



## CHAPTER

## 13

## Using Cross-Environment Data Access (CEDA)

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### Introduction

The cross-environment data access (CEDA) facility allows you to transfer Version 7 or Version 8 SAS files between two heterogeneous hosts more efficiently than other SAS file transfer techniques. CEDA takes advantage of the Version 7 or Version 8 file structure to minimize data conversion between the host's native formats and eliminates steps required by other transfer techniques.

SAS recognizes that diverse and distributed computers have become more common than they were when Version 6 was introduced. It is no longer unusual to have a site where multiple CPU's share access to a single disk or to a single networked file system. CEDA is the facility that allows any Version 7 or Version 8 SAS data file created on any directory based host (for example, Solaris, Windows, HP-UX, OpenVMS) to be read by SAS running on any other directory-based platform. Using CEDA, SAS data files (managed by the base engine) will be accessible across platforms.

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### Benefits of CEDA

The advantage of CEDA is that you can transfer your data files from one host to another, or NFS mount a disk from another host and automatically be able to access your data without any extra steps. CEDA eliminates the need to execute any other procedure, maintain a running server, or even sign on to the remote host.

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### Considerations for Using CEDA

It is important to understand that CEDA does not replace data transfer services or remote library services because of the following restrictions:

- CEDA fully supports only SAS data sets. In addition, it also supports PROC SQL views and MDDBs (Multi-dimensional Data Base) for read-only access.
- Update access is not supported. (Input and Output access is supported.)
- There is no WHERE expression optimization with an index.

- CEDA is limited to directory-based platforms (bound libraries on OS/390 and CMS files are not part of CEDA).

If your application can operate within these restrictions, then CEDA is a simpler cross-platform data access strategy than the Version 6 data transfer services and remote library services. If your needs go beyond these restrictions, then data transfer services and remote library services are still available to provide access to remote data across all platforms and releases of SAS software.

A user who does not have OS/390 cannot use CEDA to reference an OS/390 bound library. However, Version 7 or Version 8 SAS software supports unbound (or directory-based) libraries processed with the OS/390 UNIX Support Services. As an OS/390 user, you can use the IBM NFS Client to get to UNIX files from an OS/390 SAS session. As a UNIX user, you can use the IBM NFS Server to reference OS/390 UNIX Support Services files from a UNIX platform. CEDA performs the necessary translations so that these cross platform references seem like local references.

The number of observations may limit the usability of a data set transferred between two heterogeneous hosts using the CEDA facility. The reason this is a limitation is because the number of observations in a data set is stored in a long numeric type, and the number of bytes that are used to represent a long numeric type varies between hosts. The minimum is 4 bytes. Therefore, if you have data sets that contain more than  $2^{31}-1$  observations, you will not be able to access this data set on a host that stores a long numeric type in 4 bytes. This maximum observations limit may also be influenced by having an index or integrity constraints that use an index.

The failure that occurs due to the maximum observation limit is either you cannot open the data set, or you cannot add additional observations. There are four conditions where this error may occur:

- if a 4-byte long host opens an 8-byte long data set that already contains greater than  $2^{31}-1$  observations
- if an 8-byte long host opens a 4-byte long data set that already contains greater than  $2^{31}-1$  observations
- if a 4-byte long host attempts to add observation  $2^{31}-1$  in an 8-byte long data set
- if an 8-byte long host attempts to add observation  $2^{31}-1$  in an 4-byte long data set.

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## Alternatives to Using CEDA

If the restrictions make it unfeasible to use CEDA, data transfer services and remote library services are available for accessing data files that are created by and residing on another host.

- *Data transfer services* is part of SAS/CONNECT. It is a bulk data transfer mechanism that transfers a disk copy of the data and performs the necessary conversion of the data from one platform's representation to another's, as well as any necessary conversion between SAS releases. This requires that a connection be established between two SAS sessions by using the SIGNON command and then executing either PROC UPLOAD or PROC DOWNLOAD to move the data.

For more information, see Chapter 16, "Using Data Transfer Services," on page 103.

- *Remote library services* is part of both SAS/SHARE and SAS/CONNECT. It gives the user transparent access to remote data through the use of a LIBNAME statement. However, remote library services also has some prerequisites.

- When used with SAS/SHARE, a SHARE server must be previously invoked by a server administrator to give the local user access to the remote data.
- When used with SAS/CONNECT, you must establish a connection between two SAS sessions by using the SIGNON command before issuing the LIBNAME statement that points to the remote data.

For more information, see Chapter 9, “Using Remote Library Services (RLS),” on page 71.



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