



APPENDIX

1

SAS/CONNECT Version 6 to Version 7 or Version 8 Cross-Version Issues

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Introduction

There are no limitations on migrating from SAS/CONNECT Version 7 to Version 8 because they are virtually identical.

When migrating from Version 6 of SAS to Version 7 or Version 8, most organizations will find a seamless transition when converting their Version 6 data and applications to Version 7 or Version 8. However, many organizations may find it necessary to operate in a mixed-version environment during transition. This environment includes a mixture of local or remote hosts running a Version 6, Version 7, or Version 8 SAS session. SAS/CONNECT provides access to data and to applications that are on different platforms running different SAS versions in your organization. Here is what you can expect as you access data and move applications between Version 6 and Version 7 or Version 8.

A local Version 7 or Version 8 session has the following access to Version 6 data:

- A Version 7 or Version 8 session can read Version 6 data files.
- A Version 7 or Version 8 session can update and write to Version 6 data files with one exception - Version 7 or Version 8 features cannot be written to Version 6 data files.
- A Version 7 or Version 8 session has read-only access for all other Version 6 member types (only SAS/CONNECT provides the ability to transfer files of other member types to Version 6).

Information in this section relates to SAS/CONNECT cross-version issues only. See *SAS Language Reference: Concepts* for Version 6 to Version 7 or Version 8 information that relates to single-user SAS mode, and see the *SAS/SHARE User's Guide* for information that relates to SAS/SHARE software.

Cross-Version Compatibility

Version 7 and Version 8 of SAS offer several new features that affect the file format of data files. These features make Version 7 and Version 8 data files incompatible with Version 6 data files. However, for new features that involve increased character length, SAS/CONNECT will truncate the character length in an attempt to produce a Version 6 compatible data file. This allows you to take advantage of some of the new features while operating in a mixed-version environment. The new Version 7 or Version 8 features that SAS/CONNECT is able to truncate include:

- long data set labels
- long variable labels
- long variable names.

Other new Version 7 or Version 8 features cannot be modified to make data files compatible with Version 6. Therefore, any attempt to transfer data files that contain these features will fail. Some of the new features that cannot be modified to be Version 6 compatible include:

- data set generations
- integrity constraints.

For complete information about Version 7 or Version 8 features, see *SAS Language Reference: Concepts*.

Truncating Version 7 or Version 8 Data Sets for Version 6 Access

Version 7 and Version 8 of SAS support longer names and labels than those supported in Version 6. The longer names and labels are stored in Version 7 or Version 8 data files, which make them incompatible with Version 6. SAS/CONNECT implements a set of truncation rules to convert a Version 7 or Version 8 data file that contains long names and labels back into a Version 6 data file.

The truncation rules are applied when using SAS/CONNECT to transfer files

- from a Version 7 or Version 8 session to a Version 6 session.
- between two Version 7 or Version 8 sessions and to produce a Version 6 data file.

Note: A Version 6 data file is produced by specifying VALIDVARNAME=V6 in the session that creates the data file. If VALIDVARNAME=V6 is set, the truncation is performed when running either the Version 7 or Version 8 engine or the Version 6 engine. \triangle

In either case, the following rules are applied for data sets that have long data set labels, long variable labels, and/or long variable names. In each case, the length is truncated to the length that is supported by Version 6.

- Data set labels are truncated to 40 characters.
- Variable labels are truncated to 40 characters.
- Variable names are truncated to 8 characters.

Note: If the variable label field is blank, the long variable name is copied to the label field. \triangle

The truncation algorithm that is used to produce the 8-character variable name also resolves conflicting names.

- 1 The first name that is greater than 8 characters is truncated to 8 characters. For example, STOCKNUMBER53 is truncated to STOCKNUM.
- 2 The next name that is greater than 8 characters is truncated to 8 characters. If it conflicts with an existing variable name, it is truncated to 7 characters, and a suffix of 2 is added. For example, STOCKNUMBER54 is truncated to STOCKNU2.
- 3 The suffix is increased by one for each truncated name that results in a conflict. If the suffix reaches 9, the next conflicting variable name is truncated to 6 characters, and a suffix of 10 is appended. For example, STOCKNUMBER63 is truncated to STOCKN10.

Mixing Cross-Version Data Files in a Library

Whenever possible, it is generally recommended that you keep Version 6 and Version 7 or Version 8 SAS files in separate physical locations. This will avoid any potential confusion as to which file is being accessed. If mixed versions are stored in the same library, the appropriate engine should be specified when accessing the SAS data files.

Your ability to access a specific file in a library depends on the engine associated with that library. You can explicitly specify the engine using the LIBNAME statement, or you can allow SAS to determine the appropriate engine for you based on the version of the session and the files in the directory. For example, a Version 7 session will attempt to use the Version 7 engine (V7), and a Version 8 session will attempt to use the Version 8 engine (V8).

Note: A V7 engine and a V8 engine are identical. Δ

However, if a physical library contains only Version 6 files, the Version 7 or Version 8 session uses the Version 6 engine (V6) to access the SAS files in that library.

If a library contains both Version 6 files and Version 7 or Version 8 files, the Version 7 or Version 8 session may never see the Version 6 files if the V7 or V8 engine is used. If the V6 engine is specified, the Version 7 or Version 8 file may never be seen. The following are examples of specifying an engine:

```
libname v7lib v7 'SAS-data-library';
libname v8lib v8 'SAS-data-library';
libname v6lib v6 'SAS-data-library';
```

In this example, the libref V7LIB accesses only Version 7 files or Version 8 files, the libref V8LIB accesses only Version 8 files or Version 7 files, and the libref V6LIB accesses only Version 6 files.

The file extension can be used to determine which version of SAS software was used to create the file. Table A1.1 on page 482 shows examples of Version 6 and Version 7 or Version 8 filename extensions for a Windows 95 host:

Table A1.1 Version 6 and Version 7 or Version 8 Data File Extensions for a Windows 95 Host

File Type	V6 Filename	V7 or V8 Filename
	Extension	Extension
Data File	sd2	sas7bdat
Catalog	sc2	sas7bcats
View	sv2	sas7bview

Concatenating Libraries

In order to expand the scope of file access from a single library to multiple libraries, use library concatenation. With an expanded scope, you can perform operations on either Version 6 files or Version 7 or Version 8 files that span multiple libraries.

Here is an example of library concatenation:

```
libname v6lib v6 'SAS-data-library';
libname v8lib v8 'SAS-data-library';
libname catlib (v8lib v6lib);
```

Note: *SAS-data-library* must be the physical name that is recognized by the operating environment. Δ

The first LIBNAME statement assigns the libref V6LIB to a SAS data library that is accessed with the V6 remote engine. The V6 remote engine recognizes only files that are appended with a Version 6 filename extension.

The second LIBNAME statement assigns the libref V8LIB to a SAS data library that is accessed with the V8 remote engine. The V8 remote engine recognizes only files that are appended with a Version 7 or Version 8 filename extension.

The third LIBNAME statement assigns the libref CATLIB to concatenated libraries that are referenced by the librefs V8LIB and V6LIB. The order of the librefs identifies the sequence in which the libraries are searched. The SAS operation uses the first occurrence of a specified file.

For example, if the same file exists in both libraries and you delete that file, then the file in the first library (for example, STOCK.SAS7BDAT in V8LIB) is deleted. If V6LIB precedes V8LIB in the library concatenation (for example, STOCK.SD2 in V6LIB), then that file is deleted. If the specified file exists in only one library, then that file is deleted.

Accessing SAS Data Sets

Accessing data that is stored in a SAS data set is a fundamental operation in the SAS System. Therefore, it is important to be aware of any limitations or restrictions when accessing data sets in a cross-version environment. Access to the data files is based on the SAS/CONNECT service that is used, and whether the data files employ any new Version 7 or Version 8 features. There are three SAS/CONNECT services that allow you to access data files in a cross-version environment:

- Remote Library Services (RLS)
- Data Transfer Services (DTS)
- Compute Services (CS)

Version 6 Local Host Accessing a Version 7 or Version 8 Remote Host

This section summarizes the limitations of a Version 6 local host that accesses data sets on a Version 7 or Version 8 remote host in a cross-version environment.

Using *remote library services*, you have read, write, and update access to your Version 6, Version 7, and Version 8 SAS data sets on a Version 7 or Version 8 remote host if your Version 7 or Version 8 data files do not contain new Version 7 or Version 8 features.

Using *data transfer services*, all data format conversions are performed when transferring a data file and do not require any user invention. The UPLOAD procedure produces a Version 7 or Version 8 data file when transferring data files from a Version 6 local host. The DOWNLOAD procedure provides full support for the transfer of Version 6 data files residing on the remote host. However, Version 7 or Version 8 data files can be downloaded to a Version 6 local host and will follow the truncation rules described earlier, provided they do not contain any other Version 7 or Version 8 specific features.

Using *compute services*, a Version 6 local host can remote submit a SAS program to a Version 7 or Version 8 remote host. The data files that are referenced in the remote submit block can be Version 6, Version 7, or Version 8 data files.

Version 7 or Version 8 Local Host Accessing a Version 6 Remote Host

This section summarizes the limitations of a Version 7 or Version 8 local host that accesses data sets on a Version 6 remote host in a cross-version environment.

Using *remote library services*, a Version 7 or Version 8 local host can read, write, and update Version 6 data files on a Version 6 remote host if the Version 6 data files do not implement new Version 7 or Version 8 features.

Using *data transfer services*, a Version 7 or Version 8 data file can be uploaded to a Version 6 remote host and will follow the truncation rules describe earlier, provided they do not contain any other Version 7 or Version 8 specific features. The DOWNLOAD procedure transfers Version 6 data sets to the Version 7 or Version 8 local host.

Using *compute services*, a Version 7 or Version 8 local host can remote submit a SAS program to a Version 6 remote host. However, the programming statements that are referenced in the remote submit must not implement new Version 7 or Version 8 features.

Accessing SAS Views

As with data sets, there are limitations and restrictions when accessing data views in a cross-version environment. Data views that are affected in this environment include:

- DATA step views
- PROC SQL views
- SAS/ACCESS views

Access to the data views and SAS programs is based on the SAS/CONNECT service that is used to access it and whether the data employs any new Version 7 or Version 8 features. There are three SAS/CONNECT services that allow you to access data views in a cross-version environment:

- Remote Library Services (RLS)
- Data Transfer Services (DTS)

- Compute Services (CS)

Note: SAS/CONNECT uses the data that the view references, not the view itself. Δ

Version 6 Local Host Accessing a Version 7 or Version 8 Remote Host

This section summarizes the limitations of a Version 6 local host that accesses data views on a Version 7 or Version 8 remote host in a cross-version environment.

Using *remote library services*, a Version 6 local host can read, write, and update a Version 6 DATA step view or a PROC SQL view if the view is processed on the client. The view can be processed on the client by specifying RMTVIEW=NO in the LIBNAME statement. The local host has read-only access to a Version 7 or Version 8 DATA step view or a PROC SQL view if the view is processed on the server (RMTVIEW=YES).

For SAS/ACCESS views, a Version 6 local host has complete read, write, and update access using *remote library services* for both Version 6 and Version 7 or Version 8 SAS/ACCESS views.

Using *data transfer services*, a Version 6 local host can upload and download PROC SQL views by using the DATA= option to specify the data file associated with the view that is being transferred, or by using the INLIB= option to specify the library that you want to transfer.

Using *compute services*, a Version 6 local host can remote submit a SAS program to a Version 7 or Version 8 remote host that references SAS data views.

Version 7 or Version 8 Local Host Accessing a Version 6 Remote Host

This section summarizes the limitations of a Version 7 or Version 8 local host that accesses views on a Version 6 remote host in a cross-version environment.

Using *remote library services*, a Version 7 or Version 8 local host can read a Version 6 DATA step view or a Version 6 PROC SQL view provided the view is processed on the server. The view can be processed on the server by specifying RMTVIEW=YES in the LIBNAME statement. However, the Version 7 or Version 8 local host can read, write, and update a Version 6 SAS/ACCESS view on a Version 6 remote host.

Using *data transfer services*, a Version 7 or Version 8 local host can upload data that is associated with a view to a Version 6 remote host and will follow the truncation rules described earlier.

Using *compute services*, a Version 7 or Version 8 local host can remote submit a SAS program to a Version 6 remote host that references SAS data views. However, the data referenced in the remote submit must not implement new Version 7 or Version 8 features.

Accessing Catalogs

Accessing entries that are stored in a SAS catalog is a fundamental concept in the SAS System. Therefore, it is important to be aware of any limitations or restrictions when accessing catalogs in a cross-version environment. Access to the catalogs is based on the SAS/CONNECT service that is used. There are three SAS/CONNECT services that allow you to access catalogs in a cross-version environment:

- Remote Library Services (RLS)

- Data Transfer Services (DTS)
- Compute Services (CS)

Note: Version 6 catalogs on AIX/RS6000 are NOT directly readable by Version 7 or Version 8. CPORT and CIMPORT must be used when bringing catalogs forward to Version 7 or Version 8 on AIX. Δ

Entry types (alphabetized horizontally) that are compatible with Version 6 include:

AFCBT	AFGO	DEVMAP
FONT	FONTLIST	KEYMAP
KEYS	LOG	OUTPUT
SOURCE	TEMPLATE	TRANTAB

Version 6 Local Host Accessing a Version 7 or Version 8 Remote Host

This section summarizes the limitations of a Version 6 local host that accesses catalogs on a Version 7 or Version 8 remote host in a cross-version environment.

Using *remote library services*, a Version 6 local host can read a Version 6 catalog on a Version 7 or Version 8 remote host and can read, write, and update a Version 7 or Version 8 catalog. However, write and update access produces a Version 7 or Version 8 catalog with a Version 6 data format.

Using *data transfer services*, a Version 6 local host can upload a Version 6 catalog, but the resulting catalog is a Version 7 or Version 8 catalog. A Version 6 host can download Version 6, Version 7, or Version 8 catalogs as long as the entry type is backwards compatible.

Using *compute services*, a Version 6 local host can remote submit a SAS program to a Version 7 or Version 8 remote host that references a SAS catalog.

Version 7 or Version 8 Local Host Accessing a Version 6 Remote Host

This section summarizes the limitations of a Version 7 or Version 8 local host that accesses catalogs on a Version 6 remote host in a cross-version environment.

Using *remote library services*, a Version 7 or Version 8 local host can read and write a Version 6 catalog on a Version 6 remote host. However, write access is only allowed when using a PROC COPY from one Version 6 library to another Version 6 library.

Using *data transfer services*, a Version 7 or Version 8 local host can download a Version 6 catalog from a Version 6 remote host. A Version 6 catalog can also be uploaded from the Version 7 or Version 8 local host if the entry type is compatible.

Note: The Version 7 or Version 8 local host is not able to create (using PROC UPLOAD) a Version 6 catalog entry. Δ

Using *compute services*, a Version 7 or Version 8 local host can remote submit a SAS program to a Version 6 remote host that references a SAS catalog. However, the entries that are referenced in the remote submit must not implement new Version 7 or Version 8 features.

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