IBM WebSphere Transformation Extender

IBM

Pack for HL7

Version 4.2

Contents

Chapter 1. Overview of the Packs for Healthcare

There are three separate IBM Healthcare Packs:

- The IBM WebSphere Transformation Extender Pack for Health Insurance Portability and Accountability Act, Electronic Data Interchange (HIPAA EDI)
- The IBM WebSphere Transformation Extender Pack for Health Level Seven (HL7)
- The IBM WebSphere Transformation Extender Pack for the National Council of Prescription Drug Providers (NCPDP)

The objects (type trees and maps) in the packages include definitions for the complete ASC X12N standard for the HIPAA, as well as NCPDP, HL7 and CMS (formerly HCFA) formats for NSF, UB-92 and 4010 flat file formats.

The Packs for Healthcare provide healthcare and insurance payer organizations with an infrastructure that:

- Enables compliance with government and industry mandates.
- Controls administrative costs.
- Streamlines business processes.
- Facilitates accuracy and timeliness of information.
- Offers a competitive advantage.
- Conforms to existing systems.
- Adapts to new technologies as they emerge.
- Integrates multiple systems and standards.

Because the Packs for Healthcare are based on core IBM technology, your applications and systems can take advantage of IBM's full range of integration capabilities including:

- Powerful any-to-any and many-to-many data transformation.
- Multi-platform deployment and execution.
- Management of transaction flows between trading partners.
- Importers for interface creation from XML DTDs, copybooks, DBMS catalogs, and other metadata.
- Adapters for commercial applications, messaging middleware, Internet transports, relational databases, file systems, and utilities.

Organization of objects

The contents of the Pack for HL7 are organized by object type with the intention of facilitating reusability and flexibility.

The Pack for HL7 objects are installed in the following directory location:

install_dir**packs****healthcare_v***n.n***hl7**

In this location *install_dir* indicates the core IBM product installation, *n.n* indicates the current product version.

Included in the Packs for HIPAA EDI; HL7; and NCPDP

The data exchange, transformation, and integration requirements of the healthcare industry range from simple to extremely complex and can vary greatly from one organization to another. The Packs contain predefined objects that give you the functionality and flexibility to develop a wide variety of applications and systems that meet your specific transaction and production requirements.

The Packs contain type trees, maps, sample data, and utility modules. These predefined, industry-specific objects are organized in a way that provides the flexibility to create and deploy a wide variety of applications and systems that address healthcare integration requirements. These objects are constructed to allow consistent behavior and results across all supported platforms and operating systems.

The given type trees define the more commonly used healthcare industry data standards. The given maps, data, and utility modules embrace typical data validation and transformation scenarios.

Type trees

The type trees in these packages support the following healthcare standards:
- CMS, NFS, UB92
- HIPAA
- HL7
- NCPDP

The type trees described here describe the type trees that support the IBM WebSphere Transformation Extender Pack for HL7.

See the IBM WebSphere Transformation Extender Pack for HIPAA EDI for information about the type trees that support the HIPAA EDI standard.

See the IBM WebSphere Transformation Extender Pack for NCPDP for information about the type trees that support the NCPDP standard.

Intended use

The Packs for Healthcare (HIPAA EDI; HL7 and NCPDP) are intended for use by a wide variety of healthcare organizations - particularly healthcare providers and insurance payers seeking to fulfill Healthcare Industry Portability and Accountability Act (HIPAA) requirements and streamline healthcare transaction data integration.

In using the Packs for Healthcare, you can send and receive electronic healthcare transactions, receive and transmit data using legacy standards, and integrate with internal applications and data.

Compatibility

The executable objects that you create using the Packs for Healthcare (HIPAA EDI; HL7; and NCPDP) can be ported to any Windows, UNIX (AIX, HP, Solaris, and Linux), and MVS platform.

General constraints

All healthcare-related type trees developed by IBM adhere to all current, official implementation guides or published standards documents.

Healthcare data transformation maps are accurate implementations of published crosswalk or data transformation specifications. However, if examples are provided, they do not take into account specific user requirements. For this reason, all type trees and maps provided are intended for use as examples only.

It is your responsibility as a user to assess suitability and perform appropriate testing before placing any of the Packs' objects into a production environment. You will also need to ensure that you have adequately addressed security and privacy considerations in the applications and systems that you develop using the Packs.

File naming conventions

All Packs for Healthcare object filenames are lowercase and contain only alphanumeric or underscore (_) characters.

For compatibility with the OS/390 batch environment, filenames for executable objects, including executable map names referenced by RUN function calls, do not contain underscore characters in the first 8 characters of the filename and the first 8 characters of executable object names are unique within the scope of the Packs for Healthcare. This restriction does not apply to objects that are not ported directly to the z/OS or UNIX environments such as type trees or map source files.

Chapter 2. Healthcare industry

The documentation provided here discusses technical terms and other information used to exchange data in healthcare industry.

Healthcare information exchange participants

Every encounter between a patient and healthcare provider involves the exchange of information. In addition to the basics of patient demographics, symptoms, diagnoses, and treatments, the typical scenario requires the exchange of claims and payment data as well as associated payer, subscriber, eligibility and authorization information. A single encounter can involve the transmission of large volumes of information among several participants.

Healthcare transactions and standards

The exchange of healthcare information can generally be viewed as a transaction between the sender and receiver participants.

Healthcare transactions include (but are not limited to):
* Healthcare claim or encounter.
* Claim payment and remittance advice.
* Healthcare claim status.
* Coordination of benefits.
* Eligibility for a health plan.
* Referral certification and authorization.
* Enrollment and un-enrollment in a health plan.
* Premium payments.

These transactions may be transmitted electronically in compliance with healthcare transaction standards.

Healthcare data exchange standards allow the accurate and timely exchange of information between healthcare organizations. For example, a simple benefits inquiry can take 20 minutes on the phone. Using electronic data interchange (EDI); this type of request can be processed almost immediately, without the need for a call to the insurer's customer service center.

Healthcare electronic data interchange initiatives

The entire healthcare industry is facing increased pressure to implement productivity and quality improvements while reducing costs. The use of electronic data interchange and industry-specific data exchange standards for healthcare transaction data is a potential source of significant benefits in these areas.

HIPAA legislation

In 1996, legislation was passed to improve the overall healthcare administrative system. This legislation is known as the Health Insurance Portability and Accountability Act (HIPAA).

The IBM WebSphere Transformation Extender Packs for Healthcare specifically address the administrative simplification aspects of HIPAA legislation - the standardization of electronic patient health, administrative, and financial data.

HIPAA regulations affect payers, health plans, clearinghouses, and those providers who conduct financial and administrative transactions electronically.

HIPAA transactions

The following diagram shows the flow of information between healthcare providers and insurance/payers and the associated HIPAA-mandated transaction numbers. These numbers refer to specific HIPAA X12 transaction sets that are supported in the IBM WebSphere Transformation Extender Packs for Healthcare.

Providers		Insurance and Payers
Eligibility Verification	Eligibility Inquiry (270) → ← Response (271)	Enrollment
Pretreatment Authorization and Referrals	Health Care Services Delivery (278) →	Precertification and Adjudication
Service Billing/ Claim Submission	Claim (837) →	Claim Acceptance
Claim Status Inquiries	Claim Status Inquiry (276) → ← Claim Status Response (277)	Adjudication
Accounts Receivable	Claim Payment (835) →	Accounts Payable
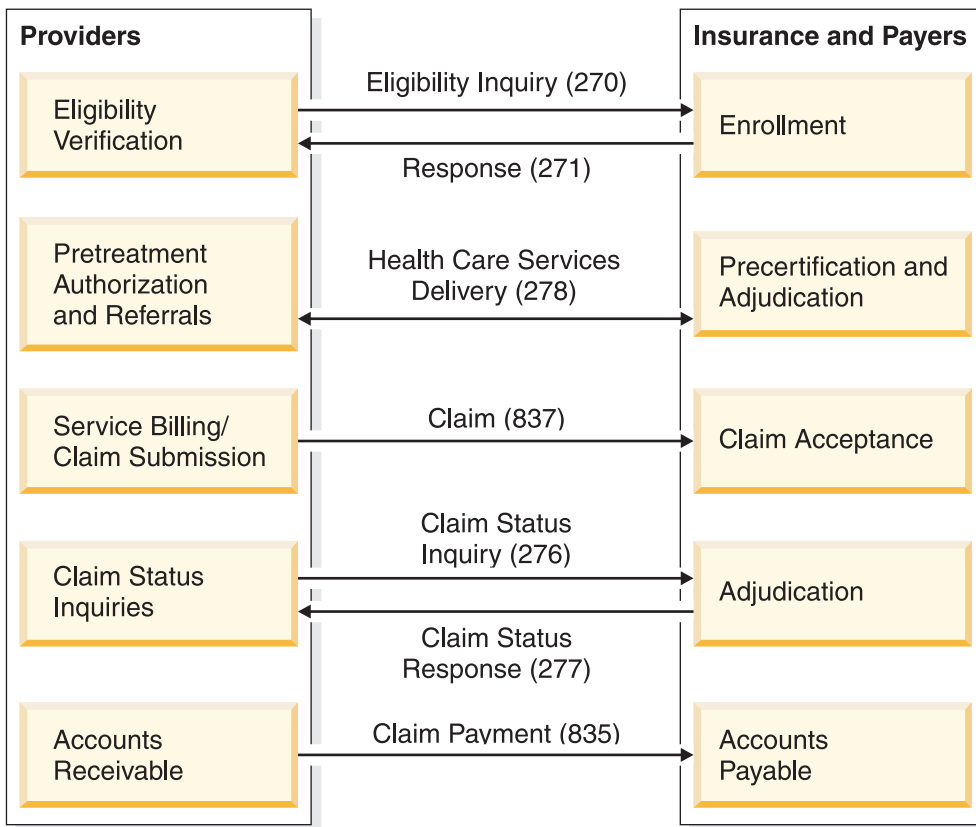
The following diagram shows the flow of information between insurance/payers and healthcare plan sponsors and the associated HIPAA-mandated transactions. Again, the parenthetical numbers refer to specific HIPAA X12 transaction sets.

```
┌─────────────────────────────────────┐        ┌───────────────────────────┐
│ Insurance and Payers                │        │ Sponsors                  │
│  ┌────────────────────┐   Enrollment (834)    │  ┌──────────────────┐     │
│  │ Enrollment         │─────────────────────────▶│ Enrollment       │     │
│  │                    │◀─────────────────────────│                  │     │
│  └────────────────────┘   Payment Order (820)   └──────────────────┘     │
│                                      │        └───────────────────────────┘
│  ┌────────────────────┐              │
│  │ Precertification and│
│  │ Adjudication       │
│  └────────────────────┘
│
│  ┌────────────────────┐
│  │ Claim Acceptance   │
│  └────────────────────┘
│
│  ┌────────────────────┐
│  │ Adjudication       │
│  └────────────────────┘
│
│  ┌────────────────────┐
│  │ Accounts           │
│  │ Payable            │
│  └────────────────────┘
└─────────────────────────────────────┘
```
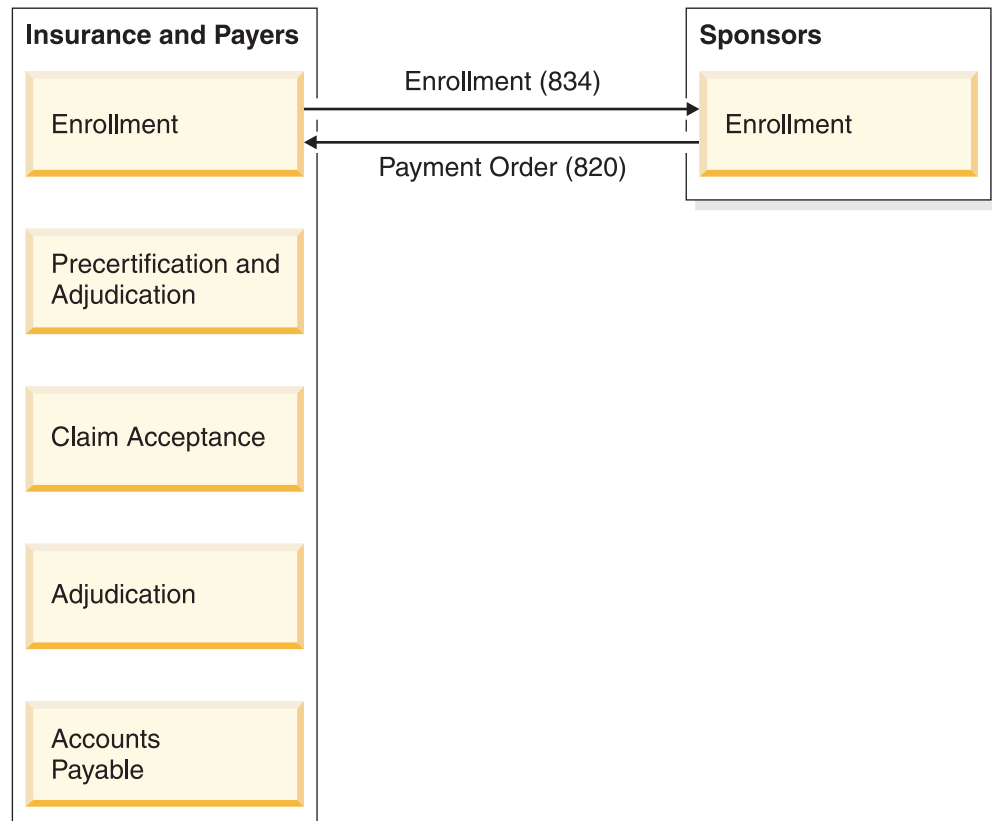
Healthcare standards organizations

There are a number of organizations that participate in the development and publication of healthcare data standards. Because of their importance in the area of healthcare data exchange standards and formats, IBM focuses on the standards and formats developed and maintained by the following four organizations:

- ANSI ASC X12N
- NCPDP
- HL7
- CMS

ANSI ASC X12N

The Accredited Standards Committee (ASC) of the American National Standards Institute (ANSI) maintains the X12 standard. X12 is the dominant EDI standard in North America. The transaction sets included in the X12 standard cover a wide range of industries and business functions - including the exchange of healthcare data. The Healthcare Task Group of the Insurance Subcommittee (also known as X12N) is the designated standards maintenance organization (DSMO) for most of the finalized HIPAA transaction set standards.

This version of the Packs for Healthcare includes type tree definitions for all of the finalized HIPAA X12 transaction sets and the HIPAA X12 Addenda.

Also included are maps and applications for transforming and validating HIPAA X12 transaction data.

NCPDP

The National Council for Prescription Drug Programs (NCPDP) is another HIPAA-designated standards maintenance organization (DSMO) for finalized HIPAA transactions. NCPDP standards are used exclusively in the retail pharmacy sector.

The Packs for Healthcare include type tree definitions for all of the finalized HIPAA NCPDP Telecommunications V5.1 transaction sets and Batch V1.0 format. The package also contains a type tree with NCPDP V3.2 transaction sets and Batch V1.1 format.

HL7

Health Level Seven (HL7) is an ANSI-accredited standards organization operating in the healthcare arena. HL7's domain is clinical and administrative data.

The HL7 produces standards for the exchange, management, and integration of data, intended to promote interoperability between healthcare information systems.

The IBM WebSphere Transformation Extender Pack for HL7 includes type tree definitions for Version 2.1, 2.2, and 2.3 of the HL7 standards.

CMS

The Center for Medicare and Medicaid Services (CMS), formerly known as "HCFA", is the supervisory organization for all public expenditures for healthcare. CMS provides health insurance for over 74 million Americans through Medicare, Medicaid, and the State Child Health Insurance Program. CMS is not a standards organization but their published interface formats are used extensively throughout the United States.

The IBM WebSphere Transformation Extender Packs for Healthcare include type tree definitions for the following formats:

- NSF Claims and Coordination of Benefits - Version 3.01
- UB-92 Claims and Coordination of Benefits - Versions 5.0 and 6.0
- 4010 Flat Files for Professional and Institutional Claims and Coordination of Benefits (837), Payments (835) and Claim Status Request/Response (276/277)

> **Note:** CMS was formerly the Healthcare Financing Administration (HCFA). Because many CMS documents, standards, and Web sites still refer to HCFA, both CMS and HCFA are used in this guide and in IBM WebSphere Transformation Extender Packs for Healthcare.

Chapter 3. HL7 Type trees

This chapter discusses the type trees included with the IBM WebSphere Transformation Extender Pack for HL7.

Overview

The IBM WebSphere Transformation Extender Pack for HL7 includes type trees with data definitions for the Healthcare Level Seven industry standard. The type trees in these packages depict the structure, relationships, and data element attributes as described in published specification documents. In practical terms, this means data that meets the specification requirements is considered valid, while data that does not meet the requirements is rejected. Other type tree attributes include the following:

- Compatibility with other IBM product offerings, such as Trading Manager
- Flexibility in modifying or merging with other type trees
- Ability to support reliable and efficient mapping
- Easily maintainable

General type tree information

Most of the type trees in the IBM WebSphere Transformation Extender Packs for Healthcare include a category: **%_Type_Tree_Information**. Double-click on the **%_Description or %_Revision_History** items to see a narrative description of the type tree or the type tree revision history.

HL7 type trees

The HL7 type trees describe the data exchange formats associated with Health Level Seven.

hl7_v2_1.mtt
This type tree contains the data definitions used in the Health Level 7 (HL7) Version 2.1 standard (including file, batch, and message formats).

File Protocol **HL7** is the top-level group in this type tree.

hl7_v2_2.mtt
This type tree contains the data definitions used in the HL7 Version 2.2 standard (including file, batch, and message formats).

File Protocol **HL7** is the top-level group in this type tree.

hl7_v2_3.mtt
This type tree contains the data definitions used in the HL7 Version 2.3 standard (including file, batch, and message formats).

File Protocol **HL7** is the top-level group in this type tree.

The **hl7_v2_3.mtt** type tree analyzes with 25 warnings that you can ignore, such as the following:

```
L199 — COMPONENT 10 may not be distinguishable from COMPONENT 14 that may follow in TYPE 'A06
ADT Message HL7' (warning)
```

hl7_v2_5.mtt

This type tree contains the data definitions used in the Health Level 7 (HL7)
Version 2.5 standard (including file, batch, and message formats). File Protocol HL7
is the top-level group in this type tree.

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