to support the primary identifier.

The purpose of this document is to define primary identifiers and a set of secondary or physical identifiers that can be used to identify each motor carrier, vehicle, driver, shipment, and international trip uniquely within the United States. Both domestic interstate and intrastate entities are considered. Furthermore, international entities are addressed. However, for the purposes of this document, international refers specifically to Canada and Mexico. It is recognized that countries other than Canada and Mexico will have CVO in the US. Although the identifiers do not directly address this issue, it is expected that many of the concepts discussed in this document will apply to the other international entities.

The Federal Motor Carrier Safety Administration (FMCSA) is developing an enterprise architecture. The goal of the Safety Architecture for the FMCSA Enterprise (SAFE) Project is to develop a target architecture, consistent with the National Intelligent Transportation System

Architecture and the Federal Enterprise Architecture Framework, that meets the diverse business needs of the FMCSA enterprise. The Data Architecture component is based on data shared across the enterprise, as determined from an analysis of the data involved in the business functions and processes and an analysis of the data exchanged among and used in current systems.

The SAFE Data Architecture ([Reference 9](#)) recommends the use of consistent data keys. Data that identify the entities of interest (e.g., motor carrier or commercial vehicle) should have the same name, definition, standard set of values, and uniform business rules to support all Federal agencies, state agencies, motor carriers, and other stakeholders that are users of the data. This version of the document has been updated to promote the SAFE recommendations for identifiers.

2. PRIMARY IDENTIFIERS

The CVISN Architecture recommends that the CVO community use the primary identifiers listed in Table 1 in all data exchanges. The primary identifiers should be used in interface agreements (open standards, Internet-based exchanges, and custom interface agreements) to facilitate the exchange of information about the entities. These identifiers are being integrated into the EDI and DSRC standards currently being maintained or, in the case of the DSRC message standard, developed, through the CVISN Architecture program. How the identifiers are stored internally outside the interface is up to the system implementers. A standard format for the primary identifiers is required at the interface to remove ambiguity.

Table 1.
Recommended Primary Identifiers

Entity	Identifier Name	Identifier Segments	Number of Characters
Motor Carrier	Primary Carrier ID		
	For <i>interstate</i> carrier:	Carrier-Specific Identifier (alphanumeric); must be USDOT number +	12 (max)
	e.g., 12345 A001 (note that '12345' must be the carrier's USDOT # ; the terminal ID 'A001' is optional)	Carrier Terminal ID designated by carrier (alphanumeric) (optional) +	4 (max)
		CVO Company Type	TBD
	For <i>intrastate</i> carrier:	Country Code (alphanumeric); the allowable codes will be defined in the FHWA Code Directory +	2
	e.g., US CA 123A45689 1234 (note that the terminal ID '1234' is optional)	Jurisdiction (state or province) Code (alphanumeric); the allowable codes will be defined in the FHWA Code Directory +	2
	Carrier-Specific Identifier; if carrier is intrastate and has a USDOT number, must be USDOT number; for state-specific IDs, the Carrier-Specific Identifier may include a prefix to clarify the agency/source of the identifier) +	12 (max)	
	Carrier Terminal ID designated by carrier (alphanumeric) (optional)	4 (max)	
	CVO Company Type	TBD	

Entity	Identifier Name	Identifier Segments	Number of Characters
Vehicle	Vehicle Identification Number e.g., 1FDKE30F8SHB33184 and Vehicle Plate ID e.g., US CA 12345664820M	VIN assigned by manufacturer (alphanumeric)	30 (max)
		Country code (alphanumeric); the allowable codes will be defined in the FHWA Code Directory +	2
		Jurisdiction (state or province) code (alphanumeric); the allowable codes will be defined in the FHWA Code Directory +	2
		License plate ID (alphanumeric)	12 (max)
Transponder	Transponder ID e.g., 0 123456789 or 1 9999 232323	segments shown below	10 (max)
		Transponder ID Definition Flag (0=current; 1=IEEE 1455-1999) +	1 (1 bit)
		<i>If Transponder ID Definition Flag = current</i> , then the other segment is: Transponder Serial Number assigned by manufacturer	8 (32-bit hexadecimal value)
		<i>If Transponder ID Definition Flag = IEEE 1455-1999</i> , then the other segments are: Manufacturer Identifier + Transponder Serial Number assigned by manufacturer	4 (16 bits hexadecimal value) 5 (20 bits hexadecimal value)
Driver	Driver Unique ID e.g., US MD B99999999999A	Country code (alphanumeric); the allowable country codes will be defined in the FHWA Code Directory +	2
		Jurisdiction (state or province) code (alphanumeric); the allowable subdivision codes will be defined in the FHWA Code Directory +	2
		Driver specific identifier (driver license number) assigned by jurisdiction (alphanumeric)	16 (max)
Shipment	Shipment Unique ID e.g., 776655443322	Bill of Lading number assigned by the carrier (numeric)	12 (max)

Entity	Identifier Name	Identifier Segments	Number of Characters
Trip	Trip/Load Number	Carrier DUNS number as assigned by Dun and Bradstreet (numeric) +	9
	e.g., 123456789761231	Trip unique number as assigned by carrier (numeric)	6

The SAFE Data Architecture recommends the addition of the identifier segment “CVO Company Type” to the Primary Carrier ID. The number of characters has not yet been defined.

The primary identifiers should be used in information exchanges and updates between information users. Since members of the CVO community currently use a variety of identifiers, an ability to access information by a number of secondary or physical identifiers must also be provided. Table 2 lists the set of physical identifiers that are used by the CVO community. The table columns are described below:

Physical Identifier Source

This is the physical object that provides the identifier. For example, it may be a document being examined by a clerk or a vehicle being examined by an enforcement officer.

Physical Identifier

This is the identification number available from the physical identifier source. For example, if an enforcement officer is looking at a vehicle license plate, the license plate number is the physical identifier.

Primary Identifier

This is the single, unique identifier that members of the CVO community have mutually adopted as the common identifier to be used in sharing information. For example, there is a United States Department of Transportation number (USDOT #), the basis of the primary carrier identifier, corresponding to each interstate carrier name (physical identifier).

Authoritative Source of Cross Reference Link

This is the information system that has the official record of the link between the primary identifier and a physical identifier. For example, each state licensing system needs to provide a link between the Driver Unique ID (primary) and the driver’s name (physical). Therefore, if an enforcement officer only has the driver’s name, the licensing system of the state that issued the driver’s license will provide a cross reference to the driver’s license number. Also, (as shown in Table 2) if the enforcement officer only has the driver’s passport number, he could consult the International Trade Data System (ITDS) to obtain a driver’s license number and then consult another database, using the driver’s license number as a key, to gain access to the desired driver information.

Indirect Sources of Cross Reference Link

These are the systems that have a copy of the link between the primary and physical identifier. A user may access an indirect source rather than going to the authoritative source for a number of reasons including access authority, cost, or ease of use. For example, an enforcement officer may get the USDOT # corresponding to a carrier's name from the Safety and Fitness Electronic Records System (SAFER), an indirect source, instead of going to Motor Carrier Management Information System (New MCMIS), the authoritative source, because he has on-line access to SAFER but not New MCMIS.

Figure 1 shows how the identification numbers and information systems relate to each other.

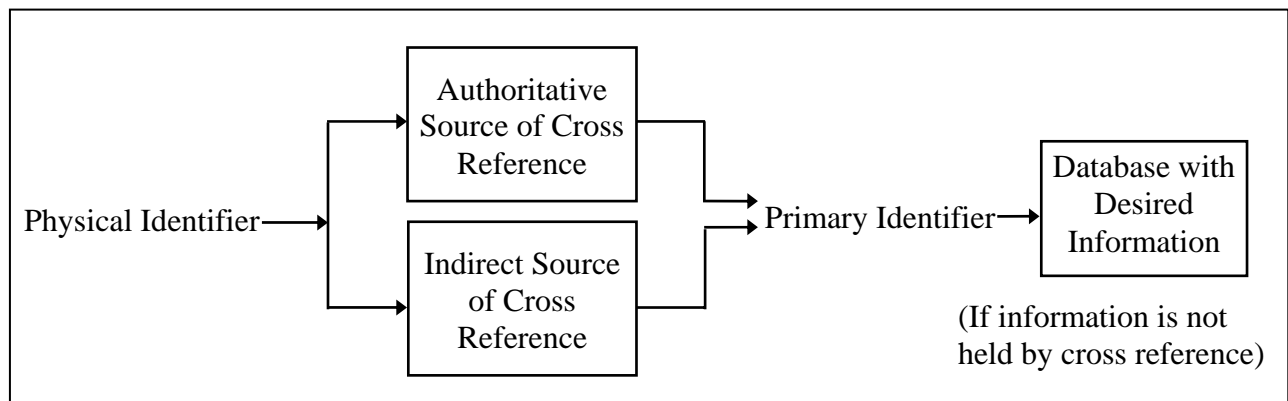


Figure 1. Relationship of Identification Numbers and Information Systems

**Table 2.
Links Between Physical Identifiers and Primary Identifiers**

Physical Identifier Source	Physical Identifier	Primary Identifier	Authoritative Source of Cross Reference Link	Indirect Sources of Cross Reference Link
Carrier Documents	Primary Carrier ID	Primary Carrier ID*		
	USDOT #	Primary Carrier ID*		
	State-Specific Carrier ID	Primary Carrier ID*	State System	
	Carrier Name	Primary Carrier ID*	New MCMIS	CVIEW, SAFER
	ICC #	Primary Carrier ID*	New MCMIS	SAFER
	SCAC	Primary Carrier ID*	ATA	
	FEIN	Primary Carrier ID*	IRS	New MCMIS, SAFER, IFTA Clearinghouse

Physical Identifier Source	Physical Identifier	Primary Identifier	Authoritative Source of Cross Reference Link	Indirect Sources of Cross Reference Link
	DUNS #	Primary Carrier ID	Carrier's System	SAFER, ACE (future)
Driver's Documents	Driver Unique ID	Driver Unique ID		
	Driver's License (DL) Number and Jurisdiction	Driver Unique ID		
	Social Security Number (SSN)	Driver Unique ID	Jurisdiction Licensing System	CDLIS Central Site
	Name/Date of Birth (DOB)	Driver Unique ID	Jurisdiction Licensing System	CDLIS Central Site
	Passport Number	Driver Unique ID	ACE (future)	
Driver	Driver Biometrics (fingerprint, retinal scan, etc.)	Driver Unique ID		
License Plate	Plate # and Jurisdiction	VIN and Vehicle Plate ID	Jurisdiction Registration System	IRP Clearinghouse, CVIEW, SAFER
Vehicle Door	USDOT #	Primary Carrier ID		
	State-Specific Carrier ID	Primary Carrier ID	State System	
	Equipment #	VIN and Vehicle Plate ID	Carrier's System	
	ICC #	Primary Carrier ID	New MCMIS	SAFER
Vehicle Chassis	VIN	VIN and Vehicle Plate ID		
Shipping Papers	Carrier Name	Primary Carrier ID	New MCMIS	CVIEW, SAFER
	Bill of Lading #	Same as Shipment Unique ID	Carrier's System	
DSRC Transponder	Transponder ID	Transponder ID		
	VIN	VIN and Vehicle Plate ID		
	Primary Carrier ID	Primary Carrier ID		
	Driver Unique ID	Driver Unique ID		
	Trip/Load #	Trip/Load #	ACE(future)	Carrier's System
*HazMat Message	Primary Carrier ID/VIN/Date/Time	Shipment Unique ID	Carrier's system	

*Some carrier physical identifiers will not correspond to a single Carrier Unique ID but a list of Carrier Unique IDs since the Carrier Unique ID corresponds to a specific facility.

The acronyms used in Table 2 are listed below:

ATA	American Trucking Associations
CDLIS	Commercial Drivers License Information System
CVIEW	Commercial Vehicle Information Exchange Window (state version of SAFER)
DUNS #	Data Universal Numbering System Number
FEIN	Federal Employer Identification Number
ICC #	Interstate Commerce Commission Number
IFTA	International Fuel Tax Agreement
IRP	International Registration Plan
IRS	Internal Revenue Service
ACE	Automated Commercial Environment
New MCMIS	New Motor Carrier Management Information System (replaces MCMIS)
SAFER	Safety and Fitness Electronic Records
SCAC	Standard Carrier Alpha Code
SSN	Social Security Number
USDOT #	United States Department of Transportation Number

3. CARRIER IDENTIFIERS

The primary identifier for a carrier is the Primary Carrier ID. The Primary Carrier ID for an interstate carrier is based on the USDOT number. The Primary Carrier ID for an intrastate carrier is based on either USDOT number (if the carrier has one), or a state-specific identifier. FMCSA policy recommends that states issue USDOT numbers to intrastate carriers and has established procedures for issuing USDOT numbers to both interstate and intrastate carriers ([Reference 8](#)). Each state will establish a unique Primary Carrier ID for each of its intrastate carriers. The Primary Carrier ID should be used in all information updates relative to that carrier.

The Primary Carrier ID is composed of these segments:

1. If the ID was issued to an intrastate carrier, then there must be a jurisdiction specified for the ID. This consists of a 2-character country code and a 2-character jurisdiction code; the allowable codes will be defined in the FHWA Code Directory ([Reference 1](#)); e.g., US CA. +
2. Carrier-Specific Identifier (alphanumeric, up to 12 characters; for interstate carrier or intrastate carrier with a USDOT number, must be the USDOT number; for state-specific IDs, the 12-character max Carrier-Specific Identifier may include a prefix to clarify the agency/source of the identifier) +
3. Carrier Terminal ID designated by carrier (optional; alphanumeric, up to 4 characters) +
4. CVO Company Type (optional; alphanumeric, number of characters not yet defined)

The SAFE Data Architecture ([Reference 9](#)) recommends the addition of the identifier segment “CVO Company Type” to the Primary Carrier ID. This will designate whether the carrier, really the “CVO Company” is a for-hire motor carrier or a private motor carrier, motor coach operator, a broker, a freight forwarder, a shipper, or a cargo tank manufacturer.

A list of the carrier physical identifiers that stakeholders use in their CVO related processes is given in Table 3.

Table 3.
Carrier Physical Identifiers

Physical ID	Physical ID Sources
Primary Carrier ID	Carrier Documents, Vehicle Door, Transponder
USDOT #	Carrier Documents, Vehicle Door
State-Specific Carrier ID	Carrier Documents, Vehicle Door
Carrier Name	Carrier Documents, Shipping Papers
ICC #	Carrier Documents, Vehicle Door
SCAC	Carrier Documents
FEIN	Carrier Documents
DUNS #	Carrier Documents

Note that consideration has been given to employing the DUNS number (issued by Dun and Bradstreet), SCAC (issued by the ATA) or FEIN (issued by the IRS) to identify motor carriers. The CVO community uses these numbers to support different business functions. For example, the DUNS number is used for credit verification purposes. Although each of these numbers has several desirable features, previous inquiries into the applicability of these numbers to support cross-referencing indicated that none were suitable.

3.1 Interstate Carriers

Interstate carriers are required to obtain a USDOT number. For interstate carriers, the USDOT number is the Carrier-Specific Identifier segment of the Primary Carrier ID. The Carrier Terminal ID segment will be present for carriers operating in states where carrier safety assessments are made on a terminal facility basis. The Carrier Terminal ID segment will be blank for carriers based in jurisdictions that do not require it.

3.2 Intrastate Carriers

The FHWA has proposed, via the rulemaking process, that all intrastate carriers should be assigned a USDOT number. Until such a rule is issued and takes effect, practices for identifying intrastate carriers will continue to vary from state to state. The scheme for Primary Carrier ID for intrastate carrier is intended to support existing state practices. In addition, the FMCSA proposal requires the State to associate the State code as a suffix to the USDOT number.

Some states already require their intrastate carriers to get a USDOT number. For other states, the Carrier Specific Identifier is the identifier the state chooses. The Carrier Specific Identifier may include a prefix to clarify the agency/source of the identifier. This is useful for states that have

different agencies assigning identifiers to different groups of motor carriers. Each agency can begin its identifiers with a specific character to avoid duplication of identifiers.

The Carrier Terminal ID segment will be present for carriers operating in states where carrier safety assessments are made on a terminal facility basis. The Carrier Terminal ID segment will be blank for carriers based in jurisdictions that do not require it.

3.3 International Carriers

Canada has an existing policy that requires each carrier that conducts operations in the United States to have a USDOT #. Each province also has identifiers for carriers that are assigned by the province. Although it could be desirable to employ the provincial identifiers for all international carriers, it is reasonable to treat international carriers like interstate carriers and require a USDOT # be assigned.

Each Mexican carrier that operates in the United States is also required to have a USDOT #. Note that if Canada and Mexico were to develop a national motor carrier identification information system and assign unique identifiers to carriers based there, some component of CVISN (probably SAFER) would connect to their systems to obtain carrier identification and other information. Then, it might not be necessary to issue a USDOT # to international carriers.

3.4 Recommended Implementation Approach

The New MCMIS database provides a cross-reference for many interstate carrier identifiers. Currently, the MCS-150 form includes these IDs: carrier name, USDOT number, motor carrier operating authority number issued by FHWA or ICC, DUNS number, and taxpayer identifier.

The SAFER/CVIEW snapshots contain a field for each of the identifiers in Table 3, except the SCAC. From a user's point of view, the SAFER/CVIEW systems make the information accessible electronically.

The availability of all related identifiers for a given intrastate carrier in a single state system varies from state to state. Until all intrastate carriers are assigned USDOT numbers by a similar mechanism to that used today for interstate carriers, it will be difficult to assemble the cross-reference in the SAFER/CVIEW snapshots. SAFER/CVIEW do not support the State Specific Carrier ID.

The snapshot should be used to collect all identifiers for all carriers. Use of the primary identifier in all exchanges that update carrier snapshot updates should help to establish the cross-reference between the primary ID and other IDs for the same carrier.

The SAFE Data Architecture ([Reference 9](#)) recommends that the entity "CVO COMPANY" be used among all Federal agencies, state agencies, motor carriers, and other stakeholders to denote a for-hire motor carrier or a private motor carrier, motor coach operator, a broker, a freight

forwarder, a shipper, or a cargo tank manufacturer. The term includes a company's agents, officers and representatives as well as employees. A "CVO Company Type" attribute would be associated to denote the type of the company. It is not known when this change will be promulgated throughout the FMCSA Safety systems.

3.5 Impacts

FHWA may issue a rule requiring that all carriers (both interstate and intrastate) be assigned a USDOT number. In the meantime, states that do not require carriers to have a USDOT number may need to change policies or enact legislation to use the Primary Carrier ID for all information exchanges.

All systems that exchange information about carriers should be enhanced as needed to use the Primary Carrier ID in all information updates.

4. VEHICLE IDENTIFIERS

There are two primary identifiers for vehicles: the VIN assigned by the manufacturer, and the Vehicle Plate ID assigned by the jurisdiction in which the vehicle is registered. Both identifiers are necessary to accommodate existing systems based on each. The primary vehicle identifiers are the same for all vehicles, both interstate and intrastate.

By federal regulation [49 CFR (Code of Federal Regulations)], all vehicles manufactured or imported for sale in the US must be assigned a VIN by the original manufacturer. This number is attached permanently to the vehicle chassis on a VIN plate and is used to support recalls and theft prevention/recovery. By law, VINs are assigned according to International Standard Organization standards 3779 and 3780, which call for a 17 character alphanumeric identifier that is described in Table 4.

Table 4.
VIN Character Allocation

Character	Purpose
1-3	World Manufacturer Identifier (WMI) issued by Society of Automotive Engineers
4-8	Vehicle Descriptors
9	Check Digit
10	Model Year
11	Plant
12-14	Either WMI or sequential production number
15-17	Sequential production number

Prior to the enactment of the Federal law in the early 1980s, VINs were sometimes longer and sometimes shorter.

The VIN does not change throughout the life of the vehicle, even if the vehicle is altered in such a manner that causes the vehicle descriptors (characters 4-8) to become inaccurate. (There are rare cases in which a severely damaged vehicle may be reissued a VIN.) Note that the term vehicle can include trucks, buses and trailers.

Since some VINs are more than 17 characters, this is the recommended definition of VIN for information exchanges: VIN assigned by manufacturer (alphanumeric); up to 30 characters.

The Vehicle Plate ID consists of three segments:

1. Country Code (alphanumeric, 2 characters; the allowable country codes will be defined in the FHWA Code Directory) +
2. Jurisdiction (state or province) Code (alphanumeric, 2 characters; the allowable subdivision codes will be defined in the FHWA Code Directory) +
3. License Plate ID (alphanumeric, up to 12 characters)

A list of the vehicle physical identifiers that stakeholders use in their CVO related processes is given in Table 5.

Table 5.
Vehicle Physical Identifiers

Physical ID	Physical ID Sources
VIN	Vehicle Chassis, Transponder
Equipment #	Vehicle Door
Plate # and Jurisdiction	License Plate

4.1 Interstate Vehicles

The IRP requires that the VIN be provided at the time of registration of a commercial motor vehicle. A Vehicle Plate ID is assigned when a license plate is issued for the vehicle. These data are available in each state registration system and are stored in the IRP Clearinghouse system. They are also stored in the SAFER/CVIEW snapshot systems.

It is possible for a vehicle to have more than one license plate at the same time. This situation could happen if a vehicle is sold and registered in a different state, while the registration under the previous owner and state is still in effect.

4.2 Intrastate Vehicles

Based on discussions with American Association of Motor Vehicle Administrators (AAMVA), the National Highway Traffic Safety Administration and the Society of Automotive Engineers (SAE), it is believed that all states in the US currently require the VIN to be provided at the time a vehicle is registered and that this number is available in each state registration system. Each state assigns a Vehicle Plate ID when a license plate is issued for the vehicle.

4.3 Trailers

Not all states require trailers to be registered. Furthermore, some vehicle manufacturers (especially low volume trailer manufacturers) do not know to assign a VIN or know how to assign a VIN correctly. Therefore, for some trailers there may be neither a Vehicle Plate ID nor VIN, and some may have one identifier but not the other.

4.4 International Vehicles

All Canadian provinces are members of IRP. Therefore, Canadian vehicles can be treated just like vehicles from the United States.

The Mexican states are not members of IRP, but Mexico is represented on the IRP, Inc Board Advisory Committee. Currently, Mexican carriers use trip permits to travel in the four border states, as allowed by North American Free Trade Agreement (NAFTA). A ballot ([Reference 10](#)) has been proposed to amend the definition of “Jurisdiction” in the International Registration Plan so that any country in North America or a state, province, territory, possession or federal district of a North American country can join the Plan. The National Governors Association is leading a working group comprised of representatives of IRP, IFTA, U.S. DOT, and Mexico that is focused on issues related to the participation of Mexico in IRP.

4.5 Recommended Implementation Approach

1. The IRP, Inc. Board of Directors should continue to work with the appropriate agencies on enabling Mexico to join IRP.
2. Each appropriate jurisdiction should be encouraged to connect to the IRP Clearinghouse.
3. If jurisdictions need to exchange information about trailers, then a uniform approach for identifying trailers should be adopted. Until that need arises, no uniform approach is warranted.
4. IRP and intrastate registration policies and procedures should be amended to require that registrants provide the default Primary Carrier ID as part of the registration process. This is important because there are situations in which a VIN cannot be correlated with a specific Primary Carrier ID. If the vehicle is not equipped with a DSRC transponder, there are few options for identifying the carrier (assuming the vehicle is not stopped) without using some physical identifier associated with the vehicle (e.g., license plate read by an optical reader). Therefore, a vehicle identifier connected with a default Primary Carrier ID permits screening of both vehicle and carrier in a number of scenarios.

4.6 Impact on Legislation, Rulemaking, and Policy

Rulemaking and/or policy changes would be necessary to require that a default carrier be identified when a vehicle was registered. States participating in the Performance and Registration Information System (PRISM) program ([Reference 7](#)) already establish that information linkage so that the carrier’s safety history can be evaluated when a vehicle is registered. The default carrier is defined as the carrier assigned responsibility for a particular vehicle for the purposes of safety management. In cases where the vehicle is owned and operated by the carrier, the default carrier and the actual carrier will be the same. However, in cases when the vehicle is leased, there may be a number of carriers that actually operate the vehicle. The default carrier could then be one of the carriers who operate the vehicle most of the time. Although it may be inaccurate to assign all safety related data to a carrier who does not use

the vehicle all the time, at least there will be some way to relate safety performance to a carrier part of the time. (Note that it may be possible to attribute some safety data to the appropriate carrier if the vehicle is stopped for an inspection or traffic incident.)

4.7 Impact on Information Systems

The impact of standardizing the vehicle identifiers as the VIN and Vehicle Plate ID will be minimal. Systems are already in place or being developed that support cross-references. For example, both the IRP Clearinghouse and SAFER have been designed to include both identifiers. The modifications that will be necessary include:

1. State registration systems will be required to include a default Primary Carrier ID for each vehicle registered.
2. The SAFER system will be modified to link IFTA accounts to vehicles through the VIN. This is complicated by the fact that the state agency responsible for IFTA data may not be the same agency responsible for vehicle registration.

5. TRANSPONDER IDENTIFIERS

The primary identifier for the transponder is the Transponder ID. Currently, available transponders use identifiers that are represented as 32-bit unsigned integers with hexadecimal values. Since the IEEE message set standard 1455-1999 ([Reference 2](#)) was adopted in 1999, transponder IDs will eventually be in the form of a 16-bit Manufacturer Identifier and a 20-bit Transponder Serial Number; the values of both should be hexadecimal. In information exchanges, a Transponder ID Definition Flag will be used to distinguish between identifiers in the current format and the IEEE 1455-1999 format. There is no distinction among transponder identifiers for interstate, intrastate, and international operators. The manufacturer builds the Transponder ID into the transponder.

5.1 Recommended Implementation Approach

Information about transponders should be exchanged to support the DSRC-based services that a carrier chooses to participate in. In the future, when exchanging information about transponders, include the Transponder ID Definition Flag. That flag will be used to determine whether only the Transponder Serial Number or both the Transponder Serial Number and Manufacturer Identifier should also be exchanged. Once transponders that satisfy the IEEE 1455-1999 standard are deployed, systems that today exchange only the Transponder Serial Number will have to be enhanced.

The exchange of Transponder Identifiers across jurisdictions and DSRC applications will let carriers participate in a variety of screening, toll, and other DSRC-based programs.

In today's environment, there is increased interest in and awareness of the potential dangers associated with freight, especially hazardous materials freight. In the future, hazardous material might be electronically locked in containers that would be electronically identified by a transponder.

5.2 Impact on Legislation, Rulemaking, and Policy

Purveyors of transponder-based services will need to exchange information about transponders. Policies for exchanging information should be disclosed in advance so that carriers can choose whether or not to participate in the service offered.

5.3 Impact on Information Systems

All information systems that use transponder identifiers should be enhanced to handle the recommended Transponder ID. The systems include SAFER/CVIEW and the systems that support electronic screening programs.

6. DRIVER IDENTIFIERS

The primary identifier for the driver is the Driver Unique ID, which is composed of the Country Code, Jurisdiction Code, and either the commercial driver’s license number (for drivers operating vehicles over 26,000 lbs or that will carry 16 or more passengers) or driver’s license number. The Driver Unique ID has been designed to accommodate all types of driver’s license numbers issued in North America. (Specifically, [Reference 3](#) and [Reference 4](#) indicate that Quebec and Nova Scotia employ the longest driver identification numbers, a 16-character alphanumeric.) Other driver identifiers (e.g., name, SSN) are already cross-referenced by some state licensing systems.

Biometric identification (e.g. fingerprints, retinal scans) is being considered for positive identification of drivers ([Reference 11](#)). Rather than store the biometric information in the driver’s license or “smart card”, storing the biometric information in the infrastructure may be less subject to fraud and misuse.

A list of the driver physical identifiers that stakeholders use in CVO related processes is given in Table 6.

Table 6.
Driver Physical Identifiers

Physical ID	Physical ID Sources
Driver Unique ID	Driver Documents, Transponder
DL #/Jurisdiction	Same as Driver Unique ID
SSN	Driver Documents
Name/DOB	Driver Documents
Passport #	Driver Documents
Driver Biometrics (fingerprint, retinal scan, etc.)	Driver

6.1 Domestic Commercial Drivers

Currently, domestic commercial drivers receive a driver’s license from a state that permits operation of a vehicle in the US. Jurisdiction databases are the authoritative source of cross-references between the driver’s name, date of birth, SSN, and the Driver Unique ID. The CDLIS Central Site is the indirect source of the cross-reference for US commercial driver’s licenses (but not for non-commercial driver’s licenses).

6.2 International Commercial Drivers

As a result of the North American Free Trade Agreement (NAFTA), US, Canadian, and Mexican commercial drivers are able to obtain a driver’s license that permits operation of a vehicle anywhere in North America. Issuing agency databases are the authoritative sources of cross-

references between the driver's name, date of birth, etc., and the Driver Unique ID. For those Canadian provinces that are members of AAMVA and participate in CDLIS, the CDLIS Central Site can be used for the indirect source of the cross-reference. However, the Mexican federal government agency that would issue these licenses does not participate in AAMVA and CDLIS, and there is currently no schedule for it to do so.

6.3 Recommended Implementation Approach

In the long-term, it is desirable to have an indirect cross-reference for all North American drivers. Therefore, it would be advantageous to have Mexico develop a capability to support indirect accessing by participating in CDLIS.

6.4 Impact on Legislation, Rulemaking, and Policy

No significant impact on legislation or policy is expected assuming that an indirect cross-reference to non-commercial driver's licenses is unnecessary.

6.5 Impact on Information Systems

No significant impact on information systems is expected. If Mexico were to join AAMVA, then the CDLIS Central Site database would have to be expanded to include the Mexican drivers.

7. SHIPMENT IDENTIFIERS

The primary identifier for a shipment is the Shipment Unique ID, which is the same as the bill of lading number. The bill of lading is the document that establishes the carrier's responsibility for goods shipped. The bill of lading identifier can be used for a variety of applications including international border clearance, hazardous material (HazMat) incident response and freight management applications. For international border clearance, this ID could be included in an EDI message that is part of determining whether or not to let the vehicle exit or enter the country. It has been identified as a mandatory data element in the customs declaration (CUSDEC) EDI transaction set developed by the International Trade Data System (ITDS) working group. For HazMat incident response, it is intended that this identifier be used in conjunction with the carrier and vehicle identifiers to permit emergency response personnel to determine the contents of a vehicle when they arrive on the scene. The authoritative source of the cross-reference is the carrier's system, and it is the carrier's responsibility to maintain the specific database supporting the cross-reference. For freight management, the Shipment Unique ID could be combined with the carrier ID to give shippers, brokers and consignees the ability to track the status of their cargo.

The American National Standards Institute (ANSI) Accredited Standards Committee (ASC) X12, within the "Data Dictionary" portion of the X12 Electronic Data Interchange Standards ([Reference 6](#)), defines a data element called "Bill of Lading/Waybill Number" (DE598). Its definition is "Identification number assigned to the shipment by the carrier or consolidator." It is an alphanumeric data element that can be from 1 to 12 characters in length.

7.1 Recommended Implementation Approach

The use of the bill of lading is already a requirement for international border crossing but not for HazMat incident response. Therefore, legislation will be required to support use of the shipment identifier to identify vehicle contents by an emergency response team. It is expected that standardization of the identifier will promote its use in business applications such as freight management. The bill of lading number is already used in commercial transportation EDI transactions.

7.2 Impact on Legislation, Rulemaking, and Policy

It will be necessary to pass legislation that will require HazMat motor carriers to maintain a manual or automated cross-reference between Primary Carrier ID or VIN and Vehicle Plate ID and the bill of lading. This cross-reference will only be exercised in the event of a HazMat incident.

7.3 Impact on Information Systems

Motor carriers that transport hazardous material must incorporate the Shipment Unique ID and data structures for HazMat shipments into their legacy systems. They must also develop either a manual or automated information system that accurately reflects the current status of individual shipments so that when an incident occurs, an emergency response team can contact the carrier for a description of the specific cargo carried by a particular vehicle. Federal systems, such as SAFER must also be updated to support exchange of shipment information.

8. TRIP IDENTIFIER

The primary identifier for a trip is the trip/load number. Currently, this number is only envisioned to be used for international border crossing, although other CVO applications could employ it. This number would be provided to the US International Trade Data System (ITDS) for clearance of carrier, vehicle, driver and shipment at an international border. It would be sent by the carrier via EDI before the vehicle reaches the border (as part of the entry papers) as well as transmitted by the transponder at the border for identification. As part of the border clearance operation, the system would determine whether or not to let the vehicle enter/exit the country using the trip/load number transmitted by a vehicle attempting to cross an international border and correlating that number with the evaluation of the entry papers stored in the infrastructure. [Note that the ITDS project has been suspended because of heightened security conditions at the border since September, 2001. Through the Customs Modernization Program (<http://www.customs.gov/modernization/index.htm>), the U.S. Customs Service is developing the new Automated Commercial Environment (ACE) system, which will replace the Automated Commercial System (ACS). The U.S. Customs Service will eventually integrate ITDS with ACE.]

The basis for the trip/load number is the DUNS number issued by Dun and Bradstreet. Appended to the 9-digit DUNS number of the carrier is a 5-digit trip unique number and a check digit. The carrier assigns the trip unique number.

8.1 Recommended Implementation Approach

1. Develop standards to support exchange of trip information within the infrastructure. (This effort had been proceeding via existing border clearance projects and the ITDS.)
2. Develop federal information systems to support trip/load number. This effort had been proceeding via the ITDS.

8.2 Impact on Legislation, Rulemaking, and Policy

The key impact of the standardized trip identifier is that it requires development of a policy that permits drivers and shipments to be rapidly cleared at the border. This policy must address concerns about illegal immigration and transport of contraband items.

8.3 Impact on Information Systems

The Automated Commercial Environment (ACE) project (<http://www.customs.ustreas.gov/imp-exp2/auto-sys/ace/>) must develop information systems to support the processing of trip information before the vehicle arrives at the border.

9. RECOMMENDED IMPLEMENTATION PLAN

This paper indicates that there are a number of significant issues that should be addressed before standard North American identifiers will be available. A summary of initiatives that should be pursued is provided below.

9.1 Legislation, Rulemaking, and Policy Initiatives

There are several rulemaking or policy initiatives that must be pursued to support development of standard North American identifiers. They are:

1. All states should establish a mechanism for uniquely identifying and maintaining census records on intrastate carriers. If a rule is issued requiring that intrastate carriers obtain USDOT #s, then the mechanism for intrastate and interstate carriers may be the same.
2. IRP and intrastate vehicle registration policies and procedures should be amended to require that registrants provide the default Primary Carrier ID as part of the registration process.
3. IFTA and intrastate fuel tax policies and procedures should be amended to require that registrants provide the Primary Carrier ID as part of the credentialing and tax filing processes.
4. All jurisdictions within North America should be encouraged to join IRP and to connect to the IRP Clearinghouse.
5. Mexico should be encouraged to join AAMVA and interface to the CDLIS Central Site that is used as an indirect source of cross-references for commercial drivers licenses.
6. Legislation should be passed requiring HazMat motor carriers to maintain a cross-reference between Carrier Unique ID or VIN and Vehicle Plate ID and the bill of lading number.

9.2 Information System Initiatives

There are a number of information system initiatives that must be pursued to support the implementation of standard North American identifiers. These include:

1. Modifying information exchange systems to include the recommended primary identifiers in all exchanges.
2. Enhancing New MCMIS to include a complete authoritative cross-referencing for motor carrier identification.
3. Enhancing/completing the development of the IRP Clearinghouse, IFTA Clearinghouse, ACE and SAFER to include cross-references for vehicles and carriers.

4. Connecting the jurisdictions' appropriate information systems to the clearinghouses. Furthermore, modify jurisdiction vehicle registration databases to permit entry of a default Primary Carrier ID for a vehicle.
5. Modifying information systems to support cross-references. Such systems include jurisdiction licensing and registration, and carrier freight administration.

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