

**DEPARTMENT OF HEALTH & HUMAN SERVICES**  
Centers for Medicare & Medicaid Services  
7500 Security Boulevard, Mail Stop N2-14-26  
Baltimore, Maryland 21244-1850



## **Central Data Administration**

---

# **Physical Data Design**

---

**September 1, 2013**

*Prepared by:*  
**Centers for Medicare & Medicaid Services (CMS)**  
**Office of Information Services (OIS)**  
**Enterprise Data Group (EDG)**  
**Division of Data Enterprise Services (DDES)**  
**7500 Security Boulevard, Baltimore, Maryland 21244-1850**

Physical Data Design

**Revision\Change Description History Log**

<b>Revision</b>	<b>Date</b>	<b>Revision\Change Description</b>	<b>Pages Affected</b>
Version 1.0	09/11/2008	Original	All
Version 2.0	03/23/2010	Eliminate physical model review by CDA	All
Version 3.0	5/24/2010	Update to differentiate between LDM/PDM vs. separate LDM and PDM	4,6,7
Version 4.0	09/01/2013	Update references to DM OP&G document	5,6

# Table of Contents

Table of Contents .....	2
1. Physical Data Design .....	3
1.1 Model System Control Data.....	4
1.2 Assign Physical Data Names .....	5

# 1. Physical Data Design

## **Introduction:**

Database Administration has final authority over Physical Data Design. The focus of this process is to start the Physical Data Model (PDM) based on the sound logical data design of the Logical Data Model (LDM). The physical data model represents CMS data within the scope of a system development project and shows the specific tables, columns, and constraints involved in a physical implementation's view of information. This process applies whether a project is using a combined LDM/PDM or separate LDM and PDM.

NOTE: There are references within this section that refer the reader to the Operating Procedures and Guidelines section. Please download the Operating Procedures and Guidelines section to view these references.

Contact [Data Administration](#) for assistance with activities described in the following processes.

- [Model System Control Data](#)
- [Assign Physical Data Names](#)

## **Key Deliverables:**

The *Physical Data Design* processes control the following data artifacts:

- *Physical Data Models*
- *Data Issues Documents*

## 1.1 Model System Control Data

### Introduction

This activity describes the modeling of system control data, temporary data, staging data, or other data that is not of business interest but is needed to facilitate system operation.

- [Model System Control Data](#)

### Deliverable(s):

- Physical control data added to the physical data model.

### Model System Control Data

*Project Data Analyst or  
Database Administrator*

A. Physical system control data, that supports the proper execution of software, the management of interface behavior, user application privilege control, workflow routing, queue management and database auditing, are not included in the logical data model. Such data appears only in the physical data model and data definition language (DDL).

*Project Data Analyst or  
Database Administrator*

B. Work with the application developer to determine what additional data is needed to facilitate system operation. Then, add any required physical system control data to the physical data model, including the appropriate definitions, cardinalities, and data types.

## 1.2 Assign Physical Data Names

### Introduction

There are two categories of data naming standards: one for logical data entity and attribute names and the standard described in this section, which is for physical data names. (Standards for logical entity and attribute names are described in the DA [Entity Standards](#) and [Attribute Standards](#).)

Note:

Naming of other aspects of the physical data model such as *databases*, *storage*, *indexes*, *foreign keys*, etc depend on the RDBMS to be used and are the responsibility of the *Project Database Administrator*. For more information about specific RDBMS physical data model standards, go to the Database Administration Home web page and select the desired RDBMS standards and guidelines.

The following activities describe steps for composing physical data names. The objective of naming standards is to foster a common reference for CMS data.

- [Assign a Table or File Name](#)
  - [DM OP-045 Operating Procedure for Constructing Physical Table or Files Names](#)
- [Assign a Column or Element Name](#)
  - [DM OP-046 Operating Procedure for Constructing Physical Column or Element Names](#)

### Deliverable(s):

- “First-cut” physical data name assignments.

### Assign a Table or File Name

*Central DA*

- A. Where physical names have not already been created by the project DBA, create “first cut” physical names. Use the abbreviated terms to compose the physical table names in the physical data model from the entity names in the logical data model. Construct the physical names by following the rules outlined in [DM OP-045 Operating Procedure for Constructing Physical Table or Files Names](#).

## Physical Data Design

*Project Data Analyst*

- B. If the table or file is managed by another system, reuse the physical table or file name from the source application. If there are separate LDM and PDM, update the Physical Table Name UDP for the LDM entity.

*Project Data Analyst*

- C. Create “physical only” table names by following the rules outlined in [DM OP-045 Operating Procedure for Constructing Physical Table or Files Names.](#)

### Assign a Column or Element Name

*Central DA*

- A. Where physical names have not already been created by the project DBA, create “first cut” physical names. Use the abbreviated terms to compose the physical names in the physical data model from the attribute names in the logical data model. Construct the physical names by following the rules outlined in [DM OP-046 Operating Procedure for Constructing Physical Column or Element Names.](#)

*Project Data Analyst or Database Administrator*

- B. If your model represents data transferred from another system, use the physical name and data types from the source application unless the name from the source system is application specific. If there are separate LDM and PDM, update the Physical Column Name UDP for the LDM attribute.

*Project Data Analyst or Database Administrator*

- C. Create “physical only” column names by following the rules outlined in [DM OP-046 Operating Procedure for Constructing Physical Column or Element Names.](#)

*Project Data Analyst or Database Administrator*

- D. Attributes that represent dates must follow the rules outlined in [DM OP-041 Operating Procedure for Assigning Date Formats.](#)