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PVCS Version Manager

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Developer's Toolkit Reference Guide



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Overview

Use Version Manager functions in your application

The Developer's Toolkit provides application programming interface (API) functions for programmers who want to develop applications that use PVCS Professional Suite services. You can use the functions in Developer's Toolkit to build your own interface to configuration management tools, or to add configuration management capabilities to your applications.

Visual Basic and Delphi programmers can also utilize the Developer's Toolkit functionality easily without having to write external functions to manipulate certain data structures normally returned by a few Developer's Toolkit functions.

The Developer's Toolkit includes functions that implement the functionality of Version Manager and Configuration Builder.

You can use Developer's Toolkit to build applications that use PVCS Version Manager services on various platforms.

Components of the Toolkit

DLLs, libraries, and header files

The Developer's Toolkit consists of a set of dynamic link libraries (DLLs), import libraries, shared libraries, static libraries, and header files.

Dynamic Link Libraries

Windows DLLs

The Developer's Toolkit includes the following DLLs for Windows:

- VMWFDTK.DLL contains functions for Version Manager services for 32-bit Windows.
- CBWF51.DLL contains functions for Configuration Builder services for 32-bit Windows.



NOTE When you are using the PVCS Version Manager services, the calling application must be able to find the DLLs. Under Windows, the DLLs must be in the same directory as the calling application or in a directory included in the PATH statement.

Import Libraries

Windows libraries

The Developer's Toolkit includes the following import libraries for linking Windows programs:

- VMWFDTK.LIB is the 32-bit import library for Version Manager functions.
- CBWF51.LIB is the 32-bit import library for Configuration Builder functions.

Shared UNIX Libraries

Shared Libraries

The Developer's Toolkit includes the following shared libraries for UNIX:

- *libpvcsvm.a* is the shared UNIX object library for Version Manager for AIX.
- *libpvcsvm.sl* is the shared UNIX object library for Version Manager for HP-UX.
- *libpvcsvm.so* is the shared UNIX object library for Version Manager for Solaris.

Static Library

Static UNIX library The Developer's Toolkit includes one static library for UNIX: `pvcscb.a` is the UNIX object library for Configuration Builder functions.

Header Files

The Developer's Toolkit includes the following C header files:

- `pvcs.h` contains definitions and function prototypes for the PVCS Version Manager services.
- `pvcsb.h` contains definitions and function prototypes for Configuration Builder functions. This file is automatically included by `pvcs.h`.
- `pvcsvm.h` contains definitions and function prototypes for Version Manager functions. This file is automatically included by `pvcs.h`.
- `pvcsvm.bas` contains definitions and function prototypes for use with Visual Basic applications.
- `pvcsdtk.pas` contains definitions and function prototypes for use with Delphi applications.



NOTE When compiling under Windows, your program should include `windows.h` before including `pvcs.h`.

Calling Conventions

Unless stated otherwise, any revision parameter can be a revision number, version label, or promotion group. If the parameter refers to a version label that begins with a number, you must prefix the label with a backslash (\) so that Version Manager does not recognize it as a revision number.

All functions return a value of zero if successful. Non-zero return values indicate that an error occurred. See [Chapter 4, "Return Values"](#) for descriptions of the error codes.

Developer's Toolkit uses the following conventions for Windows DLLs:

- The CDecl calling convention for 32-bit Windows.

Developer's Toolkit uses the following convention for UNIX:

- The C language calling convention.

Data Structures

Types of returned data Many PVCS Version Manager services return data to the caller. There are three types of returned data:

- Simple data types, such as integer.
- Null-terminated ASCII text strings.
- Data structures. These data structures are listed as C structures in the header files `PVCSVM.H` and `PVCSCB.H`, and in [Chapter 5, "Data Structures"](#)

The caller must allocate memory for data returned by the Professional services. The data structures contain a fixed-length structure, which may contain pointers to variable-length strings. The buffer must be large enough to hold the fixed portion plus the variable portion.

The Developer's Toolkit returns the error code `PVCS_E_BUFFER_OVERFLOW` if the buffer is too small.

Structures use the Microsoft C convention of even-byte alignment. This means that all structure members begin on an even-byte address.

Null Parameters

Null pointer equals pointer to a null string

Unless otherwise stated, functions with parameters that are pointers to text strings treat a null pointer and a pointer to a null string as equivalent.

Compiling and Linking Windows Applications

Compiling tips The following tips on compiling and linking applications use the Professional API functions:

- **Public names.** Professional services are case-insensitive. If you are using the Microsoft C compiler, the header files declare the functions as *Pascal* type, which means that the compiler converts all public symbols to upper case in generated object code.
- **Stack.** Allocate an additional 4K beyond your application's normal stack requirements. (Use the `/Stack` command-line option with the Microsoft linker.)
- **Single thread.** Professional services were not designed to be used with multiple threads. Results are unpredictable if a process has more than one active thread executing Professional functions. Multiple *processes* executing Professional functions will not cause problems.
- **Memory model.** Professional services use the flat memory model for Windows: 32-bit values are used for everything.

Examples The following compiling and linking examples are for Windows using Microsoft win32 SDK:

```
set LIB=%LIB%;\pvcsdtk\lib
set INCLUDE=%INCLUDE%;\pvcsdtk\include
cl386 -c -Di386 -D_X86_ -G3 -Foobject_file source_file
link32 -machine:i386 -out:executable_file -subsystem:console
object_file
pvcsvmn.lib
pvcsbn.lib
crt.dll.lib
kernel32.lib
mpr.lib
advapi32.lib
```

MS Visual C++:

```
set LIB=\msvcnt\lib;\pvcsdtk\lib
set INCLUDE=\msvcnt\include;\pvcsdtk\include
```

```
set LINK= -machine:i386 -subsystem:console
CL /c /W3 /G3 test.c
LINK test.obj,vmwfdtk + libcmt + kernel32 + advapi32
```

Compiling and Linking UNIX Applications

Tips on compiling To compile a module that includes Developer's Toolkit functions, add the directory containing the header files to the compiler's header file search path. For UNIX C compilers, you generally use the `-I` option to specify an additional directory in which to search for header files.

If your DTK application fails on AIX with an error similar to:

```
0509-136 Symbol memset (number 29) is not exported from dependent module
PathToVMLibs/libpvcsvm.a
```

verify the application is linked with the `/lib` directory before the PVCS libraries. It is preferable to have `/lib` as the first directory that is specified.

Examples In the examples below, `os` is `sol`, `hpux`, or `aix`. To compile a module named `test.c` that includes a Developer's Toolkit function, type:

```
cc -I /usr/pvcs/vm/os/dtk -DCDECL="" -DSYS_UNIX -c test.c
```

To link programs that use Developer's Toolkit, name all of the Developer's Toolkit libraries on the command line.

The following examples link a program called `test`, which uses both Version Manager and Configuration Builder functions.

To link the application, enter:

```
cc -o test test.o \
    /usr/pvcs/vm/os/dtk/pvcsvm \
    /usr/pvcs/vm/os/dtk/pvcscb.a \
```

where `pvcsvm` specifies the shared object library for Version Manager for the operating system. The value can be any of the following:

- for *AIX*: `pvcsvm.a`
- for *HP-UX*: `pvcsvm.sl`
- for *Solaris*: `pvcsvm.so`

For programs that require the Configuration Builder functions, you must link in `pvcscb.a`.

Initializing the Toolkit and Setting Global Parameters

Initialize the Toolkit first	Before performing Version Manager operations, you must first use the <code>PvcsInit</code> function to initialize the Toolkit. If you don't initialize the Toolkit, the first function you call will call <code>PvcsInit</code> for you. See " PvcsInit " on page 110 for details.
Set global parameters	After you have initialized the toolkit, you should set global parameters that affect all Developer's Toolkit functions. See " PvcsSetGlobalParameter " on page 166 for details.

Reading the Configuration File

Read the configuration file first	Before performing most Version Manager operations, you should first use the <code>PvcsQueryConfiguration</code> function to read the configuration file, which defines many aspects of Version Manager's behavior.
-----------------------------------	---

`PvcsQueryConfiguration` finds the default configuration file using the usual Version Manager rules. (These rules are listed in the *Command-Line Reference Guide*.) You can specify a configuration file, which overrides the normal rules for locating the configuration file.

If you do not call **`PvcsQueryConfiguration`**, the Professional services use the default configuration settings. If your application changes the current directory to a directory that contains a local configuration file, you should call **`PvcsQueryConfiguration`** again to update the configuration settings.

Using Archive Handles

Functions to open and close archives	Before accessing an archive, you can open it with <code>PvcsOpenArchive</code> . This function returns an archive handle, which you pass to other Professional services. When you are finished with the archive, call <code>PvcsCloseArchive</code> , which applies pending updates to the archive, closes it, and frees internal resources associated with it.
Functions can open archives automatically	It is not necessary to use <code>PvcsOpenArchive</code> to open an archive before processing it. If you use the services that access archives with an archive name rather than an archive handle, they can open and close the archives themselves. However, if you are performing multiple operations on an archive, it is more efficient to open the archive first and pass the archive handle to other services.
Close or keep archives open	If you have several operations to perform on an archive, you can close the archive after each, or you can close it after the last operation. Here are the advantages and disadvantages of each: <ul style="list-style-type: none">■ Close after each operation. This makes each operation a separate event. The advantage is that the archive is free between operations, which allows access by other users. However, there is more overhead associated with opening and closing the archive multiple times, and another user could update the archive between operations.■ Close after last operation. The archive remains open throughout the operations, which has the advantage of making all operations appear as a single transaction. If

you open the archive in update mode, no other users can update the archive until you close it.

Operating on multiple archives

If you will perform operations on multiple archives, make sure that you close each archive before opening another. If more than one archive is opened at a time, the results of toolkit operations will be undefined.

Changes to an archive are not saved until you call **PvcsCloseArchive**. If you need to cancel an update, call **PvcsCancelUpdate**.

Using DTK Applications with a Version Manager File Server

If an access control database, Single Sign On authentication, or LDAP authentication is associated with the Client Name (path map) on the Version Manager File Server, you must use the PvcsLogin function or an environment variable to present a user ID and password for validation.

By default, Version Manager checks for a user ID and password authentication source in the following order:

- 1 **MERANT_LOGIN_PRIORITY:** An environment variable. Valid values are: "PCLI_ID", "EVENTUSERID", and "user_id:user_password".
- 2 **PCLI_ID:** An environment variable. Its value is in the form of "user_id:user_password".
- 3 **EVENTUSERID:** An environment variable in the form of "user_id" used in combination with the EVENTPASSWORD variable (which contains a limited-lifetime encrypted password). Values for these variables are generated when an external command is executed from an Event Trigger, a Toolbar Command, or when using the PCLI `run -e` command.

Special Considerations

- Version Manager validates against the first authentication source that contains a valid value ("PCLI_ID", "EVENTUSERID", or "user_id:user_password"). It does NOT check subsequent authentication sources even if the initial one fails.
- You can cause PCLI_ID or EVENTUSERID to be the first authentication source that is checked by assigning the value "PCLI_ID" or "EVENTUSERID" to the environment variable MERANT_LOGIN_PRIORITY.
- You can pass a "hardcoded" user ID and password by assigning a "user_id:user_password" value to the environment variable MERANT_LOGIN_PRIORITY. No other authentication sources will be checked. NOTE You must include the colon (:) even if no password is required.

For information on setting up client access to a Version Manager File Server, see the *Administrator's Guide*.

Licensing the Developer's Toolkit

Purchasing the DTK does not grant you permission to distribute applications you create with the DTK outside of your organization.

Distributing Version Manager Functions

If you distribute an application that calls functions outside of your organization, you must purchase a license for each user of the application or complete an Original Equipment Manufacturer (OEM) agreement with Open Text.

Distributing Configuration Builder Functions

If you distribute an application that calls Configuration Builder functions, you must complete an OEM agreement with Open Text.

Installing a DTK Application

Once you have created your DTK application, you must install it and at least one Version Manager client to the systems on which you wish to run your DTK application. The Command-Line Interface has the smallest footprint of the Version Manager clients, so install it with your DTK application if you have no need for a specific Version Manager client.

Chapter 2

PVCS Version Manager Functions

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IDENT

This function returns information about the version of the Developer's Toolkit. The information returned is the version string of the Toolkit. The Version Manager desktop client displays this string in the "About" box.

Syntax IDENT(
 unsigned char **buffer*, /* Output */
 unsigned short *bufLen*) /* Input */

Parameters

buffer Buffer receiving ident string.
bufLen Length of buffer.

Return Values The return value is zero if the function is successful.

PvcsAccessAddGroupGroup

This function adds a new group member to a group and requires the ViewAccessDB privilege. The group must already exist in the database.

Syntax PvcsAccessAddGroupGroup(
 int *DBHandle*, /* Input */
 unsigned char **group*, /* Input */
 unsigned char **groupMember*) /* Input */

Parameters

DBHandle Handle returned by **PvcsAccessOpenDB**.
group Pointer to a string that contains the name of the group to which you are adding a member.
groupMember Pointer to a string that contains the name of the group member to be added.

Return Values The return value is zero if the function is successful. Other values may be:

PVCS_E_INVALID_PARAMETER
PVCS_E_UNKNOWN_GROUP
PVCS_E_GROUP_EXISTS

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
/* Initialize configuration settings */  
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);  
  
/* Open the access control database */  
status = PvcsAccessOpenDB("access.db", PVCS_ACCOPEN_UPDATE,  
    &DBHandle);  
  
/* Add group member to group */  
status = PvcsAccessAddGroupGroup(  

```

```

    DBHandle, /* Database handle */
    groupName, /* Name of group */
    groupMemberName); /* Name of group to add */

if (!status)
    printf("Added group \"%s\" to group \"%s\".\n",
        groupMemberName, groupName);

/* Close the access control database */
status = PvcsAccessCloseDB(DBHandle);

```

Related Functions

- [PvcsAccessAddGroupUser on page 19](#)
- [PvcsAccessDeleteGroupGroup on page 26](#)
- [PvcsAccessDeleteGroupUser on page 27](#)
- [PvcsAccessRenameGroupGroup on page 44](#)
- [PvcsAccessRenameGroupUser on page 45](#)

PvcsAccessAddGroupUser

This function adds a user to a group and requires the ViewAccessDB privilege. The user must already exist in the database.

Syntax

```

PvcsAccessAddGroupUser (
    int DBHandle, /* Input */
    unsigned char *group, /* Input */
    unsigned char *userMember) /* Input */

```

Parameters

<i>DBHandle</i>	Handle returned by PvcsAccessOpenDB .
<i>group</i>	Pointer to a string that contains the name of a group.
<i>userMember</i>	Pointer to a string that contains the name of a user member.

Return Values The return value is zero if the function is successful. Other values may be:

```

PVCS_E_INVALID_PARAMETER
PVCS_E_UNKNOWN_USER
PVCS_E_UNKNOWN_GROUP
PVCS_E_USER_EXISTS

```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Open the access control database */
status = PvcsAccessOpenDB("access.db", PVCS_ACCOPEN_UPDATE,
    &DBHandle);

/* Add user to group */
status = PvcsAccessAddGroupUser(
    DBHandle, /* Database handle */
    groupName, /* Name of group */
    userName); /* Name of user to add */

```

```
if (!status)
    printf("Added user \"%s\" to group \"%s\".\n", userName,
        groupName);

/* Close the access control database */
status = PvcAccessCloseDB(DBHandle);
```

Related Functions [PvcAccessAddGroupGroup](#) on page 18
[PvcAccessDeleteGroupGroup](#) on page 26
[PvcAccessDeleteGroupUser](#) on page 27
[PvcAccessRenameGroupGroup](#) on page 44
[PvcAccessRenameGroupUser](#) on page 45

PvcAccessCloseDB

This function closes the access control database. It writes the file back to disk if it was opened in create mode, or if it was opened in update mode and the caller made changes to the file.

Syntax `PvcAccessCloseDB(`
`int DBHandle)` /* Input */

Parameters

DBHandle Handle returned by **PvcAccessOpenDB**.

Return Values The return value is zero if the function is successful. Other values may be:
`PVCS_E_INVALID_PARAMETER`
`PVCS_E_INVALID_DBHANDLE`

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
/* Initialize configuration settings */
PvcQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Open the access control database */
status = PvcAccessOpenDB(
    "access.db", /* Name of access control db */
    PVCS_ACCOPEN_UPDATE, /* Type of access to db */
    &DBHandle); /* Returned database handle */

/* Close the access control database */
status = PvcAccessCloseDB(
    DBHandle); /* Database handle */
```

Related Functions [PvcAccessOpenDB](#) on page 38
[PvcMakeDB](#) on page 120
[PvcReadDB](#) on page 149

PvcsAccessDefineGroup

This function adds a group or changes a group's definition and requires the ViewAccessDB privilege.

```
Syntax PvcsAccessDefineGroup (
    int DBHandle, /* Input */
    unsigned char *group, /* Input */
    unsigned char *privList, /* Input */
    unsigned char *userList, /* Input */
    unsigned char *groupList, /* Input */
    PVCS_FLAGS flags) /* Input */
```

Parameters

<i>DBHandle</i>	Handle returned by PvcsAccessOpenDB .
<i>group</i>	Pointer to a string that contains the name of the group.
<i>privList</i>	Pointer to a buffer that contains the group's privilege list. Each privilege must be terminated by a null character, and the end-of-buffer must be marked by one additional null character. A null parameter indicates that the group has the Unlimited privilege.
<i>userList</i>	Pointer to a buffer that contains the list of users. Each user must be terminated by a null character, and the end-of-buffer must be marked by one additional null character. Each user must already be defined in the database. A null parameter indicates no users in the group.
<i>groupList</i>	Pointer to a buffer that contains the list of groups. Each group must be terminated by a null character.
<i>flags</i>	Bit field that controls the operation of this function and can be combined. The default value is: PVCS_ACCDEFINE_GROUP_ADD This setting adds a new group definition.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_INVALID_PARAMETER
PVCS_E_UNKNOWN_GROUP
PVCS_E_UNKNOWN_USER
PVCS_E_UNKNOWN_PRIVILEGE
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

```
Example /* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Open the access control database */
status = PvcsAccessOpenDB("access.db", PVCS_ACCOPEN_UPDATE,
    &DBHandle);

/* Add group definition */
status = PvcsAccessDefineGroup(
    DBHandle, /* Database handle */
    groupName, /* Group name */
    privilegeList, /* Group privilege info */
    userList, /* Group user info */
    groupList, /* Group group info */
```

```
PVCS_ACCDEFINE_USER_ADD); /* Add a new group */  
  
if (!status)  
    printf("Defined group \"%s\".\n", groupName);  
  
/* Close the access control database */  
status = PvcAccessCloseDB(DBHandle);
```

Related Functions

- [PvcAccessDeleteGroup on page 25](#)
- [PvcAccessEnumerateGroupGroups on page 29](#)
- [PvcAccessEnumerateGroups on page 30](#)
- [PvcAccessEnumerateGroupUsers on page 32](#)
- [PvcAccessQueryGroup on page 39](#)
- [PvcAccessRenameGroup on page 43](#)

PvcAccessDefinePrivilege

The function adds a new custom privilege, or changes the definition of an existing custom privilege. It requires the ViewAccessDB privilege.

Syntax

```
PvcAccessDefinePrivilege(  
    int DBHandle, /* Input */  
    unsigned char *privilegeName, /* Input */  
    unsigned char *privilegeList, /* Input */  
    unsigned char *promoGroupList, /* Input */  
    PVCS_FLAGS flags) /* Input */
```

Parameters

<i>DBHandle</i>	Handle returned by PvcAccessOpenDB .
<i>privilegeName</i>	Pointer to a string that contains the name of the privilege to define.
<i>privilegeList</i>	Pointer to a buffer that contains the custom privilege's privilege list. Each privilege is null-terminated, and the end-of-buffer must be marked by one additional null character. A null parameter indicates that the custom privilege has the Unlimited privilege.
<i>promoGroupList</i>	Pointer to a buffer that contains the custom privilege's promotion group list. Each promotion group is null-terminated, and the end-of-buffer must be marked by one additional null character. A null parameter indicates the customer privilege has no promotion group restrictions.
<i>flags</i>	Bit field that controls how the function operates. Values include: <ul style="list-style-type: none">■ <code>PVCS_ACCDEFINE_PRIV_ADD</code> This is the default setting; it adds a new privilege definition.■ <code>PVCS_ACCDEFINE_PRIV_REPLACE</code> This setting replaces an existing privilege definition.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_INVALID_PARAMETER
PVCS_E_UNKNOWN_PRIVILEGE
PVCS_E_BUFFER_OVERFLOW
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

```
Example /* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Open the access control database */
status = PvcsAccessOpenDB("access.db", PVCS_ACCOPEN_UPDATE,
    &DBHandle);

/* Add privilege definition */
status = PvcsAccessDefinePrivilege(
    DBHandle, /* I: Handle from PvcsAccessOpenDB */
    privilegeName, /* I: Name of privilege */
    privilegeList, /* I: Buf containing privilege list */
    promoGroupList, /* I: Buf containing promo group list */
    flags); /* I: Function behavior flags */

if (!status)
    printf("Defined privilege \"%s\".\n", privilegeName);

/* Close the access control database */
status = PvcsAccessCloseDB(DBHandle);
```

Related Functions [PvcsAccessDeletePrivilege on page 27](#)
[PvcsAccessEnumeratePrivilege on page 33](#)
[PvcsAccessEnumeratePrivileges on page 34](#)
[PvcsAccessQueryPrivilege on page 40](#)
[PvcsAccessRenamePrivilege on page 46](#)

PvcsAccessDefineUser

This function adds a user or changes the user's definition and requires the ViewAccessDB privilege.

```
Syntax PvcsAccessDefineUser(
    int DBHandle, /* Input */
    unsigned char *userName, /* Input */
    unsigned char *password, /* Input */
    unsigned char *privList, /* Input */
    unsigned char *expDate, /* Input */
    PVCS_FLAGS flags) /* Input */
```

Parameters

<i>DBHandle</i>	Handle returned by PvcsAccessOpenDB .
<i>userName</i>	Pointer to a string that contains the user name.
<i>password</i>	Pointer to a string that contains the user password. A null parameter indicates no password.

<i>privList</i>	Pointer to a buffer that contains the user's privilege list. Each privilege is null-terminated, and the end-of-buffer must be marked by one additional null character. A null parameter indicates the user has the Unlimited privilege.
<i>expDate</i>	Pointer to a string that contains the user expiration date. The date format is <i>mm-dd-yy hh:mm:ss</i> . A null parameter indicates no expiration date.
<i>flags</i>	Bit field that controls the operation of this function and can be combined. Values include: <ul style="list-style-type: none">■ <code>PVCS_ACCDEFINE_USER_ADD</code> Adds a new user definition. This is the default setting.■ <code>PVCS_ACCDEFINE_USER_REPLACE</code> Replaces an existing user definition.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_INVALID_PARAMETER  
PVCS_E_UNKNOWN_USER  
PVCS_E_USER_EXISTS  
PVCS_E_UNKNOWN_PRIVILEGE
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
int status;  
int DBHandle;  
char *userName = "DAVEE";  
char *password = "GOSEAHAWKS";  
char *privilegeList = "Get\0Put\0Lock\0";  
char *expDate = "01-01-96 12:00:00";  
  
/* Initialize configuration settings */  
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);  
  
/* Open the access control database */  
status = PvcsAccessOpenDB('access.db', PVCS_ACCOPEN_UPDATE,  
    &DBHandle);  
  
/* Add user definition */  
status = PvcsAccessDefineUser(  
    DBHandle, /* Database handle */  
    userName, /* User name */  
    password, /* User password */  
    privilegeList, /* User privilege info */  
    expDate, /* User expiration date */  
    PVCS_ACCDEFINE_USER_ADD); /* Add a new user */  
  
if (!status)  
    printf("Defined user \"%s\".\n", userName);  
  
/* Close the access control database */  
status = PvcsAccessCloseDB(DBHandle);
```

Related Functions [PvcsAccessDeleteUser on page 28](#)
[PvcsAccessEnumerateUserGroups on page 35](#)
[PvcsAccessEnumerateUsers on page 37](#)

[PvcsAccessQueryUser on page 41](#)
[PvcsAccessRenameUser on page 47](#)

PvcsAccessDeleteGroup

This function deletes a group from the access control database and requires the ViewAccessDB privilege.

Syntax

```
PvcsAccessDeleteGroup(
    int DBHandle, /* Input */
    unsigned char *group) /* Input */
```

Parameters

DBHandle Handle returned by **PvcsAccessOpenDB**.
group Name of the group to delete.

Return Value The return value is zero if the function is successful. Other values may be:
PVCS_E_INVALID_PARAMETER
PVCS_E_UNKNOWN_GROUP

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Open the access control database */
status = PvcsAccessOpenDB("access.db", PVCS_ACCOPEN_UPDATE,
    &DBHandle);

/* Delete the group */
status = PvcsAccessDeleteGroup(
    DBHandle, /* Database handle */
    groupName); /* Name of group */

if (!status)
    printf("Deleted \"%s\".\n", groupName);

/* Close the access control database */
status = PvcsAccessCloseDB(DBHandle);
```

Related Functions

- [PvcsAccessDefineGroup on page 21](#)
- [PvcsAccessDeleteGroup on page 25](#)
- [PvcsAccessEnumerateGroupGroups on page 29](#)
- [PvcsAccessEnumerateGroups on page 30](#)
- [PvcsAccessEnumerateGroupUsers on page 32](#)
- [PvcsAccessQueryGroup on page 39](#)
- [PvcsAccessRenameGroup on page 43](#)

PvcsAccessDeleteGroupGroup

This function deletes a group member from within a group where the member is itself a group. It requires the ViewAccessDB privilege.

Syntax

```
PvcsAccessDeleteGroupGroup(  
    int DBHandle, /* Input */  
    unsigned char *group, /* Input */  
    unsigned char *groupMember) /* Input */
```

Parameters

<i>DBHandle</i>	Handle returned by PvcsAccessOpenDB .
<i>group</i>	Pointer to a string that contains the name of the group.
<i>groupMember</i>	Pointer to a string that contains the name of the group member to be deleted.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_INVALID_PARAMETER  
PVCS_E_UNKNOWN_USER  
PVCS_E_UNKNOWN_GROUP
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
/* Initialize configuration settings */  
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);  
  
/* Open the access control database */  
status = PvcsAccessOpenDB("access.db", PVCS_ACCOPEN_UPDATE,  
    &DBHandle);  
  
/* Delete group from group */  
status = PvcsAccessDeleteGroupGroup(  
    DBHandle, /* Database handle */  
    groupName, /* Name of group */  
    groupMemberName); /* Name of group to delete */  
  
if (!status)  
    printf("Deleted group \"%s\" from group \"%s\".\n",  
        groupMemberName, groupName);  
/* Close the access control database */  
status = PvcsAccessCloseDB(DBHandle);
```

Related Functions

- [PvcsAccessAddGroupGroup on page 18](#)
- [PvcsAccessAddGroupUser on page 19](#)
- [PvcsAccessDeleteGroupUser on page 27](#)
- [PvcsAccessRenameGroupGroup on page 44](#)
- [PvcsAccessRenameGroupUser on page 45](#)

PvcsAccessDeleteGroupUser

This function deletes a user from a group member list. It requires the ViewAccessDB privilege.

Syntax

```
PvcsAccessDeleteGroupUser (
    int DBHandle,                /* Input */
    unsigned char *group,       /* Input */
    unsigned char *userName)    /* Input */
```

Parameters

DBHandle Handle returned by **PvcsAccessOpenDB**.

groupName Pointer to a string that contains the name of the group.

userName Pointer to a string that contains the name of the user to delete.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_INVALID_PARAMETER
PVCS_E_UNKNOWN_USER
PVCS_E_UNKNOWN_GROUP
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Open the access control database */
status = PvcsAccessOpenDB("access.db", PVCS_ACCOPEN_UPDATE,
    &DBHandle);

/* Delete user from group */
status = PvcsAccessDeleteGroupUser(
    DBHandle, /* Database handle */
    groupName, /* Name of group */
    userName); /* Name of user to delete */

if (!status)
    printf("Deleted user \"%s\" from group \"%s\".\n",
        userName, groupName);

/* Close the access control database */
status = PvcsAccessCloseDB(DBHandle);
```

Related Functions

- [PvcsAccessAddGroupGroup on page 18](#)
- [PvcsAccessAddGroupUser on page 19](#)
- [PvcsAccessDeleteGroupGroup on page 26](#)
- [PvcsAccessRenameGroupGroup on page 44](#)
- [PvcsAccessRenameGroupUser on page 45](#)

PvcsAccessDeletePrivilege

This function deletes a privilege and requires the ViewAccessDB privilege.

Syntax `PvcsAccessDeletePrivilege (`
 `int DBHandle, /* Input */`
 `unsigned char *privilegeName) /* Input */`

Parameters

`DBHandle` Handle from **PvcsAccessOpenDB**.
`privilegeName` Pointer to a string that contains the name of the privilege to delete.

Return Values The return value is zero if the function is successful. Other values may be:
`PVCS_E_INVALID_PARAMETER`
`PVCS_E_UNKNOWN_PRIVILEGE`

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Open the access control database */
status = PvcsAccessOpenDB("access.db", PVCS_ACCOPEN_UPDATE,
    &DBHandle);

/* Delete the privilege */
status = PvcsAccessDeletePrivilege(
    DBHandle, /* Database handle */
    privilegeName); /* Name of privilege */
if (!status)
    printf("Deleted \"%s\".\n", privilegeName);

/* Close the access control database */
status = PvcsAccessCloseDB(DBHandle);
```

Related Functions [PvcsAccessDefinePrivilege on page 22](#)
[PvcsAccessEnumeratePrivilege on page 33](#)
[PvcsAccessEnumeratePrivileges on page 34](#)
[PvcsAccessQueryPrivilege on page 40](#)
[PvcsAccessRenamePrivilege on page 46](#)

PvcsAccessDeleteUser

This function deletes a user from the access control database and requires the `ViewAccessDB` privilege.

Syntax `PvcsAccessDeleteUser (`
 `int DBHandle, /* Input */`
 `unsigned char *user) /* Input */`

Parameters

`DBHandle` Handle returned by **PvcsAccessOpenDB**.
`user` Pointer to a string that contains the name of the user to delete.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_INVALID_PARAMETER
PVCS_E_UNKNOWN_USER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

```
Example
int status;
int DBHandle;
char *userName = 'DAVEE';

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Open the access control database */
status = PvcsAccessOpenDB("access.db", PVCS_ACCOPEN_UPDATE,
    &DBHandle);

/* Delete the user */
status = PvcsAccessDeleteUser(
    DBHandle, /* Database handle */
    userName); /* Name of user */
if (!status)
    printf("Deleted \"%s\".\n", userName);

/* Close the access control database */
status = PvcsAccessCloseDB(DBHandle);
```

Related Functions

- [PvcsAccessDefineUser on page 23](#)
- [PvcsAccessEnumerateUserGroups on page 35](#)
- [PvcsAccessEnumerateUsers on page 37](#)
- [PvcsAccessQueryUser on page 41](#)
- [PvcsAccessRenameUser on page 47](#)

PvcsAccessEnumerateGroupGroups

This function returns a list of all groups within a group registered in the access control database. It requires the ViewAccessDB privilege.

```
Syntax PvcsAccessEnumerateGroupGroups(
    int DBHandle, /* Input */
    unsigned char *group, /* Input */
    unsigned char *groupList, /* Output */
    unsigned groupListLen) /* Input */
```

Parameters

<i>DBHandle</i>	Handle returned by PvcsAccessOpenDB .
<i>group</i>	Pointer to a string that contains the name of a group.
<i>groupList</i>	Pointer to a buffer that receives the group list. Each group is null-terminated, and the end-of-buffer is marked by an additional null character. If no users are present, Developer's Toolkit returns a null string.
<i>groupListLen</i>	Length of the buffer.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_INVALID_PARAMETER  
PVCS_E_BUFFER_OVERFLOW
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

```
Example /* Initialize configuration settings */  
rc = PvcAccessQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);  
  
/* Open access database */  
rc = PvcAccessOpenDB(szAccessDatabase, PVCS_ACCOPEN_RDONLY,  
    &hAccessDatabase);  
  
/*  
 * PvcAccessEnumerateGroupGroups: get a list of all  
 * groups inside given group.  
 */  
  
szGroupGroups = (PVCS_PUCHAR)malloc(256);  
rc = PvcAccessEnumerateGroupGroups(  
    hAccessDatabase,  
    szGroup,  
    szGroupGroups,  
    256);  
  
/* Print result buffer */  
    if (!rc)  
    {  
        printf ("groups within group %s:\n",szGroup);  
        p = szGroupGroups;  
        while (p && *p)  
        {  
            printf ("    %s\n",p);  
            p = p + strlen(p) + 1;  
        }  
    }  
  
/* Close access database */  
    rc = PvcAccessCloseDB(hAccessDatabase);
```

Related Functions [PvcAccessDefineGroup](#) on page 21
[PvcAccessDeleteGroup](#) on page 25
[PvcAccessEnumerateGroups](#) on page 30
[PvcAccessEnumerateGroupUsers](#) on page 32
[PvcAccessQueryGroup](#) on page 39
[PvcAccessRenameGroup](#) on page 43

PvcAccessEnumerateGroups

This function returns a list of all groups registered in the access control database. It requires the ViewAccessDB privilege.

```
Syntax PvcAccessEnumerateGroups (  
    int DBHandle, /* Input */
```

```

    unsigned char *groupList,          /* Output */
    unsigned groupListLen)           /* Input */

```

Parameters

<i>DBHandle</i>	Handle returned by PvcsAccessOpenDB .
<i>groupList</i>	Pointer to a buffer that receives the group list. Each group is null-terminated, and the end-of-buffer is marked by an additional null character. If no users are present, Developer's Toolkit returns a null string.
<i>groupListLen</i>	Length of the buffer.

Return Values The return value is zero if the function is successful. Other values may be:

```

PVCS_E_INVALID_PARAMETER
PVCS_E_BUFFER_OVERFLOW

```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```

int status;
int DBHandle;
char *groupList;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Open the access control database */
PvcsAccessOpenDB("access.db", PVCS_ACCOPEN_UPDATE,
    &DBHandle);

/* Allocate buffer to hold database information */
groupList = (unsigned char *)malloc(1024);

/* Get a list of all groups registered in the database */
status = PvcsAccessEnumerateGroups(
    DBHandle, /* Database handle */
    groupList, /* Buffer receiving group list */
    1024); /* Length of buffer */
if (!status) {
    printf('Groups:\n');
    print_list(groupList);
}

/* Close the access control database */
PvcsAccessCloseDB(DBHandle);
free(groupList);

```

Related Functions

[PvcsAccessDefineGroup](#) on page 21
[PvcsAccessDeleteGroup](#) on page 25
[PvcsAccessEnumerateGroupGroups](#) on page 29
[PvcsAccessEnumerateGroupUsers](#) on page 32
[PvcsAccessQueryGroup](#) on page 39
[PvcsAccessRenameGroup](#) on page 43

PvcsAccessEnumerateGroupUsers

This function returns a list of all users that belong to a group. It requires the ViewAccessDB privilege.

```
Syntax PvcsAccessEnumerateGroupUsers (
    int DBHandle,                /* Input */
    unsigned char *group,       /* Input */
    unsigned char *userList,    /* Output */
    unsigned userListLen)      /* Input */
```

Parameters

<i>DBHandle</i>	Handle returned by PvcsAccessOpenDB .
<i>group</i>	Pointer to a string that contains the name of a group.
<i>userList</i>	Pointer to a buffer that receives the user list. Each user is null-terminated, and the end-of-buffer is marked by an additional null character. If no users are present, then Developer's Toolkit returns a null string.
<i>userListLen</i>	Length of the buffer.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_INVALID_PARAMETER
PVCS_E_UNKNOWN_GROUP
PVCS_E_BUFFER_OVERFLOW
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

```
Example
int status;
int DBHandle;
char *groupName = "SOFTDEV";
char *userList;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Open the access control database */
PvcsAccessOpenDB("access.db", PVCS_ACCOPEN_UPDATE,
    &DBHandle);

/* Allocate buffer to hold database information */
userList = (unsigned char *)malloc(1024);

/* Get a list of all users belonging to specified group */
status = PvcsAccessEnumerateGroupUsers(
    DBHandle, /* Database handle */
    groupName, /* Name of group */
    userList, /* Buffer receiving user list */
    1024); /* Length of buffer */
if (!status) {
    printf("The following users belong to group \"%s\":\n",
        groupName);
    print_list(userList);
}
```



```

/* Close the access control database */
PvcsAccessCloseDB(DBHandle);
free(userList);

```

Related Functions

- [PvcsAccessDefineGroup](#) on page 21
- [PvcsAccessDeleteGroup](#) on page 25
- [PvcsAccessEnumerateGroupGroups](#) on page 29
- [PvcsAccessEnumerateGroups](#) on page 30
- [PvcsAccessQueryGroup](#) on page 39
- [PvcsAccessRenameGroup](#) on page 43

PvcsAccessEnumeratePrivilege

This function returns a list of promotion groups assigned to a privilege. It requires the ViewAccessDB privilege.

```

Syntax PvcsAccessEnumeratePrivilege(
    int DBHandle, /* Input */
    unsigned char *privName, /* Input */
    unsigned char *promoGroupList, /* Output */
    unsigned char *promoGroupListLen. /* Input */
    PVCS_FLAGS flags) /* Input */

```

Parameters

<i>DBHandle</i>	Handle returned by PvcsAccessOpenDB .
<i>privName</i>	The name of the privilege to enumerate.
<i>promoGroupList</i>	Pointer to a buffer that receives the promotion group list. Each promotion group is null-terminated, and the end-of-buffer is marked by an additional null character. If no promotion groups have been assigned, then Developer's Toolkit returns a null string.
<i>promoGroupListLen</i>	Length of the buffer.

Return Values The return value is zero if the function is successful. Other values may be:

```

PVCS_E_INVALID_PARAMETER
PVCS_E_UNKNOWN_PRIVILEGE

```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

```

Example
int status;
int DBHandle;
char *privilegeName = "SoftDevPriv";
char *promoGroupList;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Open the access control database */
PvcsAccessOpenDB("access.db", PVCS_ACCOPEN_UPDATE,
    &DBHandle);

```

```
/* Allocate buffer to hold promotion group information */
promoGroupList = (unsigned char *)malloc(4096);

/* Get list of all promo groups associated with privilege */
status = PvcAccessEnumeratePrivilege(
    DBHandle, /* Database handle */
    privilegeName, /* Name of privilege to enumerate */
    promoGroupList, /* Buffer receiving promo group list */
    4096); /* Length of buffer */

if (!status) {
    printf("Promotion Groups:\n");
    print_list(promoGroupList);
}

/* Close the access control database */
PvcAccessCloseDB(DBHandle);
free(promoGroupList);
```

Related Functions

- [PvcAccessDefinePrivilege on page 22](#)
- [PvcAccessDeletePrivilege on page 27](#)
- [PvcAccessEnumeratePrivileges on page 34](#)
- [PvcAccessQueryPrivilege on page 40](#)
- [PvcAccessRenamePrivilege on page 46](#)

PvcAccessEnumeratePrivileges

This function returns a list of privilege names from the access control database and requires the ViewAccessDB privilege.

Syntax

```
PvcAccessEnumeratePrivileges(
    int DBHandle, /* Input */
    char *privilegeList, /* Output */
    unsigned *privilegeListLen, /* Input */
    PVCS_FLAGS flags) /* Input */
```

Parameters

<i>DBHandle</i>	Handle returned by PvcAccessOpenDB .
<i>privilegeList</i>	Pointer to a buffer that receives the privilege list. Each privilege is null-terminated, and the end-of-buffer is marked by an additional null character. If no privileges are present, Developer's Toolkit returns a null string.
<i>privilegeListLen</i>	Length of the buffer.
<i>flags</i>	Bit field that controls how the function operates. Values include: <ul style="list-style-type: none">■ <code>PVCS_ACCENUM_BASE_PRIV</code> Returns the list of base privileges. This is the default setting.■ <code>PVCS_ACCENUM_USER_DEFINED_PRIV</code> Returns the list of custom privileges.

- PVCS_ACCENUM_COMPOSITE_PRIV
Returns the list of composite privileges.
- PVCS_ACCENUM_GUI_PRIV
Returns the list of GUI-specific menu item privileges.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_INVALID_PARAMETER
PVCS_E_BUFFER_OVERFLOW
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
int status;
int DBHandle;
char *privilegeList;
int flags = PVCS_ACCENUM_BASE_PRIV;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Open the access control database */
PvcsAccessOpenDB("access.db", PVCS_ACCOPEN_UPDATE, &DBHandle);

/* Allocate buffer to hold database information */
privilegeList = (unsigned char *)malloc(2048);

/* Get a list of all base privileges */
status = PvcsAccessEnumeratePrivileges(
    DBHandle, /* Database handle */
    privilegeList, /* Buf receiving privilege list */
    2048, /* Length of buffer */
    flags); /* Type of privileges to return */

if (!status) {
    printf("Privileges:\n");
    print_list(privilegeList);
}

/* Close the access control database */
PvcsAccessCloseDB(DBHandle);
free(privilegeList);
```

Related Functions

- [PvcsAccessDefinePrivilege on page 22](#)
- [PvcsAccessDeletePrivilege on page 27](#)
- [PvcsAccessEnumeratePrivilege on page 33](#)
- [PvcsAccessQueryPrivilege on page 40](#)
- [PvcsAccessRenamePrivilege on page 46](#)

PvcsAccessEnumerateUserGroups

This function returns a list of all groups to which a specified user belongs. It requires the ViewAccessDB privilege.

Syntax PvcsAccessEnumerateUserGroups (

```
int DBHandle, /* Input */
unsigned char *user, /* Input */
unsigned char *groupList, /* Output */
unsigned listLen) /* Input */
```

Parameters

<i>DBHandle</i>	Handle returned by PvcsAccessOpenDB .
<i>user</i>	Pointer to a string that contains the name of the user.
<i>groupList</i>	Pointer to a buffer that receives the group list. Each group is null-terminated, and the end-of-buffer is marked by an additional null character. If no users are present, then Developer's Toolkit returns a null string.
<i>listLen</i>	Length of the buffer.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_BUFFER_OVERFLOW
PVCS_E_INVALID_PARAMETER
PVCS_E_UNKNOWN_USER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
int status;
int DBHandle;
char *userName = "DAVEE";
char *groupList;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Open the access control database */
PvcsAccessOpenDB("access.db", PVCS_ACCOPEN_UPDATE,
    &DBHandle);

/* Allocate buffer to hold database information */
groupList = (unsigned char *)malloc(1024);

/* Get list of groups to which the specified user belongs */
status = PvcsAccessEnumerateUserGroups(
    DBHandle, /* Database handle */
    userName, /* Name of user */
    groupList, /* Buf receiving group list */
    1024); /* Length of buffer */

if (!status) {
    printf("User \"%s\" belongs to the following groups:\n",
        userName);
    print_list(groupList);
}

/* Close the access control database */
PvcsAccessCloseDB(DBHandle);
free(groupList);
```

Related Functions

- [PvcsAccessDefineUser on page 23](#)
- [PvcsAccessDeleteUser on page 28](#)
- [PvcsAccessEnumerateUsers on page 37](#)
- [PvcsAccessQueryUser on page 41](#)
- [PvcsAccessRenameUser on page 47](#)

PvcsAccessEnumerateUsers

This function returns a list of all users registered in the access control database. It requires the ViewAccessDB privilege.

Syntax

```
PvcsAccessEnumerateUsers (
    int DBHandle, /* Input */
    unsigned char *userList, /* Output */
    unsigned listLen) /* Input */
```

Parameters

<i>DBHandle</i>	Handle returned by PvcsAccessOpenDB .
<i>userList</i>	Pointer to a buffer that receives the user list. Each user is null-terminated, and the end-of-buffer is marked by an additional null character. If no users are present, then Developer's Toolkit returns a null string.
<i>listLen</i>	Length of the buffer.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_BUFFER_OVERFLOW
PVCS_E_INVALID_PARAMETER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
int status;
int DBHandle;
char *userList;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Open the access control database */
PvcsAccessOpenDB("access.db", PVCS_ACCOPEN_UPDATE,
    &DBHandle);

/* Allocate buffer to hold database information */
userList = (unsigned char *)malloc(1024);

/* Get a list of all users registered in the database */
status = PvcsAccessEnumerateUsers(
    DBHandle, /* Database handle */
    userList, /* Buf receiving user list */
    1024); /* Length of buffer */
if (!status) {
    printf("Users:\n");
    print_list(userList);
}
```

```
    }  
  
    /* Close the access control database */  
    PvcAccessCloseDB(DBHandle);  
    free(userList);
```

Related Functions

- [PvcAccessDefineUser on page 23](#)
- [PvcAccessDeleteUser on page 28](#)
- [PvcAccessEnumerateUserGroups on page 35](#)
- [PvcAccessQueryUser on page 41](#)
- [PvcAccessRenameUser on page 47](#)

PvcAccessOpenDB

This function opens the access control database.

Syntax

```
PvcAccessOpenDB(  
    unsigned char *path,                /* Input */  
    int mode,                          /* Input */  
    int *pDBHandle)                   /* Output */
```

Parameters

<i>path</i>	Pointer to a string that contains the name of the access control database.
<i>mode</i>	Integer that specifies the type of access to the access control database. Values include: <ul style="list-style-type: none">■ <code>PVCS_ACCOPEN_RDONLY</code> Opens the existing access control database for read-only access.■ <code>PVCS_ACCOPEN_UPDATE</code> Opens the existing access control database for read-write access. All other authorized users are locked out during this function.■ <code>PVCS_ACCOPEN_CREATE</code> Creates a new access control database. If a database exists already, it is overwritten. All other authorized users are locked out during this function.
<i>pDBHandle</i>	Pointer to a variable that receives the access control database handle. This handle is used in other PVCS Version Manager services.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_FILE_NOT_FOUND  
PVCS_ACCOPEN_RDONLY  
PVCS_ACCOPEN_UPDATE  
PVCS_E_CANT_OPEN_ACCESSSDB  
PVCS_E_INVALID_PARAMETER  
PVCS_E_NO_HANDLES  
PVCS_E_FILE_BUSY
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
int status;  
int DBHandle;
```

```

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Open the access control database */
status = PvcsAccessOpenDB(
    "access.db", /* Name of access control db */
    PVCS_ACCOPEN_UPDATE, /* Type of access to database */
    &DBHandle); /* Returned database handle */

/* Close the access control database */
status = PvcsAccessCloseDB(
    DBHandle); /* Database handle */

```

PvcsAccessQueryGroup

This function returns information about a group (privileges) and requires the ViewAccessDB privilege.

Syntax

```

PvcsAccessQueryGroup(
    int DBHandle, /* Input */
    unsigned char *groupName, /* Input */
    unsigned char *privilegeList, /* Output */
    unsigned privilegeListLen) /* Input */

```

Parameters

<i>DBHandle</i>	Handle returned by PvcsAccessOpenDB .
<i>groupName</i>	Pointer to a string that contains the name of the group.
<i>privilegeList</i>	Pointer to a buffer that receives the privilege list. Each privilege is null-terminated, and the end-of-buffer is marked by an additional null character.
<i>privilegeListLen</i>	Length of the buffer.

Return Values The return value is zero if the function is successful. Other values may be:

```

PVCS_E_INVALID_PARAMETER
PVCS_E_BUFFER_OVERFLOW
PVCS_E_UNKNOWN_GROUP

```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```

int status;
int DBHandle;
char *group = "SOFTDEV";
char *privilegeList;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Open the access control database */
PvcsAccessOpenDB("access.db", PVCS_ACCOPEN_UPDATE,
    &DBHandle);

```

```
/* Allocate buffers to hold database information */
privilegeList = (unsigned char *)malloc(4096);

/* Get access control information for a specific group */
status = PvcAccessQueryGroup(
    DBHandle, /* Database handle */
    group, /* Name of group */
    privilegeList, /* Buf to receive privilege info */
    4096); /* Length of buffer */

if (!status) {
    printf("Group:\n %s\n", group);
    printf("Privileges:\n");
    print_list(privilegeList);
}

/* Close the access control database */
PvcAccessCloseDB(DBHandle);
free(privilegeList);
```

Related Functions

- [PvcAccessDefineGroup on page 21](#)
- [PvcAccessDeleteGroup on page 25](#)
- [PvcAccessEnumerateGroups on page 30](#)
- [PvcAccessEnumerateGroupUsers on page 32](#)
- [PvcAccessRenameGroup on page 43](#)

PvcAccessQueryPrivilege

This function returns the list of privileges that make up a composite privilege. It requires the ViewAccessDB privilege.

Syntax

```
PvcAccessQueryPrivilege(
    int DBHandle, /* Input */
    unsigned char *privName, /* Input */
    unsigned char *privList, /* Output */
    unsigned privListLen) /* Input */
```

Parameters

<i>DBHandle</i>	Handle returned by PvcAccessOpenDB .
<i>privName</i>	Pointer to a string that contains the name of the privilege.
<i>privList</i>	Pointer to a buffer that receives the privilege list. Each privilege is null-terminated, and the end-of-buffer is marked by an additional null character.
<i>privListLen</i>	Length of the buffer.

Return Values

The return value is zero if the function is successful. Other values may be:

- PVCS_E_INVALID_PARAMETER
- PVCS_E_UNKNOWN_PRIVILEGE

See [Chapter 4, "Return Values"](#) for descriptions of return values.


```

Example  int status;
         int DBHandle;
         char *privilegeName = "SoftDevPriv";
         char *privilegeList;

         /* Initialize configuration settings */
         PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

         /* Open the access control database */
         PvcsAccessOpenDB("access.db", PVCS_ACCOPEN_UPDATE,
                          &DBHandle);

         /* Allocate buffer to hold database information */
         privilegeList = (unsigned char *)malloc(4096);

         /* Get a list of all base privileges making up a given privilege */
         status = PvcsAccessQueryPrivilege(
             DBHandle, /* Database handle */
             privilegeName, /* Name of privilege to enumerate */
             privilegeList, /* Buffer receiving privilege list */
             4096); /* Length of buffer */

         if (!status) {
             printf("Privileges:\n");
             print_list(privilegeList);
         }

         /* Close the access control database */
         PvcsAccessCloseDB(DBHandle);
         free(privilegeList);

```

Related Functions [PvcsAccessDefinePrivilege on page 22](#)
[PvcsAccessDeletePrivilege on page 27](#)
[PvcsAccessEnumeratePrivilege on page 33](#)
[PvcsAccessEnumeratePrivileges on page 34](#)
[PvcsAccessRenamePrivilege on page 46](#)

PvcsAccessQueryUser

This function returns information about a specific user (password, privilege, and expiration date). This function requires the ViewAccessDB privilege.

```

Syntax  PvcsAccessQueryUser(
         int DBHandle, /* Input */
         unsigned char *userName, /* Input */
         unsigned char *password, /* Output */
         unsigned passwordLen, /* Input */
         unsigned char *privilegeList, /* Output */
         unsigned privilegeListLen, /* Input */
         char *expDate, /* Output */
         unsigned expDateLen) /* Input */

```

Parameters

<i>DBHandle</i>	Handle returned by PvcsAccessOpenDB .
<i>userName</i>	Pointer to a string containing the user name.
<i>password</i>	Pointer to a buffer that receives the user password. If no password is present, then Developer's Toolkit returns a null string.
<i>passwordLen</i>	Length of the buffer.
<i>privilegeList</i>	Pointer to a buffer that receives the privilege list. Each privilege is null-terminated, and the end-of-buffer is marked by an additional null character.
<i>privilegeListLen</i>	Length of the buffer.
<i>expDate</i>	Pointer to a buffer that receives the user expiration data. The date format is: mm dd yyyy hh:mm:ss If no expiration date is present, then Developer's Toolkit returns a null string.
<i>expDateLen</i>	Length of the buffer.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_BUFFER_OVERFLOW  
PVCS_E_INVALID_PARAMETER  
PVCS_E_UNKNOWN_USER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
int status;  
int DBHandle;  
char *user = "DAVEE";  
char *password;  
char *privilegeList;  
char *expDate;  
  
/* Initialize configuration settings */  
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);  
  
/* Open the access control database */  
PvcsAccessOpenDB("access.db", PVCS_ACCOPEN_UPDATE, &DBHandle);  
  
/* Allocate buffers to hold database information */  
password = (unsigned char *)malloc(32);  
privilegeList = (unsigned char *)malloc(4096);  
expDate = (unsigned char *)malloc(32);  
  
/* Get access control information for a specific user */  
status = PvcsAccessQueryUser(  
    DBHandle, /* Database handle */  
    user, /* Name of user */  
    password, /* Buf to receive user password */  
    32, /* Length of buffer */  
    privilegeList, /* Buf to receive privilege info */  
    4096, /* Length of buffer */  
    expDate, /* Buf to user expiration date */
```

```

    32);      /* Length of buffer */

if (!status) {
    printf("User:\n  %s\n", user);
    printf("Password:\n  %s\n",
           strlen(password) ? password : "<none>");
    printf("Privileges:\n");
    print_list(privilegeList);
    printf("Expiration date:\n  %s\n",
           strlen(expDate) ? expDate : "<none>");
}

/* Close the access control database */
PvcsAccessCloseDB(DBHandle);
free(password);
free(privilegeList);
free(expDate);

```

Related Functions

- [PvcsAccessDefineUser on page 23](#)
- [PvcsAccessDeleteUser on page 28](#)
- [PvcsAccessEnumerateUsers on page 37](#)
- [PvcsAccessEnumerateUserGroups on page 35](#)
- [PvcsAccessRenameUser on page 47](#)

PvcsAccessRenameGroup

This function renames a group and requires the ViewAccessDB privilege.

Syntax

```

PvcsAccessRenameGroup(
    int DBHandle,                /* Input */
    unsigned char *oldGroup,     /* Input */
    unsigned char *newGroup)    /* Input */

```

Parameters

<i>DBHandle</i>	Handle returned by PvcsAccessOpenDB .
<i>oldGroup</i>	Pointer to a string that contains the original name of the group.
<i>newGroup</i>	Pointer to a string that contains the new name of the group.

Return Values The return value is zero if the function is successful. Other values may be:

```

PVCS_E_INVALID_PARAMETER
PVCS_E_UNKNOWN_GROUP
PVCS_E_USER_EXISTS

```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```

int status;
int DBHandle;
char *oldName = "SOFTDEV";
char *newName = "SOFTWARE_DEVELOPMENT";

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

```

```
/* Open the access control database */
status = PvcAccessOpenDB("access.db", PVCS_ACCOPEN_UPDATE,
    &DBHandle);

status = PvcAccessRenameGroup(
    DBHandle, /* Database handle */
    oldName, /* Original name of group */
    newName); /* New name of group */
if (!status)
    printf("Renamed \"%s\" to \"%s\".\n", oldName, newName);
/* Close the access control database */
status = PvcAccessCloseDB(DBHandle);
```

Related Functions

- [PvcAccessDefineGroup on page 21](#)
- [PvcAccessDeleteGroup on page 25](#)
- [PvcAccessEnumerateGroupGroups on page 29](#)
- [PvcAccessEnumerateGroups on page 30](#)
- [PvcAccessEnumerateGroupUsers on page 32](#)
- [PvcAccessQueryGroup on page 39](#)

PvcAccessRenameGroupGroup

This function renames group members in a group. It requires the ViewAccessDB privilege.

Syntax

```
PvcAccessRenameGroupGroup(
    int DBHandle, /* Input */
    unsigned char *group, /* Input */
    unsigned char *oldGroupMember, /* Input */
    unsigned char *newGroupMember) /* Input */
```

Parameters

<i>DBHandle</i>	Handle returned by PvcAccessOpenDB .
<i>group</i>	Pointer to a string that contains the name of the group.
<i>oldGroupMember</i>	Pointer to a string that contains the original name of the group member.
<i>newGroupMember</i>	Pointer to a string that contains the new name of the group member.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_INVALID_PARAMETER
PVCS_E_UNKNOWN_GROUP
PVCS_E_GROUP_EXISTS
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
/* Initialize configuration settings */
rc = PvcQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Open access database */
rc = PvcAccessOpenDB(szAccessDatabase, PVCS_ACCOPEN_RDONLY);
```

```

        &hAccessDatabase);

/*
 * PvcsAccessEnumerateGroupGroups: get a list of all
 * groups inside given group.
 */
szGroupGroups = (PVCS_PUCHAR)malloc(256);
rc = PvcsAccessEnumerateGroupGroups(
    hAccessDatabase,
    szGroup,
    szGroupGroups,
    256);

/* print result buffer */
if (!rc)
{
    printf("Groups within group %s:\n", szGroup);
    {
        p = szGroupGroups;
        while (p && *p)
        {
            printf("    %s\n", p);
            p = p + strlen(p) + 1;
        }
    }
}

/* Close access control database */
rc = PvcsAccessCloseDB(hAccessDatabase);
free(szGroupGroups);

```

Related Functions

- [PvcsAccessAddGroupGroup on page 18](#)
- [PvcsAccessAddGroupUser on page 19](#)
- [PvcsAccessDeleteGroupGroup on page 26](#)
- [PvcsAccessDeleteGroupUser on page 27](#)
- [PvcsAccessRenameGroupUser on page 45](#)

PvcsAccessRenameGroupUser

This function changes the name of a user in a group member list. It requires the ViewAccessDB privilege.

Syntax

```

PvcsAccessRenameGroupUser(
    int DBHandle,                /* Input */
    unsigned char *group,        /* Input */
    unsigned char *oldUserMember, /* Input */
    unsigned char *newUserMember) /* Input */

```

Parameters

<i>DBHandle</i>	Handle returned by PvcsAccessOpenDB .
<i>group</i>	Pointer to a string that contains the name of the group.

oldUserMember Pointer to a string that contains the original name of the user.
newUserMember Pointer to a string that contains the new name of the user.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_INVALID_PARAMETER  
PVCS_E_UNKNOWN_USER  
PVCS_E_UNKNOWN_GROUP  
PVCS_E_USER_EXISTS
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
int status;  
int DBHandle;  
char *groupName = "SOFTDEV";  
char *oldUserName = "DAVEE";  
char *newUserName = "FREDF";  
  
/* Initialize configuration settings */  
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);  
  
/* Open the access control database */  
status = PvcsAccessOpenDB("access.db", PVCS_ACCOPEN_UPDATE,  
    &DBHandle);  
  
/* Change the name of user within group */  
status = PvcsAccessRenameGroupUser(  
    DBHandle, /* Database handle */  
    groupName, /* Name of group */  
    oldUserName, /* Original name of user */  
    newUserName); /* New name of user */  
  
if (!status)  
    printf("Renamed user \"%s\" in group \"%s\" to \"%s\".\n",  
        oldUserName, groupName, newUserName);  
  
/* Close the access control database */  
status = PvcsAccessCloseDB(DBHandle);
```

Related Functions [PvcsAccessAddGroupGroup on page 18](#)
[PvcsAccessAddGroupUser on page 19](#)
[PvcsAccessRenameGroupGroup on page 44](#)
[PvcsAccessDeleteGroupGroup on page 26](#)
[PvcsAccessDeleteGroupUser on page 27](#)

PvcsAccessRenamePrivilege

This function renames a custom privilege. It requires the ViewAccessDB privilege.

Syntax

```
PvcsAccessRenamePrivilege(  
    int DBHandle, /* Input */  
    unsigned char *oldName, /* Input */  
    unsigned char *newName) /* Input */
```

Parameters

<i>DBHandle</i>	Handle returned by PvcsAccessOpenDB .
<i>oldName</i>	Pointer to a string that contains the original name of the privilege.
<i>newName</i>	Pointer to a string that contains the new name of the privilege.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_INVALID_PARAMETER
PVCS_E_UNKNOWN_PRIVILEGE
PVCS_E_PRIVILEGE_EXISTS
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
int status;
int DBHandle;
char *oldName = "SOFTDEV";
char *newName = "SOFTWARE_DEVELOPMENT";

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Open the access control database */
status = PvcsAccessOpenDB("access.db", PVCS_ACCOPEN_UPDATE,
    &DBHandle);

status = PvcsAccessRenamePrivilege(
    DBHandle, /* Database handle */
    oldName, /* Original name of privilege */
    newName); /* New name of privilege */
if (!status)
    printf("Renamed \"%s\" to \"%s\".\n", oldName, newName);

/* Close the access control database */
status = PvcsAccessCloseDB(DBHandle);
```

Related Functions

[PvcsAccessQueryPrivilege on page 40](#)
[PvcsAccessEnumeratePrivilege on page 33](#)
[PvcsAccessEnumeratePrivileges on page 34](#)
[PvcsAccessDefinePrivilege on page 22](#)
[PvcsAccessDeletePrivilege on page 27](#)

PvcsAccessRenameUser

This function changes a user name and requires the ViewAccessDB privilege.

```
Syntax PvcsAccessRenameUser (
    int DBHandle, /* Input */
    unsigned char *oldUser, /* Input */
    unsigned char *newUser) /* Input */
```


Parameters

`aliasName` Pointer to the name of the alias to define.
`aliasValue` Pointer to the character string that is assigned to `aliasName`.

Return Values This function returns zero if successful. Otherwise the value is `PVCS_E_INVALID_PARAMETER`. See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
char *name = "SourceFiles";
char *value = "alpha.c beta.c gamma.c";
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Add alias definition to alias list */
status = PvcsAddAlias(
    name,    /* Alias name */
    value); /* Alias value */

/* Display newly defined alias */
if (!status)
    printf("Alias name \"%s\" is defined to be \"%s\".\n",
        name, value);
```

Related Function

[PvcsQueryAlias on page 135](#)

Related Topic

For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...

How to use aliases

See...

Using Aliases

PvcsAddPromoteTreeNode

This function adds a group to a promotion model by defining the relationship between each group and its parent group. This is equivalent to the Promote directive.

Syntax

```
PvcsAddPromoteTreeNode (
    unsigned char *fromGroup,          /* Input */
    unsigned char *toGroup)           /* Input */
```

Parameters

`fromGroup` Name of promotion group.
`toGroup` Name of the parent of group `fromGroup`.

Return Values

The return value is zero if the function is successful. Other values may be:
`PVCS_E_INVALID_PARAMETER`
`PVCS_E_INVALID_PROMO`

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations To define a complete promotion model, call this function once for every promotion group, except the highest group in the model, called the *production group*. Then call **PvcsVerifyPromoTree** to verify that the model has exactly one production group and that every group except the production group promotes to exactly one parent group.

Example

```
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Build the following promotion model */
/*
/*          PRODUCTION
/*          |
/*          QA
/*          |
/*  _____|_____
/*  |         |         |
/*  DEV1      DEV2      DEV3
/*
/*
status = PvcsAddPromoteTreeNode("QA", "PRODUCTION");
if (!status)
    status = PvcsAddPromoteTreeNode("DEV1", "QA");
if (!status)
    status = PvcsAddPromoteTreeNode("DEV2", "QA");
if (!status)
    status = PvcsAddPromoteTreeNode("DEV3", "QA");

/* Verify the promotion model */
if (!status)
    status = PvcsVerifyPromoTree();
if (!status)
    printf("Promotion model defined successfully.\n");
```

Related Functions

- [PvcsGetPromoParent on page 96](#)
- [PvcsGroupToRevision on page 109](#)
- [PvcsPromoteRevision on page 128](#)
- [PvcsVerifyPromoTree on page 175](#)
- [PvcsVerifyPromoTreeNodeExist on page 176](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Promotion models	<i>Promotion</i>
Defining a promotion group	<i>Promote directive</i>
Promoting revisions	<i>V PROMOTE command</i>

PvcsAssignPromoGroup

This function assigns or deletes a promotion group. It is equivalent to the VCS -G command.

```

Syntax PvcsAssignPromoGroup (
        ARCHIVEHANDLE hArchive,                /* Input */
        unsigned char *fileName,              /* Input */
        unsigned char *group,                 /* Input */
        unsigned char *revarg,                /* Input */
        PVCS_FLAGS grpFlags)                 /* Input */

```

Parameters

hArchive	Handle returned by PvcsOpenArchive . If the archive is not open, specify ARCHIVEHANDLE_NOT_OPEN.
fileName	Pointer to a string that contains the name of the archive or workfile. Required only if the archive is not open.
group	Pointer to a string that contains the promotion group that you want to revise.
revarg	Pointer to a string that contains a revision number, version label, or promotion group. If the version label or promotion group begins with a number, precede it with a backslash (\). A null parameter defaults to the tip revision on the trunk.
grpFlags	Bit field that controls how the function operates. Values include: <ul style="list-style-type: none"> ■ PVCS_AG_REPLACE_GROUP Moves an existing promotion group to a new revision. ■ PVCS_AG_NO_REPLACE_GROUP Does not move an existing promotion group. This is the default. ■ PVCS_AG_RENAME_GROUP Renames the promotion group using <i>revarg</i> as the old name and <i>group</i> as the new name. ■ PVCS_AG_DELETE_GROUP Deletes the group.

Return Values The return value is zero if the function is successful. Other values may be:

```

PVCS_E_GROUP_EXISTS
PVCS_E_LOCKED_REVISION
PVCS_E_ARCHIVE_EMPTY
PVCS_E_NO_GROUP
PVCS_E_NO_REVISION
PVCS_E_NO_VERSION
PVCS_E_INVALID_PARAMETER

```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

```

Example /* Initialize configuration settings */
rc = PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* PvcsAssignPromoGroup: */
rc = PvcsAssignPromoGroup(
    ARCHIVEHANDLE_NOT_OPEN,
    szArchive,
    szGroup,
    szRevision,
    flags);

/*

```

```
    * Call PvcGetRevisionInfo2 to get a list of the promotion
    * groups assigned to the given revision.
    */
bufSize = 256;
pRevInfo2Buffer = (PVCS_PUCHAR)malloc(bufSize);
rc = PvcGetRevisionInfo2(
    ARCHIVEHANDLE_NOT_OPEN,
    szArchive,
    szRevision,
    &szAuthor,
    &szVersions,
    &szPromoGroups,
    &szLockers,
    &szDescription,
    pRevInfo2Buffer,
    bufSize,
    NULL);

if (!rc)
{
    printf("    Rev: %s\n", szRevision);
    printf("    PromoGroups:  ");
    print_string_list(szPromoGroups);
}
if (pRevInfo2Buffer) free(pRevInfo2Buffer);
```

Related Functions [PvcGroupToRevision on page 109](#)
[PvcGetPromoParent on page 96](#)
[PvcPromoteRevision on page 128](#)

PvcAssignVersion

This function assigns or modifies a version label. It is equivalent to the VCS -V command.

Syntax `PvcAssignVersion(`
 `ARCHIVEHANDLE hArchive,` /* Input */
 `unsigned char *fileName,` /* Input */
 `unsigned char *version,` /* Input */
 `unsigned char *revarg,` /* Input */
 `PVCS_FLAGS verFlags)` /* Input */

Parameters

<code>hArchive</code>	Handle returned by PvcOpenArchive . If the archive is not open, specify <code>ARCHIVEHANDLE_NOT_OPEN</code> .
<code>fileName</code>	Pointer to the name of the archive or workfile. This parameter is required only if the archive is not open.
<code>version</code>	Pointer to a string that contains the version label to modify.
<code>revarg</code>	Pointer to a string that contains a revision number or version label. If the version label begins with a number, precede it with a backslash (\). A null parameter defaults to the tip revision on the trunk.

`verFlags` Bit field that controls the operation of this function. Values include:

- `PVCS_AV_REPLACE_VERS`
Moves an existing version label to a new revision.
- `PVCS_AV_NO_REPLACE_VERS`
Does not move an existing version label. This is the default.
- `PVCS_AV_BRANCH_VERS`
Makes *version* a floating version label on the same branch as *revarg*.
- `PVCS_AV_RENAME_VERS`
Renames the version label, using *revarg* as the old name and *version* as the new name.
- `PVCS_AV_DELETE_VERS`
Deletes the version label.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ACCESS_VIOLATION
PVCS_E_ARCHIVE_NOT_FOUND
PVCS_E_BAD_ARCHIVE_HANDLE
PVCS_E_FILE_BUSY
PVCS_E_INVALID_PARAMETER
PVCS_E_NO_REVISION
PVCS_E_NO_VERSION
PVCS_E_USER_ABORTED
PVCS_E_VERSION_EXISTS
PVCS_E_VERSION_EXISTS
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- If *fileName* refers to a workfile, the program infers the archive name. If *fileName* contains wildcards, the program expands it according to the usual Version Manager rules.
- If *revarg* is a revision number, *version* is assigned to it. If *revarg* is a version label, *version* is assigned to the revision number to which *revarg* is currently assigned.
- If you specify `PVCS_AV_DELETE_VERSION` for *verFlags* to delete a version label, *revarg* is ignored.

Example

```
/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Assign a version label */
PvcsAssignVersion(ARCHIVEHANDLE_NOT_OPEN,
  "foo.c_v", /* Name of archive */
  "Beta Release 1.0", /* Version label to assign */
  NULL, /* Assign to tip revision */
  PVCS_AV_NO_REPLACE_VERS); /* Don't move existing label */
```

Related Functions

[PvcsOpenArchive on page 126](#)
[PvcsPutRevision on page 132](#)
[PvcsVersionToRevision on page 178](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Version labels	<i>Version Labels</i>
Assigning version labels	<i>PUT command</i> <i>VCS command</i>
Specifying archives and workfiles	<i>File Specification</i>
Wildcard file expansion	<i>Wildcards</i>

PvcsCancelUpdate

This function cancels an update to an open archive.

Syntax `PvcsCancelUpdate (`
`ARCHIVEHANDLE hArchive)` `/* Input */`

Parameter

`hArchive` Handle returned by **PvcsOpenArchive**. If the archive is not open, specify `ARCHIVEHANDLE_NOT_OPEN`.

Return Value This function returns zero if successful. Otherwise it returns `PVCS_E_INVALID_PARAMETER`. See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- You must open the archive with **PvcsOpenArchive** before calling this function.
- Changes to an archive are not saved until you call **PvcsCloseArchive** or **PvcsCloseAll**. To cancel changes made since you opened the archive, call **PvcsCancelUpdate**. You do not need to call **PvcsCloseArchive** after calling **PvcsCancelUpdate**.
- If the `NoArchiveWork` directive is in effect, you cannot use this function to cancel changes to an archive. When `NoArchiveWork` is in effect, Version Manager applies changes directly to the archive, rather than to a copy of it.

When `ArchiveWork` is in effect, Version Manager applies updates to a working copy of the archive. When you call **PvcsCancelUpdate**, Version Manager deletes the working copy and leaves the archive in its original state.

You can query the `ArchiveWork` directive from your program by using the `useArchiveWork` value of the `CONFIG` structure after calling **PvcsQueryConfiguration**. For details on the `CONFIG` data structure, see [Chapter 5, "Data Structures"](#)

Example

```
ARCHIVEHANDLE handle;
int status;

/* Initialize configuration structure */
config = (CONFIG *)malloc(sizeof(CONFIG));
PvcsQueryConfiguration(NULL, NULL, 0,
    PVCS_CONFIG_OVERWRITE);
```


Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ACCESS_DENIED  
PVCS_E_ARCHIVE_NOT_FOUND  
PVCS_E_BAD_ARCHIVE_HANDLE  
PVCS_E_INVALID_PARAMETER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations If *fileName* refers to a workfile, the program infers the archive name. If *fileName* contains wildcards, the program expands it according to the usual Version Manager rules.

```
Example /* Initialize configuration settings */  
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);  
  
/* Add "SOFTDEV" to AccessList of foo.c_v */  
PvcsChangeAccessList(ARCHIVEHANDLE_NOT_OPEN,  
    "foo.c_v",  
    "SOFTDEV",  
    PVCS_ACCLIST_ADD);  
  
/* Delete "QA" from AccessList of foo.c_v */  
PvcsChangeAccessList(ARCHIVEHANDLE_NOT_OPEN,  
    "foo.c_v",  
    "QA",  
    PVCS_ACCLIST_DELETE);  
  
/* Replace AccessList of foo.c_v with DEVGROUP1,DEVGROUP2,DEVGROUP3 */  
PvcsChangeAccessList(ARCHIVEHANDLE_NOT_OPEN,  
    "foo.c_v",  
    "DEVGROUP1,DEVGROUP2,DEVGROUP3",  
    PVCS_ACCLIST_REPLACE);  
  
/* Delete all names from AccessList of foo.c_v */  
PvcsChangeAccessList(ARCHIVEHANDLE_NOT_OPEN,  
    "foo.c_v",  
    NULL,  
    PVCS_ACCLIST_CLEAR);
```

Related Functions [PvcsChangeArchiveInfo on page 56](#)
[PvcsGetArchiveInfo on page 83](#)
[PvcsQueryArchiveAccess on page 136](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Changing an access list	<i>VCS command</i>
Controlling user access	<i>Access Control</i>

PvcsChangeArchiveInfo

This function changes archive header information. It is equivalent to certain VCS command options.


```

Syntax PvcsChangeArchiveInfo (
    ARCHIVEHANDLE hArchive,           /* Input */
    unsigned char *fileName,         /* Input */
    unsigned short attributes,       /* Input */
    unsigned short reclen,           /* Input */
    unsigned short renum_start_col,  /* Input */
    unsigned short renum_end_col,    /* Input */
    long renum_start_val,            /* Input */
    long renum_step_val,             /* Input */
    unsigned char *workfile,         /* Input */
    unsigned char *owner,            /* Input */
    unsigned char *access,           /* Input */
    unsigned char *cmt_str,          /* Input */
    unsigned char *newline,          /* Input */
    unsigned char *diffmask)         /* Input */

```

Parameters

<i>hArchive</i>	Handle returned by PvcsOpenArchive . If the archive is not open, specify <code>ARCHIVEHANDLE_NOT_OPEN</code> .
<i>fileName</i>	Pointer to the name of an archive or a workfile. This parameter is required only if the archive is not open.
<i>attributes</i>	Bit field with values that toggle archive attributes. Values include: <ul style="list-style-type: none"> ■ <code>PVCS_ATTR_CHK_LOCK</code> Enables or disables lock checking. This flag is equivalent to the VCS <code>+ -PL</code> command. ■ <code>PVCS_ATTR_CMPRS_DELTA</code> Enables or disables delta compression. This flag is equivalent to the VCS <code>+ -PD</code> command. ■ <code>PVCS_ATTR_CMPRS_TEXT</code> Enables or disables compression of workfile images. This flag is equivalent to the VCS <code>+ -PC</code> command. ■ <code>PVCS_ATTR_EXCL_LOCK</code> Enables or disables exclusive locking. This flag is equivalent to the VCS <code>+ -PE</code> command. ■ <code>PVCS_ATTR_EXP_KEYS</code> Enables or disables keyword expansion. This flag is equivalent to the VCS <code>+ -PK</code> command. ■ <code>PVCS_ATTR_TRANSLATE</code> Enables or disables file translation. This flag is equivalent to the VCS <code>+ -PT</code> command. ■ <code>PVCS_ATTR_WRT_PROT</code> Enables or disables write protection of archives. This flag is equivalent to the VCS <code>+ -PW</code> command.
<i>reclen</i>	Workfile record length. Use 0 to indicate that the workfile does not contain fixed-length records. This parameter is equivalent to the VCS <code>-XRecordLength</code> command.

<i>renum_start_col</i>	Starting column number of the line number field. Use 0 to disable renumbering. This parameter is equivalent to the <i>column_start</i> parameter to the VCS -XRenumber command.
<i>renum_end_col</i>	Ending column number of the line number field. This parameter is equivalent to the <i>column_end</i> parameter to the VCS -XRenumber command.
<i>renum_start_val</i>	The number for the first line in the workfile. This parameter is equivalent to the <i>start</i> parameter to the VCS -XRenumber command.
<i>renum_step_val</i>	The value used to increment the line numbers. This parameter is equivalent to the <i>number</i> parameter to the VCS -XRenumber command.
<i>workfile</i>	Pointer to a string that contains the name of the workfile. The program uses this name as the workfile name when it only knows the archive name. This parameter is equivalent to the VCS -W command.
<i>owner</i>	Pointer to a string that contains the ID of the archive's owner. This parameter is equivalent to the VCS -O command.
<i>access</i>	Pointer to a string that contains the archive access list, which is a comma-separated list of user IDs or group names. This parameter is equivalent to the VCS -A command.
<i>cmt_str</i>	Pointer to a string that contains the comment prefix string, used when expanding the \$Log\$ keyword. This parameter is equivalent to the VCS -EC command.
<i>newline</i>	Pointer to a string that contains the end-of-line characters used when expanding the \$Log\$ keyword. The default is <code>\r\n</code> . This parameter is equivalent to the VCS -EN command.
<i>diffmask</i>	Pointer to a string that contains the column mask specification used when computing differences. A null parameter indicates that columns are not masked when computing differences. This parameter is equivalent to the VCS -X ColumnMask command.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ACCESS_VIOLATION
PVCS_E_ARCHIVE_NOT_FOUND
PVCS_E_FILE_BUSY
PVCS_E_INVALID_PARAMETER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Consideration If *fileName* refers to a workfile, the program infers the archive name. If *fileName* contains wildcards, the program expands it according to the usual Version Manager rules.

Example

```
#define ARCHIVEINFO_PAD 256
ARCHIVEINFO *archinfo;
char newAccessList[256];
unsigned short newAttributes;
char *fileName = "foo.c_v";

/* Initialize configuration settings */
```

```

PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Obtain archive information */
archinfo = (ARCHIVEINFO *)malloc(sizeof(ARCHIVEINFO) +
    ARCHIVEINFO_PAD);
PvcsGetArchiveInfo(ARCHIVEHANDLE_NOT_OPEN,
    Filename,
    archinfo,
    sizeof(ARCHIVEINFO) + ARCHIVEINFO_PAD);

/* Add names to the AccessList */
if (strlen(archinfo->info + archinfo->access))
    strcpy(newAccessList, archinfo->info + archinfo->access);
strcat(newAccessList, "SOFTDEV,TECHPUBS,QA");

/* Turn off keyword expansion */
newAttributes = archinfo->attributes &= ~PVCS_ATTR_EXP_KEYS;

/* Change archive information */
PvcsChangeArchiveInfo(ARCHIVEHANDLE_NOT_OPEN,
    "Filename",
    newAttributes,
    archinfo->reclen,
    archinfo->renum_start_col,
    archinfo->renum_end_col,
    archinfo->renum_start_val,
    archinfo->renum_step_val,
    archinfo->info + archinfo->workfile,
    archinfo->info + archinfo->owner,
    newAccessList,
    archinfo->info + archinfo->cmt_str,
    archinfo->info + archinfo->newline,
    archinfo->info + archinfo->diffmask);

```

Related Functions [PvcsChangeAccessList on page 55](#)
[PvcsGetArchiveInfo on page 83](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Changing archive information	<i>VCS command</i>
Archive attributes	<i>Archive Attributes</i>
Specifying archive and workfile names	<i>File Specification</i>

PvcsCloseAll

This function closes all open archives and deletes semaphores and temporary files.

Syntax `PvcsCloseAll (void)`

Parameters There are no parameters to this function.

Special Consideration	You can call this function as a cleanup function when your program exits. It does not return an error if no archives are open.
Return Value	This function returns zero.
Example	<pre>ARCHIVEHANDLE handle[3]; char workfile[32]; char archive[32]; int status; /* Initialize configuration settings */ PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE); /* Open several archives for update */ PvcsOpenArchive("alpha.c_v", NULL, 0, NULL, 0, PVCS_OPEN_UPDATE, &handle[0]); PvcsOpenArchive("beta.c_v", NULL, 0, NULL, 0, PVCS_OPEN_UPDATE, &handle[1]); PvcsOpenArchive("gamma.c_v", NULL, 0, NULL, 0, PVCS_OPEN_UPDATE, &handle[2]); /* Close all archives */ status = PvcsCloseAll(); if (!status) printf("Closed all archives\n");</pre>
Related Functions	PvcsCancelUpdate on page 54 PvcsCloseArchive on page 60 PvcsOpenArchive on page 126

PvcsCloseArchive

This function closes an archive and frees resources associated with it. It also closes the archive semaphore, if it exists.

Syntax `PvcsCloseArchive(
 ARCHIVEHANDLE hArchive
 /* Input */`

Parameter

hArchive Handle returned by **PvcsOpenArchive**.

Return Values The return value is zero if the function is successful. Otherwise it returns `PVCS_E_INVALID_PARAMETER`. See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
ARCHIVEHANDLE handle;
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Open archive for update */
PvcsOpenArchive(
```


- Use **PvcsOpenArchive** to perform the inverse operation: computing the workfile name for a known archive.

```

Example char archiveName[128];
char workfileName[128] = "foo.c";
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Compute name of archive for "foo.c" */
status = PvcsComputeArchiveName(workfileName,
    archiveName,
    sizeof(archiveName));

/* Display name of archive */
if (!status)
    printf("Archive name for \"%s\" is \"%s\"\n", workfileName,
        archiveName);

```

Related Function [PvcsOpenArchive on page 126](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
How workfile names are translated into archive names	<i>Suffix Translation</i>
Specifying archive translation	<i>ArchiveSuffix directive</i>
Specifying archive and workfile names	<i>File Specification</i>

PvcsCreateArchive

This function creates a new archive that contains no revisions. It is equivalent to the VCS `-I` command.

```

Syntax PvcsCreateArchive(
    unsigned char *fileName,           /* Input */
    unsigned char *workfileName,      /* Input */
    unsigned char *fileDesc,          /* Input */
    unsigned char *accessList,        /* Input */
    unsigned char *owner,             /* Input */
    PVCS_FLAGS createFlags)          /* Input */

```

Parameters

<i>fileName</i>	Pointer to the archive name. See <i>Special Considerations</i> for the effects of various types of path specifications.
<i>workfileName</i>	Pointer to the name of the workfile, which is stored in the archive. The name may contain a path. This parameter is equivalent to the <i>file_name</i> parameter to the VCS <code>-I</code> command.

<i>fileDesc</i>	Pointer to a string that contains the description of the workfile. The string may contain <i>@fileName</i> , which causes the program to read the description from <i>fileName</i> . A null parameter causes the program to prompt the user for a description. This parameter is equivalent to the -T option used with the VCS -I command.
<i>accessList</i>	Pointer to a string that contains the comma- or space-separated archive access list. A null parameter indicates an empty access list. This parameter is equivalent to the -A option used with the VCS -I command.
<i>owner</i>	Pointer to a string that contains the owner of the archive. If the parameter is null, the program uses the current user ID. This parameter is equivalent to the -O option used with the VCS -I command.
<i>createFlags</i>	Bit field that controls the operation of this function. Values include: <ul style="list-style-type: none"> ■ PVCS_CREATE_IGN_PATH Ignores the path of the workfile and creates the archive in the first path in the VCSDir list. This flag is equivalent to having the IgnorePath directive in effect when you use the VCS -I command. ■ PVCS_CREATE_NO_OVERWRITE Does not overwrite the archive if it exists. This flag is equivalent to the -N option used with the VCS -I command. ■ PVCS_CREATE_OVERWRITE Overwrites the archive if it exists. This flag is equivalent to the -Y option used with the VCS -I command. ■ PVCS_CREATE_WRITABLE Makes the archive writable. The default is read-only. This flag is equivalent to having the NoWriteProtect directive in effect when you use the VCS -I command.

Return Values The return value is zero if the function is successful. Other values may be:

PVCS_E_ACCESS_DENIED
PVCS_E_ACCESS_VIOLATION
PVCS_E_ALREADY_EXISTS
PVCS_E_BAD_FILENAME
PVCS_E_FILE_BUSY
PVCS_E_INVALID_PARAMETER
PVCS_E_USER_ABORTED

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- Archive attributes, such as Compress and ExpandKeywords, are taken from the directives in the CONFIG structure. If the CONFIG structure is null, the Developer's Toolkit uses the default configuration. For details on the CONFIG structure, see [Chapter 5, "Data Structures"](#)
- There are several ways to specify the *fileName* parameter:
 - **Fully qualified path.** The program creates the archive in the specified location. The specified drive and directory must exist.

- **Path without a file name.** The program derives the archive name from the workfile name and creates the archive in the specified location. The specified drive and directory must exist.
- **Null.** The program derives the archive name from the workfile name and creates the archive in the first path specified for the VCSDir directive. If the VCSDir list is empty, it creates the archive in the current directory.
- If *fileName* is null and *workfileName* contains a path, the program creates the archive in the workfile directory, unless you specify the flag `PVCS_CREATE_IGN_PATH`.

```
Example /* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Create archive */
PvcsCreateArchive(
    NULL, /* Path only; force deriv of */
    /* Archive name from workfile */
    "foo.c", /* Workfile name */
    "@proj1.msg", /* Use msg file for desc */
    NULL, /* Empty access list */
    "DAVEE", /* Archive owner */
    PVCS_CREATE_NO_OVERWRITE); /* Don't overwrite existing */
```

Related Functions [PvcsOpenArchive on page 126](#)
[PvcsPutRevision on page 132](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...

Creating archives

Directives that are related to this function

See...

VCS command

IgnorePath directive
WriteProtect directive
VCSDir directive

PvcsDeleteRevision

This function deletes revisions from an archive. It is equivalent to the VDEL command.

```
Syntax PvcsDeleteRevision(
    ARCHIVEHANDLE archiveHandle, /* Input */
    unsigned char *fileName, /* Input */
    unsigned char *revisionRange, /* Input */
    PVCS_FLAGS flags) /* Input */
```

Parameters

<i>archiveHandle</i>	Use <code>ARCHIVEHANDLE_NOT_OPEN</code> .
<i>fileName</i>	Pointer to a string that contains the archive or workfile name.

<i>revisionRange</i>	Pointer to a string specifying revisions to delete. To specify a revision range, separate the revisions with an asterisk (*). Append a plus sign (+) to the range to delete branches as well as the trunk. If you do not use a plus sign and there are branches, the operation fails with the error PVCS_E_BRANCH_REVISION. The range can be open-ended on either end.
<i>flags</i>	Not currently used.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_BRANCH_REVISION
PVCS_E_GROUP_EXISTS
PVCS_E_INVALID_PARAMETER
PVCS_E_LOCKED_REVISION
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- If *fileName* refers to a workfile, the program infers the archive name. If *fileName* contains wildcards, the program expands it according to the usual Version Manager rules.
- This function does not currently support archive handles. You can specify the name of the archive to be modified, and **PvcsDeleteRevision** opens and closes the archive. If the archive is open and you specify an archive handle, the function returns PVCS_E_INVALID_PARAMETER.
- You cannot delete a revision if it contains locks or promotion groups. If a revision contains locks or promotion groups, the function does not delete any revision and returns PVCS_LOCKED_REVISION or PVCS_GROUP_EXISTS.

Example

```
char *version = "Beta Release 1.0";
char range[32];
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Build a ver range that specifies all revisions up to, but */
/* excluding the ver label "Beta Release 1.0" */
sprintf(range, "%s%s", "*", version, "-1");

/* Delete a revision range */
status = PvcsDeleteRevision(ARCHIVEHANDLE_NOT_OPEN,
    "foo.c_v", /* Archive name */
    range, /* Version range */
    0); /* Not currently used */

if (!status)
    printf("Deleted revisions prior to vers. label \"%s\".\n",
        version);
```

Related Functions [PvcsGetRevisionInfo on page 101](#)
[PvcsUnLockRevision on page 171](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Deleting revisions	<i>VDEL command</i>
Specifying revision ranges	<i>Revision Specification</i>

PvcsDiagnosticEnable

This function enables the Developer's Toolkit debug trace to write diagnostic information to a file that you specify. Call this function once to enable the debug trace for all future Developer's Toolkit functions.

Call this function with the `PVCS_DIAG_CLOSE` flag to end the debug trace and close the file.

Syntax

```
PvcsdiagnosticEnable(  
    unsigned char *diagnosticFile,          /* Input */  
    unsigned short diagnosticFileMode,     /* Input */  
    PVCS_FLAGS flags)                     /* Input */
```

Parameters

<i>diagnosticFile</i>	Pointer to a string that names the output file to which Developer's Toolkit writes diagnostic information. The type of file access is determined by the <i>diagnosticFileMode</i> parameter.
<i>diagnosticFileMode</i>	Integer that specifies the type of access to the output file. It is also used to close the output file. Values include: <ul style="list-style-type: none">■ <code>PVCS_DIAG_MODE_OVERWRITE</code> Developer's Toolkit opens the output file in overwrite mode. If the diagnostic information file exists, then it is overwritten. This is the default.■ <code>PVCS_DIAG_MODE_APPEND</code> Developer's Toolkit opens the output file in append mode. If the file exists, then information is appended to the end of the file. Without this flag, the file is overwritten.■ <code>PVCS_DIAG_MODE_CLOSE</code> Developer's Toolkit closes the output file and stops all diagnostic reporting.

flags

Bit field that controls how this function operates. Values include `PVCS_DIAG_CONFIG`, which enables configuration file tracing using

PvcsQueryConfiguration to echo a copy of each line it reads from the configuration file. It is equivalent to the `-#1` command-line flag. It must be enabled before you call

PvcsQueryConfiguration. Output is:

```
(nesting_level) config_file_name
[line_number]: config_file_line
```

Example:

Contents of `vcs.cfg`:

```
Login = vcsid
VcsID = cyne
AccessDB = access.db
AccessList = cyne, lauraf, skipr
Include = local.cfg
```

Contents of `local.cfg`:

```
NoDeleteWork
NoExpandKeywords
NoArchiveWork
```

Output:

```
( 1) vcs.cfg[ 1]: Login = vcsid
( 1) vcs.cfg[ 3]: Vcsid = cyne
( 1) vcs.cfg[ 4]: AccessDB = access.db
( 1) vcs.cfg[ 5]: AccessList = cyne, lauraf,
skipr
( 1) vcs.cfg[ 6]: Include = local.cfg
( 2) local.cfg[ 1]: NoDeleteWork
( 2) local.cfg[ 2]: NoExpandKeywords
( 2) local.cfg[ 3]: NoArchiveWork
```

■ PVCS_DIAG_FUNCTION

Enables tracing. Every Developer's Toolkit function writes the name of the function and the value of the function parameters. There is no command-line equivalent. Output is:
function_name,date_and_time_when_called

Example:

```
PvcsDiagnosticEnable, 18 Feb 1995
14:59:40
  1: "tkdig.out"
  2: 1
  3: 7

PvcsQueryConfiguration, 19 Feb 1995
14:59:40
  1:0000:0000
  2:0000:0000
  3:0
  4:0

PvcsCreateArchive, 18 Feb 1994 14:59:42
  1: 0000:0000
  2: "foo.c"
  3: "message text"
  4: 0000:0000
  5: "DAVEE"
  6: 2

PvcsOpenArchive, 19 Feb 1995 14:59:42
  1: "foo.c_v"
  2: 002F:195C
  3: 32
  4: 002F:197C
  5: 32
  6: 2
  7: 002F:1958
```

```

PvcsPutRevision, 18 Feb 1995 14:59:42
 1: 0
 2: "DAVEE"
 3: 0000:0000
 4: 0000:0000
 5: 0000:0000
 6: "Fixed a killer bug."
 7: 0000:0000
 8: "Beta Release 1.0"
 9: 0000:0000
10: 0000:0000
11: 0
12: 32
PvcsCloseArchive, 18 Feb 1995 14:59:42
 1: 0
PvcsDiagnostic Enable, 18 Feb 1995
14:59:42
 1: 0000:0000
 2: 3
 3: 0

```

■ PVCS_DIAG_ACCESS_CONTROL

Enables access control privilege tracing. It writes access control information about the current user. This flag must be enabled before you call any Developer's Toolkit functions that open archives. It is equivalent to the -#400 command-line flag. Output is:

```

owner:archive_owner,access_list:
archive_access_list
Opening_access_control_database_name
User name:user_name
privilege:[base_priv_1, base_priv_2,...,
base_priv_n]

```

Example:

Contents of access control database named "access.db":
 USER davee (Put, Get, Lock, Unlock,
 AddVersion, ViewArchive)

Output:

```

owner: davee, access list:
Opening access.db
User name: davee
privilege:
[LT, LN, UN, bl, GT, GN, PT, PB, sb, ca, co, cp, cc, cw, m
w, mc, AV, dv, mv, il, dt, dn, vd, VH, VR, va, pr, ag, mg,
dg]

```

Base Privilege Codes Every base privilege is represented by a two-character mnemonic value. Values in lower case are turned off for the current user; values in upper case are active for the current user (as shown in the example above).

Base Privilege Codes

AV	AddVersion	LN	LockNonTip
AG	AddGroup	LT	LockTip
BL	BreakLock	MC	ModifyChangeDescription
CA	ChangeAccessList	MG	ModifyGroup
CC	ChangeCommentDelimiter	MV	ModifyVersion
CO	ChangeOwner	MW	ModifyWorkfileDescription
CP	ChangeProtection	PB	PutBranch
CW	ChangeWorkfileName	PR	Promote
DG	DeleteGroup	PT	PutTrunk
DN	DeleteRevNonTip	SB	StartBranch
DT	DeleteRevTip	UN	Unlock
DV	DeleteVersion	VA	ViewAccessDB
GN	GetNonTip	VD	ViewDelta
GT	GetTip	VH	ViewArchiveHeader
IL	InitArchive	VR	ViewArchiveRev

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_INVALID_PARAMETER  
PVCS_E_DIAG_FILE
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example ARCHIVEHANDLE handle;

```
/* Enable debug trace */  
PvcsDiagnosticEnable(  
    "diag.out", /* Diagnostic file name */  
    PVCS_DIAG_MODE_OVERWRITE, /* Overwrite existing file */  
    PVCS_DIAG_FUNCTION); /* Write toolkit func param */  
  
/* Initialize configuration settings */  
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);  
/* Create archive */  
PvcsCreateArchive(NULL, "foo.c", "message text", NULL,  
    "DAVEE", PVCS_CREATE_OVERWRITE);  
  
/* Open archive for update */  
PvcsOpenArchive("foo.c_v", NULL, 0, NULL,  
    0, PVCS_OPEN_UPDATE, &handle);  
  
/* Check in a revision */  
PvcsPutRevision(handle, "DAVEE", NULL, NULL, NULL, "Fixed a  
    bug.", NULL, "Beta Release 1.0", NULL, NULL, 0,  
    PVCS_PUT_RELOCK);  
  
/* Close archive */  
PvcsCloseArchive(handle);
```

```

/* Disable diagnostic trace */
PvcsDiagnosticEnable(
    (char *)0,
    PVCS_DIAG_MODE_CLOSE, /* Close diagnostic file */
    0);

```

PvcsEndArchiveSearch

This function ends an archive search that was initiated by **PvcsFindFirstArchive** and frees memory associated with the file search.

Syntax PvcsEndArchiveSearch(
 PVCSSEARCHHANDLE *srchHandle*) /* Input */

Parameter

srchHandle Pointer to a search handle. This handle must have been initialized by a call to **PvcsFindFirstArchive**

Return Value The return value is zero if the function is successful. Otherwise the value is PVCS_E_INVALID_PARAMETER. See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```

PVCSSEARCHHANDLE srchHandle;
char archive[128];
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Find first file, set up search handle for next file */
status = PvcsFindFirstArchive(
    &srchHandle, /* Receives search hdl used on subsequent */
    /* calls to PvcsFindNextArchive */
    "*.c_v", /* File pattern to match */
    archive, /* Buffer receiving first matching name */
    sizeof(archive)); /* Length of buffer */

if (!status) {

    /* Iterate over all matching files */
    do {

        /* Perform an operation on the archive */
        PvcsAssignVersion(ARCHIVEHANDLE_NOT_OPEN, archive,
            "Beta Release 1.0", NULL, PVCS_AV_REPLACE_VERS);

        /* Obtain next file name */
        status = PvcsFindNextArchive(
            srchHandle, /* Search handle */
            archive, /* Buf receiving next matching name */
            sizeof(archive)); /* Length of buffer */
    } while (status == 0);
}

```

```
    if ((status) && (status != PVCS_E_NO_MORE_FILES)) {
        printf("Error finding next archive.\n");
        break;
    }
    } while (status != PVCS_E_NO_MORE_FILES);

    /* End the search */
    PvcEndArchiveSearch(srchHandle);
}
else
    printf("Error finding first archive.\n");
```

Related Functions [PvcFindFirstArchive on page 77](#)
[PvcFindNextArchive on page 79](#)

PvcExport

This function exports archive data to text files in the specified format. It duplicates the functionality of the VSQL program.

```
Syntax PVCS_APIENTRY PvcExport (
    unsigned char *DDLTimestamp,          /* Input */
    unsigned char *DDLVarchar,          /* Input */
    unsigned char *DDLInteger,          /* Input */
    unsigned char *DDLFileName,        /* Input */
    unsigned char *DMLFileName,        /* Input */
    unsigned char *TimeFormat,         /* Input */
    unsigned char *Delimiter,          /* Input */
    unsigned char *EmbDelimiter,        /* Input */
    unsigned char *Separator,          /* Input */
    unsigned char *EmbSeparator,        /* Input */
    unsigned char *LineCont,           /* Input */
    unsigned char *EmbLineCont,        /* Input */
    unsigned char *EmbNewLine,         /* Input */
    unsigned char *SQLTerminator,      /* Input */
    unsigned short CharMaxLen,         /* Input */
    unsigned short LineMaxLen,         /* Input */
    unsigned char *FileName,           /* Input */
    PVCS_FLAGS exportFlags)           /* Input */
```

Parameters

<i>DDLTimestamp</i>	Pointer to a string that contains the TimeStamp column type definition, depending on the requirements of your SQL interpreter. The default is <code>TIMESTAMP</code> . This parameter is equivalent to the VSQL <code>-DT</code> command.
<i>DDLVarchar</i>	Pointer to a string that contains the variable-length character string column type definition. The default is <code>VARCHAR(1500)</code> . This parameter is equivalent to the VSQL <code>-DV</code> command.

<i>DDLInteger</i>	Pointer to a string that contains the integer column type definition, depending on the requirements of your SQL interpreter. The default is <code>INTEGER</code> . This parameter is equivalent to the <code>VSQL -DI</code> command.
<i>DDLFileName</i>	Pointer to a string that contains the file name where the DDL statements are to be written. DDL file contains <code>DROPTABLE</code> , <code>CREATETABLE</code> , and <code>CREATEVIEW</code> commands to initiate tables for holding Version Manager archive data and views used for updating these tables. This parameter is equivalent to the <code>VSQL -DL</code> command.
<i>DMLFileName</i>	Pointer to a string that contains the file name where the DML statements are to be written. The DML statements will insert, update, and/or delete information from the tables created by the DDL statements.
<i>TimeFormat</i>	<p>Pointer to a string that contains the format for the timestamp fields, or the fields specified by <i>DDLTimestamp</i>.</p> <p><i>TimeFormat</i> may contain the following special formatting strings:</p> <ul style="list-style-type: none"> ■ <code>yyyy</code>: A four-digit number representing the year portion of the date. You can also use <code>yy</code> to represent the last two digits of the year. ■ <code>mm</code>: (First occurrence.) A two-digit number between 01 and 12 representing the month. If you enter more than two consecutive <code>m</code> characters, the Developer's Toolkit interprets them as an abbreviation of the month. For example, <code>mmm=Dec</code>; <code>mmmm=Dece</code> ■ <code>dd</code>: A two-digit number between 01 and 31 (the maximum depends on the month and year) representing the day of the month. ■ <code>hh</code>: A two-digit number between 00 and 24 representing the hour portion of the time (using a 24-hour clock). ■ <code>mm</code>: (Second occurrence.) A two-digit number between 00 and 59 representing the minutes portion of the time. ■ <code>ss</code>: A two-digit number from 00 to 59 representing the seconds portion of the time. The default is: <code>TimeFormat yyyy-mm-dd-hh.mm.ss</code> <p>This parameter is equivalent to the <code>VSQL -FT</code> command.</p>
<i>Delimiter</i>	<p>Pointer to a string that contains the string delimiter character. Most CSV formats are processed with the least conflict using double quotation marks (") as the string delimiter. The default, however, is a single quotation mark (') to accommodate the DML format.</p> <p>To use a single quotation mark or double quotation mark, preface it with a backslash (\). To use a backslash, enter two backslashes. This parameter is equivalent to the <code>VSQL -O</code> command.</p>

<i>EmbDelimiter</i>	<p>Pointer to a string that contains the character that the Developer's Toolkit substitutes for <i>Delimiter</i> when it is embedded within a string. The default <i>Delimiter</i> is a single quotation mark.</p> <p>To use a single quotation mark or double quotation mark, preface it with a backslash. To use a backslash, enter two backslashes. This parameter is equivalent to the VSQL -E command.</p> <p>For example, if <i>Delimiter</i> is a single quotation mark, and you expect to use single quotation marks within strings, you can use backslash, double quotation mark (") to ensure that the Developer's Toolkit won't confuse <i>Delimiter</i> with characters within strings.</p>
<i>Separator</i>	<p>Pointer to a string that contains the field separator character. The default Separator is a comma (.). This parameter is equivalent to the VSQL -G command.</p>
<i>EmbSeparator</i>	<p>Pointer to string that contains the character that the Developer's Toolkit substitutes for <i>Separator</i> when it is embedded in a field. This parameter is usually needed only in CSV format files if no <i>Delimiter</i> is used. This parameter is equivalent to the VSQL -I command.</p> <p>For example, if <i>Separator</i> is a comma, and you expect to use commas within strings, use a semicolon (;), or another non-conflicting character to change the treatment of commas within a field.</p>
<i>LineCont</i>	<p>Pointer to string that contains the line continuation character. The default is an empty string. This parameter is equivalent to the VSQL -J command.</p>
<i>EmbLineCont</i>	<p>Pointer to a string that contains the character that the Developer's Toolkit substitutes for <i>LineCont</i> when it is embedded in a string. The default is an empty string. This parameter is equivalent to the VSQL -L command.</p>
<i>EmbNewLine</i>	<p>Pointer to a string that contains the character that the Developer's Toolkit substitutes for the newline character when it is embedded in a string. By default, the Developer's Toolkit substitutes a space. If you don't specify this parameter, strings cannot contain newline characters. This parameter is equivalent to the VSQL -N command.</p> <p>For example, to preserve newline characters in strings, use one of the following values: "\n," "<lf>".</p>
<i>SQLTerminator</i>	<p>Pointer to a string that contains the SQL statement termination character. If your SQL interpreter requires no statement terminator, use a null string (" ") as the parameter value. The default is a semicolon (;). This parameter is equivalent to the VSQL -T command.</p>
<i>CharMaxLen</i>	<p>Maximum length of a variable-length character string, as named in the <i>DDLVarchar</i> parameter (above).</p>
<i>LineMaxLen</i>	<p>Maximum line length for output command files. The minimum line length is 64 characters. If you use a number smaller than 64, the line length will default to 64 characters. The default is an unlimited length. This parameter is equivalent to the VSQL -K command.</p> <p>For example, use 250 to limit the line length to 250 characters, including delimiters and modification characters.</p>

<i>FileName</i>	Pointer to a string that contains an archive file specification. The specification allows wildcards.
<i>exportFlags</i>	<p>Bit field that controls how the function operates. Values include:</p> <ul style="list-style-type: none"> ■ PVCS_EXPORT_SQLDML_FORMAT ■ PVCS_EXPORT_CSV_FORMAT ■ PVCS_EXPORT_CSV_FORMAT_HDRS <p>If PVCS_EXPORT_SQLDML_FORMAT is set, then the Developer's Toolkit uses the file name specified by <i>DMLFileName</i>. This file contains SQL DML format insert statements.</p> <p>If none of the above mentioned flags is set, then the default is PVCS_EXPORT_SQLDML_FORMAT. This parameter is equivalent to the VSQL -MH, VSQL -MV, or VSQL -ML command.</p> <ul style="list-style-type: none"> ■ PVCS_EXPORT_GEN_VIEW_STMTS Generates DROPTABLE and DROPVIEW commands if used in conjunction with PVCS_EXPORT_GEN_DROP_STMTS. You can use this command to re-execute the command file. It deletes and recreates the old tables and views. ■ PVCS_EXPORT_GEN_DROP_STMTS Generates DROP statements in the DDL command file if used in conjunction with PVCS_EXPORT_GEN_VIEW_STMTS. DROP commands delete old tables and views from the database before generating new ones. You can use this command if you need to rerun the DDL command file with the old tables still defined in the database. This command is ignored if you have not set PVCS_EXPORT_GEN_VIEW_STMTS. ■ PVCS_EXPORT_GEN_UPDATE_STMTS Generates update statements. This command puts the Delete statements in a separate file with the name specified by <i>DMLFileName</i>, if used in conjunction with PVCS_EXPORT_CSV_FORMAT, PVCS_EXPORT_CSV_FORMAT_HDRS, or PVCS_EXPORT_SQLDML_FORMAT. You can use this command to maintain incremental changes to an existing database of archives when the tables cannot be easily regenerated; or, where the number of new/updated rows is expected to be small compared to the total number of rows. ■ PVCS_EXPORT_CONTINUE Use in conjunction with wildcard archive file name specifications. ■ PVCS_EXPORT_SQLDML_FORMAT Generates SQL DML format insert statements. This flag is equivalent to the VSQL -ML command.

- `PVCS_EXPORT_CSV_FORMAT`
Generates a set of CSV format files that contain data from specified archives. The Developer's Toolkit creates all script files; however, they may be empty. This flag is equivalent to the VSQL -MV command.
- `PVCS_EXPORT_CSV_FORMAT_HDRS`
Generates a set of CSV format files that contain data from specified archives. The column names are the first record of each file. This flag is equivalent to the VSQL -MH command.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_INVALID_PARAMETER
PVCS_E_DISK_FULL
PVCS_E_BAD_ARCHIVE
PVCS_E_ACCESS_VIOLATION
PVCS_E_ACCESS_DENIED
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- The `DDLTimeStamp`, `DDLVarchar`, and `DDLInteger` parameters will be the default if they are specified as null pointers. All other pointers must be required and will return a `PVCS_E_INVALID_PARAMETER` error if they are null.
- Each invocation of **PvcsExport** will process one archive file specification (which may contain wildcards) and create new output files. To process additional wildcard specifications, use the `PVCS_EXPORT_CONTINUE` flag.



IMPORTANT! **PvcsExport** must always be called first if the `PVCS_EXPORT_CONTINUE` flag is not set.

- The status returned is for the last archive processed. For this reason, if the caller wants to process warning-level errors (anything but `PVCS_E_DISK_FULL`), then the caller should do wildcard expansion using **PvcsFindFirstArchive/**
PvcsFindNextArchive, and then call **PvcsExport()** for each archive.
- Archive IDs are calculated from the current time. To avoid duplicate IDs, do not run multiple instances of `PVCSExport` in quick succession.

Example The following example demonstrates with pseudo-code how to create one set of output files that contains archive information for all .C and .H archives:

```
for each fileSpecification in *.c_v *.h_v
    PvcsExport(..., fileSpecification, exportFlags);
    exportFlags |= PVCS_EXPORT_CONTINUE;
endfor
char *fileName = "foo.c_v";
PVCS_FLAGSexportFlags =PVCS_EXPORT_CSV_FORMAT_HDRS |
    PVCS_EXPORT_GEN_VIEW_STMTS | PVCS_EXPORT_GEN_DROP_STMTS |
    PVCS_EXPORT_GEN_UPDATE_STMTS;
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Export archive information for use by relational database */
```

```

status = PvcsExport(
    NULL, /* I: -DT, defs to "TIMESTAMP" */
    NULL, /* I: -DV, defs to "VARCHAR(1500)" */
    NULL, /* I: -DI, defs to "INTEGER" */
    "ddl", /* I: -DL + DDLGenerate */
    "vsq1", /* I: -MH, -MV, -ML */
    "YYYY-MM-DD-HH.MM.SS",
    "\"", /* I: -O String delimiter */
    "\\'", /* I: -E ...when embedded */
    ",", /* I: -G Field separator */
    "\",", /* I: -I ...when embedded */
    "", /* I: -J Line continuation */
    "", /* I: -L ...when embedded */
    " ", /* I: -N ...when embedded */
    ";", /* I: -T SQL Termination */
    1500, /* I: -DV */
    10000, /* I: -K */
    fileName, /* I: Archive file specification */
    exportFlags); /* I: */

if (!status)
    printf("Exported information from \"%s\".\n", fileName);

```

PvcsFindFirstArchive

This function searches for files matching a file specification. It returns the name of the first matching file and a search handle that **PvcsFindNextArchive** can use to locate additional files that match the wildcard specification. This is the function used by Version Manager to find files that are specified on the command line.



IMPORTANT! This function finds files that may or may not be archives.

Syntax

```

PvcsFindFirstArchive(
    PVCSSEARCHHANDLE *srchHandle, /* Output */
    unsigned char *filePattern, /* Input */
    unsigned char *resultBuf, /* Output */
    unsigned short bufLen) /* Input */

```

Parameters

<i>srchHandle</i>	Pointer to a search handle. This handle is used on subsequent calls to PvcsFindNextArchive .
<i>filePattern</i>	Pointer to a file pattern, which may include a path and wildcards.
<i>resultBuf</i>	Pointer to a buffer to receive the matching file name. The buffer must be long enough to contain the full path name.
<i>bufLen</i>	Length of the result buffer.

Return Values The return value is zero if the function is successful. Other values may be:
 PVCS_E_ARCHIVE_NOT_FOUND

```
PVCS_E_BUFFER_OVERFLOW
PVCS_E_INVALID_PARAMETER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- The function searches the directories specified by the `VCSDir` directive. If `VCSDir` is null, it searches the current directory.

You can also specify a directory as part of the `filePattern` parameter to ignore the `VCSDir` directive. For example:

```
I:\source\vmgui\logfiles\*.c_v
```

- After processing data from **PvcsFindFirstArchive**, call **PvcsEndArchiveSearch** to free memory allocated by **PvcsFindFirstArchive**.

Example

```
PVCSSEARCHHANDLE srchHandle;
char archive[128];
int status;
int is_archive;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Find first file, set up search handle for next file */
status = PvcsFindFirstArchive(
    &srchHandle, /* Receives search hdl used on subsequent */
    /* Calls to PvcsFindNextArchive */
    "*.c_v", /* File pattern to match */
    archive, /* Buffer receiving first matching name */
    sizeof(archive)); /* Length of buffer */

if (!status)
{
    /* Iterate over all matching files */
    do
    {
        /* Only do operation if file is Pvc archive */
        status = PvcsIsArchive(archive, &is_archive);
        if (!status && is_archive)
        {
            /* Perform an operation on the archive */
            PvcsAssignVersion(ARCHIVEHANDLE_NOT_OPEN,
                archive, "Beta Release 1.0", NULL,
                PVCS_AV_REPLACE_VERS);
        }
        /* Obtain next file name */
        status = PvcsFindNextArchive(
            srchHandle, /* Search handle */
            archive, /* Buf receiving next matching name */
            sizeof(archive)); /* Length of buffer */
        if ((status) && (status != PVCS_E_NO_MORE_FILES))
        {
            printf("Error finding next archive.\n");
            break;
        }
    } while (status != PVCS_E_NO_MORE_FILES);
}
```



```
/* Find first file, set up search handle for next file */
status = PvcFindFirstArchive(
    &srchHandle, /* Receives search hdl used on subsequent */
                /* calls to PvcFindNextArchive */
    "*.c_v", /* File pattern to match */
    archive, /* Buffer receiving first matching name */
    sizeof(archive)); /* Length of buffer */

if (!status) {

    /* Iterate over all matching files */
    do {

        /* Perform an operation on the archive */
        PvcAssignVersion(ARCHIVEHANDLE_NOT_OPEN,
            archive, "Beta Release 1.0", NULL,
            PVCS_AV_REPLACE_VERS);

        /* Obtain next file name */
        status = PvcFindNextArchive(
            srchHandle, /* Search handle */
            archive, /* Buf receiving next matching name */
            sizeof(archive)); /* Length of buffer */
        if ((status) && (status != PVCS_E_NO_MORE_FILES)) {
            printf("Error finding next archive.\n");
            break;}
        } while (status != PVCS_E_NO_MORE_FILES);

        /* End the search */
        PvcEndArchiveSearch(srchHandle);
    }
else
    printf("Error finding first archive.\n");
```

Related Functions [PvcEndArchiveSearch on page 71](#)
[PvcFindFirstArchive on page 77](#)

PvcGenDeltaFile

This function compares two files or revisions and generates a delta file, which contains editing commands used by the Version Manager REGEN command to generate the target file from the reference file. This function is equivalent to the VDIFF -D command.

Syntax `PvcGenDeltaFile(`

<code>ARCHIVEHANDLE</code>	<code>hArchive,</code>	<code>/* Input */</code>
<code>unsigned char</code>	<code>*refFile,</code>	<code>/* Input */</code>
<code>unsigned char</code>	<code>*refRev,</code>	<code>/* Input */</code>
<code>unsigned char</code>	<code>*tgtFile,</code>	<code>/* Input */</code>
<code>unsigned char</code>	<code>*tgtRev,</code>	<code>/* Input */</code>
<code>unsigned short</code>	<code>deltaFormat,</code>	<code>/* Input */</code>
<code>unsigned char</code>	<code>*deltaCfg,</code>	<code>/* Input */</code>
<code>unsigned char</code>	<code>*outFile,</code>	<code>/* Input */</code>


```

unsigned short recordLength,           /* Input */
unsigned char *columnMask,           /* Input */
PVCS_FLAGS flags)                   /* Input */

```

Parameters

<i>hArchive</i>	Handle returned by PvcsOpenArchive . If the archive is not open, specify <code>ARCHIVEHANDLE_NOT_OPEN</code> .
<i>refFile</i>	Pointer to a string that contains the name of the reference file. Specify a null pointer if the reference file is an archive whose archive handle is specified in the <i>hArchive</i> parameter.
<i>refRev</i>	Pointer to a string that contains the revision number or version label of the reference file. If the version label begins with a number, precede it with a backslash (\). If the reference file is not an archive, or if it is the tip revision, specify a null pointer.
<i>tgtFile</i>	Pointer to a string that contains the name of the target file. Specify a null pointer if the target file is an archive with an archive handle specified in the <i>hArchive</i> parameter.
<i>tgtRev</i>	Pointer to a string that contains the revision number or version label of the target file. If the version label begins with a number, precede it with a backslash (\). If the target file is not an archive, or if it is the tip revision, specify a null pointer.
<i>deltaFormat</i>	Integer that specifies the type of delta file to create. Values include: <ul style="list-style-type: none"> ■ <code>PVCS_DELTA_BINARY</code> Generates a binary delta file in Version Manager format. This flag is equivalent to the <code>VDIFF -DS</code> command. ■ <code>PVCS_DELTA_LIBRARIAN</code> Generates a CA-LIBRARIAN delta file. This flag is equivalent to the <code>VDIFF -DL</code> command. ■ <code>PVCS_DELTA_PANVALET</code> Generates a CA-PANVALET delta file. This flag is equivalent to the <code>VDIFF -DP</code> command. ■ <code>PVCS_DELTA_PREDEFINED</code> Uses the file specified by the <i>deltaCfg</i> parameter. ■ <code>PVCS_DELTA_UNKNOWN</code> Uses the file specified by the <i>deltaCfg</i> parameter. If the <i>deltaCfg</i> parameter is null, this flag defaults to the <code>PVCS_DELTA_BINARY</code> <i>deltaformat</i>.
<i>deltaCfg</i>	Pointer to a string that contains the name of a file that contains delta configuration directives. The <code>PVCS_DELTA_PREDEFINED</code> <i>deltaformat</i> must be specified to generate the delta file in this format. If this parameter is null, the function generates a delta file in the format specified by the <i>deltaFormat</i> parameter. This parameter is equivalent to the <code>VDIFF -D</code> command.
<i>outFile</i>	Pointer to a string that contains the name of a file to which this function writes the delta file. The specified file will be overwritten if it exists. If this pointer is null, the report is sent to standard output. This parameter is equivalent to the <code>VDIFF -XO</code> command.

<i>recordLength</i>	Integer specifying the record length of the files to be compared. Specify 0 to indicate that the files use newline characters to indicate the ends of lines. This parameter is equivalent to the VDIFF -XRecordLength command.
<i>columnMask</i>	String specifying the columns to ignore when comparing files. This parameter is equivalent to the VDIFF -XColumnMask command.
<i>flags</i>	Bit field that controls how this function operates. Values include: <ul style="list-style-type: none">■ PVCS_DIFF_APPEND Appends the report to an existing file.■ PVCS_DIFF_IGN_WHITE Ignores leading and trailing white space during comparison. This flag is equivalent to the VDIFF -B command.■ PVCS_DIFF_NOMOVE Records moved text as deletions and insertions.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ACCESS_DENIED
PVCS_E_ACCESS_VIOLATION
PVCS_E_ARCHIVE_NOT_FOUND
PVCS_E_BAD_FILENAME
PVCS_E_FILE_BUSY
PVCS_E_INVALID_PARAMETER
PVCS_E_NO_REVISION
PVCS_E_USER_ABORTED
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
char *outFile = "foo.dlt";
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Generate delta for differences between two revisions */
/* in an archive */
status = PvcsGenDeltaFile(ARCHIVEHANDLE_NOT_OPEN,
    "foo.c_v", /* Use archive as reference file */
    NULL, /* Use tip as reference rev */
    "foo.c_v", /* Use archive as target file */
    "Beta Release 1.0", /* Use ver label as target rev */
    PVCS_DELTA_BINARY, /* Generate Version Manager delta */
    NULL, /* Use format specified above */
    outFile, /* Delta output file */
    0, /* Newlines are end of line */
    NULL, /* No columnmask */
    PVCS_DIFF_IGN_WHITE); /* Ignore whitespace

if (!status)
    printf("Created delta in \"%s\".\n", outFile);
```

Related Functions [PvcsReportDifferences on page 162](#)
[PvcsTestDifferences on page 169](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Delta file format	<i>Delta Files</i>
Generating delta files	<i>VDIFF command</i>
Directives that affect delta generation	<i>Delta Delete directive</i> <i>Delta Insert directive</i> <i>Delta Replace directive</i> <i>Delta Seq directive</i>
Recreating a file from its delta file	<i>REGEN command</i>

PvcsGetArchiveInfo

This function returns archive header information. It is equivalent to the VLOG -B command.

```
Syntax PvcsGetArchiveInfo (
    ARCHIVEHANDLE hArchive,                /* Input */
    unsigned char *fileName,              /* Input */
    ARCHIVEINFO *archInfo,                /* Output */
    unsigned short archInfoLen)           /* Input */
```

Parameters

<i>hArchive</i>	Handle returned by PvcsOpenArchive . If the archive is not open, specify <code>ARCHIVEHANDLE_NOT_OPEN</code> .
<i>fileName</i>	Pointer to the name of an archive or a workfile. This parameter is required only if the archive is not open.
<i>archInfo</i>	Pointer to the structure receiving archive information. The last element of this structure contains buffer information, which is a character array of variable length.
<i>archInfoLen</i>	Length of the information buffer.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ACCESS_VIOLATION
PVCS_E_ARCHIVE_NOT_FOUND
PVCS_E_BUFFER_OVERFLOW
PVCS_E_FILE_BUSY
PVCS_E_INVALID_PARAMETER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- If *fileName* refers to a workfile, the program infers the archive name. If *fileName* contains wildcards, the program expands it according to the usual Version Manager rules.
- To get archive information in a format suitable for user reports, use **PvcsLog** instead.
- You must allocate the ARCHIVEINFO structure. It should be long enough to contain the string fields copied into the information buffer. The location of each string is given

by an offset into information. There are seven strings, each with a maximum length of 256 bytes, so you should pad the structure with 1792 bytes when you allocate it.

See the definition of the ARCHIVEINFO structure in [Chapter 5, "Data Structures"](#) for a description of the fields returned by this function.

- If you don't need any of the information string fields, you don't need to provide extra space for the information buffer. You will get a buffer overflow error, which you can ignore.
- If PVCS_E_BUFFER_OVERFLOW is returned, a string offset value of -1 indicates that the corresponding information string would not fit in the buffer.

```

Example #define ARCHIVEINFO_PAD = 1792
ARCHIVEINFO *archinfo;
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Allocate buffer to hold archive information */
archinfo = (ARCHIVEINFO *)malloc(sizeof(ARCHIVEINFO) +
    ARCHIVEINFO_PAD);

/* Obtain archive information */
status = PvcsGetArchiveInfo(ARCHIVEHANDLE_NOT_OPEN,
    "foo.c_v",
    archinfo,
    sizeof(ARCHIVEINFO) + ARCHIVEINFO_PAD);

/* Display archive information */
if (!status) {
    printf("Number of revs:      %d\n", archinfo->revcnt);
    printf("Number of locks:     %d\n", archinfo->lockers);
    printf("CheckLock:              %s\n",
        (archinfo->attributes & PVCS_ATTR_CHK_LOCK) ?
        "on" : "off");
    printf("WriteProtect:          %s\n",
        (archinfo->attributes & PVCS_ATTR_WRT_PROT) ? "on" : "off");
    printf("ExclusiveLock:         %s\n",
        (archinfo->attributes & PVCS_ATTR_EXCL_LOCK) ? "on" :
        "off");
    printf("ExpandKeywords:       %s\n",
        (archinfo->attributes & PVCS_ATTR_EXP_KEYS) ? "on" : "off");
    printf("Translate:            %s\n",
        (archinfo->attributes & PVCS_ATTR_TRANSLATE) ? "on" :
        "off");
    printf("CompressDelta:        %s\n",
        (archinfo->attributes & PVCS_ATTR_CMPRS_DELTA) ? "on" :
        "off");
    printf("CompressWorkImage:    %s\n",
        (archinfo->attributes & PVCS_ATTR_CMPRS_TEXT) ? "on" :
        "off");
    printf("RecordLength:         %d\n", archinfo->reclen);
    printf("Created:              %d/%d/%d %d:%d:%d\n",
        archinfo->create_time.month,
        archinfo->create_time.day, archinfo->create_time.year,

```

```

        archinfo->create_time.hours, archinfo->create_time.minutes,
        archinfo->create_time.twosecs * 2);
printf("Renum start col: %d\n", archinfo->renum_start_col);
printf("Renum end col:   %d\n", archinfo->renum_end_col);
printf("Renum start val: %ld\n", archinfo->renum_start_val);
printf("Renum step val:  %ld\n", archinfo->renum_step_val);
printf("Archive:        %s\n", archinfo->info + archinfo->archive);
printf("Workfile:       %s\n", archinfo->info + archinfo->workfile);
printf("Owner:          %s\n", archinfo->info + archinfo->owner);
printf("AccessList:     %s\n", archinfo->info + archinfo->access);
printf("CommentPrefix: %s\n", archinfo->info + archinfo->cmt_str);
printf("NewLine:        %s\n", archinfo->info + archinfo->newline);
printf("ColumnMask:    %s\n", archinfo->info + archinfo->diffmask);

```

Related Functions

- [PvcsChangeArchiveInfo on page 56](#)
- [PvcsGetLockInfo on page 93](#)
- [PvcsGetRevisionInfo on page 101](#)
- [PvcsLog on page 116](#)
- [PvcsOpenArchive on page 126](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Viewing archive information	<i>VLOG command</i>
Specifying archive and workfile names	<i>File Specification</i>

PvcsGetArchiveInfoVB1

This function, specifically for Visual Basic users, returns the most commonly used values from the archive header information.

```

Syntax PvcsGetArchiveInfoVB1 (
    ARCHIVEHANDLE hArchive,                /* Input */
    unsigned char *fileName,              /* Input */
    unsigned short *revcnt,                /* Output */
    unsigned short *lockers,               /* Output */
    unsigned char *archive,                /* Output */
    unsigned char *workfile,               /* Output */
    unsigned char *owner,                  /* Output */
    unsigned char *access,                 /* Output */
    unsigned char *create_time,            /* Output */
    unsigned short *attribute_chk_lock,    /* Output */
    unsigned short *attribute_wrt_prot,    /* Output */
    unsigned short *attribute_excl_lock,   /* Output */
    unsigned short *attribute_exp_keys,    /* Output */
    unsigned short *attribute_translate,   /* Output */
    unsigned short *attribute_cmpers_delta, /* Output */
    unsigned short *attribute_cmpers_text, /* Output */
    PVCS_FLAGS flags)                     /* Input */

```

Parameters

<i>hArchive</i>	Handle returned by PvcsOpenArchive . If the archive is not open, specify <code>ARCHIVEHANDLE_NOT_OPEN</code> .
<i>fileName</i>	Pointer to the name of the archive or workfile. This parameter is required only if the archive is not open.
<i>revcnt</i>	Pointer to a string that receives the number of revisions in the archive.
<i>lockers</i>	Pointer to an unsigned short that receives the number of locks on the archive.
<i>archive</i>	Pointer to a string that receives the name of the archive.
<i>workfile</i>	Pointer to a string that receives the name of the workfile.
<i>owner</i>	Pointer to a string that receives the owner of the archive.
<i>access</i>	Pointer to a string that receives information about which users have access to the archive.
<i>create_time</i>	Pointer to a string that receives the time the archive was created.
<i>attribute_chk_lock</i> <i>attribute_wrt_prot</i> <i>attribute_excl_lock</i> <i>attribute_exp_keys</i> <i>attribute_translate</i> <i>attribute_cmprs_delta</i> <i>attribute_cmprs_text</i>	These parameters return a value of TRUE if the corresponding bit in the ARCHIVEINFO attributes variable is set.
<i>flags</i>	Bit field that controls the operation of this function. Values include: <code>PVCS_ARCHINFO_DATETIME_FORMAT (0X0001)</code> This flag causes the <i>create_time</i> string to be formatted with the currently configured date/time format. If this flag is not set, then the <i>create_time</i> string will be returned with the default format <code>mm/dd/yyyy hh:mm:ss</code> .

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ACCESS_VIOLATION
    PVCS_E_ARCHIVE_NOT_FOUND
PVCS_E_BUFFER_OVERFLOW
PVCS_E_FILE_BUSY
PVCS_E_INVALID_PARAMETER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Consideration Any of the non-input parameters may be passed a NULL value if no return value for that parameter is desired.

Example `/* PvcsGetArchiveInfoVB1 example */`

```
int status = 0;
unsigned short revcnt;
unsigned short lockers;
unsigned char archive[256];
```

```

unsigned char workfile[256];
unsigned char owner[64];
unsigned char access[256];
unsigned char create_time[32];
unsigned short attribute_chk_lock;
unsigned short attribute_wrt_prot;
unsigned short attribute_excl_lock;
unsigned short attribute_exp_keys;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/*
 * PvcsGetArchiveInfoVB1: Get archive info into separate
 * variables instead of an ARCHIVEINFO structure. If you don't
 * want the information for a specific field, then pass NULL
 * (i.e. see the last three attribute parameters).
 */
status = PvcsGetArchiveInfoVB1(
    ARCHIVEHANDLE_NOT_OPEN, /* I: Archive handle */
    "foo.c_v",              /* I: Name of archive or workfile */
    &revcnt,                 /* O: Number of revisions */
    &lockers,                /* O: Number of locks */
    archive,                /* O: Name of archive */
    workfile,               /* O: Name of workfile */
    owner,                  /* O: Name of archive owner */
    access,                 /* O: Archive access list */
    create_time,            /* O: Text version of workfile
                             creation time */
    &attribute_chk_lock,    /* O: Attrib item check lock on
                             check in bit */
    &attribute_wrt_prot,    /* O: Attribute item archive write
                             protection bit */
    &attribute_excl_lock,  /* O: Attribute item single lock
                             bit */
    &attribute_exp_keys,   /* O: Attrib item expand keywords
                             bit */
    NULL,                   /* O: Attrib item do eol trans bit */
    NULL,                   /* O: Attrib item compress deltas bit */
    NULL,                   /* O: Attrib item compress full text
                             revisions bit */
    flags /* I: Bit field */
);
if (!status)
{
    printf("Archive name: %s\n", archive);
    printf("Number of revisions: %d\n", revcnt);
    printf("Number of locks: %d\n", lockers);
    printf("Workfile name: %s\n", workfile);
    printf("Owner: %s\n", owner);
    printf("Access list: %s\n", access);
    printf("Creation time: %s\n", create_time);
    printf("Check Lock attribute is:
           %s\n", attribute_chk_lock ? "on" : "off");
    printf("Write Protect attribute is:
           %s\n", attribute_wrt_prot ? "on" : "off");
}

```

```
    printf("    Exclusive Lock attribute is:
           %s\n",attribute_excl_lock ? "on" : "off");
    printf("    Expand Keywords attribute is:
           %s\n",attribute_exp_keys ? "on" : "off");
}
```

Related Functions [PvcsGetArchiveInfo on page 83](#)
[PvcsGetArchiveInfoVB2 on page 88](#)
[PvcsGetLockInfoVB on page 94](#)
[PvcsGetRevisionInfoVB on page 105](#)

PvcsGetArchiveInfoVB2

This function, specifically for Visual Basic users, returns the less commonly used values from the archive header information.

Syntax `PvcsGetArchiveInfoVB2 (`
 `ARCHIVEHANDLE hArchive, /* Input */`
 `unsigned char* fileName, /* Input */`
 `unsigned short* reclen, /* Output */`
 `unsigned short* renum_start_col, /* Output */`
 `unsigned short* renum_end_col, /* Output */`
 `unsigned long* renum_start_val, /* Output */`
 `unsigned long* renum_step_val, /* Output */`
 `unsigned char* cmt_str, /* Output */`
 `unsigned char* newline, /* Output */`
 `unsigned char* diffmask) /* Output */`

Parameters

<i>hArchive</i>	Handle returned by PvcsOpenArchive . If the archive is not open, specify <code>ARCHIVEHANDLE_NOT_OPEN</code> .
<i>fileName</i>	String that contains the name of an archive or a workfile. This parameter is required only if the archive is not open
<i>reclen</i>	Integer that receives the workfile fixed record length.
<i>renum_start_col</i>	Integer that receives the renumber start column value.
<i>renum_end_col</i>	Integer that receives the renumber end column value.
<i>renum_start_val</i>	Integer that receives the renumber start value.
<i>renum_step_val</i>	Integer that receives the renumber step value.
<i>cmt_str</i>	String that receives the comment prefix string.
<i>newline</i>	String that receives the newline string.
<i>diffmask</i>	String that receives the column mask range.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ACCESS_VIOLATION
PVCS_E_ARCHIVE_NOT_FOUND
PVCS_E_BUFFER_OVERFLOW
PVCS_E_FILE_BUSY
PVCS_E_INVALID_PARAMETER
```


See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Consideration Any of the non-input parameters may be passed a NULL value if no return value for that parameter is desired.

```

Example /* PvcsGetArchiveInfoVB2 example */

int          status = 0;
unsigned shortreclen;
unsigned shortrenum_start_col;
unsigned shortrenum_end_col;
unsigned longrenum_start_val;
unsigned longrenum_step_val;
unsigned charcmt_str[32];

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/*
 * PvcsGetArchiveInfoVB2: Get archive info into separate
 * variables
 * instead of an ARCHIVEINFO structure. If you don't want the
 * information for a specific field, then pass NULL
 * (i.e. see the last two parameters).
 */
status = PvcsGetArchiveInfoVB2(
    ARCHIVEHANDLE_NOT_OPEN, /* I: Archive handle */
    "foo.c_v",              /* I: Name of archive or workfile */
    &reclen,                /* O: Workfile fixed record
                          length */
    &renum_start_col       /* O: Renumber start column */
    &renum_end_col,        /* O: Renumber end column */
    &renum_start_val,      /* O: Renumber starting value */
    &renum_step_val,      /* O: Renumber increment */
    cmt_str,               /* O: Comment prefix string */
    NULL,                  /* O: Newline string */
    NULL                   /* O: Column mask range */
);

if (!status)
{
    printf("Archive name: %s\n", "foo.c_v");
    printf("Workfile record length: %d\n", reclen);
    printf("Renumber start column: %d\n", renum_start_col);
    printf("  Renumber end column: %d\n", renum_end_col);
    printf("  Renumber starting value:
          %ld\n", renum_start_val);
    printf("Renumber increment value:
          %ld\n", renum_step_val);
    printf("Comment prefix string: %s\n", cmt_str);
}

```

Related Functions

- [PvcsGetArchiveInfo on page 83](#)
- [PvcsGetArchiveInfoVB1 on page 85](#)
- [PvcsGetLockInfoVB on page 94](#)
- [PvcsGetRevisionInfoVB on page 105](#)

PvcsGetErrorMessage

This function retrieves the text message that corresponds to a return code and copies it into a buffer that the caller provides.

Syntax

```
PvcsGetErrorMessage(  
    unsigned int errorCode,                /* Input */  
    unsigned char *msgBuffer,             /* Output */  
    unsigned int bufLen)                  /* Input */
```

Parameters

errorCode An error code returned by a Developer's Toolkit function.

msgBuffer Pointer to the buffer that receives the message string corresponding to the error code. The messages returned are the return values listed in [Chapter 4, "Return Values"](#)

bufLen Length of the buffer that receives the message string.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_BUFFER_OVERFLOW  
PVCS_E_INVALID_PARAMETER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations This function returns the name of the error, not a description. For example, it returns the name `PVCS_E_INTERNAL` instead of the description, "An internal toolkit error has occurred."

Example

```
char msgBuffer[128];  
int status;  
  
/* Initialize configuration settings */  
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);  
  
/* Force an error */  
status = PvcsCreateArchive(  
    NULL,  
    "^+=", /* Invalid file name */  
    NULL,  
    NULL,  
    NULL,  
    PVCS_CREATE_NO_OVERWRITE);  
  
if (status) {  
  
    /* Retrieve error message */  
    status = PvcsGetErrorMessage(  
        status, /* Error code */  
        msgBuffer, /* Buf to receive msg */  
        sizeof(msgBuffer)); /* Length of buffer */  
  
    /* Display error message */  
    if (!status)  
        printf("PvcsComputeArchiveName error: %s\n", msgBuffer);  
}
```

Related Function [PvcsQueryConfigurationError](#) on page 140

PvcsGetExtRevAttribute

This function retrieves an extended attribute that was previously attached to a revision using **PvcsPutExtRevAttribute**. Extended revision attributes are used to attach free-form binary or text data to a revision. The attribute contains a user-defined keyword, which you use to access the attribute data.

```
Syntax PvcsGetExtRevAttribute (
    ARCHIVEHANDLE hArchive,                /* Input */
    unsigned char *fileName,              /* Input */
    unsigned char *revarg,                /* Input */
    unsigned char *keyword,               /* Input */
    unsigned char *extAttribute,          /* Output */
    unsigned short bufLen)                /* Input */
```

Parameters

<i>hArchive</i>	Handle returned by PvcsOpenArchive . If the archive is not open, specify <code>ARCHIVEHANDLE_NOT_OPEN</code> .
<i>fileName</i>	Pointer to the name of the archive or workfile. This parameter is required only if the archive is not open.
<i>revarg</i>	Pointer to a string that contains a revision number or version label. The function retrieves the extended attribute associated with this revision. If the version label begins with a number, precede it with a backslash (\). A null parameter defaults to the tip revision on the trunk.
<i>keyword</i>	Pointer to a buffer that contains the user-defined value used to retrieve this extended attribute.
<i>extAttribute</i>	Pointer to a buffer to receive the extended revision attribute record. See below for the buffer format.
<i>bufLen</i>	Length of the extended attribute buffer.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ACCESS_VIOLATION
PVCS_E_ARCHIVE_NOT_FOUND
PVCS_E_BUFFER_OVERFLOW
PVCS_E_FILE_BUSY
PVCS_E_INVALID_PARAMETER
PVCS_E_NO_ATTRIBUTE
PVCS_E_USER_ABORTED
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- You can only retrieve one attribute per function call.
- If *fileName* refers to a workfile, the program infers the archive name. If *fileName* contains wildcards, the program expands it according to the usual Version Manager rules.

- The format of the *extAttribute* buffer is as follows:

<i>Length</i>
<i>Keyword</i>
<i>Null</i>
<i>User_data</i>

<i>Length</i>	Two-byte unsigned value that is the length of the keyword and null terminator, plus the length of the user data. The length does not include the length field itself.
<i>Keyword</i>	Null-terminated string that contains a user-defined keyword.
<i>User_data</i>	Free-format data, which may be text or binary.

- The maximum length of the extended attribute record (including the length field) is 64K.
- If `PVCS_E_BUFFER_OVERFLOW` is returned, the first two bytes of the attribute buffer contain the actual length that was required.

Example

```

char *keyword = "BetaTextKey";
char *userdata = "This Beta release was sent out to 500 customers \
as a precursor to the General Availability release.";
int extAttCount = 1;
char *archive = "foo.c_v";
char *revision = "Beta Release 1.0";
char getExtAttBuf[256];
char *bufPtr;
char *ptr;
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Add an extended attribute */
extAttBuf.length = strlen(keyword) + strlen(userdata) + 2;
strcpy(extAttBuf.data, keyword);
ptr = strchr(extAttBuf.data, '\\0');
strcpy(ptr + 1, userdata);
bufPtr = (char *)&extAttBuf;
status = PvcsPutExtRevAttribute(ARCHIVEHANDLE_NOT_OPEN, archive,
    revision, bufPtr, extAttCount);
/* Now retrieve the extended attribute that was stored */
if (!status) {
    /* Retrieve extended attribute */
    status = PvcsGetExtRevAttribute(ARCHIVEHANDLE_NOT_OPEN,
        archive,
        revision,
        keyword,
        getExtAttBuf,
        sizeof(getExtAttBuf));
    /* Display extended attribute */
    if (!status){

```

```

        printf("User data associated with keyword
        \"%s\" is:\n\"%s\"\n",
        keyword, getExtAttBuf);
    }
}

```

Related Functions [PvcsOpenArchive on page 126](#)
[PvcsPutExtRevAttribute on page 130](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Wildcard expansion	<i>Wildcards</i>
Specifying archive and workfile names	<i>File Specification</i>

PvcsGetLockInfo

This function returns information about locked revisions. It is equivalent to the VLOG -BL command.

```

Syntax PvcsGetLockInfo(
    ARCHIVEHANDLE hArchive,                /* Input */
    unsigned char *fileName,              /* Input */
    unsigned char *revision,              /* Input */
    unsigned char *lockers,               /* Input */
    unsigned short *pLockCount,           /* Input / Output */
    LOCK *pLockInfo,                      /* Output */
    unsigned short buflen)                /* Input */

```

Parameters

<i>hArchive</i>	Handle returned by PvcsOpenArchive . If the archive is not open, specify <code>ARCHIVEHANDLE_NOT_OPEN</code> .
<i>fileName</i>	Pointer to the name of an archive or a workfile. This parameter is required only if the archive is not open.
<i>revision</i>	Pointer to a string that contains a revision number. If the parameter is null, the function returns information about all locks in the archive. This parameter is equivalent to the -R option used with the VLOG -BL command.
<i>lockers</i>	Pointer to a string that contains a comma-separated list of user IDs used to limit the search for locks. If the parameter is null, this function returns information about locks owned by any user. This parameter is equivalent to the <i>user_id</i> parameter to the VLOG -BL command.
<i>pLockCount</i>	Pointer to a variable that specifies the number of LOCK structures to retrieve. The actual number retrieved is returned. Specify -1 to retrieve all LOCK structures.
<i>pLockInfo</i>	Pointer to a buffer to receive lock information.
<i>buflen</i>	The length of the <i>pLockInfo</i> buffer.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ACCESS_VIOLATION
PVCS_E_ARCHIVE_EMPTY
PVCS_E_BAD_ARCHIVE_HANDLE
PVCS_E_BUFFER_OVERFLOW
PVCS_E_INVALID_PARAMETER
PVCS_E_NOT_LOCKED
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

- Special Considerations**
- If *fileName* refers to a workfile, the program infers the archive name. If *fileName* contains wildcards, the program expands it according to the usual Version Manager rules.
 - This function organizes the buffer as an array of LOCK structures, followed by a variable-length data area which contains revision numbers and user IDs. The *pLockInfo* buffer must be large enough to contain the LOCK structures and variable data area. For details on the LOCK structure, see [Chapter 5, "Data Structures"](#)
 - Use the NoCase directive to conduct a case-insensitive search for user IDs that match the *lockers* list.

Example

```
LOCK lockInfoBuf[256];
    LOCK *pLock;
short lockCount = -1;

PvcsGetLockInfo(
    ARCHIVEHANDLE_NOT_OPEN, /* Archive handle */
    archive, /* Archive name */
    NULL, /* Revision (any revision) */
    NULL, /* VCSID (any) */
    &lockCount, /* Count (unlimited) */
    lockInfoBuf, /* Buffer */
    sizeof(lockInfoBuf)); /* Buffer length */
for (pLock = lockInfoBuf; lockCount-- != 0; pLock++) {
    printf("Revision: %s\n", pLock->revision);
    printf("New rev: %s\n", pLock->newRevision);
    printf("Locked by: %s\n", pLock->locker);
}
```

Related Functions [PvcsLockRevisionGroup on page 114](#)
[PvcsOpenArchive on page 126](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Viewing lock information	<i>VLOG command</i>
Revision locking	<i>Revision Locking</i>
Controlling case-sensitivity of user IDs	<i>Case directive</i>

PvcsGetLockInfoVB

This function, specific for Visual Basic users, returns information about locked revisions.

```
Syntax PvcsGetLockInfoVB(
    ARCHIVEHANDLE hArchive, /* Input */
    unsigned char* fileName, /* Input */
    unsigned char* revision, /* Input */
    unsigned char* lockers, /* Input */
    unsigned char* oldRevision, /* Output */
    unsigned char* newRevision, /* Output */
    unsigned char* lockers, /* Output */
    unsigned short lock_info_index, /* Input */
    PVCS_FLAGS flags) /* Input */
```

Parameters

<i>hArchive</i>	Handle return by PvcsOpenArchive . If the archive is not open, specify <code>ARCHIVEHANDLE_NO_OPEN</code>
<i>fileName</i>	Pointer to the name of an archive or a workfile. This parameter is required only if the archive is not open.
<i>revision</i>	Pointer to a string that contains the revision if the parameter is NULL (see <i>oldRevision</i>).
<i>lockers</i>	Pointer to a string that contains a comma-separated list of user IDs used to limit the search for locks. If the parameter is null, this function returns information about locks owned by any user. This parameter is equivalent to the <i>user_id</i> parameter to the VLOG -BL command.
<i>oldRevision</i>	Pointer to a string that that receives the name of the locked revision.
<i>newRevision</i>	Pointer to the string that receives the new revision number to be created when the workfile is checked in.
<i>lockers</i>	Pointer to the string to receive the user ID of the locker.
<i>lock_info_index</i>	Specifies the requested number of lock information structures on which to return information.
<i>flags</i>	This parameter is reserved for future use.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ACCESS_VIOLATION
PVCS_E_ARCHIVE_EMPTY
PVCS_E_BAD_ARCHIVE_HANDLE
PVCS_E_BUFFER_OVERFLOW
PVCS_E_INVALID_PARAMETER
PVCS_E_NO_REVISION
PVCS_E_NOT_LOCKED
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- Any of the non-input parameters may be passed a null value if no return value for that parameter is desired.
- You can determine how many locks are in an archive by calling **PvcsGetArchiveInfoVB1** and looking at the *lockers* parameters.

Example

```
/* PvcsGetLockInfoVB example */

int          status = 0;
unsigned short index = 0;
```

```
unsigned charlockRevision[64];
unsigned charnewRevision[64];
unsigned charlocker[64];

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWIRTE);

/*
 * PvcsGetLockInfoVB: Gets the lock information for the given
 * archive into separate variables. This example gets the
 * first lock for the archive not limited by revision or
 */locker.

status = PvcsGetLockInfoVB(
    ARCHIVEHANDLE_NOT_OPEN, /* I: Archive Handle */
    "foo.c_v",              /* I: Name of archive or workfile */
    NULL,                   /* I: Revision */
    NULL,                   /* I: VCSID of locker */
    lockRevision,           /* O: The locked revision */
    newRevision,           /* O: Revision to create at check
                           in */
    locker,                 /* O: User ID of the locker */
    index,                  /* I: Index of lock to return
                           values from */
    PVCS_REVINFO_USE_DATETIME_FORMAT /* I: Bit field */
);

if (!status)
{
    printf("Revision: %s\n", lockRevision);
    printf("New revision on Check In: %s\n", newRevision);
    printf("Locker ID: %s\n", locker);
}
```

Related Functions

- [PvcsGetArchiveInfoVB1 on page 85](#)
- [PvcsGetArchiveInfoVB2 on page 88](#)
- [PvcsGetLockInfo on page 93](#)
- [PvcsGetRevisionInfoVB on page 105](#)

PvcsGetPromoParent

This function returns the name of the parent of a promotion group.

Syntax

```
PvcsGetPromoParent (
    unsigned char *buffer,           /* Output */
    unsigned short length,          /* Input */
    unsigned char *node_name)       /* Input */
```

Parameters

buffer Pointer to a buffer that receives the name of the parent of *node_name*.

length Length of the buffer.
node_name Name of the promotion group for which to find the parent.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_BUFFER_OVERFLOW
PVCS_E_INVALID_PARAMETER
PVCS_E_INVALID_PROMO
PVCS_E_PROMO_NO_NODE
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
char *child = "SOFTDEV";
char parent[64];
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Obtain parent of specified group name */
status = PvcsGetPromoParent(
    parent, /* Buf to receive parent group name */
    sizeof(parent), /* Length of buffer */
    child); /* Child group name */

/* Display parent group */
if (!status)
    printf("Parent of promotion group \"%s\" is \"%s\".\n", child,
        parent);
```

Related Functions

[PvcsGroupToRevision on page 109](#)
[PvcsPromoteRevision on page 128](#)
[PvcsVerifyPromoTree on page 175](#)
[PvcsVerifyPromoTreeNodeExist on page 176](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...

Promotion models
 Defining a promotion group
 Promoting revisions

See...

Promotion
Promote directive
VPROMOTE command

PvcsGetRevision

This function checks out revisions from archives. It is equivalent to the GET command.

Syntax

```
PvcsGetRevision(
    ARCHIVEHANDLE hArchive, /* Input */
    unsigned char *fileName, /* Input */
    unsigned char *workfileName, /* Input */
    unsigned char *revarg, /* Input */
    unsigned char *date, /* Input */
    ...)
```

```
unsigned char *update,           /* Input */
unsigned char *locker,          /* Input */
unsigned char *grp_name,       /* Input */
void *reserved,                /* Input */
PVCS_FLAGS getFlags)          /* Input */
```

Parameters

<i>hArchive</i>	Handle returned by PvcsOpenArchive . If the archive is not open, specify <code>ARCHIVEHANDLE_NOT_OPEN</code> .
<i>fileName</i>	Pointer to the name of an archive or a workfile. This parameter is required only if the archive is not open. The file name can contain wildcards.
<i>workfileName</i>	Pointer to the name of a workfile. If this parameter is null, the function obtains the workfile name from the archive. If you specify a workfile name, then <i>fileName</i> must contain an archive name.
<i>revarg</i>	Pointer to a string that contains a revision number, version label, or promotion group. If the version label begins with a number, precede it with a backslash (\). This parameter is equivalent to the GET -R command.
<i>date</i>	Pointer to a string that contains a date/time. The function checks out the latest revision with a check-in date on or before that date. This parameter is equivalent to the GET -D command.
<i>update</i>	Pointer to a string that contains a date specification. The function only checks out the revision if its check-in date is later than the specified date. If you specify a date, you must set the <code>PVCS_GET_NEWER</code> flag for the <i>getFlags</i> parameter.
<i>locker</i>	Pointer to a string that contains the user ID of the person who is locking the revision. If the parameter is null, the current user ID is used.
<i>grp_name</i>	Pointer to a string that contains the name of the promotion group to which the revision is drawn down. This parameter is used only if you have defined a promotion model. The group must be at the lowest level of the promotion model. This parameter is equivalent to the GET -G command.
<i>reserved</i>	Used internally. Pass a null pointer for this parameter.
<i>getFlags</i>	Bit field that controls the operation of this function. Values include: <ul style="list-style-type: none">■ <code>PVCS_GET_LOCK</code> Locks the revision. This flag is equivalent to the GET -L command.■ <code>PVCS_GET_MULTILOCK</code> Adds an additional lock if the MultiLock directive is in effect.

- `PVCS_GET_BRANCH_PERMITTED`
Grants permission to lock a revision that would cause a branch to be created upon check in. This flag does not do anything unless the BranchWarn directive is in effect. If the BranchWarn directive is in effect, you must give permission to lock a revision that would cause Version Manager to create a branch.
- `PVCS_GET_NEWER`
Checks out the revision only if it is newer than the existing workfile. If you specify a date for the *update* parameter, using this flag checks out the revision only if it is newer than the date. This flag is equivalent to the GET -U command.
- `PVCS_GET_NOBRANCH`
Denies permission to lock a revision that would cause a branch to be created upon check in. This flag does not do anything unless the BranchWarn directive is in effect. The function returns `PVCS_E_BRANCHWARN` if the revision that you are locking would cause a branch to be created.
- `PVCS_GET_NOMULTILOCK`
Does not add an additional lock even if the MultiLock directive is in effect.
- `PVCS_GET_NO_OVERWRITE`
Does not overwrite an existing workfile. This flag is equivalent to the GET -N command.
- `PVCS_GET_OVERWRITE`
Overwrites an existing workfile. This flag is equivalent to the GET -Y command.
- `PVCS_GET_PIPE`
Writes the revision to standard output. This flag is equivalent to the GET -P command.
- `PVCS_GET_TOUCH`
Sets the workfile timestamp to the current time. This flag is equivalent to the GET -T command.
- `PVCS_GET_UPDATE`
Checks out the archive only if its check-in date is later than the date specified using the *update* parameter. This flag is equivalent to the GET -U command.
- `PVCS_GET_WRITABLE`
Checks out a writable copy of the workfile. This flag is equivalent to the GET -W command.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ACCESS_DENIED
PVCS_E_ACCESS_VIOLATION
PVCS_E_ALREADY_EXISTS
PVCS_E_ARCHIVE_NOT_FOUND
PVCS_E_BAD_FILENAME
PVCS_E_FILE_BUSY
PVCS_E_LOCKED_REVISION
PVCS_E_INVALID_PARAMETER
```

```
PVCS_E_NO_REVISION
PVCS_E_USER_ABORTED
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- If *fileName* refers to a workfile, the program infers the archive name. If *fileName* contains wildcards, the program expands it according to the usual Version Manager rules.
- Use the *workfileName* parameter when you are generating a workfile that has a different name than the name stored in the archive. This is equivalent to the following command-line example:

```
GET foo.c_v(d:\temp\test.c)
```

In this example, *fileName* is FOO.C_V and *workfileName* is D:\TEMP\TEST.C.

The *workfileName* parameter can consist of a drive or path. This is equivalent to the following command-line example, where *fileName* is **.??V*, and *workfileName* is C:\SOURCE:

```
Example #return REVINFO_PAD = 256
REVINFO *revinfo;
unsigned short revcount = -1;
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Check out revisions by version label, overwriting workfiles */
PvcsGetRevision(ARCHIVEHANDLE_NOT_OPEN,
  "*.c", /* Archive names */
  NULL, /* Use default workfile names */
  "Beta Release 1.0", /* Version label to be checked
  out */
  NULL, /* No date restriction */
  NULL,
  NULL, /* Use user's VCSID as locker */
  NULL, /* Assume no promotion hierarchy */
  NULL, /* Reserved */
  PVCS_GET_OVERWRITE); /* Force overwrite of existing
  workfiles */
```

Related Functions [PvcsGetRevisionInfo on page 101](#)
[PvcsLog on page 116](#)
[PvcsOpenArchive on page 126](#)
[PvcsPutRevision on page 132](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Checking out revisions	<i>GET command</i>
Wildcard expansion	<i>Wildcards</i>
Specifying archive and workfile names	<i>File Specification</i>
Specifying dates	<i>Date and Time Specification</i>
Drawing revisions down to a development group	<i>Promotion</i>

PvcsGetRevisionInfo

This function returns information about revisions in specified archives. It is equivalent to the VLOG -BR command.

```
Syntax PvcsGetRevisionInfo(
    ARCHIVEHANDLE hArchive,           /* Input */
    unsigned char *fileName,         /* Input */
    unsigned char *revision,         /* Input */
    unsigned short *pRevCount,       /* Input/Output */
    REVINFO *pRevInfo,               /* Output */
    PVCS_FLAGS flags)                /* Input */
```

Parameters

<i>hArchive</i>	Handle returned by PvcsOpenArchive . If the archive is not open, specify ARCHIVEHANDLE_NOT_OPEN.
<i>fileName</i>	Pointer to the name of an archive or a workfile. This parameter is required only if the archive is not open.
<i>revision</i>	Pointer to a string that contains a revision number. If the parameter is null, the function returns information about all revisions, beginning with the tip of the trunk. This parameter can contain a version label. If the version label begins with a number, precede it with a backslash (\).
<i>pRevCount</i>	Pointer to a variable that specifies the number of REVINFO structures to retrieve. The parameter returns the number of structures retrieved. Specify -1 for all revisions.
<i>pRevInfo</i>	Pointer to a buffer to receive revision information.
<i>flags</i>	Bit field that controls how the function processes a range of revisions. Values include: <ul style="list-style-type: none"> ■ PVCS_REVINFO_RECURSE Includes all branches emanating from specified revisions. This flag is equivalent to appending a plus sign (+) to a revision range. ■ PVCS_REVINFO_NO_RECURSE Ignores branches emanating from specified revisions.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ARCHIVE_EMPTY
PVCS_E_BAD_ARCHIVE_HANDLE
PVCS_E_BUFFER_OVERFLOW
PVCS_E_INVALID_PARAMETER
PVCS_E_ACCESS_VIOLATION
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- If *fileName* refers to a workfile, the program infers the archive name. If *fileName* contains wildcards, the program expands it according to the usual Version Manager rules.
- To retrieve information for more than one revision, specify the number of revisions in *pRevCount*. In this case, *pRevInfo* must point to an array of **pRevCount* REVINFO structures. Use the *revision* parameter to specify the revision with which to begin

processing. The function processes revisions in reverse order, so you would specify the tip of the trunk as the starting point to retrieve information about all revisions.

See [Chapter 5, "Data Structures"](#) for details on the REVINFO structure.

```
Example REVINFO *revinfo;
        unsigned short revcount = 1;
        int status;

        /* Initialize configuration settings */
        PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

        /* Allocate buffer to hold revision information */
        revinfo = (REVINFO *)malloc(sizeof(REVINFO));

        /* Report revision number corresponding to a version label */
        status = PvcsGetRevisionInfo(ARCHIVEHANDLE_NOT_OPEN,
        "foo.c_v", /* Archive name */
        "Beta Release 1.0", /* Ver label to search for */
        &revcount, /* Only one rev associated w/
        label */
        revinfo, /* Buffer to receive rev info */
        PVCS_REVINFO_RECURSE); /* Search all branches */

        if (!status)
        printf("Revision corresponding to \"Beta Release 1.0\" is
        \"%s\".\n", revinfo->revstr);
```

Related Functions [PvcsGetArchiveInfo on page 83](#)
[PvcsOpenArchive on page 126](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...

Specifying archive and workfile names
Specifying revisions

See...

File Specification
Revision Specification

PvcsGetRevisionInfo2

This function returns the following information associated with a revision:

- Version labels assigned to a revision
- Promotion groups assigned to a revision
- Locks on a revision
- Author of a revision
- Change description of a revision

```
Syntax PvcsGetRevisionInfo2 (
        ARCHIVEHANDLE hArchive, /* Input */
        unsigned char *fileName, /* Input */
        unsigned char *revision, /* Input */
```

```

unsigned char **author,           /* Output */
unsigned char **versions,       /* Output */
unsigned char **promoGroups,    /* Output */
unsigned char **lockers,       /* Output */
unsigned char **descr,         /* Output */
unsigned char *resultBuf,      /* Input */
unsigned bufLen,               /* Input */
void *reserved)               /* Reserved */

```

Parameters

<i>hArchive</i>	Handle returned by PvcsOpenArchive . If the archive is not open, specify <code>ARCHIVEHANDLE_NOT_OPEN</code> .
<i>fileName</i>	Pointer to the name of an archive or a workfile. This parameter is required only if the archive is not open.
<i>revision</i>	Pointer to a string that contains the revision for which you want to retrieve information. If the parameter is null, Developer's Toolkit returns information about the tip revision.
<i>author</i>	(Output). Pointer to a pointer to a string: the user ID of the user who created this revision.
<i>versions</i>	(Output). Pointer to a pointer to a list of strings. Each is a version label associated with this revision. If Developer's Toolkit returns a null pointer, then no version labels are present.
<i>promoGroups</i>	(Output). Pointer to a pointer to a list of strings. Each string is a promotion group associated with this revision. The strings are null-separated with a double-null pointer at the end of the list. Developer's Toolkit returns a null pointer if no promotion groups are present.
<i>lockers</i>	(Output). Pointer to a pointer to a list of strings. Each is a user ID that owns a lock on the revision. The strings for these are null-separated with a double-null pointer at the end of the list. Developer's Toolkit returns a null pointer if no locks are present.
<i>descr</i>	(Output). Pointer to a pointer to a string: the revision change description. If Developer's Toolkit returns a null pointer, then no change description is present.
<i>resultBuf</i>	Pointer to a buffer that this function uses to store the result data. Your program must allocate the buffer. The pointers referenced by <i>author</i> , <i>versions</i> , <i>promoGroups</i> , <i>lockers</i> , and <i>description</i> will point to memory in <i>resultBuffer</i> .
<i>bufLen</i>	Length of the result buffer.
<i>reserved</i>	Reserved for future use. Must be null.

Return Values The return value is zero if the function is successful. Other values may be:

```

PVCS_E_ARCHIVE_EMPTY
PVDS_E_NO_REVISION
PVCS_E_BAD_ARCHIVE_HANDLE
PVCS_E_BUFFER_OVERFLOW
PVCS_E_INVALID_PARAMETER
PVCS_E_ACCESS_VIOLATION

```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

- Special Considerations
- If *fileName* refers to a workfile, the program infers the archive name. If *fileName* contains wildcards, the program expands it according to the usual Version Manager rules.
 - The result buffer must be large enough to hold all of the variable-length data. This can get quite large if you have a number of version labels and lengthy change descriptions.

```
Example int          rc;
PVCS_PUCHAR szFilename2 = NULL;
PVCS_PUCHAR szRevision2 = NULL;
PVCS_PUCHAR szAuthor = NULL;
PVCS_PUCHAR szVersions = NULL;
PVCS_PUCHAR szPromoGroups = NULL;
PVCS_PUCHAR szLockers = NULL;
PVCS_PUCHAR szDescription = NULL;
PVCS_PUCHAR pRevInfo2Buffer = NULL;
unsigned shortbufSize;

/* Initialize configuration settings */
rc = PvcQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/*
 * PvcGetRevisionInfo2 only for single archives and single revisions
 */
bufSize = 256;
pRevInfo2Buffer = (PVCS_PUCHAR)malloc(bufSize);

rc =PvcGetRevisionInfo2(
    ARCHIVEHANDLE_NOT_OPEN,
    szFilename2,
    szRevision2,
    &szAuthor,
    &szVersions,
    &szPromoGroups,
    &szLockers,
    &szDescription,
    pRevInfo2Buffer,
    bufSize,
    NULL
);

if (!rc) return(rc){
    printf(" Rev: %s\n",pRevInfoBuffer->revstr);
    printf("      Author:      %s\n",szAuthor);
    printf("      Versions:      ");
    print_string_list(szVersions);
    printf("      PromoGroups:  ");
    print_string_list(szPromoGroups);
    printf("      Lockers:      ");
    print_string_list(szLockers);
    printf("      Decription:   %s\n", szDescription);
}
```

Related Functions [PvcGetArchiveInfo on page 83](#)
[PvcOpenArchive on page 126](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Specifying archive and workfile names	<i>File Specification</i>
Specifying revisions	<i>Revision Specification</i>

PvcsGetRevisionInfoVB

This function, specifically for Visual Basic users, returns information about a revision in a specified archive.

```
Syntax PvcsGetRevisionInfoVB (
    ARCHIVEHANDLE hArchive, /* Input */
    unsigned char *fileName, /* Input */
    unsigned char*revision, /* Input */
    unsigned short*branch_count, /* Output */
    unsigned short*lock_count, /* Output */
    unsigned short *level, /* Output */
    unsigned char *date, /* Output */
    unsigned char *mdate, /* Output */
    unsigned short*ord, /* Output */
    unsigned char*revstr, /* Output */
    unsigned short rev_info_index, /* Input */
    PVCS_FLAGS flags) /* Input */
```

Parameters

<i>hArchive</i>	Handle returned by PvcsOpenArchive . If the archive is not open, specify <code>ARCHIVEHANDLE_NOT_OPEN</code> .
<i>fileName</i>	String that contains the name of an archive or a workfile. This parameter is required only if the archive is not open.
<i>revision</i>	String that contains the revision number to retrieve.
<i>branch_count</i>	Integer that receives the number of branches off this revision.
<i>lock_count</i>	Integer that receives the number of locks on this revision.
<i>level</i>	Integer that receives the revision level.
<i>date</i>	String that receives the date the revision was checked in.
<i>mdate</i>	String that receives the date the revision was modified.
<i>ord</i>	Integer that receives the ordinal number.
<i>revstr</i>	String that receives the revision.

<i>rev_info_index</i>	Specifies the revision information structure about which to return information. The first structure has an index of 0 (the tip of the trunk) and the last index is one less than the value of <i>revcnt</i> returned by PvcsGetArchiveInfoVB1 or PvcsGetArchiveInfo .
<i>flags</i>	Indicates how to modify the behavior of this function. Values include: <ul style="list-style-type: none">■ <code>PVCS_REVINFO_RECURSE</code> Includes all branches emanating from specified revisions. this flag is equivalent to appending a plus sign (+) to a revision range■ <code>PVCS_REVINFO_NO_RECURSE</code> Ignores branches emanating from specified revisions.■ <code>PVCS_REVINFO_DATETIME_FORMAT</code> Causes the <i>create_time</i> string to be formatted with the currently configured date/time format. If this flag is not set, then the <i>create_time</i> string will be returned with the default format <code>mm/dd/yyyy hh:mm:ss</code>.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ARCHIVE_EMPTY  
PVCS_E_ACCESS_VIOLATION  
PVCS_E_BAD_ARCHIVE_HANDLE  
PVCS_E_BUFFER_OVERFLOW  
PVCS_E_INVALID_PARAMETER  
PVDS_E_NO_REVISION
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

- Special Considerations**
- Any of the non-input parameters may be passed a NULL value if no return value for that parameter is desired.
 - You can determine how many revisions are in an archive by calling **PvcsGetArchiveInfoVB1** and looking at the *revcnt* parameter.
 - If the *revisions* parameter is not NULL, it will override the index passed in the *rev_info_index* parameter.

Example `/* PvcsGetRevisionInfoVB example */`

```
int          status = 0;  
unsigned shortindex = 0;  
unsigned shortbranch_count;  
unsigned shortlock_count;  
unsigned shortlevel;  
unsigned shortord;  
unsigned chardate[32];  
unsigned charmdate[32];  
unsigned charrevstr[64];  
  
/* Initialize configuration settings */  
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);  
  
/*  
 * PvcsGetRevisionInfoVB: Get revision info into separate
```

```

* variables instead of a REVINFO structure. This example
* gets information from the tip revision. If you don't
* want the information for a specific field, then pass NULL
* (i.e. see the modification date parameter).
*/
status = PvcsGetRevisionInfoVB(
    ARCHIVEHANDLE_NOT_OPEN, /* I: Archive handle */
    "foo.c_v", /* I: Name of archive or workfile */
    NULL, /* I: Revision to retrieve */
    &branch_count, /* O: Number of branches from this
        rev */
    &lock_count, /* O: Number of locks on this
        revision */
    &level, /* O: Revision tree level, 0 = trunk */
    date, /* O: Text version of check-in rev
        date */
    NULL, /* O: Text version of rev mod date */
    &ord, /* O: Ordinal number in archive */
    revstr, /* O: Revision number as text */
    index, /* I: Which revision to get info for */
    PVCS_REVINFO_USE_DATETIME_FORMAT /* I: Bit field */
);

if (!status)
{
    printf(" Revision: %s\n", revstr);
    printf(" Branch Count: %d\n", branch_count);
    printf(" Lock Count: %d\n", lock_count);
    printf(" Level: %d\n", level);
    printf(" Check In Date: %s\n", date);
    printf(" Ordinal Number: %d\n", ord);
}

```

Related Functions [PvcsGetRevisionInfo on page 101](#)
[PvcsGetLockInfoVB on page 94](#)
[PvcsGetArchiveInfoVB1 on page 85](#)
[PvcsGetArchiveInfoVB2 on page 88](#)

PvcsGetUserInfo

This function returns the current user ID and login source.

```

Syntax PvcsGetUserInfo(
    unsigned char *userID, /* Output */
    unsigned short userIDLen, /* Input */
    unsigned char *loginSource, /* Output */
    unsigned short loginSourceLen, /* Input */
    unsigned short *loginSourceValue) /* Output */

```

Parameters

<i>userID</i>	Pointer to a buffer that receives the current user ID.
<i>userIDLen</i>	Variable that contains the length of the <i>userID</i> buffer.

<i>loginSource</i>	Pointer to a buffer that receives a string that contains the login source. This string contains one of the following values: HOST NETWARE LANMAN VLOGIN VCSID UNKNOWN WNET
<i>loginSourceLen</i>	Variable that contains the length of the <i>loginSource</i> buffer.
<i>loginSourceValue</i>	Pointer to a variable that receives a number that identifies the login source. This number is one of the following values: PVCS_LOGSRC_HOST PVCS_LOGSRC_NETWARE PVCS_LOGSRC_LANMAN PVCS_LOGSRC_NOT_ESTABLISHED PVCS_LOGSRC_VLOGIN PVCS_LOGSRC_VCSID PVCS_LOGSRC_UNKNOWN PVCS_LOGSRC_WNET

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_BUFFER_OVERFLOW  
PVCS_E_INVALID_PARAMETER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Consideration If you call this function before calling **PvcsQueryConfiguration**, you may not receive the actual login name or source. The LogIn directive affects where Version Manager looks for the user ID.

Example

```
char userBuf[64];  
char sourceBuf[16];  
int sourceValue;  
int status;  
  
/* Initialize configuration settings */  
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);  
status = PvcsGetUserInfo(  
    userBuf, /* Buffer receiving user ID */  
    sizeof(userBuf), /* Length of buffer */  
    sourceBuf, /* Buffer receiving login source */  
    sizeof(sourceBuf), /* Length of buffer */  
    &sourceValue); /* Receives login source ident ID */  
  
if (!status)  
    printf("Current user ID is \"%s\", login source is  
        \"%s\".\n", userBuf, sourceBuf);
```

Related Function [PvcsQueryConfiguration on page 137](#)

PvcsGroupToRevision

This function returns the revision numbers that are assigned to a specified promotion group. It is equivalent to the VLOG -BG command.

```
Syntax PvcsGroupToRevision(
    ARCHIVEHANDLE hArchive,           /* Input */
    unsigned char *fileName,         /* Input */
    unsigned char *grpName,          /* Input */
    unsigned short *pGrpCount,       /* Input/Output */
    unsigned char *groupTable,      /* Output */
    unsigned short bufLen)          /* Input */
```

Parameters

<i>hArchive</i>	Handle returned by PvcsOpenArchive . If the archive is not open, specify <code>ARCHIVEHANDLE_NOT_OPEN</code> .
<i>fileName</i>	Pointer to the name of an archive or a workfile. This parameter is required only if the archive is not open. This parameter cannot contain wildcards.
<i>grpName</i>	Pointer to a string that contains a promotion group. The promotion group must be assigned to a revision in the archive. If <i>grpName</i> is null, the function returns revision/group pairs up to the limit specified in <i>*pGrpCount</i> or until the <i>groupTable</i> buffer is full.
<i>pGrpCount</i>	Pointer to a variable that specifies the number of revision/group pairs to retrieve. The parameter returns the actual number that were retrieved.
<i>groupTable</i>	Pointer to a buffer that receives the revision/group pairs.
<i>bufLen</i>	The length of the <i>groupTable</i> buffer.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_BUFFER_OVERFLOW
PVCS_E_INVALID_PARAMETER
PVCS_E_PROMO_NO_NODE
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

- Special Considerations**
- If *fileName* refers to a workfile, the program infers the archive name. If *fileName* contains wildcards, the program expands it according to the usual Version Manager rules.
 - The format of the *groupTable* buffer is as follows:

<i>revisionString</i>
<i>null</i>
<i>groupString</i>
<i>null</i>
.
.
.
<i>null</i>

Each revision string and group string is null-terminated, and the end-of-buffer is marked by an additional null character. The revision number is returned as a printable string—for example, 1.15.

```
Example unsigned short grpCount = USHORT_MAX;
char grpBuffer[512];
char *bufPtr;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Obtain revisions associated with group names */
PvcsGroupToRevision(ARCHIVEHANDLE_NOT_OPEN,
    "foo.c_v", /* Name of archive or workfile */
    NULL, /* All revision/group pairs */
    &grpCount, /* Returns number of pairs retrieved */
    grpBuffer, /* Buf to receive revision/group pairs
    sizeof(grpBuffer)); /* Length of the buffer */

/* Display all revisions with group names */
bufPtr = grpBuffer;
while (grpCount--) {
    printf("Revision: %s", bufPtr);
    bufPtr += strlen(bufPtr) + 1; /* Skip over revision */
    printf(" Group: %s\n", bufPtr);
    bufPtr += strlen(bufPtr) + 1; /* Skip over group */
}
```

Related Functions [PvcsGetPromoParent on page 96](#)
[PvcsGroupToRevision on page 109](#)
[PvcsOpenArchive on page 126](#)
[PvcsPromoteRevision on page 128](#)
[PvcsVerifyPromoTree on page 175](#)
[PvcsVerifyPromoTreeNodeExist on page 176](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Specifying archive and workfile names	<i>File Specification</i>
Promotion models	<i>Promotion</i>
Defining a promotion group	<i>Promote directive</i>
Promoting revisions	<i>VPROMOTE command</i>

PvcsInit

This function initializes internal variables, allocating memory for file buffers, and verifying the license. You can call this function in your program's initialization routine to verify that you will be able to use Developer's Toolkit services later in your program.

```
Syntax PvcsInit(
    unsigned char *programe) /* Input */
```

Parameter	<i>progrname</i>	Pointer to a string that names the calling program. Developer's Toolkit prefixes warning and error messages with this string. If this string is null, Developer's Toolkit uses the string <code>PVCS_API</code> .
Return Value		The return value is zero if the function is successful. Otherwise it returns <code>PVCS_E_NO_MEMORY</code> . See Chapter 4, "Return Values" for descriptions of return values.
Special Considerations		Developer's Toolkit calls this function if you do not call it in advance.
Example	<pre>int status; /* Initialize Developer's Toolkit */ status = PvcsInit("My Application"); /* Display error message upon failure */ if (status) printf("Error, unable to initialize application.\n");</pre>	
Related Functions	PvcsCloseArchive on page 60 PvcsOpenArchive on page 126 PvcsCancelUpdate on page 54	

PvcsIsArchive

This function determines whether a file name is an archive by returning a status code. Developer's Toolkit does not perform any VCSDir checking or ArchiveSuffix translation on the file name.

Syntax

```
PvcsIsArchive(
    unsigned char *fileName,           /* Input */
    unsigned short *is_archive)      /* Output */
```

Parameters

<i>fileName</i>	Pointer to the name of the file to process. The file name cannot contain wildcards and must be a fully qualified path name.
<i>is_archive</i>	Pointer to a short that will be set to TRUE (1) if the file is an archive or FALSE (0) if the file is not an archive.

Return Values This function returns zero if successful. Other values include:
`PVCS_E_ARCHIVE_NOT_FOUND`
`PVD_E_INVALID_PARAMETER`
 See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
int status;
unsigned char *file = "c:\vcsdir\foo.c_v";
unsigned short is_archive;

/* Initialize configuration settings */
```

```
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Determine if file is an archive */
status = PvcsIsArchive(
    file,      /* Name of file to check */
    &is_archive); /* Indicates whether */
                /* the file is an archive */
if (status)
    printf("%s %s an archive.\n", file, (is_archive)? "is":
        "is not");
```

PvcsIsUserInDatabase

This function searches the access control database for a specific user. This function requires the ViewAccessDB privilege.

Syntax

```
PvcsIsUserInDatabase(
    unsigned char *user,          /* Input */
    unsigned short *found)       /* Output */
```

Parameters

user Pointer to the name of the user.

found Pointer to a short that is set to TRUE if the user is in the database or FALSE if the user cannot be found.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_BAD_ACCESS_USER
PVCS_E_CANT_OPEN_ACCESSDB
PVCS_E_INVALID_PARAMETER
PVCS_E_UNKNOWN_USER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
/*
 * PvcsIsUserInDatabase: See if user is in access database.
 * Return result in 2nd parameter, TRUE for yes, FALSE for no.
 */

rc = PvcsIsUserInDatabase(
    szUser,
    &found);

if (found)
    printf ("User %s is in the database.\n", szUser);
```

Related Functions

- [PvcsLogin on page 119](#)
- [PvcsGetUserInfo on page 107](#)
- [PvcsQueryUserAccess on page 147](#)

PvcsListJournal

This function creates a journal report from a journal file. It is equivalent to the VJOURNAL command.

```
Syntax PvcsListJournal(
    unsigned char *journalFile,          /* Input */
    unsigned char *date,                 /* Input */
    unsigned char *archiveList,         /* Input */
    unsigned char *users,                /* Input */
    unsigned char *operations,           /* Input */
    unsigned char *reportFile,          /* Input */
    PVCS_FLAGS flags)                   /* Input */
```

Parameters

<i>journalFile</i>	Pointer to a string that contains the name of the journal file to process. If the pointer is null or points to a null string, the name of the journal file is obtained from the Journal directive in the configuration file.
<i>date</i>	Pointer to a string that contains a date or a date range. This parameter limits the report to operations that occurred within the date range.
<i>archiveList</i>	Pointer to a string that contains a list of archive names separated by spaces. This parameter is <i>not</i> case-sensitive and accepts workfiles, partial directories, and wildcards. It will list all like names across directories. This parameter limits the report to operations on these archives.
<i>users</i>	Pointer to a string that contains a list of user IDs separated by spaces. This parameter limits the report to operations by these users.
<i>operations</i>	Pointer to a string that contains a list of operations separated by spaces. For example, PUT, PUT -R. This parameter limits the report to these operations.
<i>reportFile</i>	Pointer to a string that contains the name of a file to receive the journal report. An existing file will be overwritten unless you specify the flag <code>PVCS_JOURNAL_APPEND</code> .
<i>flags</i>	Bit field that controls the operation of this function. Values include: <ul style="list-style-type: none"> ■ <code>PVCS_JOURNAL_APPEND</code> Appends to the report file rather than overwriting it. ■ <code>PVCS_JOURNAL_LOCKS</code> Generates the lock list. This is equivalent to the VJOURNAL -XL command.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_BAD_DATE
PVCS_E_BAD_REDIRECT
PVCS_E_INVALID_PARAMETER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Consideration If you do not want to limit the report with one of the limiting parameters, specify a null pointer for that parameter.

```

Example char *outFile = "davee.jnl";
          int status;

          /* Initialize configuration settings */
          PvcQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);
          status = PvcListJournal(
            "journal.vcs", /* Name of journal file */
            "93",          /* Limit to 1993 */
            NULL,          /* No archive restrictions */
            "DAVEE",      /* Limit to actions by DAVEE */
            NULL,          /* No operation restrictions */
            outFile, /* File to receive report */
            (PVCS_FLAGS)0); /* Overwrite existing, no lock list */

          if (!status)
            printf("Created journal report in \"%s\".\n", outFile);

```

Related Function [PvcGetArchiveInfo on page 83](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Viewing journal reports	<i>VJOURNAL</i> command
Contents and format of journal files	<i>Journal Files</i>
Specifying date ranges	<i>Date and Time Specification</i>
Enabling journal entries	<i>Journal directive</i>

PvcLockRevisionGroup

This function locks a revision in an archive. It is equivalent to the VCS -L command.

```

Syntax PvcLockRevisionGroup(
          ARCHIVEHANDLE archiveHandle,          /* Input */
          unsigned char *fileName,             /* Input */
          unsigned char *revarg,              /* Input */
          unsigned char *locker,              /* Input */
          unsigned char *group,               /* Input */
          PVCS_FLAGS flags)                   /* Input */

```

Parameters

<i>archiveHandle</i>	Handle returned by PvcOpenArchive . If the archive is not open, specify ARCHIVEHANDLE_NOT_OPEN.
<i>fileName</i>	Pointer to the name of an archive or a workfile. This parameter is required only if the archive is not open.

<i>revarg</i>	Pointer to a string that contains a revision number or version label. Use a null string to specify the tip revision. If the version label begins with a number, precede it with a backslash (\). This parameter is equivalent to the VCS -R command.
<i>locker</i>	Pointer to a string that contains the user ID of the locker. If the parameter is null, the current user ID is used.
<i>group</i>	Pointer to a string that contains the promotion group that is assigned to the locked revision. This group must be a development group. If you do not specify a group, and more than one development group is defined, the function returns PVCS_E_NO_GROUP. This parameter is equivalent to the VCS -G command.
<i>flags</i>	Bit field that controls the operation of this function. Values include: <ul style="list-style-type: none"> ■ PVCS_LOCK_MULTILOCK Adds an additional lock if the MultiLock directive is in effect. ■ PVCS_LOCK_NOMULTILOCK Does not add an additional lock even if MultiLock is in effect. ■ PVCS_LOCK_BRANCH_PERMITTED Grants permission to lock a revision that would cause a branch to be created upon check in. This flag does not do anything unless the BranchWarn directive is in effect. If the BranchWarn directive is in effect, you must give permission to lock revisions that would cause Version Manager to create a branch. ■ PVCS_LOCK_NOBRANCH Denies permission to lock a revision that would cause a branch to be created upon check in. This flag does not do anything unless the BranchWarn directive is in effect. The function returns PVCS_E_BRANCHWARN if the revision that you are locking would cause a branch to be created.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_NO_REVISION
PVCS_E_GROUP_LOCKED
PVCS_E_INVALID_PARAMETER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- If *fileName* refers to a workfile, the program infers the archive name. If *fileName* contains wildcards, the program expands it according to the usual Version Manager rules.
- You can use this function to lock a revision even if there is no promotion group by specifying a null pointer for the group parameter.
- This function replaces **PvcsLockRevision**. **PvcsLockRevisionGroup** is similar to **PvcsLockRevision**, but takes the *group* and *flags* arguments. For compatibility with previous versions, Developer's Toolkit still supports **PvcsLockRevision**.

Example

```
/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);
```

```

/* Lock a revision */
PvcsLockRevisionGroup (ARCHIVEHANDLE_NOT_OPEN,
    "foo.c_v", /* Archive name */
    "1.12", /* Revision to lock */
    "DAVEE", /* User ID of locker */
    "SOFTDEV", /* Group name associated with
    lock */
    PVCS_LOCK_NOMULTILOCK); /* Only one lock per revision */

```

Related Functions

- [PvcsGetLockInfo on page 93](#)
- [PvcsGetRevision on page 97](#)
- [PvcsUnLockRevision on page 171](#)
- [PvcsOpenArchive on page 126](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Locking revisions	<i>Revision Locking VCS command</i>
Specifying archive and workfile names	<i>File Specification</i>
Wildcard expansion	<i>Wildcards</i>

PvcsLog

This function returns information about archives in a format suitable for reporting. It is equivalent to the VLOG command.

Syntax

```

PvcsLog(
    ARCHIVEHANDLE hArchive, /* Input */
    unsigned char *fileName, /* Input */
    unsigned char *revision, /* Input */
    unsigned char *version, /* Input */
    unsigned char *owners, /* Input */
    unsigned char *authors, /* Input */
    unsigned char *lockers, /* Input */
    unsigned char *groups, /* Input */
    unsigned char *date, /* Input */
    unsigned char *outFile, /* Input */
    PVCS_FLAGS logFlags) /* Input */

```

Parameters

<i>hArchive</i>	Handle returned by PvcsOpenArchive . If the archive is not open, specify <code>ARCHIVEHANDLE_NOT_OPEN</code> .
<i>fileName</i>	Pointer to the name of an archive or a workfile. This parameter is required only if the archive is not open. The file name can contain wildcards.

<i>revision</i>	Pointer to a string that contains a revision number or revision range. The function displays only revisions that match this specification. This parameter is equivalent to the VLOG -R command.
<i>version</i>	Pointer to a string that contains a version label. The function displays information only for revisions with this version label. This parameter is equivalent to the VLOG -V command.
<i>owners</i>	Pointer to a string that specifies a comma-separated list of user IDs. The function displays information only for archives that were created by these user IDs. This parameter is equivalent to the VLOG -O command.
<i>authors</i>	Pointer to a string that specifies a comma-separated list of user IDs. The function displays information only for revisions modified by these users. This parameter is equivalent to the VLOG -A command.
<i>lockers</i>	Pointer to a string that specifies a comma-separated list of user IDs. The function displays information only for revisions that are locked by these users. If the parameter is null, the function displays revisions that are locked by any user. This parameter is equivalent to the VLOG -L command.
<i>groups</i>	Pointer to a string that contains the name of a promotion group. The function displays information only about archives that contain a revision associated with this group.
<i>date</i>	Pointer to a string that specifies a date or date range. The function displays information only for revisions that were checked in within this range. This parameter is equivalent to the VLOG -D command.
<i>outFile</i>	Pointer to a string that names an output file. If this parameter is null, the function displays the report. This parameter is equivalent to the VLOG -XO command.
<i>logFlags</i>	Bit field that controls the operation of this function. Values include: <ul style="list-style-type: none">■ PVCS_LOG_APPEND Appends to the output file rather than overwriting it.■ PVCS_LOG_CHECK_TIP Lists each archive whose tip revision is not the same as <i>revision</i> or <i>version</i>. This flag is equivalent to the VLOG -BC command.■ PVCS_LOG_GROUPS Displays revisions associated with the promotion group specified using the <i>groups</i> parameter. This flag is equivalent to the VLOG -BG command.■ PVCS_LOG_LOCKERS Displays a list of locked revisions. If the <i>lockers</i> parameter is specified, displays only revisions locked by those users. This flag is equivalent to the VLOG -BL command.■ PVCS_LOG_NEWEST Displays the newest revision on the trunk. This flag is equivalent to the VLOG -BN command.

- PVCS_LOG_NO_HEADER
Does not display the archive header. This flag is equivalent to the VLOG -BR command.
- PVCS_LOG_NO_INDENT
Does not indent the revision history. This flag is equivalent to the VLOG -I command.
- PVCS_LOG_NO_REVISIONS
Does not display the revision history. This flag is equivalent to the VLOG -B command.
- PVCS_LOG_VERSIONS
Displays version labels only. If the *version* parameter is specified, displays only that version. This flag is equivalent to the VLOG -BV command.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ACCESS_VIOLATION
PVCS_E_ARCHIVE_NOT_FOUND
PVCS_E_FILE_BUSY
PVCS_E_INVALID_PARAMETER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- If *fileName* refers to a workfile, the program infers the archive name. If *fileName* contains wildcards, the program expands it according to the usual Version Manager rules.
- To get information in a format suitable for program manipulation, use **PvcsGetArchiveInfo** or **PvcsGetRevisionInfo** instead.
- To specify a range for the *revision* or *date* parameter, use the form *first_value*last_value*.
- If you use both the *revision* and *version* parameters, the *revision* parameter supersedes the *version* parameter.

Example

```
char *outFile = "davee.lck";
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Generate report of all locks by "DAVEE" on revs checked */
/* in during 1993 for archives matching "*.c_v" */
status = PvcsLog(ARCHIVEHANDLE_NOT_OPEN,
    "*.c_v", /* Archive name */
    NULL, /* No revision restrictions */
    NULL, /* No version restrictions */
    NULL, /* No ownership restrictions */
    NULL, /* No author restrictions */
    "DAVEE", /* Limit to revisions locked by
             DAVEE */
    NULL, /* No group restrictions */
    "93", /* Revisions checked in in 1993 */
    outFile, /* File to receive report */
    PVCS_LOG_LOCKERS); /* Display list of locked revisions */
```

```
if (!status)
    printf("Created lock report in \"%s\".\n", outFile);
```

Related Functions [PvcsGetArchiveInfo on page 83](#)
[PvcsGetRevisionInfo on page 101](#)
[PvcsOpenArchive on page 126](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Viewing revision information	<i>VLOG command</i>
Specifying revision ranges	<i>Revision Specification</i>
Specifying date ranges	<i>Date and Time Specification</i>
Wildcard expansion	<i>Wildcards</i>
Specifying archive and workfile names	<i>File Specification</i>

PvcsLogin

This function validates user IDs and passwords against the access control database. If the login source is VLOGIN, then the user ID becomes the VCSID. If the login source is not VLOGIN, then **PvcsLogin** does not affect Developer's Toolkit behavior. This function does not replace the VLOGIN command, but sets the user ID for the life of the Developer's Toolkit DLL.



NOTE If an access control database or LDAP authentication is associated with the Client Name (path map) on the Version Manager File Server, you must use the PvcsLogin function or an environment variable to present a user ID and password for validation. See, [Chapter 1, "Using DTK Applications with a Version Manager File Server" on page 13](#).

NOTE The login source and access control database path can be set using VCONFIG or by using directives in a configuration file. If you set these using the configuration file, you must call **PvcsQueryConfiguration** before calling **PvcsLogin**.

Syntax

```
PvcsLogin(
    unsigned char *userid,          /* Input */
    unsigned char *passwd,        /* Input */
    void *reserved)               /* Input */
```

Parameters

<i>userid</i>	Pointer to a string that contains the user ID as defined in the access control database.
<i>passwd</i>	Pointer to a string that contains the password as defined in the access control database.
<i>reserved</i>	Reserved for future use.

Return Values The return value is zero if the function is successful. Other values may be:
PVCS_E_NO_ACCESS_DB
PVCS_E_UNKNOWN_USER

```
PVCS_E_INVALID_PASSWORD
PVCS_E_CANT_OPEN_ACCESSDB
PVCS_E_BAD_ACCESS_DB
PVCS_E_USER_EXPIRED
PVCS_E_INVALID_PARAMETER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

```
Example char *name = "HANKB";
char *password = "BOBO";
char msgBuffer[128];
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Set the user ID */
status = PvcsLogin(
    name, /* User ID */
    password, /* User password */
    NULL); /* Reserved */

if (!status)
    printf("User \"%s\" has been validated.\n", name);
```

Related Functions [PvcsGetUserInfo on page 107](#)
[PvcsIsUserInDatabase on page 112](#)
[PvcsQueryUserAccess on page 147](#)

PvcsMakeDB

This function creates an access control database file. It is equivalent to the MAKEDB command.

```
Syntax PvcsMakeDB(
    unsigned char *databaseName, /* Input */
    unsigned char *file, /* Input */
    void *reserved) /* Input */
```

Parameters

<i>databaseName</i>	Pointer to a string that contains the name of the resulting access control database. If this parameter is null, then Developer's Toolkit uses the file name embedded by the VCONFIG -A command or specified by the AccessDB directive.
<i>file</i>	Pointer to a string that contains the name of the input text file.
<i>reserved</i>	Reserved for future use. Must be null.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_INVALID_PARAMETER
PVCS_E_FILE_NOT_FOUND
PVCS_E_CANT_OPEN_ACCESSDB
```


See [Chapter 4, "Return Values"](#) for descriptions of return values.

```
Example int status;
        char *databaseName = "access.db";
        char *listFile = "access.txt";
        void *reserved = (void *)0;

        /* Initialize configuration settings */
        PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

        /* Create access control database */
        status = PvcsMakeDB(
            databaseName, /* Name of access control database */
            listFile, /* Name of input text file */
            reserved); /* Reserved for future use */

        if (!status)
            printf("Created access control database \"%s\".\n",
                databaseName);
```

Related Functions [PvcsAccessOpenDB on page 38](#)
[PvcsAccessCloseDB on page 20](#)
[PvcsReadDB on page 149](#)

PvcsMerge

This function merges revisions that diverge from a common ancestor. It is equivalent to the VMRG command.

```
Syntax PvcsMerge (
    ARCHIVEHANDLE hArchive, /* Input */
    unsigned char *baseFile, /* Input */
    unsigned char *baseRev, /* Input */
    unsigned char *branch1File, /* Input */
    unsigned char *branch1Rev, /* Input */
    unsigned char *branch2File, /* Input */
    unsigned char *branch2Rev, /* Input */
    unsigned char *outFile, /* Input */
    PVCS_FLAGS mergeFlags) /* Input */
```

Parameters

<i>hArchive</i>	Handle returned by PvcsOpenArchive . If the archive is not open, specify <code>ARCHIVEHANDLE_NOT_OPEN</code> .
<i>baseFile</i>	Pointer to a string that contains the file name of the base point of the merge, which is usually the archive. If the parameter is a workfile and <i>baseRev</i> is not null, the function infers the archive name.
<i>baseRev</i>	Pointer to a string that contains the revision number or version label of the base point. This parameter is equivalent to the VMRG <code>-R</code> or VMRG <code>-V</code> command.

<i>branch1File</i>	Pointer to a string that contains the name of the archive or workfile that contains the first branch revision. If this string is null, the function uses the base file name.
<i>branch1Rev</i>	Pointer to a string that contains the revision number or version label of the revision on the first branch. If this string is null, the function uses the tip revision. This parameter is equivalent to the VMRG -R or VMRG -V command.
<i>branch2File</i>	Pointer to a string that contains the name of the archive or workfile of the second branch revision. If this string is null, the function uses the base file name.
<i>branch2Rev</i>	Pointer to a string that contains the revision number or version label of the revision on the second branch. If this string is null, the function uses the tip revision. This parameter is equivalent to the VMRG -R or VMRG -V command.
<i>outFile</i>	Pointer to a string that contains the file name that the function uses to create the merged file. If this parameter is null, the function uses <i>branch2File</i> . If <i>branch2File</i> is an archive, the function uses the workfile name. This parameter is equivalent to the VMRG -O command.
<i>mergeFlags</i>	Bit field that controls the operation of this function. Values include: <ul style="list-style-type: none">■ <code>PVCS_MERGE_AUTO</code> Performs an automatic merge. This flag is equivalent to the VMRG -A command.■ <code>PVCS_MERGE_NO_OVERWRITE</code> Disallows overwriting if <i>outFile</i> exists. The function returns the value <code>PVCS_E_OVERWRITE</code>. This flag is equivalent to the VMRG -N command.■ <code>PVCS_MERGE_OVERWRITE</code> Allows overwriting if <i>outFile</i> exists. This flag is equivalent to the VMRG -Y command.■ <code>PVCS_MERGE_STDOUT</code> Writes the merge file to standard output. Do not use this flag in conjunction with the <i>outFile</i> parameter. This flag is equivalent to the VMRG -XO command.

Return Values The return value is zero if the function is successful. Other values may be:

`PVCS_E_ACCESS_VIOLATION`
`PVCS_E_ARCHIVE_NOT_FOUND`
`PVCS_E_FILE_BUSY`
`PVCS_E_INVALID_PARAMETER`

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- The *baseFile*, *branch1File*, and *branch2File* parameters correspond to the VMRG command-line parameters of the same names.
- If *branch1Rev* and *branch2Rev* are revisions in the archive *baseFile*, then *branch1File*, and *branch2File* can be null.

Example

```
char *outFile = "foo.mrg";  
int status;
```

```

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Merge the following revisions from archive "foo.c_v": */
/* Base Rev - rev with version label "Beta Release 1.0" */
/* Branch 1 Rev - tip revision of archive */
/* Branch 2 Rev - rev with version label "Daves_Branch" */

/* Create merge output file "foo.mrg"*/
status = PvcsMerge(ARCHIVEHANDLE_NOT_OPEN,
    "foo.c_v", /* File name of the merge base */
    "Beta Release 1.0", /* Version of the merge base */
    NULL, /* Use base file name for Branch 1 file
    NULL, /* Use tip as Branch 1 revision */
    NULL, /* Use base file name for Branch 2 file
    "Daves_Branch", /* Use ver label as Branch 2 rev */
    outFile, /* Merge output file */
    PVCS_MERGE_OVERWRITE); /* Overwrite existing output file */

if (!status)
    printf("Created merged output in \"%s\".\n", outFile);

```

Related Functions [PvcsOpenArchive on page 126](#)
[PvcsMerge2 on page 123](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Merging	<i>Merging</i>
How to merge	<i>VMRG command</i>
Specifying archive and workfile names	<i>File Specification</i>

PvcsMerge2

This function is equivalent to the VMRG command with two additional parameters. It notifies you of the percentage of completion and the number of merge conflicts it finds.

```

Syntax PvcsMerge2(
    ARCHIVEHANDLE hArchive, /* Input */
    unsigned char *baseFile, /* Input */
    unsigned char *baseRev, /* Input */
    unsigned char *branch1File, /* Input */
    unsigned char *branch1Rev, /* Input */
    unsigned char *branch2File, /* Input */
    unsigned char *branch2Rev, /* Input */
    unsigned char *outFile, /* Input */
    int *pConflictCount, /* Output */
    PVCS_CALLBACKFUNC_MERGE_STATUS *pStatusFunc,
    PVCS_FLAGS mergeFlags) /* Input */

```

Parameters

<i>hArchive</i>	Handle returned by PvcsOpenArchive . If the archive is not open, specify <code>ARCHIVEHANDLE_NOT_OPEN</code> .
<i>baseFile</i>	Pointer to a string that contains the file name of the base point of the merge, which is usually the archive. If the parameter is a workfile and <i>baseRev</i> is not null, the function infers the archive name.
<i>baseRev</i>	Pointer to a string that contains the revision number or version label of the base point. This parameter is equivalent to the <code>VMRG -R</code> or <code>VMRG -V</code> command.
<i>branch1File</i>	Pointer to a string that contains the name of the archive or workfile that contains the first branch revision. If this string is null, the function uses the base file name.
<i>branch1Rev</i>	Pointer to a string that contains the revision number or version label of the revision on the first branch. If this string is null, the function uses the tip revision. This parameter is equivalent to the <code>VMRG -R</code> or <code>VMRG -V</code> command.
<i>branch2File</i>	Pointer to a string that contains the name of the archive or workfile of the second branch revision. If this string is null, the function uses the base file name.
<i>branch2Rev</i>	Pointer to a string that contains the revision number or version label of the revision on the second branch. If this string is null, the function uses the tip revision. This parameter is equivalent to the <code>VMRG -R</code> or <code>VMRG -V</code> command.
<i>outFile</i>	Pointer to a string that contains the file name that the function uses to create the merged file. If this parameter is null, the function uses <i>branch2File</i> . If <i>branch2File</i> is an archive, the function uses the workfile name. This parameter is equivalent to the <code>VMRG -O</code> command.
<i>pConflictCount</i>	Pointer to an integer that receives the number of merge conflicts.
<i>pStatusFunc</i>	Pointer to a callback function that displays the percent complete. Developer's Toolkit calls this function periodically, passing it an integer ranging from 0 to 100. Specify a null pointer if you don't want Developer's Toolkit to call a function.
<i>mergeFlags</i>	Bit field that controls the operation of this function. Values include: <ul style="list-style-type: none">■ <code>PVCS_MERGE_AUTO</code> Performs an automatic merge. This flag is equivalent to the <code>VMRG -A</code> command.■ <code>PVCS_MERGE_NO_OVERWRITE</code> Disallows overwriting if <i>outFile</i> exists. The function returns the value <code>PVCS_E_OVERWRITE</code>. This flag is equivalent to the <code>VMRG -N</code> command.

- `PVCS_MERGE_OVERWRITE`
Allows overwriting if *outFile* exists. This flag is equivalent to the VMRG -Y command.
- `PVCS_MERGE_STDOUT`
Writes the merge file to standard output. Do not use this flag in conjunction with the *outFile* parameter. This flag is equivalent to the VMRG -XO command

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ACCESS_VIOLATION
PVCS_E_ARCHIVE_NOT_FOUND
PVCS_E_FILE_BUSY
PVCS_E_INVALID_PARAMETER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- The *baseFile*, *branch1File*, and *branch2File* parameters correspond to the VMRG command-line parameters of the same names.
- If *branch1Rev* and *branch2Rev* are revisions in the archive *baseFile*, then *branch1File*, and *branch2File* can be null.

Example

```
int          rc;
PVCS_PUCHAR szOutfile = NULL;
PVCS_PUCHAR szBaseFile = NULL;
PVCS_PUCHAR szBaseRev = NULL;
PVCS_PUCHAR szBranch1File = NULL;
PVCS_PUCHAR szBranch1Rev = NULL;
PVCS_PUCHAR szBranch2File = NULL;
PVCS_PUCHAR szBranch2Rev = NULL;
int          nConflictCount;

/* Initialize configuration settings */
rc = PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/*
 * PvcsMerge2: merge two files into a third given a common
 * base. This code merges two revisions in single archive
 * from base revision in the archive. If file names for
 * branch1 or branch2 not specified, it uses the same name
 * as the base. To merge workfiles, set the revision
 * arguments to NULL. It also registers a callback function
 * to print percentage complete.
 */
rc =PvcsMerge2(
    ARCHIVEHANDLE_NOT_OPEN,
    szBaseFile,
    szBaseRev,
    szBranch1File,
    szBranch1Rev,
    szBranch2File,
    szBranch2Rev,
    szOutfile,
    &nConflictCount,
    merge2_monitor,
    0);
```

```
if (!rc)
    printf("    Conflicts:  %d\n",nConflictCount);

/* Callback procedure */
int PVCS_CALLBACK
merge2_monitor(int n, char *msg)
{
    printf("%d%% complete:  %s\n",n,msg);
    return PVCS_OK;
}
```

Related Functions [PvcsOpenArchive on page 126](#)
[PvcsMerge on page 121](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Merging	<i>Merging</i>
How to merge	<i>VMRG command</i>
Specifying archive and workfile names	<i>File Specification</i>

PvcsOpenArchive

This function opens an archive and returns an archive handle to be used by subsequent operations. The archive remains open until you call **PvcsCloseArchive**, **PvcsCloseAll**, or **PvcsCancelUpdate**.

Syntax `PvcsOpenArchive(`
 unsigned char **fileName*, /* Input */
 unsigned char **workfile*, /* Output */
 unsigned short *workfileLen*, /* Input */
 unsigned char **archive*, /* Output */
 unsigned short *archiveLen*, /* Input */
 PVCS_FLAGS *openFlags*, /* Input */
 ARCHIVEHANDLE **hArchive*) /* Output */

Parameters

<i>fileName</i>	Pointer to the name of an archive or a workfile. If this parameter is an archive, the function finds the corresponding workfile.
<i>workfile</i>	Pointer to a buffer to receive the name of the workfile.
<i>workfileLen</i>	Length of the <i>workfile</i> buffer.
<i>archive</i>	Pointer to a buffer to receive the name of the archive.
<i>archiveLen</i>	Length of the <i>archive</i> buffer.
<i>openFlags</i>	Bit field that controls the operation of this function. Values include:

- `PVCS_OPEN_RDONLY`
Opens the archive in read-only mode. If you do not call any functions that modify the archive, it is much more efficient to use the `PVCS_OPEN_RDONLY` flag. If you later attempt an update operation on the archive, you will get the `PVCS_E_BAD_ARCHIVE_HANDLE` error. This flag is the default.
- `PVCS_OPEN_UPDATE`
Opens the archive for modification, using normal archive semaphores. No other update access will be permitted to the archive while it is open.

hArchive Pointer to a variable that receives the archive handle. This handle is used in other Version Manager services.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ACCESS_VIOLATION
PVCS_E_ARCHIVE_NOT_FOUND
PVCS_E_BAD_ARCHIVE_HANDLE
PVCS_E_BUFFER_OVERFLOW
PVCS_E_FILE_BUSY
PVCS_E_INVALID_PARAMETER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- It is not necessary to use this function to open an archive before processing it. If you use services that access archives with an archive name rather than an archive handle, they open and close the archives themselves. However, if you are performing multiple operations on an archive, it is more efficient to open the archive first and pass the archive handle to other services.
- Leaving an archive open may keep other users from accessing the archive, especially if it was opened for updating.
- The *archive* and *workfile* buffers must be long enough to contain the full path names. Specify null parameters if you do not want this information.

Example

```
ARCHIVEHANDLE handle;
char workfile[256];
char archive[256];
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Open archive for update */
PvcsOpenArchive(
    "foo.c_v", /* Name of archive or workfile */
    workfile, /* Buffer receiving name of workfile */
    (workfile), /* Length of workfile buffer */
    archive, /* Buffer receiving name of archive */
    sizeof(archive), /* Length of archive buffer */
    PVCS_OPEN_UPDATE, /* Open archive for modification */
    &handle); /* Returned archive handle */

/* Close archive */
PvcsCloseArchive(handle);
```


- Special Considerations
- If *fileName* refers to a workfile, the program infers the archive name. If *fileName* contains wildcards, the program expands it according to the usual Version Manager rules.
 - If the specified promotion promotes a revision across a branch, and you don't specify one of the flags `PVCS_PROMOTE_XBRANCH` or `PVCS_PROMOTE_NO_XBRANCH`, **PvcsPromoteRevision** prompts for permission to promote across the branch. If you specify the `PVCS_PROMOTE_NO_XBRANCH` flag, **PvcsPromoteRevision** does not promote the revision across a branch, and returns `PVCS_E_PROMOTE_XBRANCH`.
 - This function replaces **PvcsPromote**. **PvcsPromoteRevision** is similar to **PvcsPromote**, but takes the *flags* argument. For compatibility with previous versions, Developer's Toolkit still supports **PvcsPromote**.

```
Example
unsigned short grpCount = 1;
char grpBuffer[512];
char *archive = "foo.c_v";
char *group = "SOFTDEV";
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* See if group exists in archive */
status = PvcsGroupToRevision(ARCHIVEHANDLE_NOT_OPEN,
    archive, /* Name of archive or workfile */
    group, /* Promotion group */
    &grpCount, /* Returns number of pairs retrieved */
    grpBuffer, /* Buf that receives
        revision/group pairs */
    sizeof(grpBuffer)); /* Length of the buffer */

/* If so, then promote it */
if (status != PVCS_E_PROMO_NO_NODE)
    PvcsPromoteRevision(ARCHIVEHANDLE_NOT_OPEN,
        archive, /* Archive name */
        group, /* Group to promote */
        PVCS_PROMOTE_NO_XBRANCH); /* Don't promote across */
    /* branch */
```

Related Functions

- [PvcsGetPromoParent on page 96](#)
- [PvcsGroupToRevision on page 109](#)
- [PvcsVerifyPromoTree on page 175](#)
- [PvcsVerifyPromoTreeNodeExist on page 176](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Promotion models	<i>Promotion</i>
Defining a promotion group	<i>Promote directive</i>
Promoting revisions	<i>VPROMOTE command</i>
Specifying archive and workfile names	<i>File Specification</i>

PvcsPutExtRevAttribute

This function associates an extended attribute with a revision, or modifies an existing extended attribute. Use extended attributes to attach free-form binary or text data to a revision. The attribute contains a user-defined keyword, which you can use to access the data at a later time.

```
Syntax PvcsPutExtRevAttribute (
    ARCHIVEHANDLE hArchive,                /* Input */
    unsigned char *fileName,              /* Input */
    unsigned char *revarg,                /* Input */
    unsigned char *extAttribute,          /* Input */
    unsigned short extAttrCount)          /* Input */
```

Parameters

<i>hArchive</i>	Handle returned by PvcsOpenArchive . If the archive is not open, specify ARCHIVEHANDLE_NOT_OPEN.
<i>fileName</i>	Pointer to the name of an archive or a workfile. This parameter is required only if the archive is not open.
<i>revarg</i>	Pointer to a string that contains a revision number or version label. The function associates the extended attribute with this revision. If the version label begins with a number, precede it with a backslash (\). A null parameter defaults to the tip revision on the trunk.
<i>extAttribute</i>	Pointer to a buffer that contains an extended attribute. See below for the buffer format.
<i>extAttrCount</i>	The number of extended attribute records present.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ACCESS_VIOLATION
PVCS_E_ARCHIVE_NOT_FOUND
PVCS_E_FILE_BUSY
PVCS_E_INVALID_PARAMETER
PVCS_E_USER_ABORTED
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- If *fileName* refers to a workfile, the program infers the archive name. If *fileName* contains wildcards, the program expands it according to the usual Version Manager rules.
- The format of the *extAttribute* buffer is as follows:

<i>Length</i>
<i>Keyword</i>
<i>Null</i>
<i>User_data</i>

<i>Length</i>	Two-byte unsigned value that is the length of the keyword and null terminator, plus the length of the user data. The length does not include the length field itself.
<i>Keyword</i>	Null-terminated string that contains a user-defined keyword.
<i>User_data</i>	Free-format data, which may be text or binary.

- The maximum length of the extended attribute record (including the length field) is 64K.
- If the extended attribute keyword already exists, this function replaces it. To avoid inadvertently replacing an attribute, call **PvcsGetExtRevAttribute** before using this function to verify that the attribute does not already exist.

Example

```

char *keyword = "BetaTextKey";
char *userdata = "This Beta release was sent out to 500 customers \
as a precursor to the General Availability release.";
int extAttCount = 1;
char *archive = "foo.c_v";
char *revision = "Beta Release 1.0";
char getExtAttBuf[256];
char *bufPtr;
char *ptr;
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* See if extended attribute keyword already exists */
status = PvcsGetExtRevAttribute(ARCHIVEHANDLE_NOT_OPEN,
    archive, revision, keyword, getExtAttBuf,
    sizeof(getExtAttBuf));

/* If keyword exists, indicate that user data will be replaced */
if (!status)
    printf("Replacing data for keyword \"%s\".\n", keyword);

/* Set up extended attribute buffer */
extAttBuf.length = strlen(keyword) + strlen(userdata) + 2;
strcpy(extAttBuf.data, keyword);
ptr = strchr(extAttBuf.data, '\\0');
strcpy(ptr + 1, userdata);
bufPtr = (char *)&extAttBuf;

/* Add extended attribute */
status = PvcsPutExtRevAttribute(ARCHIVEHANDLE_NOT_OPEN,
    archive,
    revision,
    bufPtr,
    extAttCount);

```

Related Functions [PvcsGetExtRevAttribute on page 91](#)
[PvcsOpenArchive on page 126](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Specifying archive and workfile names	<i>File Specification</i>
Specifying revision numbers	<i>Revision Numbering</i>

PvcsPutRevision

This function checks a new revision into an archive. It is equivalent to the PUT command.

```
Syntax PvcsPutRevision(
    ARCHIVEHANDLE hArchive,          /* Input */
    unsigned char *locker,          /* Input */
    unsigned char *fileName,        /* Input */
    unsigned char *workfileName,    /* Input */
    unsigned char *revarg,          /* Input */
    unsigned char *changeDescr,    /* Input */
    unsigned char *fileDesc,       /* Input */
    unsigned char *versionLabel,    /* Input */
    unsigned char *groupName,      /* Input */
    unsigned char *extAttribute,    /* Input */
    unsigned short extAttrCount,    /* Input */
    PVCS_FLAGS putFlags)          /* Input */
```

Parameters

<i>hArchive</i>	Handle returned by PvcsOpenArchive . If the archive is not open, specify <code>ARCHIVEHANDLE_NOT_OPEN</code> .
<i>locker</i>	Pointer to a string that contains the user ID of the person who locked the revision. If this parameter is null, the function uses the current user ID. If the <code>PVCS_PUT_RELOCK</code> flag is set, the function relocks the revision using the same user ID.
<i>fileName</i>	Pointer to the name of an archive or a workfile. This parameter is required only if the archive is not open.
<i>workfileName</i>	Pointer to the name of a workfile. If this parameter is null, the function obtains the workfile name from the archive. If you specify a workfile name, then <i>fileName</i> must contain an archive name.
<i>revarg</i>	Pointer to a string that contains a revision number, which overrides the default revision numbering scheme. This parameter is equivalent to the PUT -R command.
<i>changeDescr</i>	Pointer to a string that contains the description of the change. This parameter is equivalent to the PUT -M command. <i>When the archive exists</i> , if the parameter is null or an empty string, the Toolkit prompts for a change description. <i>When the archive does not exist</i> , if the parameter is an empty string, the Toolkit prompts for a change description. <i>When the archive does not exist</i> , if the parameter is null, the Toolkit uses the "Initial Revision" for the change description.

<i>fileDesc</i>	<p>Pointer to a string that contains the description of the workfile, used at initial check in only. This parameter is equivalent to the PUT -T command.</p> <p><u>When the archive exists</u> the <i>fileDesc</i> parameter is ignored. <u>When the archive does not exist</u>, if the <i>fileDesc</i> parameter is null or an empty string, the Toolkit prompts for a file description.</p>
<i>versionLabel</i>	<p>Pointer to a string that contains the version label to assign to the new revision. This parameter is equivalent to the PUT -V command.</p>
<i>groupName</i>	<p>Pointer to a string that contains the promotion group of the new revision. This parameter is equivalent to the PUT -G command.</p>
<i>extAttribute</i>	<p>Pointer to a buffer that contains an extended attribute record.</p>
<i>extAttrCount</i>	<p>The number of extended attribute records present. This field must contain 0 or 1.</p>
<i>putFlags</i>	<p>Bit field that controls the operation of this function. Values include:</p> <ul style="list-style-type: none"> ■ EVCS_PUT_AUTOCREATE Creates an archive before checking in the workfile, if one does not exist. This flag overrides the NoAutoCreate directive. ■ EVCS_PUT_BRANCH_VERS Makes <i>versionLabel</i> a floating version label. This flag is equivalent to the <i>-floating_version:*</i> variant of the PUT -V command. ■ EVCS_PUT_DELETE Deletes the workfile after check in. This flag overrides the NoDeleteWork directive. ■ EVCS_PUT_FORCE_BRANCH Creates a new branch. This flag is equivalent to the PUT -FB command. ■ EVCS_PUT_FORCE_PUT Checks in the file, even if it is unchanged. This flag is equivalent to the PUT -F command. ■ EVCS_PUT_KEEP_MSGFILE Does not delete the message file. This flag is equivalent to the NoDeleteMessageFile directive. ■ EVCS_PUT_NO_REPLACE_VERS Does not overwrite an existing version label. This flag is equivalent to the PUT -N command. ■ EVCS_PUT_NOAUTOCREATE Does not create an archive if one does not exist. ■ EVCS_PUT_NODELETE Does not delete the workfile. This flag is equivalent to the PUT -U command.

- `PVCS_PUT_NOFORCE_PUT`
Does not allow the workfile to be checked in if it is older than the parent, or is unchanged.
- `PVCS_PUT_NOPROMPT`
Suppresses prompts. If Version Manager requires input from the user to complete the operation, the function returns the error code `PVCS_E_PROMPT`, and the operation fails.
- `PVCS_PUT_NOWHITE`
Ignores leading and trailing white space when determining whether the file has changed. This flag is equivalent to the `PUT -B` command.
- `PVCS_PUT_RELOCK`
Checks the revision back out with a lock. This flag is equivalent to the `PUT -L` command.
- `PVCS_PUT_REPLACE_VERS`
Overwrites an existing version label. This flag is equivalent to the `PUT -Y` command.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ACCESS_DENIED
PVCS_E_ACCESS_VIOLATION
PVCS_E_ARCHIVE_NOT_FOUND
PVCS_E_BAD_FILENAME
PVCS_E_FILE_BUSY
PVCS_E_INVALID_PARAMETER
PVCS_E_USER_ABORTED
PVCS_E_VERSION_EXISTS
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- If *fileName* refers to a workfile, the program infers the archive name. If *fileName* contains wildcards, the program expands it according to the usual Version Manager rules.
- Use the *workfileName* parameter when you are checking in a workfile with a different name than the name stored in the archive. This is equivalent to the following command-line example:

```
put inv.c_v(d:\temp\test.c)
```

In this example, *fileName* is `INV.C_V` and *workfileName* is `D:\TEMP\TEST.C`.

- Either the *changeDesc* or *fileDesc* parameter may contain *@fileName*, which causes the program to read the description from *fileName*. If either parameter is null, the program prompts the user for a description.
- If *versionLabel* already exists in the archive, the program prompts the user for permission to overwrite it, unless you use the `PVCS_PUT_REPLACE_VERS` or `PVCS_PUT_NO_REPLACE_VERS` flag.

```
Example /* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Check in a revision, assign a version label, and check out */
```

```

/* the revision with a lock */
PvcsPutRevision(ARCHIVEHANDLE_NOT_OPEN,
  "DAVEE", /* User ID of locker */
  "foo.c_v", /* Archive name */
  NULL, /* Infer workfile name */
  NULL, /* Use default revision numbering scheme */
  "Fixed a killer bug.", /* Change description */
  NULL, /* Assume archive exists */
  "Beta Release 1.0", /* Version label to assign */
  NULL, /* Assume no promo hierarchy */
  NULL, /* Assume no ext rev attrib */
  0,
  PVCS_PUT_RELOCK); /* Check out with a lock */

```

Related Functions [PvcsGetRevision on page 97](#)
[PvcsOpenArchive on page 126](#)
[PvcsPutExtRevAttribute on page 130](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Checking revisions into archives	<i>PUT command</i>
Specifying archive and workfile names	<i>File Specification</i>

PvcsQueryAlias

This function returns the current value of an alias that was defined using **PvcsAddAlias**. This is equivalent to referencing an alias that has been defined by the Alias directive.

Syntax `PvcsQueryAlias (`
 unsigned char **aliasName*, /* Input */
 unsigned char **aliasValue*, /* Output */
 unsigned short *bufLen*) /* Input */
`)`

Parameters

<i>aliasName</i>	Pointer to the name of the alias to query.
<i>aliasValue</i>	Pointer to the buffer that is to contain the alias value.
<i>bufLen</i>	Length of the alias buffer.

Return Values This function returns zero if successful. Other values may be:

```

PVCS_E_BUFFER_OVERFLOW
PVCS_E_INVALID_PARAMETER
PVCS_E_NO_ALIAS

```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```

char *name = "SourceFiles";
char *value = "alpha.c beta.c gamma.c";
char aliasBuf[64];
int status;

```

```
/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Add an alias definition */
PvcsAddAlias(
    name,      /* Alias name */
    value);   /* Alias value */

/* Retrieve newly defined alias */
status = PvcsQueryAlias(
    name,      /* Alias name */
    aliasBuf, /* Buffer receiving alias value */
    sizeof(aliasBuf)); /* Length of buffer */

if (!status)
    printf("Alias name \"%s\" is defined to be \"%s\".\n", name,
        aliasBuf);
```

Related Function [PvcsAddAlias on page 48](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...

How to use aliases

See...

Using Aliases

PvcsQueryArchiveAccess

This function checks to determine if a user can perform an action on a specific archive.

```
Syntax PvcsQueryArchiveAccess(
    unsigned char *archive,          /* Input */
    unsigned char *user,            /* Input */
    char *privilege,                /* Input */
    int *pStatus,                   /* Output */
    void *reserved)                 /* Reserved */
```

Parameters

<i>archive</i>	Pointer to a string that contains the name of the archive.
<i>user</i>	Pointer to a string that contains the name of the user.
<i>privilege</i>	Pointer to a string that contains the name of the base privilege.
<i>pStatus</i>	The variable that receives the access status. A non-zero value indicates that the user has access.
<i>reserved</i>	Reserved for future use. Must be null.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_INVALID_PARAMETER
PVDS_E_UNKNOWN_USER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.


```

Example  /* PvcsQueryArchiveAccess */
         PVCS_PUCHAR szArchive=NULL;
         PVCS_PUCHAR szUser=NULL;
         char *szPrivilege="GETTIP";
         int nAccessGranted=0;
         int rc;

         /* Initialize configuration settings */
         rc = PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

         /*
          * PvcsQueryArchiveAccess: this procedure checks the
          * access list internal to the archive and the access db to
          * see if the given user is allowed access
          * to the archive for the specified priv. nAccessGranted is 0
          * for denied, non-0 for granted.
          */

         rc = PvcsQueryArchiveAccess(
             szArchive,
             szUser,
             szPrivilege,
             &nAccessGranted,
             NULL);

```

Related Function [PvcsChangeAccessList on page 55](#)

PvcsQueryConfiguration

This function reads a Version Manager configuration file and fills in the CONFIG structure. Call this function before calling other PVCS Version Manager functions if you want to use directives from a configuration file to control the operation of the functions. For details on the CONFIG structure, see [Chapter 5, "Data Structures"](#)

```

Syntax  PvcsQueryConfiguration(
         unsigned char *configFile,           /* Input */
         CONFIG *pConfig,                    /* Output */
         unsigned short bufLen,              /* Input */
         PVCS_FLAGS configFlags)            /* Input */

```

Parameters

<i>configFile</i>	Pointer to the name of the configuration file to process. The file name cannot contain wildcards.
<i>pConfig</i>	Pointer to the CONFIG structure that receives the configuration data. You must be sure to pad extra space in the CONFIG structure to store string values (512 bytes). If <i>pConfig</i> is null, Developer's Toolkit does not return any data, although it still stores the values. The function reads and processes the configuration file, but does not require you to allocate a CONFIG structure.

<i>bufLen</i>	Variable that contains the length of the CONFIG data buffer.
<i>configFlags</i>	Bit field that controls the operation of this function. Values include: <ul style="list-style-type: none">■ PVCS_CONFIG_APPEND Appends the configuration settings to the current configuration.■ PVCS_CONFIG_MASTER_FILE Treats the specified file as the master configuration file. The function will not read any other master configuration file unless explicitly directed.■ PVCS_CONFIG_NO_MASTER Does not read the master configuration file embedded into the DLL using VCONFIG.■ PVCS_CONFIG_OVERWRITE Sets the CONFIG structure to the default settings before processing the configuration file.■ PVCS_CONFIG_READ_MASTER If you use VCONFIG to embed a master configuration file into the DLL, Developer's Toolkit reads it unconditionally before reading the specified file.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ACCESS_DENIED  
PVCS_E_ARCHIVE_NOT_FOUND  
PVCS_E_INVALID_CONFIG_PARM  
PVCS_E_INVALID_PARAMETER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- If you don't call this function, Developer's Toolkit ignores configuration files, and all directives retain their default values.
- If you specify a null *pointer* for the *configFile* parameter, the function finds the default configuration file using the normal Version Manager rules. If you specify a null *string*, the function does not read a configuration file and sets the configuration structure to the default settings.
- To process a second configuration file, set *configFlags* to PVCS_CONFIG_APPEND. This flag appends the second configuration file to the current configuration. If you don't use this flag, the function sets all directives to their defaults before reading the configuration file.

Example

```
#define CONFIG_PAD 1024  
CONFIG *config;  
int status;  
  
/* Allocate buffer to hold configuration information */  
config = (CONFIG *)malloc(sizeof(CONFIG) + CONFIG_PAD);  
  
/* Process configuration file */  
status = PvcQueryConfiguration(NULL,  
    config,  
    sizeof(CONFIG) + CONFIG_PAD,  
    PVCS_CONFIG_OVERWRITE);
```

```

if (!status) {
    printf("Quiet: %s\n",
           config->quiet ? "on" : "off");
    printf("WriteProtect: %s\n",
           config->wrtProtArchive ? "on" : "off");
    printf("CheckLock: %s\n",
           config->checkLock ? "on" : "off");
    printf("BranchWarn: %s\n",
           config->branchWarn ? "on" : "off");
    printf("IgnorePath: %s\n",
           config->ignorePath ? "on" : "off");
    printf("ForceUnlock: %s\n",
           config->forceUnlock ? "on" : "off");
    printf("AutoCreate: %s\n",
           config->autoCreate ? "on" : "off");
    printf("firstMatch: %s\n",
           config->firstMatch ? "on" : "off");
    printf("DeleteMessageFile: %s\n",
           config->delMsgFile ? "on" : "off");
    printf("Semaphore: Local %s\n",
           config->semaphoreLocal ? "on" : "off");
    printf("Semaphore: Network %s\n",
           config->semaphoreNetwork ? "on" : "off");
    printf("ArchiveWork: %s\n",
           config->useArchiveWork ? "on" : "off");
    printf("Signon: %s\n",
           config->signon ? "on" : "off");
    printf("NoCase VCSID %s\n",
           config->ignIDCase ? "on" : "off");
    printf("Share Local %s\n",
           config->shareLocal ? "on" : "off");
    printf("Share Network: %s\n",
           config->shareNet ? "on" : "off");
    printf("MemSwap: %s\n",
           config->memswap ? "on" : "off");
    printf("Ctrlz: %s\n",
           config->ctrlz ? "on" : "off");
    printf("NodeleteWork NoWriteProtect: %s\n",
           config->writable_workfile ? "on" : "off");
    printf("AccessDB NoWriteProtect: %s\n",
           config->writable_accessdb ? "on" : "off");
    printf("SemaphoreRetry: %s\n",
           config->semRetry ? "on" : "off");
    printf("SemaphoreDelay: %s\n",
           config->semDelay ? "on" : "off");
    printf("DeleteWork: %s\n",
           config->delWork ? "on" : "off");
    printf("MultiLock User: %s\n",
           config->multiLockUser ? "on" : "off");
    printf("MultiLock Revision: %s\n",
           config->multiLockRev ? "on" : "off");
    printf("ExclusiveLock: %s\n",
           config->exclusiveLock ? "on" : "off");
    printf("Vlogin: %s\n",
           config->vloginInt ? "on" : "off");
    printf("Internal diagnostic level: %ld\n", config->diag);
}

```

```
printf("PathSeparator:      %c\n", config->pathSep);
printf("Translate:          %s\n", config->translate);
printf("ArchivSuffix:        %s\n", config->archsuf);
printf("MessageSuffix:       %s\n", config->msgsuf);
printf("SemSuffix:           %s\n", config->semsuf);
printf("DefaultVersion:      %s\n", config->defVers);
printf("BaseVersion:         %s\n", config->baseVers);
printf("branchVersion:       %s\n", config->branchVers);
printf("SemaphoreDir:        %s\n", config->semDir);
printf("WorkDir:             %s\n", config->workDir);
printf("ArchiveWork:         %s\n", config-
    archiveWorkDir);
printf("VCSEdit:             %s\n", config->vcsEdit);
printf("VCSID:               %s\n", config->vcSid);
printf("Owner:               %s\n", config->owner);
printf("Journal:            %s\n", config->journal);
printf("Newline:            %s\n", config->newline);
printf("AccessDB:           %s\n", config->accessdb);
printf("ColumnMask:         %s\n", config->columnMask);
printf("Renumber:           %s\n", config->renum);
printf("VCS DIR:            %s\n", config->vcsdir);
printf("CompressWorkImage:   %s\n", config-
    >compressImage);
printf("CompressDelta:       %s\n", config-
    >compressDelta);
printf("RecordLength:       %s\n", config->recordLength);
printf("ExpandKeywords:     %s\n", config->expKeywords);
printf("Login:              %s\n", config->loginSource);
```

Related Functions [PvcsQueryConfigurationError on page 140](#)
[PvcsQueryConfigurationItem on page 142](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Reading configuration files	<i>Configuration Files</i>
Default configuration settings	<i>Directives</i>

PvcsQueryConfigurationError

This function returns information about an error in configuration file processing.

```
Syntax PvcsQueryConfigurationError(
    unsigned char *pCfgFile,          /* Output */
    unsigned short cfgFileLen,       /* Input */
    unsigned long *pLineNumber,     /* Output */
    unsigned char *pCfgLine,        /* Output */
    unsigned short cfgLineLen)      /* Input */
```

Parameters

<i>pCfgFile</i>	Pointer to a buffer that receives the name of the configuration file that contained the error. If there was no error, the buffer contains a null string.
<i>cfgFileLen</i>	Length of the buffer receiving the file name.
<i>pLineNumber</i>	Pointer to a variable that receives the line number of the line that contained the error. If there was no error, the variable is set to zero.
<i>pCfgLine</i>	Pointer to a buffer that receives a copy of the line that contained the error. If there was no error, the buffer contains a null string.
<i>cfgLineLen</i>	Length of the buffer receiving the line that contains the error. The maximum length is 256.

Return Values The return value is zero if the function is successful. Otherwise it returns `PVCS_E_BUFFER_OVERFLOW`. See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```

CONFIG *config;
char *filename;
char *line;
long lineno;
int status;

/* Process configuration file */
config = (CONFIG *)malloc(sizeof(CONFIG) + CONFIG_PAD);
status = PvcsQueryConfiguration(NULL,
    config,
    sizeof(CONFIG) + CONFIG_PAD,
    PVCS_CONFIG_OVERWRITE);

if (status) {

/* Allocate buffers to hold configuration file name and line */
filename = malloc(256);
line = malloc(256);

/* Obtain information about error in configuration processing */
PvcsQueryConfigurationError(
    filename, /* Buffer receiving name of config file */
    256,     /* Length of buffer */
    &lineno, /* Variable receiving last line number */
    line,   /* Buffer receiving copy of last line */
    256);  /* Length of buffer */
    if (lineno)
        printf("Configuration error on line %ld of file
            %s:\n%s\n", lineno, filename, line);
}

```

Related Functions [PvcsGetErrorMessage](#) on page 90
[PvcsQueryConfiguration](#) on page 137

PvcsQueryConfigurationItem

This function returns the current value of a directive.

```
Syntax PvcsQueryConfigurationItem(
        unsigned short itemType,           /* Input */
        unsigned char *pCfgData,         /* Output */
        unsigned short bufLen)          /* Input */
```

Parameters

<i>itemType</i>	Variable that specifies which configuration directive to query. See <i>Directive Values</i> , below, for possible values.
<i>pCfgData</i>	Pointer to a buffer that receives the requested value.
<i>bufLen</i>	Variable that contains the length of the data buffer.

Return Values The return value is zero if the function is successful. Other values can be:

```
PVCS_E_BUFFER_OVERFLOW
PVCS_E_INVALID_PARAMETER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Consideration This function does not read the configuration file. Call **PvcsQueryConfiguration** to read the configuration file and initialize the Developer's Toolkit internal copy of the configuration values.

Example

```
char *vcmdir;

/* Initialize configuration information */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Allocate buffer to hold VCSDir value */
vcmdir = malloc(256);

/* Obtain VCSDir setting */
PvcsQueryConfigurationItem(
    PVCS_CFGITEM_VCSDIR, /* Configuration item identifier */
    vcmdir, /* Buffer to receive config value */
    256); /* Length of buffer */

/* Display VCSDIR setting */
if (strlen(vcmdir))
    printf("VCSDIR value is \"%s\".\n", vcmdir);
else
    printf("VCSDIR is not set.\n");
```

Related Function [PvcsQueryConfiguration on page 137](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Version Manager directives	<i>Directives</i>

Directive Values

The lists below show possible values for the *itemType* parameter and the directive to which each corresponds. It also shows the data type returned in the buffer, depending on the value of the *itemType* parameter. Parameters are grouped by the data type they return.

Boolean Values

If you specify one of the following *itemType* values, the returned buffer contains an unsigned short integer Boolean value.

Directive	Value for <i>itemType</i>
AccessDB NoWriteProtect	PVCS_CFGITEM_WRITABLE_ACCESSDB
AutoCreate	PVCS_CFGITEM_AUTOCREATE
BranchWarn	PVCS_CFGITEM_BRANCHWARN
CheckLock	PVCS_CFGITEM_CHECKLOCK
CtrlZ	PVCS_CFGITEM_CTRLZ
DeleteMessageFile	PVCS_CFGITEM_DELMMSGFILE
DeleteWork	PVCS_CFGITEM_DELWORK
ExclusiveLock	PVCS_CFGITEM_EXCLUSIVELOCK
FirstMatch	PVCS_CFGITEM_FIRSTMATCH
ForceUnlock	PVCS_CFGITEM_FORCEUNLOCK
IgnorePath	PVCS_CFGITEM_IGNOREPATH
MemSwap	PVCS_CFGITEM_MEMSWAP
MultiLock Revision	PVCS_CFGITEM_MULTILOCKREV
MultiLock User	PVCS_CFGITEM_MULTILOCKUSER
NoArchiveWork	PVCS_CFGITEM_NOLOGWORK
NoCase VCSID	PVCS_CFGITEM_IGNIDCASE
NoDeleteWork NoWriteProtect	PVCS_CFGITEM_WRITABLE_WORKFILE
Quiet	PVCS_CFGITEM_QUIET
ReferenceDir TrunkOnly	PVCS_CFGITEM_REFDIR_TRUNKONLY
ReferenceDir WriteProtect	PVCS_CFGITEM_REFDIR_WR_PROTECT
Screen	PVCS_CFGITEM_SCREEN
Screen Hercules	PVCS_CFGITEM_HERC_SCREEN
Share Local	PVCS_CFGITEM_SHARELOCAL
Share Network	PVCS_CFGITEM_SHARENET
SignOn	PVCS_CFGITEM_SIGNON
WriteProtect	PVCS_CFGITEM_WRTPROTARCHIVE

Integer Values

If you specify one of the following *itemType* values, the returned buffer contains an unsigned short integer value.

Directive	Value for <i>itemType</i>
Diagnostic	PVCS_CFGITEM_DIAG
Semaphore Local	PVCS_CFGITEM_SEMAPHORELOCAL
Semaphore Network	PVCS_CFGITEM_SEMAPHORENETWORK
SemaphoreDelay	PVCS_CFGITEM_SEMDELAY
SemaphoreRetry	PVCS_CFGITEM_SEMRETRY
VLogIn	PVCS_CFGITEM_VLOGININT

If you specify PVCS_CFGITEM_SEMAPHORELOCAL or PVCS_CFGITEM_SEMAPHORENETWORK, the value is an unsigned short integer that stands for one of the following:

PVCS_SEM_NONE	No semaphore
PVCS_SEM_FILE	File
PVCS_SEM_NETWARE	NetWare

Character Values

If you specify one of the following *itemType* values, the returned buffer contains a null-terminated character string. The maximum length is 256 bytes.

Directive	Value for <i>itemType</i>
AccessDB	PVCS_CFGITEM_ACCESSSDB
AccessList	PVCS_CFGITEM_ACCESSLIST
ArchiveSuffix	PVCS_CFGITEM_ARCHSUF
ArchiveSuffix	PVDS_CFGITEM_ARCHSUFLIST
ArchiveWork	PVCS_CFGITEM_ARCHIVEWORKDIR
BaseVersion	PVCS_CFGITEM_BASEVERS
BranchVersion	PVCS_CFGITEM_BRANCHVERS
DefaultVersion	PVCS_CFGITEM_DEFVERS
Delta Delete	PVCS_CFGITEM_DELTA_DELETE
Delta Insert	PVCS_CFGITEM_DELTA_INSERT
Delta Replace	PVCS_CFGITEM_DELTA_REPLACE
Delta Seq	PVCS_CFGITEM_DELTA_SEQUENCE
EventTrigger	PVDS_CFGITEM_EVENTTRIGGER
Journal	PVCS_CFGITEM_JOURNAL
MessageSuffix	PVCS_CFGITEM_MSGSUF
Owner	PVCS_CFGITEM_OWNER

Directive	Value for <i>itemType</i>
ReferenceDir	PVCS_CFGITEM_REFDIR
SemaphoreDir	PVCS_CFGITEM_SEMDIR
SemSuffix	PVCS_CFGITEM_SEMSUF
VCSDir	PVCS_CFGITEM_VCSDIR
VCSEdit	PVCS_CFGITEM_VCSEEDIT
WorkDir	PVCS_CFGITEM_WORKDIR

Extension Values

Extensions are null-terminated strings and contain a leading period (.). A string that contains a single period indicates a directive that applies to files with no extension. The table is terminated by a null character. If there are no extensions for the *itemType* value, the list contains a single null character. For example, the list might contain:

```
.c<null>.h<null>.asm<null><null>
```

If you specify one of the following *itemType* values, the returned buffer contains a list of extensions for the corresponding directive.

Directive	Value for <i>itemType</i>
CompressDelta	PVCS_CFGITEM_COMPRESSDELTA
CompressWorkImage	PVCS_CFGITEM_COMPRESSIMAGE
ExpandKeywords	PVCS_CFGITEM_EXPKEYWORDS
NoCompressDelta	PVCS_CFGITEM_NOCOMPRESSDELTA
NoCompressWorkImage	PVCS_CFGITEM_NOCOMPRESSIMAGE
NoExpandKeywords	PVCS_CFGITEM_NOEXPKEYWORDS
NoTranslate	PVCS_CFGITEM_NOTRANSLATE
Translate	PVCS_CFGITEM_TRANSLATE

Extension/String Values

Extensions are null-terminated strings that contain a leading period (.). The table is terminated by a null character. If there are no extensions for the *itemType* value, the list contains a single null character. For example, the list for PVCS_CFGITEM_COMMENTPREFIX might contain:

```
.c<null>*<null>.bat<null>REM<null>.asm<null>; <null><null>
```

The following values for *itemType* return a list of extension/string value pairs. This type of directive assigns a different string value to each extension.

Directive	Value for <i>itemType</i>
ArchiveSuffix	PVCS_CFGITEM_ARCHSUFLIST
CommentPrefix	PVCS_CFGITEM_COMMENTPREFIX
NewLine	PVCS_CFGITEM_NEWLINE
RecordLength	PVCS_CFGITEM_RECORDLENGTH

Special Values

If you specify one of the following *itemType* values, the returned buffer contains a special value as described.

Directive	Value for <i>itemType</i>
Alias	<p>PVCS_CFGITEM_ALIAS</p> <p>Returns a list of aliases defined by the Alias directive. The format of the list is a series of strings of the form <i>name=value</i>. Each element of the list is followed by a null character, and the list is terminated by a null character. If the list is empty, the list contains a single null character.</p> <p>This list contains only aliases defined by the Alias directive. There is currently no way to get a list of aliases defined on the command line or by environment variables. However, you can obtain the value for specific names by calling PvcsQueryAlias.</p>
ColumnMask	<p>PVCS_CFGITEM_COLUMNMASK</p> <p>Returns a list of extension/value pairs. The value is a null-terminated string with the following format:</p> <pre>start_column-end_column, start_column- end_column</pre> <p>For example:</p> <pre>.cob<null>1-6, 73-80<null><null></pre>
Disallow	<p>PVCS_CFGITEM_DISALLOW</p> <p>Returns a list of directives that have been disallowed using the Disallow directive in the master configuration file. Each directive is a null-terminated string, and the list is terminated by a null character. For example:</p> <pre>SEMAPHORE<null>LOGIN<null><null></pre>
EventTrigger	<p>PVCS_CFGITEM_EVENTTRIGGER</p> <p>Returns a sequence of pairs where the first string is an event name, and the second is the event command line (if it is registered). Each group is a null-terminated string, and the list is terminated by a null pointer. No event triggers are registered in the following example.</p> <pre>AllEvents\0\QPrePut\0\0 ... PrePromote \0\0PreVersionLabel\0\0\0</pre>
ExpandKeywordsTouch	<p>PVCS_CFGITEM_EXPANDKEYWORDS_TOUCH</p> <p>Returns a Boolean value that indicates the setting of the ExpandKeywords Touch directive. Zero indicates that the NoTouch option is in effect, which means that the timestamp of the workfile will not be updated if there are keywords in the workfile.</p>
LogIn	<p>PVCS_CFGITEM_LOGINSOURCE</p> <p>Returns a comma-separated list of login sources, terminated by a null character. For example:</p> <pre>netware,vcsid,unknown<null></pre>
PathSeparator	<p>PVCS_CFGITEM_PATHSEP</p> <p>Returns a single character.</p>

Directive	Value for <i>itemType</i>
Promote	PVCS_CFGITEM_PROMOTE Returns the promotion pairs <i>from_group</i> and <i>to_group</i> . Each group is a null-terminated string, and the list is terminated by a null. For example: Dev<null>QA<null>QA<null>Prod<null><null>
Renumber	PVCS_CFGITEM_RENUM Returns a list of extension/value pairs. The value is a null-terminated string in the following format: start_column-end_column from start_value by step For example: .cob<null>1-6 from 10 by 10<null><null>
VCSDir	PVCS_CFGITEM_VCSDIR Returns a semicolon-separated list of archive directories.
VCSDir	PVCS_CFGITEM_VCSDIR_REFDIR Returns a semicolon-separated list of archive directories. Unlike the string returned by PVCS_CFGITEM_VCSDIR, this string contains the reference directory name, if any. For example: J:\proj1\arc(j:\proj1\source);J:\proj2 \archives

PvcsQueryUserAccess

This function checks a user's privileges for a specific action. It does not verify the user's access privileges to an archive.

```
Syntax PvcsQueryUserAccess (
    unsigned char *userName,           /* Input */
    char *privilege,                 /* Input */
    int *pStatus,                    /* Output */
    void *reserved)                  /* Reserved */
```

Parameters

<i>userName</i>	Pointer to a string that contains the name of the user.
<i>privilege</i>	Pointer to a string that contains the base privilege.
<i>pStatus</i>	The variable that receives the privilege status. A non-zero value indicates that the user has the privilege.
<i>reserved</i>	Reserved for future use. Must be null.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_INVALID_PARAMETER
PVCS_E_UNKNOWN_USER
PVCS_E_UNKNOWN_PRIVILEGE
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

```
Example  int status;
        unsigned char *userName = "DAVEE";
        char *privilege = "GETTIP";
        int status;
        void *reserved = (void *)0;

        /* Initialize configuration settings */
        PvcQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

        /* See if user has permission to perform an operation */
        status = PvcQueryUserAccess(
            userName, /* Name of user */
            privilege, /* Name of privilege */
            &status, /* Receives privilege status */
            reserved); /* Reserved for future use */

        if (!status && pStatus)
            printf("User \"%s\" has permission to perform \"%s\".\n",
                userName, privilege);
```

Related Functions [PvcLogin on page 119](#)
[PvcGetUserInfo on page 107](#)
[PvcIsUserInDatabase on page 112](#)

PvcQueryVconfigItem

This function returns the current value of a VCONFIG setting.

```
Syntax  PvcQueryVconfigItem(
        unsigned char *DLLName,           /* Input */
        unsigned short itemCode,         /* Input */
        unsigned char *pVcfgData,       /* Output */
        unsigned short bufLen)          /* Input */
```

Parameters

- | | |
|-----------------|--|
| <i>DLLName</i> | Pointer to a string that specifies the configured DLL file: <ul style="list-style-type: none">■ Windows: VMWFVC.DLL The file name cannot contain wildcards. If <i>DLL Name</i> is a null pointer, then the default DLL file name is used. If it is a null string, then Developer's Toolkit returns an error. |
| <i>itemCode</i> | The variable that specifies which item to query. Values include: <ul style="list-style-type: none">■ PVCS_VCFGITEM_ACCESS_DB
Specifies the access control database.■ PVCS_VCFGITEM_MASTER_CFG_FILE
Specifies the master configuration file.■ PVCS_VCFGITEM_USER_ID_SOURCE
Specifies the user identification source.■ PVCS_VCFGITEM_LANGUAGE
Specifies the default language. |

- `PVCS_VCFGITEM_MSG_FILE`
Specifies the path to the message file.
- `PVCS_VCFGITEM_LOCALE_FILE`
Specifies the path to the locale file.

`pVcfgData` Pointer to the buffer that receives the configuration value. This buffer contains a null-terminated character string. If this value is not set, then the buffer contains a null string.

`bufLen` Length of the data buffer.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_INVALID_PARAMETER
PVCS_E_BUFFER_OVERFLOW
PVCS_E_BAD_SERIAL_NUMBER
PVCS_E_CANT_OPEN_VCONFIG_FILE
PVCS_E_BAD_VCONFIG_FILE
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Consideration Note that under UNIX, the `DLL_Name` parameter is `library`.

Example

```
/* Initialize configuration information */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);
/* Allocate buffer to hold master configuration file name */
master_cfg = malloc(256);
/* Obtain master configuration file name */
PvcsQueryVconfigItem(
    (char *)0, /* Use default name */
    PVCS_VCFGITEM_MASTER_CFG_FILE, /* VCONFIG item id */
    master_cfg, /* VCONFIG value */
    256); /* Length of buffer */

/* Display master configuration file name */
if (strlen((char *)master_cfg))
    printf("Master configuration file is \"%s\".\n", master_cfg);
else
    printf("Master configuration file not set.\n");
```

Related Function [PvcsVconfig on page 173](#)

PvcsReadDB

This function displays records from an access control database. It is equivalent to the READDB command and requires the ViewAccessDB privilege.

Syntax

```
PvcsReadDB(
    unsigned char *databaseName, /* Input */
    unsigned char *listFile, /* Input */
    void *reserved, /* Input */
    PVCS_FLAGS flags) /* Input */
```

Parameters

<i>databaseName</i>	Pointer to a string containing the name of the access control database. If this parameter is null, then it reads the file name that was embedded by the VCONFIG -A command or specified by the AccessDB directive.
<i>listFile</i>	Pointer to a string containing the name of the output file.
<i>reserved</i>	Reserved for future use. Must be null.
<i>flags</i>	Bit field that controls the operation of this function. Value includes: <ul style="list-style-type: none">■ PVCS_READDB_DISPLAY_PASSWORD Displays all passwords in the database.

Return Values The return value is zero if the function is successful. Other values may be:

PVCS_E_INVALID_PARAMETER
PVCS_E_FILE_NOT_FOUND

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
int status;
char *databaseName = "access.db";
char *listFile = "access.txt";
void *reserved = (void *)0;
FILE *stream;
char line[128];

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Create access control database */
status = PvcsReadDB(
    databaseName, /* Name of access control database */
    listFile, /* Name of output text file */
    reserved, /* Reserved for future use */
    0); /* Do not write passwords to text file */

if (!status) {
    printf("Contents of \"%s\":\n", listFile);
    stream = fopen(listFile, "r");
    while (fgets(line, sizeof(line), stream) != NULL)
        printf("%s", line);
    fclose(stream);
}
```

Related Functions [PvcsAccessCloseDB on page 20](#)
[PvcsAccessOpenDB on page 38](#)
[PvcsMakeDB on page 120](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...

Viewing the access control database

See...

READB command

PvcsRedirectOutput

This function redirects standard output and standard error messages to a file.

Syntax

```
PvcsRedirectOutput (
    unsigned char *fileName,          /* Input */
    PVCS_FLAGS flags)               /* Input */
```

Parameters

fileName Pointer to a string containing the name of an output file. This file will be overwritten if it already exists.

flags Bit field that controls the operation of this function. Values include:

- `PVCS_REDIR_STDOUT`
Redirects messages that go to the standard output device. This includes most processing messages.
- `PVCS_REDIR_STDERR`
Redirects messages that go to the standard error device. This includes the sign-on message and all error messages.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_BAD_REDIRECT
PVCS_E_INVALID_PARAMETER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Consideration You can use the flags `PVCS_REDIR_STDOUT` and `PVCS_REDIR_STDERR` together to redirect all messages to the same file.

Example

```
int status;

/* Keep a log of error messages */
PvcsRedirectOutput("error.log", PVCS_REDIR_STDERR);

/* Turn off screen output to silence PvcsQueryConfiguration */
PvcsRedirectOutput("nul", PVCS_REDIR_STDOUT);

/* Process configuration file */
status = PvcsQueryConfiguration(NULL,
    NULL,
    0,
    PVCS_CONFIG_OVERWRITE);

/* If no error, turn screen output back on */
if (!status)
    PvcsRedirectOutput("con", PVCS_REDIR_STDOUT);
/* Program would continue on from here */
```

Related Functions

- [PvcsQueryConfigurationError](#) on page 140
- [PvcsGetErrorMessage](#) on page 90
- [PvcsInit](#) on page 110
- [PvcsSetGlobalParameter](#) on page 166
- [PvcsDiagnosticEnable](#) on page 66

PvcsRegisterCallback

This function registers a callback function that Developer's Toolkit calls when an event occurs during Version Manager processing. The parameter list passed to your callback function varies depending on the type of callback.

Syntax **For Microsoft C users:**

```
PvcsRegisterCallback(
    int callbackType, /* Input */
    int (PVCS_CALLBACK *function) () /* Input */)
```

For IBM C Set users:

```
PvcsRegisterCallback(
    int callbackType, /* Input */
    int (* PVCS_CALLBACK function) () /* Input */)
```

For Visual C++ users:

```
PvcsRegisterCallback(
    callbackType, /* Input */
    (int (__cdecl *) (void)) function)
```

Parameters



NOTE The syntax for each specific callback type is explained in detail later in this section.

callbackType

Integer that specifies the callback function identified in the header file. Values include:

- PVCS_CALLBACK_CFG_ALIASREF
Calls the callback function when **PvcsQueryConfiguration** encounters an alias referenced in a configuration file.
- PVCS_CALLBACK_CFG_CONDITION
Calls the callback function when **PvcsQueryConfiguration** encounters a conditional construct. This callback function is invoked no more than once per configuration file.
- PVCS_CALLBACK_CFG_INCLUDE
Calls the callback function when **PvcsQueryConfiguration** encounters an INCLUDE (or @) directive.
- PVCS_CALLBACK_CHGDESC
Calls the callback function that Developer's Toolkit calls to retrieve a change description.
- PVCS_CALLBACK_CONFIG
Calls the callback function for each line processed in the configuration file.
- PVCS_CALLBACK_CONFIRM
Calls the callback function when a Yes/No response is required for a particular event.
- PVCS_CALLBACK_DELAY
Calls the callback function that indicates when a file is in use, and that it has entered a semaphore delay/retry loop.

- `PVCS_CALLBACK_FREEMEM`
Calls the callback function that indicates when a buffer, supplied by your application, has finished processing.
- `PVCS_CALLBACK_NO_DIRECTORY`
Calls the callback function if a nonexistent directory is encountered as a directive parameter while processing the configuration file. This callback gives your application the opportunity to create the directory. If you create the directory, your function should return zero.
- `PVCS_CALLBACK_WORKDESC`
Calls the callback function that Developer's Toolkit calls (**PvcsCreateArchive** or **PvcsPutRevision**) to retrieve a workfile description.
- `PVCS_CALLBACK_YIELD`
Calls the callback function at frequent intervals during processing to yield control to the operating system.

function Pointer to the function that Developer's Toolkit calls when the callback event occurs. The function type is `PVCS_CALLBACK`, which is defined in `PVCS.H`.

Return Value The return value is zero if the function is successful. Otherwise it returns `PVCS_E_INVALID_PARAMETER`. See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- Your callback function should return zero if you want Developer's Toolkit to continue execution. If the function returns a non-zero value, the Developer's Toolkit stops processing and returns `PVCS_E_USER_ABORTED`.
- When calling this function from a DLL, disable stack checking on callback functions. To disable stack checking using the Microsoft C compiler, use either the `/Gs` compiler option, or the `check_stack` pragma.

PVCS_CALLBACK_CFG_ALIASREF

This callback type registers a function that Developer's Toolkit calls when **PvcsQueryConfiguration** encounters an alias in the configuration file. This callback is invoked at most once per configuration file.

Syntax

```
int PVCS_CALLBACK PvcsCallbackCfgAliasRef(
    char *configFile) /* Input */
```

Parameter

configFile Pointer to a string that contains the name of the configuration file that is being processed. This is the name of the file that contains the alias reference.

Return Value This function should return `PVCS_OK` or `PVCS_CANCEL`. Developer's Toolkit terminates the operation if you return `PVCS_CANCEL`.

PVCS_CALLBACK_CFG_CONDITIONAL

This callback type registers a function that Developer's Toolkit calls when **PvcsQueryConfiguration** encounters a conditional construct. This callback is invoked at most once per configuration file.

Syntax `int PVCS_CALLBACK PvcsCallbackCfgConditional(
 unsigned char *configFile) /* Input */`

Parameter

configFile Pointer to a string that contains the name of the configuration file that is being processed. This is the name of the file that contains the conditional construct.

Return Value This function should return `PVCS_OK` or `PVCS_CANCEL`. Developer's Toolkit terminates the operation if you return `PVCS_CANCEL`.

PVCS_CALLBACK_CFG_INCLUDE

This callback type registers a function that Developer's Toolkit calls when **PvcsQueryConfiguration** encounters an INCLUDE (or @) directive.

Syntax `int PVCS_CALLBACK PvcsCallbackCfgInclude(
 char *configFile, /* Input */
 char *includeFile, /* Input */
 int includeLevel, /* Input */
 void *reserved) /* Reserved */`

Parameters

configFile Pointer to a string that contains the name of the configuration file that is being processed. This is the name of the file that contains the INCLUDE directive.

includeFile Pointer to a string that contains the name of the file that is being included.

includeLevel Integer that contains the number of include nesting levels.

reserved Reserved for future use; must be null.

Return Value This function should return `PVCS_OK` or `PVCS_CANCEL`. Developer's Toolkit terminates the operation if you return `PVCS_CANCEL`.

PVCS_CALLBACK_CHGDESC

This callback type registers a function that Developer's Toolkit (**PvcsPutRevision**) calls to retrieve a change description from your application.

Syntax `int PVCS_CALLBACK PvcsCallbackChgDesc(
 char *workfileName, /* Input */
 char *archiveName, /* Input */
 char **ppDescription, /* Input */
 void *reserved) /* Reserved */`

Parameters

<i>workfileName</i>	Pointer to a string that contains the name of the workfile.
<i>archiveName</i>	Pointer to a string that contains the name of the archive.
<i>ppDescription</i>	Pointer to a pointer to a buffer that contains the workfile description. Your program supplies the buffer and indirectly updates the pointer.
<i>reserved</i>	Reserved for future use; must be null.

Return Value This function should return `PVCS_OK` or `PVCS_CANCEL`. Developer's Toolkit terminates the operation if you return `PVCS_CANCEL`.

PVCS_CALLBACK_CONFIG

This callback type registers a function that Developer's Toolkit (**PvcsQueryConfiguration**) calls to retrieve configuration information. In most cases, Developer's Toolkit calls your callback function once for each line that it reads. However, no callbacks exist for conditional constructs (for example, `%if`) or the following directives:

Abort
Echo
End
EndMaster
Include

Some directives apply to two configuration items. For example, the MultiLock directive is equivalent to MultiLock User and MultiLock Revision. The following directives generate two callbacks:

Multilock	<code>PVCS_CFGITEM_MULTILOCKUSER</code> <code>PVCS_CFGITEM_MULTILOCKREV</code>
Semaphore	<code>PVCS_CFGITEM_SEMAPHORELOCAL</code> <code>PVCS_CFGITEM_SEMAPHORENETWORK</code>
Compress	<code>PVCS_CFGITEM_COMPRESSIMAGE</code> <code>PVCS_CFGITEM_COMPRESSDELTA</code>
Share	<code>PVCS_CFGITEM_SHARELOCAL</code> <code>PVCS_CFGITEM_SHARENET</code>

Syntax

```
int PVCS_CALLBACK ConfigCallbackFunction
    int configItemType, /* PVCS_CFGITEM_... */
    char *configLine, /* Copy of the line */
    char *configFileName, /* Name of config file */
    unsigned configLineNumber) /* Line number in file */
```

Parameters

<i>configItemType</i>	Variable that specifies the configuration item type.
<i>configLine</i>	Pointer to a buffer that receives a copy of a line in the configuration file.

configFileName Pointer to the name of the configuration file.

configLineNumber Pointer to a buffer that receives the line number in the configuration file.

Return Value This function should return `PVCS_YES`, `PVCS_NO`, or `PVCS_CANCEL`. Developer's Toolkit terminates the operation if you return `PVCS_CANCEL`.

Related Function [PvcsQueryConfigurationItem on page 142](#)

PVCS_CALLBACK_CONFIRM

This callback type registers a function that Developer's Toolkit calls when it requires a Yes/No response to a particular event.

Syntax

```
int PVCS_CALLBACK PvcsCallbackConfirm(
    char *promptString,           /* Input */
    int category,                /* Input */
    char void *reserved)        /* Reserved */
```

Parameters

promptString Pointer to a string that is the message prompt provided by Developer's Toolkit. For example, this string might be:
"A writable \"test.c\" exists."

category Integer that identifies the category of the prompt (list below).

reserved Reserved for future use; must be null.

Return Value This function should return `PVCS_YES`, `PVCS_NO`, or `PVCS_CANCEL`. Developer's Toolkit terminates the operation if you return `PVCS_CANCEL`.

Prompt Categories

The *category* parameter identifies the type of prompt. The following table lists the categories and the *promptString* parameters associated with each:

Category	Prompt String
<code>PVCS_CONFIRM_DELETE_BRANCH</code>	Delete branch "branchRevisionNumber" from archive?
<code>PVCS_CONFIRM_DELETE_REVISION</code>	Delete revision "revision1" from archive?
<code>PVCS_CONFIGRM_DELETE_REVISIONS</code>	Delete revisions "revision1" to "revision2" from archive?
<code>PVCS_CONFIRM_MRG_OVERWRITE</code>	Output file "workfile" exists, overwrite?
<code>PVCS_CONFIRM_OVERWRITE_ARCHIVE</code>	Archive "archive" exists. Overwrite?
<code>PVCS_CONFIRM_LOCK_BRANCHWARN</code>	Locking "archive" rev revision would cause a branch when checked in, get anyway?
<code>PVCS_CONFIRM_OVERWRITE_WORK</code>	A writable "workfile" exists, get anyway?
<code>PVCS_CONFIRM_REUSE_COMMENT</code>	Use previous comment for file "archive"?
<code>PVCS_CONFIRM_PUT_UNCHANGED</code>	Workfile "workfile" unchanged, put anyway?

Category	Prompt String
PVCS_CONFIRM_REPLACE_VERSION	Version "version" is already defined in archive "archive". Overwrite?
PVCS_CONFIRM_PUT_OLDER	Workfile "workfile" is older than its parent, put anyway?
PVCS_CONFIRM_MULTILOCK	Rev "revision1" in archive "archive" already locked. Apply additional lock?"
PVCS_CONFIRM_REPLACE_GROUP	Group "promotionGroup" is already defined in archive "archive". Overwrite?
PVCS_CONFIRM_BREAKLOCK	Unlock anyway?
PVCS_CONFIRM_PROMOTE_XBRANCH	Promoting "archive" from "group1" to "group2" will cross a branch boundary, has a merge been run?

PVCS_CALLBACK_DELAY

This callback type registers a function that Developer's Toolkit calls when a file is in use, and it has entered a semaphore delay/retry loop. This callback can display the number of remaining retries or cancel the operation.



NOTE Developer's Toolkit invokes this callback when a semaphore exists. The configuration file specifies the number of retry attempts (**SemaphoreRetry**), and the amount of time to delay between attempts (**SemaphoreDelay**).

Syntax

```
PvcsCallbackDelay(
    char *fileName,                /* Input */
    int attemptsRemaining,        /* Input */
    void *reserved)              /* Reserved */
```

Parameters

<i>fileName</i>	Pointer to a string that contains the name of the file in use.
<i>attemptsRemaining</i>	Integer that contains the number of remaining retries.
<i>reserved</i>	Reserved for future use; must be null.

Return Values This function should return `PVCS_OK` or `PVCS_CANCEL`. Developer's Toolkit terminates the operation if you return `PVCS_CANCEL`.

PVCS_CALLBACK_FREEMEM

This callback type registers a function that Developer's Toolkit calls when it finishes processing a buffer that was supplied by your application. For example, the `PVCS_CALLBACK_CHGDESC` callback returns a pointer to a buffer that contains the change description. Developer's Toolkit calls the `PVCS_CALLBACK_FREEMEM` function to notify your program that it can free memory associated with the buffer.

Syntax

```
PvcsCallbackFreeMem(
    char *pAllocateMemory,        /* Input */
    void *reserved)              /* Input */
```

Special Considerations Developer's Toolkit calls `PVCS_CALLBACK_FREEMEM` when it finishes processing the description buffer (`ppDescription`). It doesn't call the `PVCS_CALLBACK_FREEMEM` function if you didn't register one.

Parameters

`pAllocateMemory` Pointer to memory allocated by your program.
`reserved` Must be null; reserved for future use.

Return Value This function should return `PVCS_OK` or `PVCS_CANCEL`. Developer's Toolkit terminates the operation if you return `PVCS_CANCEL`.

PVCS_CALLBACK_WORKDESC

This callback type registers a function that Developer's Toolkit (**PvcsCreateArchive** or **PvcsPutRevision**) calls to retrieve a workfile description.

Syntax

```
PvcsCallbackWorkDesc (  
    char *workfileName,           /* Input */  
    char *archiveName,           /* Input */  
    char **ppDescription,        /* Input */  
    void *reserved)              /* Reserved */
```

Parameters

`workfileName` Pointer to a string that contains the name of the workfile.
`archiveName` Pointer to a string that contains the name of the archive.
`ppDescription` Pointer to a pointer to a buffer that contains the workfile description. Your program supplies the buffer and indirectly updates the pointer.
`reserved` Reserved for future use; must be null.

Return Value This function should return `PVCS_OK` or `PVCS_CANCEL`. Developer's Toolkit terminates the operation if you return `PVCS_CANCEL`.

PVCS_CALLBACK_NO_DIRECTORY

Developer's Toolkit calls this callback function if it detects a nonexistent directory as a directive parameter while processing the configuration file. The following directives can trigger this callback:

```
ArchiveWorkPVCS_CFGITEM_ARCHIVWORKDIR  
WorkDir PVCS_CFGITEM_WORKDIR  
SemaphoreDirPVCS_CFGITEM_SEMDIR  
VCSDir PVCS_CFGITEM_VCSDIR
```

Syntax

```
int PVCS_CALLBACK NoDirectoryCallbackFunction(  
    int configItemType, /* PVCS_CFGITEM_... */  
    char *path) /* Directory path */
```

Parameters

<i>configItemType</i>	Variable that identifies the configuration item.
<i>path</i>	Pointer to a string that identifies the path to the directory.

Return Value This function should return `PVCS_OK` or `PVCS_CANCEL`. Developer's Toolkit terminates the operation if you return `PVCS_CANCEL`.

PVCS_CALLBACK_YIELD

This callback type calls the callback function at frequent intervals during processing to yield central control to the operating system.

Syntax `int PVCS_CALLBACK YieldCallbackFunction(void)`

Example

```

/* Register a "yield" function */
PvcsRegisterCallback(
    PVCS_CALLBACK_YIELD, /* Callback func identifier */
    callbackYield); /* Function to call */

/* Register a "config" function */
PvcsRegisterCallback(
    PVCS_CALLBACK_CONFIG, /* Callback func identifier */
    callbackConfig); /* Function to call */

/* Register a "no directory" function */
PvcsRegisterCallback(
    PVCS_CALLBACK_NO_DIRECTORY, /* Callback func identifier */
    callbackNoDirectory); /* Function to call */

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);
.
.
.
}

#pragma check_stack(off)
    /* When calling functions from a DLL, you */
    * must disable stack checking. Microsoft C */
    * provides this pragma to disable stack checking. */

/*
 * Callback function that is called at frequent intervals.
 */
static int PVCS_CALLBACK callbackYield(void)
{
    static int timesCalled = 0;
    int status = 0;
    printf("Yield callback: %d\n", ++timesCalled);
    return status;
}

/*
 * Callback func called during configuration file processing.

```

```
*/
static int PVCS_CALLBACK callbackConfig(int itemType,
    char *cfgLine, char *fileName, unsigned lineNumber)
{
    int status = 0;
    printf("Config callback: %2d: %s (%u) \"%s\"\n",
        itemType, fileName, lineNumber, cfgLine);
    return status;
}

/*
 * Callback function that is called during configuration file
 * processing if a directive specifies a nonexistent
 * directory.
 */
static int PVCS_CALLBACK callbackNoDirectory(int itemType, char *path)
{
    int answer;
    int status = 0;
    printf("NoDirectory callback: directory \"%s\" does
        not exist.\n", path);
    printf("\tCreate? (y/n) ");
    answer = getche();
    printf("\n");
    if (answer == 'n')
        status = 1; /* Abort processing */
    else
        mkdir(path); /* Create dir and continue */
    return status;
}

#pragma check_stack() /* Enable stack checking */
```

Related Functions [PvcsQueryConfigurationItem on page 142](#)
[PvcsRegisterBuildCallback on page 188](#)

PvcsRegisterEvent

This function registers an event trigger. Once registered, Developer's Toolkit executes the event trigger whenever its associated event occurs during run time.

Syntax

```
PvcsRegisterEvent(
    int eventID, /* Input */
    int eventTriggerType, /* Input */
    unsigned char *triggerInfo) /* Input */
```

Parameters

eventID

Integer that identifies the event that triggers this handler.
Values include:

- PVCS_EVENT_ALL_EVENTS
Registers a trigger that is executed whenever any event occurs.

- PVCS_EVENT_UNCOND_PRE_PUT
Registers a trigger that is executed before a new revision is checked in and when the workfile has not yet been read by Version Manager.
- PVCS_EVENT_PRE_PUT
Registers a trigger that is executed before a new revision is checked in.
- PVCS_EVENT_POST_PUT
Registers a trigger that is executed after a revision is checked in.
- PVCS_EVENT_PRE_GET
Registers a trigger that is executed before a workfile is checked out.
- PVCS_EVENT_POST_GET
Registers a trigger that is executed after a workfile is checked out.
- PVCS_EVENT_POST_JOURNAL
Registers a trigger that is executed after an entry is written to the journal file (Journal directive in effect).
- PVCS_EVENT_PRE_PROMOTE
Registers a trigger that is executed before a revision is promoted.
- PVCS_EVENT_POST_PROMOTE
Registers a trigger that is executed after a revision is promoted.
- PVCS_EVENT_PRE_VERSION_LABEL
Registers a trigger that is executed before a version label is applied.
- PVCS_EVENT_POST_VERSION_LABEL
Registers a trigger that is executed after a version label is applied.
- PVCS_EVENT_PRE_LOCK
Registers a trigger that is executed before a revision is locked.
- PVCS_EVENT_POST_LOCK
Registers a trigger that is executed after a revision is locked.
- PVCS_EVENT_PRE_UNLOCK
Registers a trigger that is executed before a revision is unlocked.
- PVCS_EVENT_POST_UNLOCK
Registers a trigger that is executed after a revision is unlocked.
- PVCS_EVENT_PRE_CREATE_ARCHIVE
Registers a trigger that is executed before a new archive is created.

- `PVCS_EVENT_POST_CREATE_ARCHIVE`
Registers a trigger that is executed after a new archive is created.

eventTriggerType Identifies the type of event trigger. It can be an executable or batch file command line.

`PVCS_EVENT_TYPE_UNKNOWN`
`PVCS_EVENT_TYPE_CMDLINE`

triggerInfo Pointer to a string that contains the name of the executable.

Return Value The return value is zero if the function is successful. Otherwise you can receive `PVCS_E_INVALID_PARAMETER`. See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- You can register only one trigger for each *eventID*. If you try to register a trigger for an event that already has a trigger registered, it replaces the first trigger.
- Remember that if you register an event using the `PVCS_EVENT_ALL_EVENTS` flag, it registers a trigger that is executed whenever *any* event occurs.

Example `char *theCmdLine = "build -f myevent.bld";`

```
/* Register an event. */
PvcsRegisterEvent(PVCS_EVENT_POST_PUT,
    PVCS_EVENT_TYPE_CMDLINE,
    (PVCS_PUCHAR)theCmdLine);

/* At this point you might do any other processing.
 * When a check-in action occurs, theCmdLine will be executed,
 * causing the build script MYEVENT.BLD to be executed. */

/* At program completion (or earlier) you should unregister
 * all events that you registered */

PvcsUnRegisterEvent(PVCS_EVENT_POST_PUT);
```

Related Functions [PvcsUnRegisterEvent on page 172](#)
[PvcsQueryConfigurationItem on page 142](#)

PvcsReportDifferences

This function compares two files or revisions and reports the differences between them. It is equivalent to the `VDIFF` command.

Syntax

```
PvcsReportDifferences (
    ARCHIVEHANDLE hArchive,          /* Input */
    unsigned char *refFile,         /* Input */
    unsigned char *refRev,          /* Input */
    unsigned char *tgtFile,         /* Input */
    unsigned char *tgtRev,          /* Input */
    unsigned char *outFile,         /* Input */
    ...)
```

```

unsigned short tabs,                /* Input */
unsigned short contextLines,       /* Input */
unsigned short recordLength,       /* Input */
unsigned char *columnMask,         /* Input */
PVCS_FLAGS flags)                 /* Input */

```

Parameters

<i>hArchive</i>	Handle returned by PvcsOpenArchive . If the archive is not open, specify <code>ARCHIVEHANDLE_NOT_OPEN</code> .
<i>refFile</i>	Pointer to a string containing the name of the reference file. Specify a null pointer if the reference file is an archive whose archive handle is specified in the <i>hArchive</i> parameter.
<i>refRev</i>	Pointer to a string containing the revision number or version label of the reference file. If the version label begins with a number, precede it with a backslash (\). If the reference file is not an archive, or if the revision is the tip revision, specify a null pointer.
<i>tgtFile</i>	Pointer to a string containing the name of the target file. Specify a null pointer if the target file is an archive whose archive handle is specified in the <i>hArchive</i> parameter.
<i>tgtRev</i>	Pointer to a string containing the revision number or version label of the target file. If the version label begins with a number, precede it with a backslash. If the target file is not a revision, or if it is the tip revision, specify a null pointer.
<i>outFile</i>	Pointer to a string containing the name of a file to which this function writes the difference report. The specified file will be overwritten if it exists. If this parameter is null, the report is sent to standard output. This parameter is equivalent to the <code>VDIFF -XO</code> command.
<i>tabs</i>	Integer containing the number of spaces to display between tabs in the difference report. This parameter is equivalent to the <code>VDIFF -E</code> command.
<i>contextLines</i>	Integer containing the number of context lines to display in the report. If you specify 0, the entire report displays. This parameter is equivalent to the <code>VDIFF -L</code> command.
<i>recordLength</i>	Integer specifying the record length of the files to be compared. Specify 0 to indicate that the files use newline characters to indicate the ends of lines. This parameter is equivalent to the <code>VDIFF -XRecordLength</code> command.
<i>columnMask</i>	String specifying the columns to convert to spaces when comparing files. Specify a null pointer to indicate no column masking. This parameter is equivalent to the <code>VDIFF -XColumnMask</code> command.
<i>flags</i>	Bit field that controls the operation of this function. Values include: <ul style="list-style-type: none"> ■ <code>PVCS_DIFF_ALLDIFF</code> Displays all differences. This flag is equivalent to the <code>VDIFF -A</code> command. ■ <code>PVCS_DIFF_APPEND</code> Appends the report to an existing file.

- `PVCS_DIFF_BRIEF`
Eliminates line numbers from the report. This flag is equivalent to the `VDIFF -N` command.
- `PVCS_DIFF_NOMOVE`
Does not display moved text. The report displays moved text as deletions and insertions.
- `PVCS_DIFF_IGN_WHITE`
Ignores leading and trailing white space during comparison. This flag is equivalent to the `VDIFF -B` command.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ACCESS_DENIED
PVCS_E_ACCESS_VIOLATION
PVCS_E_ARCHIVE_NOT_FOUND
PVCS_E_BAD_FILENAME
PVCS_E_FILE_BUSY
PVCS_E_INVALID_PARAMETER
PVCS_E_NO_REVISION
PVCS_E_USER_ABORTED
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

```
Example char *outFile = "foo.dif";
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Report differences between tip of archive and workfile */
status = PvcsReportDifferences(ARCHIVEHANDLE_NOT_OPEN,
    "foo.c_v", /* Use archive as reference file */
    NULL, /* Use tip of archive */
    "foo.c", /* Use workfile as target file */
    NULL, /* Not an archive */
    outFile, /* Difference output file */
    0, /* Use default tab spacing */
    10, /* Display 10 lines of context */
    0, /* Newlines are end of line */
    NULL, /* No columnmask */
    PVCS_DIFF_IGN_WHITE); /* Ignore white space */

if (!status)
    printf("Created difference report in \"%s\".\n", outFile);
```

Related Functions [PvcsFindFirstArchive on page 77](#)
[PvcsTestDifferences on page 169](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Comparing files	<i>VDIFF command</i>
Specifying archive and workfile names	<i>File Specification</i>

PvcsSetDescription

This function changes either the work file description in a log file or the revision description in an archive.

Syntax

```
PvcsSetDescription(
    ARCHIVEHANDLE logHandle,          /* Input */
    PVCS_PUCHAR fileName,            /* Input */
    PVCS_PUCHAR revision,            /* Input */
    unsigned char *pBuffer,          /* Input */
    unsigned long bufLen,            /* Input */
    PVCS_FLAGS flags);              /* Input */
```

Parameters

<i>logHandle</i>	Handle returned by PvcsOpenArchive . If the archive is not open, specify <code>ARCHIVEHANDLE_NOT_OPEN</code> .
<i>fileName</i>	Pointer to a string containing the name of the reference file. Specify a null pointer if the reference file is an archive whose archive handle is specified in the <i>logHandle</i> parameter.
<i>revision</i>	Pointer to a string that contains a revision number, version label, or promotion group. If the version label begins with a number, precede it with a backslash (\). This parameter is equivalent to the VCS <code>-R</code> command.
<i>pBuffer</i>	Pointer to a string that contains the description of the change.
<i>bufLen</i>	Specifies the length of the <i>pBuffer</i> .
<i>flags</i>	Bit field that controls the operation of this function. Values include: <ul style="list-style-type: none"> ■ <code>PVCS_SETDESC_WORKFILE</code> Change the work file description for the archive. This is the default. ■ <code>PVCS_SETDESC_REVISION</code> Change the check-in description for the specified revision. ■ <code>PVCS_SETDESC_OVERWRITE</code> Replace the description with the one specified in <i>pBuffer</i> instead of appending it to the current description. ■ <code>PVCS_SETDESC_NOLOG</code> Do not also append time and user ID to the description when running in append mode.

Special Consideration

- There are no special considerations for this function.

Example

```
ARCHIVEHANDLE handle;
char* description = "New revision description";

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);
```

```
/* Open archive for update */
PvcsOpenArchive("foo.c_v", NULL, 0, NULL,
    0, PVCS_OPEN_UPDATE, &handle);

/* Setup new description for 1.1 revision */
PvcsSetDescription(
    handle,
    "",
    "1.1",
    description,
    strlen(description) +1,
    PVCS_SETDESC_REVISION
);

/* Close archive */
PvcsCloseArchive(handle);
```

Related Functions [PvcsCreateArchive on page 62](#)
[PvcsGetRevision on page 97](#)
[PvcsPutRevision on page 132](#)
[PvcsReportDifferences on page 162](#)

PvcsSetGlobalParameter

This function sets global parameters that affect all Developer's Toolkit functions. If you are using Developer's Toolkit functions to develop a Windows application, you must call **PvcsSetGlobalParameter()** with the `PVCS_GLOBAL_NOPROMPT` flag to suppress prompts from the toolkit. You should also call the `PVCS_GLOBAL_NOMESSAGES` flag to suppress the display of console messages.

Syntax `PvcsSetGlobalParameter(`
`int globalParameter` `/* Input */`

Parameters

<code><i>globalParameter</i></code>	Integer that identifies the global parameter to set. Values include: <ul style="list-style-type: none">■ <code>PVCS_GLOBAL_PROMPT</code> Enables all interactive prompts. This is the default.■ <code>PVCS_GLOBAL_NOPROMPT</code> Suppresses all interactive prompts. Developer's Toolkit functions return an error in circumstances that require a prompt.■ <code>PVCS_GLOBAL_MESSAGES</code> Enables console messages. This is the default.■ <code>PVCS_GLOBAL_NOMESSAGES</code> Suppresses the display of console messages.
-------------------------------------	---

- Special Consideration
- If you are using Developer's Toolkit functions to develop a Windows application, you must call **PvcsSetGlobalParameter()** with the `PVCS_GLOBAL_NOPROMPT` flag to suppress prompts from the toolkit. You should also call the `PVCS_GLOBAL_NOMESSAGES` flag to suppress the display of console messages.

Using **PvcsSetGlobalParameter()** the `PVCS_GLOBAL_NOPROMPT` flag causes Developer's Toolkit to return an error when it encounters a situation in which a prompt is required. To handle the error, you should also call **PvcsRegisterCallback()** with the `PVCS_CALLBACK_CONFIRM` type to register a function that is called every time a yes/no response is required by Developer's Toolkit. Developer's Toolkit only terminates the application if the callback function returns `PVCS_CANCEL`.

```
Example  int status;

        /* Initialize configuration settings */
        PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

        /* Abort program if a prompt is required */
        PvcsSetGlobalParameter(PVCS_GLOBAL_NOPROMPT);
        /* Program would continue on from here */
```

- Related Functions
- [PvcsCreateArchive on page 62](#)
 - [PvcsGetRevision on page 97](#)
 - [PvcsMerge on page 121](#)
 - [PvcsPutRevision on page 132](#)
 - [PvcsReportDifferences on page 162](#)

PvcsSetProjectSemaphore

This function sets or clears a semaphore for an archive directory, or all directories named by the `VCSDir` directive. If set, this semaphore disallows update access to all archives in the directory. It requires the `SetProjectSemaphore` privilege.

```
Syntax  PvcsSetVcsdirSemaphore(
        unsigned char *archDir,           /* Input */
        unsigned char *semName,         /* Input */
        PVCS_FLAGS flags                 /* Input */
    )
```

Parameters

- | | |
|----------------|---|
| <i>archDir</i> | Pointer to a string that contains the name of an archive directory or archive name. The pointer can be null, which implies all directories named by <code>VCSDir</code> . |
| <i>semName</i> | Name of the project semaphore. A null pointer causes Developer's Toolkit to use the default name. |
| <i>flags</i> | Bit field that controls how the function operates. Values include: <ul style="list-style-type: none"> ■ <code>PVCS_SEMAPHORE_SET</code>
Sets the semaphore. ■ <code>PVCS_SEMAPHORE_CLEAR</code>
Clears the semaphore. |

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_CANT_CREATE_SEMAPHORE
PVCS_E_CANT_DELETE_SEMAPHORE
PVCS_E_INVALID_PARAMETER
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- If the *archDir* parameter points to an archive directory, Developer's Toolkit creates the semaphore for that directory. If it points to an archive name, the semaphore is created for the directory containing that archive. The archive name can be unqualified; in this case the archive directory is located using the VCSDir path. If the *archDir* parameter is a null pointer, semaphores are created for all directories named by VCSDir.
- All project semaphores are file semaphores. Project semaphores are unaffected by Semaphore directives.
- If a semaphore exists in a directory, and you try to create another semaphore in the same directory, then Developer's Toolkit invokes the `PVCS_CALLBACKFUNC_SEMAPHORE` function. The directory name, and `PVCS_SEMAPHORE_ALREADY_SET` error are passed to the callback function.
- If a semaphore does not exist in a directory, and you try to clear it, Developer's Toolkit invokes the `PVCS_CALLBACKFUNC_SEMAPHORE` function. The directory name and `PVCS_SEMAPHORE_ALREADY_CLEAR` error are passed to the callback function.
- Each time an archive is opened for an update operation, the directory in which the archive resides is checked for a project semaphore. If one is present, then the Developer's Toolkit call attempting an update returns a `PVCS_E_PROJECT_BUSY` error. No retries are attempted.
- Command-line consideration: If a command-line command (GET, PUT, VCS) attempts to update an archive residing in a directory containing a project semaphore, Developer's Toolkit returns an error.
- Previous versions of Version Manager (5.1.1 or earlier) do not recognize project semaphores.

Example

```
PVCS_PUCHAR szArchive = NULL;
PVCS_PUCHAR szSemaphore = NULL;

/ * Initialize configuration settings */
rc = PvcQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/*
 * Set a project semaphore. This code just puts one in the archive
 * directory that the archive we were given is in using the default
 * project semaphore name. Other options are:
 *
 * szArchive:
 * NULL - set semaphore on all directories in VCSDir,
 * A directory - set semaphore in that directory,
 * An archive - set semaphore in directory containing the archive */

rc = PvcSetProjectSemaphore(
    szArchive,
    NULL,
    PVCS_SEMAPHORE_SET);

/*
```



```

    * Clear the project semaphore.
    */

rc = PvcsSetProjectSemaphore(
    szArchive,
    NULL,
    PVCS_SEMAPHORE_CLEAR);

```

PvcsTestDifferences

This function compares two files or revisions and returns a status code that indicates whether they are different. This is equivalent to the VDIFF -T command.

```

Syntax PvcsTestDifferences(
    ARCHIVEHANDLE hArchive,                /* Input */
    unsigned char *refFile,               /* Input */
    unsigned char *refRev,                /* Input */
    unsigned char *tgtFile,               /* Input */
    unsigned char *tgtRev,                /* Input */
    unsigned short *diffStatus,           /* Output */
    unsigned short recordLength,          /* Input */
    unsigned char *columnMask,           /* Input */
    PVCS_FLAGS flags)                    /* Input */

```

Parameters

<i>hArchive</i>	Handle returned by PvcsOpenArchive . If the archive is not open, specify <code>ARCHIVEHANDLE_NOT_OPEN</code> .
<i>refFile</i>	Pointer to a string containing the name of the reference file. Specify a null parameter if the reference file is an archive whose archive handle is specified in the <i>hArchive</i> parameter.
<i>refRev</i>	Pointer to a string containing the revision number or version label of the reference file. If the version label begins with a number, precede it with a backslash (\). If the reference file is not an archive, or if it is the tip revision, specify a null pointer.
<i>tgtFile</i>	Pointer to a string containing the name of the target file. Specify a null pointer if the target file is an archive whose archive handle is specified in the <i>hArchive</i> parameter.
<i>tgtRev</i>	Pointer to a string containing the revision number or version label of the target file. If the version label begins with a number, precede it with a backslash. If the target file is not an archive, or if it is the tip revision, specify a null pointer.
<i>diffStatus</i>	Pointer to an integer that indicates whether the target file differs from the reference file. Zero indicates that the files are identical; a non-zero value indicates that the target file has changed.
<i>recordLength</i>	Integer specifying the record length of the files to be compared. Specify 0 to indicate that the files use newline characters to indicate the ends of lines. This parameter is equivalent to the VDIFF -XRecordLength command.
<i>columnMask</i>	String specifying the columns to ignore when comparing. This parameter is equivalent to the VDIFF -XColumnMask command.

flags

Bit field that controls the operation of this function. Value includes:

- `PVCS_DIFF_IGN_WHITE`
Ignores leading and trailing white space during comparison. This flag is equivalent to the `VDIFF -B` command.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ARCHIVE_NOT_FOUND
PVCS_E_NO_REVISION
PVCS_E_FILE_BUSY
PVCS_E_INVALID_PARAMETER
PVCS_E_ACCESS_VIOLATION
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
unsigned short diffStatus;
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Test differences between tip of archive, and workfile */
status = PvcsTestDifferences(ARCHIVEHANDLE_NOT_OPEN,
    "foo.c_v", /* Use archive as ref file */
    NULL, /* Use tip of archive */
    "foo.c", /* Use workfile as target */
    NULL, /* Not an archive */
    &diffStatus, /* Receives difference status */
    0, /* Newlines are end of line */
    NULL, /* No columnmask */
    PVCS_DIFF_IGN_WHITE); /* Ignore leading and trailing
    whitespace */

if (!status) {
    if (!diffStatus)
        printf("Files are identical.\n");
    else
        printf("Files are different.\n");
}
```

Related Functions [PvcsFindFirstArchive on page 77](#)
[PvcsReportDifferences on page 162](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...

Comparing files

Specifying archive and workfile names

See...*VDIFF* command*File Specification*

PvcsUnlockRevision

This function unlocks a revision in an archive. It is equivalent to the VCS -U command.

```
Syntax PvcsUnlockRevision(
    ARCHIVEHANDLE hArchive,           /* Input */
    unsigned char *fileName,         /* Input */
    unsigned char *revarg,           /* Input */
    unsigned char *locker)           /* Input */
```

Parameters

<i>hArchive</i>	Handle returned by PvcsOpenArchive . If the archive is not open, specify <code>ARCHIVEHANDLE_NOT_OPEN</code> .
<i>fileName</i>	Pointer to the name of an archive or a workfile. This parameter is required only if the archive is not open.
<i>revarg</i>	Pointer to a string containing the revision number, version label, or promotion group to unlock. If the version label begins with a number, precede it with a backslash (\). If this parameter is null, the function removes all locks owned by <i>locker</i> . This parameter is equivalent to the -R option used with the VCS -U command.
<i>locker</i>	Pointer to a string containing the user ID of the person owning the lock. If this parameter is null, the function uses the current user ID.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ACCESS_VIOLATION
PVCS_E_ARCHIVE_NOT_FOUND
PVCS_E_FILE_BUSY
PVCS_E_INVALID_PARAMETER
PVCS_E_LOCKED_REVISION
PVCS_E_NOT_LOCKED
PVCS_E_USER_ABORTED
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Consideration If *fileName* refers to a workfile, the program infers the archive name. If *fileName* contains wildcards, the program expands it according to the usual Version Manager rules.

```
Example /* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Unlock a revision */
PvcsUnlockRevision(ARCHIVEHANDLE_NOT_OPEN,
    "foo.c_v", /* Archive name */
    "1.12", /* Revision to unlock */
    "DAVEE"); /* User ID of lock owner */
```

Related Functions

- [PvcsGetLockInfo on page 93](#)
- [PvcsLockRevisionGroup on page 114](#)
- [PvcsOpenArchive on page 126](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Unlocking revisions	<i>VCS command</i>
Locking revisions	<i>Revision Locking</i>
Specifying archive and workfile names	<i>File Specification</i>

PvcsUnRegisterEvent

This function removes the handle for a specified event.

Syntax `PvcsUnRegisterEvent(`
`int eventID) /* Input */`

Parameters

- eventID* Integer that identifies the event that triggers this handler. Values include:
- `PVCS_EVENT_ALL_EVENTS`
Unregisters a trigger that would otherwise execute whenever any event occurs.
 - `PVCS_EVENT_UNCOND_PRE_PUT`
Unregisters a trigger that is executed before a new revision is checked in and when the workfile has not yet been read by Version Manager.
 - `PVCS_EVENT_PRE_PUT`
Unregisters a trigger that executes before a new revision is checked in.
 - `PVCS_EVENT_POST_PUT`
Unregisters a trigger that executes after a revision is checked in.
 - `PVCS_EVENT_PRE_GET`
Unregisters a trigger that executes before a workfile is checked out.
 - `PVCS_EVENT_POST_GET`
Unregisters a trigger that executes after a workfile is checked out.
 - `PVCS_EVENT_POST_JOURNAL`
Unregisters a trigger that executes after an entry is written to the journal file (Journal directive in effect).
 - `PVCS_EVENT_PRE_PROMOTE`
Unregisters a trigger that executes before a revision is promoted.
 - `PVCS_EVENT_POST_PROMOTE`
Unregisters a trigger that is executed after a revision is promoted.
 - `PVCS_EVENT_PRE_VERSION_LABEL`
Unregisters a trigger that is executed before a version label is applied.

- PVCS_EVENT_POST_VERSION_LABEL
Unregisters a trigger that is executed after a version label is applied.
- PVCS_EVENT_PRE_LOCK
Unregisters a trigger that is executed before a revision is locked.
- PVCS_EVENT_POST_LOCK
Unregisters a trigger that is executed after a revision is locked.
- PVCS_EVENT_PRE_UNLOCK
Unregisters a trigger that is executed before a revision is unlocked.
- PVCS_EVENT_POST_UNLOCK
Unregisters a trigger that is executed after a revision is unlocked.
- PVCS_EVENT_PRE_CREATE_ARCHIVE
Unregisters a trigger that is executed before a new archive is created.
- PVCS_EVENT_POST_CREATE_ARCHIVE
Unregisters a trigger that is executed after a new archive is created.

Return Values The return value is zero if the function is successful. Otherwise you can receive PVCS_E_INVALID_PARAMETER. See [Chapter 4, "Return Values"](#) for descriptions of return values.

```
Example PVCS_PUCHAR theCmdLine = "build -f myevent.bld";

/* Register an event. */
PvcsRegisterEvent(PVCS_EVENT_POST_PUT,
    PVCS_EVENT_TYPE_CMDLINE,
    theCmdLine);

/* At this point you might do any other processing. When
 * a check in action occurs, theCmdLine will be executed,
 * causing the build script MYEVENT.BLD to be executed. */

/* At program completion (or earlier) you should unregister
 * all events that you registered */
PvcsUnRegisterEvent(PVCS_EVENT_POST_PUT);
```

Related Function [PvcsRegisterEvent on page 160](#)
[PvcsQueryConfigurationItem on page 142](#)

PvcsVconfig

This function embeds the master configuration file, access control database name, and the list of user ID sources in the Version Manager DLL files. This function is equivalent to the VCONFIG command.

```
Syntax PvcsVconfig(
    unsigned char *DLLName,                /* Input */
    unsigned char *accessDbName,          /* Input */
    unsigned char *masterConfigName,     /* Input */
    unsigned char *userIDSources,        /* Input */
    ...)
```

```
unsigned char *language,           /* Input */
unsigned char *messagePath,       /* Input */
unsigned char *localePath,       /* Input */
void *reserved)                  /* Reserved */
```

Parameters

<i>DLLName</i>	Pointer to a string that specifies the Developer's Toolkit DLL to configure (Windows or Protected Mode DLL). The file name cannot contain wildcards. If this is a null pointer, then Developer's Toolkit uses the default file name. If it is a null string, then it returns an error.
<i>accessDbName</i>	Pointer to a string that specifies the access control database. If it is a null pointer, then its setting is not affected. If it is a null string, then the currently embedded access control database is removed. This parameter is equivalent to the VCONFIG -A command.
<i>masterConfigName</i>	Pointer to a string that specifies the master configuration file. If it is a null pointer, then its setting is not affected. If it is a null string, then the currently embedded master configuration name is removed. This parameter is equivalent to the VCONFIG -C command.
<i>userIDSources</i>	Pointer to a string that specifies the user identification sources and the order in which Version Manager uses them. Sources are not case-sensitive, and include the following values: HOST LANMAN NETWARE UNKNOWN VCSID VLOGIN If <i>userIdSources</i> is a null pointer, then its setting is not affected. If it is a null string, then the currently embedded user identification sources are removed. This parameter is equivalent to the VCONFIG -C command.
<i>language</i>	Pointer to a string that specifies the default language. If <i>language</i> is a null pointer, then its setting is not affected. If <i>language</i> is a null string, then the currently embedded default language is removed. This parameter is equivalent to the VCONFIG -I command.
<i>messagePath</i>	Pointer to a string that names the path to the message file. If <i>messagePath</i> is a null pointer, then its setting is not affected. If it is a null string, then the currently embedded message file path is removed. This parameter is equivalent to the VCONFIG -P command.
<i>localePath</i>	Pointer to a string that specifies the path to the locale file. If it is a null pointer, then its setting is not affected. If it is a null string, then the currently embedded locale file path is removed. This parameter is equivalent to the VCONFIG -C command.
<i>reserved</i>	Reserved for future use.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_INVALID_PARAMETER
PVCS_E_BAD_USER_ID_SOURCE
PVCS_E_CANT_OPEN_VCONFIG_FILE
PVCS_E_CANT_READ_VCONFIG_FILE
```

```
PVCS_E_CANT_WRITE_VCONFIG_FILE
PVCS_E_BAD_SERIAL_NUMBER
PVCS_E_BAD_VCONFIG_FILE
PVCS_E_UNKNOWN_ID_SOURCE
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

For UNIX users:

- Under UNIX, the *DLLName* parameter is *library*.
- Under UNIX, LANMAN and NETWARE are not applicable values for the *userIdSources* parameter. If you use VLOGIN as a login source, you must call **PvcsLogin** to validate a login ID.

Example

```
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Implant configuration information into DLL */
status = PvcsVconfig(
    NULL,          /* Use default DLL file name */
    "c:\\pvcs\\access.db", /* Name of access control db */
    "c:\\pvcs\\master.cfg", /* Name of master cfg file */
    "netware, vlogin, host", /* List of user ID sources */
    NULL,         /* Default language unchanged */
    NULL,        /* Path unchanged */
    NULL,        /* Path unchanged */
    (void *)0); /* Reserved for future use */

if (!status)
    printf("Implanted configuration information.\n");
}
```

PvcsVerifyPromoTree

This function verifies the promotion model by making sure it has exactly one group at the highest level (or *production group*) and that every group (except the production group) promotes to exactly one parent.

Syntax PvcsVerifyPromoTree(
void)

Return Value The return value is zero if the function is successful. The other possible value is PVCS_E_BAD_PROMO_TREE. See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Build the promotion model */
PvcsAddPromoteTreeNode("QA", "PRODUCTION");
```

```

PvcsAddPromoteTreeNode("DEV1", "QA");
PvcsAddPromoteTreeNode("DEV2", "QA");
PvcsAddPromoteTreeNode("DEV3", "QA");

/* Verify the model */
status = PvcsVerifyPromoTree();
if (!status)
    printf("Promotion model defined successfully.\n");

```

Related Functions

- [PvcsGetPromoParent on page 96](#)
- [PvcsGroupToRevision on page 109](#)
- [PvcsPromoteRevision on page 128](#)
- [PvcsVerifyPromoTreeNodeExist on page 176](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...

Promotion models
 Defining a promotion group
 Promoting revisions

See...

Promotion
Promote directive
VPROMOTE command

PvcsVerifyPromoTreeNodeExist

This function determines whether a promotion group exists in a promotion model and indicates whether it is a production group, development group, or neither.

Syntax

```

PvcsVerifyPromoTreeNodeExist(
    unsigned char *node_name,          /* Input */
    unsigned short *value)            /* Output */

```

Parameters

<i>node_name</i>	Pointer to the name of the promotion group to verify.
<i>value</i>	Pointer to a variable that receives one of the following values: <ul style="list-style-type: none"> ■ PVCS_PROMO_DEV Bottom-level group, called a <i>development group</i>. ■ PVCS_PROMO_MID Group exists and is neither a <i>development group</i> nor the <i>production group</i>. ■ PVCS_PROMO_NO_EXIST Group does not exist in the model. ■ PVCS_PROMO_ROOT <i>Production group</i>.

Return Value The return value is zero if the function is successful. The other possible value is PVCS_E_INVALID_PARAMETER. See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Consideration Use **PvcsGroupToRevision** to determine whether an archive contains a revision at the specified promotion group.

```

Example int type;
int i;
char *production = "PRODUCTION";
char *qa = "QA";
char *development[3] = {"DEV1", "DEV2", "DEV3"};
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Build the promotion model */
for (i = 0; i < 3; i++)
    PvcsAddPromoteTreeNode(development[i], qa);
    PvcsAddPromoteTreeNode(qa, production);

/* Verify the existence of groups */
for (i = 0 ; i < 3; i++) {
    PvcsVerifyPromoTreeNodeExist(development[i], &type);
    displayGroupType(development[i], type);
}
PvcsVerifyPromoTreeNodeExist(qa, &type);
displayGroupType(qa, type);
PvcsVerifyPromoTreeNodeExist(production, &type);
displayGroupType(production, type);
.
.
.
void displayGroupType(char *group, int type)
{
    switch (type) {
        case PVCS_PROMO_DEV:
            printf("%s\n" is a development group.\n",
                group); break;
        case PVCS_PROMO_MID:
            printf("%s\n" is an intermediate group.\n",
                group); break;
        case PVCS_PROMO_ROOT:
            printf("%s\n" is the production group.\n",
                group); break;
        case PVCS_PROMO_NO_EXIST:
            printf("%s\n" does not exist in the
                hierarchy.\n", group); break;
    }
}

```

Related Functions

- [PvcsGetPromoParent on page 96](#)
- [PvcsGroupToRevision on page 109](#)
- [PvcsPromoteRevision on page 128](#)
- [PvcsVerifyPromoTree on page 175](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...	See...
Promotion models	<i>Promotion</i>
Defining a promotion group	<i>Promote directive</i>
Promoting revisions	<i>VPROMOTE command</i>

PvcsVersionToRevision

This function returns the revision numbers that are assigned to a specified version label.

```
Syntax PvcsVersionToRevision(
    ARCHIVEHANDLE hArchive,           /* Input */
    unsigned char *fileName,         /* Input */
    unsigned char *versionLabel,     /* Input */
    unsigned short *pVersCount,      /* Input / Output */
    unsigned char *versionTable,     /* Output */
    unsigned short bufLen)          /* Input */
```

Parameters

<i>hArchive</i>	Handle returned by PvcsOpenArchive . If the archive is not open, specify ARCHIVEHANDLE_NOT_OPEN.
<i>fileName</i>	Pointer to the name of an archive or a workfile. This parameter is required only if the archive is not open.
<i>versionLabel</i>	Pointer to a string containing a version label. The version label must exist in the archive. If <i>versionLabel</i> is null, the function returns all revision/version pairs up to the limit specified in <i>pVersCount</i> or until the <i>versionTable</i> buffer is full.
<i>pVersCount</i>	Points to a variable that specifies the number of revision/version pairs to retrieve. The parameter returns the actual number retrieved.
<i>versionTable</i>	Pointer to a buffer that receives the revision/version pairs.
<i>bufLen</i>	Specifies the length of the <i>versionTable</i> buffer.

Return Values The return value is zero if the function is successful. Other values may be:

```
PVCS_E_ACCESS_VIOLATION
PVCS_E_ARCHIVE_NOT_FOUND
PVCS_E_BUFFER_OVERFLOW
PVCS_E_FILE_BUSY
PVCS_E_INVALID_PARAMETER
PVCS_E_NO_REVISION
PVCS_E_NO_VERSION
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Considerations

- If *fileName* refers to a workfile, the program infers the archive name. If *fileName* contains wildcards, the program expands it according to the usual Version Manager rules.

- The format of the buffer is:

<i>revisionString</i>
<i>null</i>
<i>versionString</i>
<i>null</i>
.
.
.
<i>null</i>

Each revision string and version string is null-terminated, and the end of the buffer is marked by an additional null character. The revision number is returned as a printable string—for example, 1.15, 1.5.2.3, or 1.2.1.*. (The last example is a revision string for a floating version label.)

```
Example unsigned short versCount = -1;
char versBuffer[512];
char *bufPtr;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Obtain revisions associated with version labels */
PvcsVersionToRevision(ARCHIVEHANDLE_NOT_OPEN,
    "foo.c_v", /* Name of archive or workfile */
    NULL, /* All revision/version pairs */
    &versCount, /* Returns number of pairs
                retrieved */
    versBuffer, /* Buffer receiving rev/ver
                pairs */
    sizeof(versBuffer)); /* Length of the buffer */

/* Display all revisions with version labels */
bufPtr = versBuffer;
while (versCount--) {
    printf("Revision: %s", bufPtr);
    bufPtr += strlen(bufPtr) + 1; /* Skip over revision */
    printf(" Version: %s\n", bufPtr);
    bufPtr += strlen(bufPtr) + 1; /* Skip over version */
}
```

Related Functions [PvcsAssignVersion on page 52](#)
[PvcsGetRevisionInfo on page 101](#)
[PvcsOpenArchive on page 126](#)

Related Topics For more information, see the following topics in the *Command-Line Reference Guide*.

For information about...

Version labels

Revision numbers

See...

Version Labels

Revision Numbering

Chapter 3

Configuration Builder Functions

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PvcsBuild

This function builds a target according to the rules in a build script that was previously read with **PvcsReadBuildScript**.

```
Syntax PvcsBuild(
    SCRIPTHANDLE theScript,           /* Input */
    unsigned char *targetName,       /* Input */
    unsigned short FAR *lastErrorlevel) /* Output */
```

Parameters

<i>theScript</i>	Handle that was initialized with PvcsReadBuildScript .
<i>targetName</i>	Pointer to a buffer containing the name of the target to be built. The function builds all sources for <i>targetName</i> first, if necessary, and then builds <i>targetName</i> . The function builds the default target if the value is null.
<i>lastErrorlevel</i>	Operating system exit code of the last command executed.

Return Values The return value is one of the following if the function is successful:

```
PVCS_E_MKUPTODATE
PVCS_E_MKWORKED
```

If the operation is not successful, the return value is one of the following:

```
PVCS_E_MKFAILED
PVCS_E_MKABORTED
```

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Special Consideration You can call **PvcsBuild** multiple times using a script handle that was initialized just once.

```
Example char *scriptName = "makefile";
char *target = "foo.exe";
SCRIPTHANDLE handle;
PVCS_FLAGS options = PVCS_RD_DEBUG_OUTPUT |
    PVCS_RD_INHERIT_ENVIRONMENT |
    PVCS_RD_DEFINE_ENV_MACROS;
int errorLevel;
int status;

/* Read build script */
status = PvcsReadBuildScript(
    scriptName, /* Name of build script */
    options, /* Options */
    "MEMORY_MODEL=LARGE", /* Define a macro */
    &handle); /* Receives the script handle */
if (!status) {

    /* Build a target */
    status = PvcsBuild(
        handle, /* Script handle */
        target, /* Target to build */
        &errorLevel); /* Receives exit code of last command */
```

```

/* Display message and close handle */
if (!status) {
    printf("Successfully built target \"%s\".\n", target);
    PvcsCloseBuildScript(handle);
}
}

```

Related Functions [PvcsReadBuildScript on page 184](#)
[PvcsCloseBuildScript on page 183](#)

Related Topics For more information, see the following topics in the *Configuration Builder Reference Guide*.

For information about...	See...
Build script contents	<i>Build Scripts</i>
Building targets	<i>Targets</i>

PvcsCloseBuildScript

This function closes a script handle that was opened by **PvcsReadBuildScript**.

Syntax `PvcsCloseBuildScript (`
`SCRIPTHANDLE theScript)` `/* Input */`

Parameter

theScript Handle that was initialized with **PvcsReadBuildScript**.

Return Value The return value is zero if the function is successful.

Special Considerations

- Use this function to free memory allocated in other Configuration Builder functions.
- Do not call this function if any previous Configuration Builder function terminated unsuccessfully.

Example

```

char *scriptName = "makefile";
SCRIPTHANDLE handle;
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Read build script */
status = PvcsReadBuildScript(scriptName,
    CS_RD_INHERIT_ENVIRONMENT, "", &handle);
if (!status) {

    /* Close build script */
    status = PvcsCloseBuildScript(handle);
    if (!status)

```

```
        printf("Successfully closed build script \"%s\".\n",
              scriptName);
    }
```

Related Functions [PvcsBuild on page 182](#)
[PvcsReadBuildScript on page 184](#)

Related Topics For more information, see the following topics in the *Configuration Builder Reference Guide*.

For information about...	See...
Build script contents	<i>Build Scripts</i>

PvcsReadBuildScript

This function reads a build script and returns a script handle, which is passed to **PvcsBuild**. A script handle identifies a body of rules that describe how to build a project (or parts of a project). You cannot access or modify this body of rules directly; instead, you must use this function.

Syntax

```
PvcsReadBuildScript(
    unsigned char *scriptName,           /* Input */
    PVCS_FLAGS buildOptions,           /* Input */
    unsigned char *macroDefs,          /* Input */
    SCRIPTHANDLE FAR *theScript)       /* Output */
```

Parameters

<i>scriptName</i>	Name of the build script. If this parameter is null, the function finds the build script using the usual Configuration Builder rules.
<i>buildOptions</i>	Bit field that controls the operation of this function. Values include: <ul style="list-style-type: none">■ <code>PVCS_RD_INHERIT_ENVIRONMENT</code> Passes environment to commands executed by PvcsBuild. This flag emulates the program's default behavior, which you can override from the command line using the <code>-NoEnvInherit</code> flag.■ <code>PVCS_RD_ALLOW_DEFAULTRULES</code> Uses built-in rules. This flag emulates the program's default behavior, which you can override from the command line using the <code>-Reject</code> flag.■ <code>PVCS_RD_ALLOW_INI_FILE</code> Looks for the <code>TOOLS.INI</code> file. This flag emulates the program's default behavior, which you can override from the command line using the <code>-Init</code> flag.

- `PVCS_RD_DEBUG_OUTPUT`
Displays debugging information. This flag is equivalent to the `-Debug` flag.
- `PVCS_RD_DEFINE_ENV_MACROS`
Uses environment variables as predefined macros. This flag emulates the program's default behavior, which you can override from the command line using the `-NoEnvMacros` flag.
- `PVCS_RD_DISPLAY_SYMBOL_TABLE`
Displays a summary of macro definitions, archive declarations, rules, and dependencies. This flag is equivalent to the `-Summary` flag.
- `PVCS_RD_ENV_MACRO_PRECEDENCE`
Gives environment variables precedence over macro definitions. This flag emulates the program's default behavior, which you can override from the command line using the `-NoRedefine` flag.
- `PVCS_RD_IGNORE_ERRORS`
Ignores any non-zero exit codes from operations. This flag is equivalent to the `-Ignore` flag.
- `PVCS_RD_KEEP_WORKING`
Keeps working despite errors. This flag is equivalent to the `-KeepWorking` flag.
- `PVCS_RD_MS_NMAKE_MODE`
Emulates Microsoft NMAKE. This flag is equivalent to the `-Nmake` flag.
- `PVCS_RD_NOEXECUTION`
Displays operation lines but does not execute them. This flag is equivalent to the `-NoExecute` flag.
- `PVCS_RD_SILENT_OPERATION`
Does not display commands and error messages. This flag is equivalent to the `-Quiet` flag.
- `PVCS_RD_TOUCH_ONLY`
Sets the time and date of any files that need to be built to the current time and date. This flag is equivalent to the `-Touch` flag.

- `PVCS_RD_UNCONDITIONAL_BUILD`
Forces a rebuild without regard to the timestamp of the target and all sources. This flag is equivalent to the `-All` flag.

`macroDefs` A null-terminated string in the following form:
MacroName=Value...
Separate multiple MacroName=Value pairs with spaces.

`theScript` Script handle for use in subsequent operations.

Return Values The return value is zero if the function is successful. Other values may be:

`PVCS_E_MKABORTED`
`PVCS_E_FILE_NOT_FOUND`

See [Chapter 4, "Return Values"](#) for descriptions of return values.

Example

```
/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);
```

```
/* Read build script */
status = PvcsReadBuildScript(
    scriptName, /* Name of build script */
    options, /* Options */
    "MEMORY_MODEL=LARGE", /* Define a macro */
    &handle); /* Receives the script handle */
```

```
if (!status) {

    /* Build a target */
    status = PvcsBuild(
        handle, /* Script handle */
        target, /* Target to build */
        &errorLevel); /* Receives exit code */
```

Related Function [PvcsCloseBuildScript on page 183](#)

Related Topics For more information, see the following topics in the *Configuration Builder Reference Guide*.

For information about...	See...
Command-line flags	<i>Flags</i>
Build script contents	<i>Build Scripts</i>

PvcsRedirectBuildOutput

This function redirects standard output or standard error to a file.

Syntax

```
PvcsRedirectBuildOutput (
    SCRIPTHANDLE theScript, /* Input */
    unsigned char *newStdOut, /* Input */
```

```
unsigned char *newStdErr) /* Input */
```

Parameters

<i>theScript</i>	Handle initialized with PvcsReadBuildScript . You can call this function with different build scripts, and specify different files for redirection. This parameter can be null, so you can call this function before calling PvcsReadBuildScript to redirect read-time output. If you set <i>theScript</i> to null, you must call PvcsReadBuildScript immediately after calling PvcsRedirectBuildOutput . The redirection is effective only for the <code>SCRIPTHANDLE</code> initialized by that call to PvcsReadBuildScript .
<i>newStdOut</i>	Pointer to a string that specifies a file name for standard output. If the string is a hyphen (-), the function redirects standard output to the file specified by <i>newStdErr</i> . If the string is null, the function does not redirect standard output. This enables you to redirect standard error without redirecting standard output.
<i>newStdErr</i>	Pointer to a string that specifies a file name for standard error. If the string is a hyphen (-), the function redirects standard error to the file specified by <i>newStdOut</i> . If the string is null, the function does not redirect standard error. This enables you to redirect standard output without redirecting standard error.

Return Value This function always returns zero.

Example

```
char *scriptName = "makefile";
char *target = "foo.exe";
SCRIPTHANDLE handle;
PVCS_FLAGS options = PVCS_RD_DEBUG_OUTPUT |
    PVCS_RD_INHERIT_ENVIRONMENT |
    PVCS_RD_DEFINE_ENV_MACROS;
char *outFile = "build.log";
int errorLevel;
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Read build script */
status = PvcsReadBuildScript(scriptName, options,
    "MEMORY_MODEL=LARGE", &handle);
if (!status) {

    /* Place all output in a log file */
    PvcsRedirectBuildOutput(
        handle, /* Script handle */
        outFile, /* File to contain std output messages */
        outFile); /* File to contain std error messages */

    /* Build a target */
    status = PvcsBuild(handle, target, &errorLevel);
```

```
    /* Close handle */
    if (!status)
        PvcCloseBuildScript(handle);
    printf("Build output log is in \"%s\".\n", outFile);
}
```

Related Functions [PvcReadBuildScript on page 184](#)
[PvcBuild on page 182](#)

Related Topics For more information, see the following topics in the *Configuration Builder Reference Guide*.

For information about...

Redirecting error messages

See...

-DirectOutput flag
-DirectAll flag
-DirectErrors flag

PvcRegisterBuildCallback

This function registers a callback function that Developer's Toolkit calls when an event occurs. The parameter list passed to your callback function varies depending on the type of the callback.

Syntax `PvcRegisterBuildCallback(`
 `SCRIPTHANDLE theScript, /* Input */`
 `int callbackType, /* Input */`
 `PVCSCB_YIELDPROC pFunction) /* Input */`

Parameters

<i>theScript</i>	<p>Handle initialized with PvcsReadBuildScript. You can call this function with different build scripts, and specify different callbacks.</p> <p>This parameter can be null, so you can call this function before calling PvcsReadBuildScript to register callback functions. If you set <i>theScript</i> to null, call PvcsReadBuildScript immediately after calling PvcsRegisterBuildCallback. The callback function is effective only for the <code>SCRIPTHANDLE</code> initialized by that call to PvcsReadBuildScript.</p>
<i>callbackType</i>	<p>Integer that specifies the callback function identified in the header file. Values include:</p> <ul style="list-style-type: none"> ■ <code>PVCS_CALLBACK_YIELD</code> Developer's Toolkit calls the specified function at frequent intervals during processing. Your function should have the following form: <pre>int PVCS_CALLBACK YieldCallbackFunction(void)</pre> ■ <code>PVCSCB_CALLBACK_VIEW</code> Developer's Toolkit calls the specified function at any point where the command line executable would write to standard output or standard error, and passes the message string to the callback function.
<i>pFunction</i>	<p>Pointer to the function that Developer's Toolkit calls when the callback event occurs.</p> <p>If <i>callbackType</i> is <code>PVCS_CALLBACK_YIELD</code>, <i>pFunction</i> must point to a function of type <code>PVCSCB_CALLBACK</code>.</p> <p>If <i>callbackType</i> is <code>PVCSCB_CALLBACK_VIEW</code>, <i>pFunction</i> must point to a function of type <code>PVCSCB_VIEWPROC</code>, which requires a typecast. For example, the standard C <code>vprintf()</code> function is of this type.</p>

Return Value This function always returns zero.

- Special Considerations
- By default, the Windows version of Configuration Builder has a `PeekMessage()` loop. Some applications may need a more complex yield function. You can call **PvcsRegisterBuildCallback** with *callbackType* set to `PVCS_CALLBACK_YIELD` to register a yield function that Configuration Builder calls in place of the default yield function.
- If you register a yield callback that blocks the flow of messages, then the Windows desktop environment will be stopped until the entire build finishes.
- If the yield function returns a non-zero value, Configuration Builder terminates with the following message:
- ```
Received Interrupt: cleaning up.
```
- This enables the application to cancel the build process—for example, with a Cancel button.
- If you call **PvcsRegisterBuildCallback** with *callbackType* set to `PVCSCB_CALLBACK_VIEW`, then Configuration Builder sends every message to the

display function before it displays the message. After calling the display function, Configuration Builder writes the normal output to the output window or redirected file.

- When calling this function from a DLL, disable stack checking on callback functions. To disable stack checking using the Microsoft C compiler, use either the /Gs compiler option, or the `check_stack` pragma.

```
Example char *scriptName = "makefile";
char *target = "foo.exe";
SCRIPTHANDLE handle;
PVCS_FLAGS options = PVCS_RD_DEBUG_OUTPUT |
 PVCS_RD_INHERIT_ENVIRONMENT |
 PVCS_RD_DEFINE_ENV_MACROS;
int errorLevel;
int status;

/* Initialize configuration settings */
PvcsQueryConfiguration(NULL, NULL, 0, PVCS_CONFIG_OVERWRITE);

/* Read build script */
status = PvcsReadBuildScript(
 scriptName, options, "MEMORY_MODEL=LARGE", &handle);
if (!status) {

 /* Register a "yield" function */
 PvcsRegisterBuildCallback(
 handle, /* Build script handle */
 PVCS_CALLBACK_YIELD, /* Callback func id */
 callbackYield); /* Function to call */

 /* Build a target */
 PvcsBuild(handle, target, &errorLevel);

 /* Close handle */
 PvcsCloseBuildScript(handle);
}
.
.
.

#pragma check_stack(off)
/* When calling functions from a DLL, */
/* you must disable stack checking. Microsoft */
/* C provides this pragma to disable stack */
/* checking. */
/*
 * Callback function that is called at frequent intervals.
 */
static int PVCS_CALLBACK callbackYield(void)
{
 int status = 0;
 static int timesCalled = 0;
 printf("Yield callback: %d\n", ++timesCalled);
 return status;
}
```

```
#pragma check_stack() /* Enable stack checking */
```

Related Functions [PvcsReadBuildScript on page 184](#)  
[PvcsBuild on page 182](#)  
[PvcsRegisterCallback on page 152](#)

## PvcsSaveWinmainParams

This function saves the parameters that Windows passes to an application when it starts the application.

Syntax

```
PvcsSaveWinmainParams (
 unsigned hInst, /* Input */
 unsigned hPrevInstance, /* Input */
 unsigned char *lpCmdLine, /* Input */
 int nCmdShow) /* Input */
```

### Parameters

|                      |                                                                                                                   |
|----------------------|-------------------------------------------------------------------------------------------------------------------|
| <i>hInst</i>         | The instance handle that Windows uses to identify the application.                                                |
| <i>hPrevInstance</i> | The previous instance handle. This is the instance handle of the most recent active instance of the same program. |
| <i>lpCmdLine</i>     | Command-line parameters.                                                                                          |
| <i>nCmdShow</i>      | A number that specifies how to display the window.                                                                |

Return Values This function returns zero if it is successful. If the **PvcsSaveWinmainParams** parameters could not be stored, the Developer's Toolkit will return a non-zero value. If you receive this error, check to see that you have called **PvcsUnsaveWinmainParams** at the end of each Configuration Builder application.

Special Considerations

- Windows applications must call this function before calling other Configuration Builder functions, passing it the arguments that Windows passed to the application's WinMain function. Since you can run multiple instances of the DLL, this function records the instance handle, the previous instance handle, and command-line parameters for each program instance.
- This function is only available (and necessary) in the Windows version of the Developer's Toolkit.

Example

```
WinMain(
 HANDLE hInstance,
 HANDLE hPrevInstance,
 LPSTR lpCmdLine,
 int nCmdShow
)
{
 PvcsSaveWinmainParams(hInstance, hPrevInstance, lpCmdLine,
 nCmdShow);

 /*... do other Configuration Builder calls here ... */

 PvcsUnsaveWinmainParams();
```

```
return 0;
}
```

Related Function [PvcsUnsaveWinmainParams on page 192](#)

## PvcsUnsaveWinmainParams

This function frees resources reserved by a previous call to **PvcsSaveWinmainParams**.

Syntax `PvcsUnsaveWinmainParams (void)`

Parameters There are no parameters to this function.

Return Value This function always returns zero.

Special Considerations

- You must call this function as a cleanup function when your Windows program exits.
- This function is only available (and necessary) in the Windows version of the Developer's Toolkit.

Example

```
WinMain(
 HANDLE hInstance,
 HANDLE hPrevInstance,
 LPSTR lpCmdLine,
 int nCmdShow
)
{
 PvcsSaveWinmainParams(hInstance, hPrevInstance, lpCmdLine,
 nCmdShow);

 /*... do other Configuration Builder calls here ... */

 PvcsUnsaveWinmainParams();

 return 0;
}
```

Related Function [PvcsSaveWinmainParams on page 191](#)



# Chapter 4

## Return Values

### Return Values

Developer's Toolkit error codes      The following table lists the values returned by Developer's Toolkit functions and the reasons why each occurs. The values for these codes are defined in PVCS.H. If you don't see a value listed here, check PVCS.H.

| Code | Return Value               | Description                                                                                                      |
|------|----------------------------|------------------------------------------------------------------------------------------------------------------|
| 1    | PVCS_E_INTERNAL            | An internal error occurred because of an unexpected condition.                                                   |
| 2    | PVCS_E_ARCHIVE_NOT_FOUND   | Developer's Toolkit cannot find the specified archive.                                                           |
| 3    | PVCS_E_ALREADY_EXISTS      | A file cannot be created because it already exists, and the <code>NO_OVERWRITE</code> flag was specified.        |
| 4    | PVCS_E_INVALID_CONFIG_PARM | A line in the configuration file is invalid.                                                                     |
| 5    | PVCS_E_ACCESS_DENIED       | File access is denied at the file system level. The most likely cause is insufficient network privileges.        |
| 6    | PVCS_E_FILE_BUSY           | File access is denied because the file is in use by another process.                                             |
| 7    | PVCS_E_INVALID_PARAMETER   | A parameter to a function is invalid.                                                                            |
| 8    | PVCS_E_BUFFER_OVERFLOW     | The buffer receiving information is not large enough.                                                            |
| 9    | PVCS_E_BAD_FILENAME        | The file name is invalid because the drive or path does not exist, or the file name contains invalid characters. |
| 10   | PVCS_E_BAD_ARCHIVE_HANDLE  | The archive handle does not specify an open archive.                                                             |
| 11   | PVCS_E_NO_VERSION          | The specified version label does not exist.                                                                      |
| 12   | PVCS_E_VERSION_EXISTS      | Developer's Toolkit could not add a version label because the label already exists.                              |

| Code | Return Value              | Description                                                                                                                                                                     |
|------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 13   | PVCS_E_ACCESS_VIOLATION   | Access to the archive is denied by Version Manager because the current user has insufficient access privileges.                                                                 |
| 14   | PVCS_E_LOCKED_REVISION    | You tried to operate on a revision that is currently locked.                                                                                                                    |
| 15   | PVCS_E_USER_ABORTED       | The user canceled the request in response to a prompt.                                                                                                                          |
| 16   | PVCS_E_NO_MEMORY          | A memory allocation request failed.                                                                                                                                             |
| 17   | PVCS_E_BAD_DATE           | The date specification is invalid.                                                                                                                                              |
| 18   | PVCS_E_NO_REVISION        | The specified revision does not exist.                                                                                                                                          |
| 19   | PVCS_E_BAD_REVISION       | The revision specification contains incorrect syntax.                                                                                                                           |
| 20   | PVCS_E_ARCHIVE_EMPTY      | Developer's Toolkit cannot process the request because the archive contains no revisions.                                                                                       |
| 21   | PVCS_E_EXCESS_CFG_NESTING | The levels of configuration file nesting exceed the maximum of 20.                                                                                                              |
| 22   | PVCS_E_SAME_NAME          | The workfile and archive names are identical.                                                                                                                                   |
| 23   | PVCS_E_CANT_DELETE        | An error occurred when the program tried to delete the file.                                                                                                                    |
| 24   | PVCS_E_OVERWRITE          | A file already exists, and permission to overwrite it was not given.                                                                                                            |
| 25   | PVCS_E_NO_HANDLES         | The operating system is out of file handles.                                                                                                                                    |
| 26   | PVCS_E_NET_NOT_ALLOWED    | Developer's Toolkit detected a license violation and is denying access to network files.                                                                                        |
| 27   | PVCS_E_BAD_ARCHIVE        | The file is not an archive.                                                                                                                                                     |
| 28   | PVCS_E_NO_ATTRIBUTE       | No attribute exists.                                                                                                                                                            |
| 29   | PVCS_E_CANT_LOCK          | Developer's Toolkit cannot lock a revision. Either lock checking is disabled for the archive, or the archive has the ExclusiveLock attribute and there is already a lock on it. |
| 30   | PVCS_E_NOT_LOCKED         | Developer's Toolkit expected to find a locked revision, but no locks exist on the specified revisions.                                                                          |
| 31   | PVCS_E_NO_MORE_FILES      | There are no more files that match the wildcard file specification.                                                                                                             |

| Code | Return Value            | Description                                                                                                                                                                                                                                  |
|------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 32   | PVCS_E_WORK_NOT_FOUND   | The program cannot find the specified workfile.                                                                                                                                                                                              |
| 33   | PVCS_E_PROMPT           | Version Manager requires user input, but prompts are suppressed.                                                                                                                                                                             |
| 34   | PVCS_E_INVALID_PROMO    | Either you tried to promote the production group, there are no revisions at the group from which you tried to promote, or you attempted some other promotion that violates the promotion model.                                              |
| 35   | PVCS_E_BAD_PROMO_TREE   | <b>PvcsQueryConfiguration</b> returns this error code when a configuration file contains Promote directives with recursive promotions or multiple top levels.                                                                                |
| 36   | PVCS_E_PROMO_NO_PARENT  | You tried to promote from the promotion group that is at the top of the promotion model.                                                                                                                                                     |
| 37   | PVCS_E_PROMO_NO_NODE    | The specified promotion group does not exist.                                                                                                                                                                                                |
| 38   | PVCS_E_PROMO_ERROR      | Obsolete.                                                                                                                                                                                                                                    |
| 39   | PVCS_E_NO_ALIAS         | The <b>PvcsQueryAlias</b> parameter cannot find the alias.                                                                                                                                                                                   |
| 40   | PVCS_E_GROUP_EXISTS     | The promotion group already exists.                                                                                                                                                                                                          |
| 41   | PVCS_E_NO_GROUP         | The specified promotion group does not exist in the archive.                                                                                                                                                                                 |
| 42   | PVCS_E_NO_NETWARE_DLL   | <b>PvcsInit</b> returns this code under Windows if the NetWare drivers are loaded, but NWNETAPI.DLL is not in the PATH. This prevents Version Manager from using any non-file I/O services, such as getting user IDs or creating semaphores. |
| 43   | PVCS_E_NO_JOURNAL_FILES | <b>PvcsListJournal</b> returns this error when you do not specify a journal file, and it cannot find a default file.                                                                                                                         |
| 44   | PVCS_E_BAD_JOURNAL_FILE | <b>PvcsListJournal</b> returns this error code when it encounters a format error in a journal file, which may happen if someone edits the file.                                                                                              |
| 45   | PVCS_E_NOT_DEV_GROUP    | Developer's Toolkit cannot lock a revision because the specified group is not a development group.                                                                                                                                           |

| Code | Return Value              | Description                                                                                                                                                                                                                                                                                                                                                                                                       |
|------|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 46   | PVCS_E_GROUP_LOCKED       | The program could not place a lock on a revision because the specified development group is already associated with another lock.                                                                                                                                                                                                                                                                                 |
| 47   | PVCS_E_BRANCHWARN         | <b>PvcsGetRevision</b> and <b>PvcsLockRevisionGroup</b> return this code when a revision that you are locking would cause a branch to be created when it is checked in, and the BranchWarn directive is in effect.                                                                                                                                                                                                |
| 48   | PVCS_E_CANT_OPEN_ACCESSDB | Developer's Toolkit cannot open the access control database.                                                                                                                                                                                                                                                                                                                                                      |
| 49   | PVCS_E_PROMOTE_XBRANCH    | <b>PvcsPromoteRevision</b> returns this error when you specify the <code>PVCS_PROMOTE_NO_XBRANCH</code> flag and a promotion would cross a branch.                                                                                                                                                                                                                                                                |
| 50   | PVCS_E_NO_USER_ID         | Developer's Toolkit cannot find the user identification.                                                                                                                                                                                                                                                                                                                                                          |
| 51   | PVCS_E_OLD_WORKFILE       | <b>PvcsPutRevision</b> cannot check in a revision because the workfile is older than the previous revision. To check it in, use the <code>PVCS_PUT_FORCE_PUT</code> flag.                                                                                                                                                                                                                                         |
| 52   | PVCS_E_UNCHANGED_WORKFILE | The workfile is identical to the previous revision in the archive. Use the <code>PVCS_PUT_FORCE_PUT</code> flag to check in the file anyway.                                                                                                                                                                                                                                                                      |
| 53   | PVCS_E_EXPECTING_FILENAME | <b>PvcsReportDifferences</b> and <b>PvcsMerge</b> return this code when you do not specify the required number of file names or revisions.<br><b>PvcsReportDifferences</b> must be able to identify two files by some combination of file names and revision parameters.<br><b>PvcsMerge</b> must be able to identify a base file and two branch files by some combination of file names and revision parameters. |
| 55   | PVCS_E_FILE_NOT_FOUND     | A specified file cannot be found.                                                                                                                                                                                                                                                                                                                                                                                 |
| 56   | PVCS_E_BAD_REDIRECT       | A redirection specification contains a syntax error, invalid file name, or invalid path name.                                                                                                                                                                                                                                                                                                                     |
| 57   | PVCS_E_CFG_INCLUDE        | A configuration file contains a syntax error in the Include directive.                                                                                                                                                                                                                                                                                                                                            |

| Code | Return Value                 | Description                                                                                                                                                                                                                                                                                                                                         |
|------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 58   | PVCS_E_CANT_SHARE            | The file system does not support file sharing.                                                                                                                                                                                                                                                                                                      |
| 59   | PVCS_E_CANT_MAP              | Developer's Toolkit cannot map to a network drive.                                                                                                                                                                                                                                                                                                  |
| 60   | PVCS_E_CFG_COLUMNMASK        | A configuration file contains a syntax error in the ColumnMask directive.                                                                                                                                                                                                                                                                           |
| 61   | PVCS_E_SEMAPHORE_NOT_ALLOWED | The Semaphore directive specifies a type that is not allowed by the operating system.                                                                                                                                                                                                                                                               |
| 62   | PVCS_E_CFG_BAD_CONDITIONAL   | A configuration file conditional construct contains a syntax or logic error.                                                                                                                                                                                                                                                                        |
| 63   | PVCS_E_CFG_RENUMBER          | A configuration file contains a syntax error in the Renumber directive.                                                                                                                                                                                                                                                                             |
| 64   | PVCS_E_LINE_EDITOR           | Developer's Toolkit cannot open the console for the line editor.                                                                                                                                                                                                                                                                                    |
| 65   | PVCS_E_CANT_CREATE_SEMAPHORE | Developer's Toolkit issues this error for any of the following reasons:<br><br>You tried to create a semaphore, but it already exists.<br><br>The NoSemaphore directive is enabled.<br><br>You tried to use a nonexistent directory as the <i>archDir</i> parameter.<br><br>You tried to use a nonexistent archive as the <i>archDir</i> parameter. |
| 66   | PVCS_E_CANT_DELETE_SEMAPHORE | You tried to delete a semaphore that does not exist.                                                                                                                                                                                                                                                                                                |
| 67   | PVCS_E_BAD_PRIVILEGE         | A privilege statement in the access control database contains a syntax error.                                                                                                                                                                                                                                                                       |
| 68   | PVCS_E_UNKNOWN_PRIVILEGE     | Developer's Toolkit did not recognize a privilege in the <i>privilegeList</i> parameter as base, composite, or custom.                                                                                                                                                                                                                              |
| 69   | PVCS_E_BAD_ACCESS_GROUP      | A group definition statement in the access control database contains a syntax error.                                                                                                                                                                                                                                                                |
| 70   | PVCS_E_BAD_ACCESS_USER       | A user definition statement in the access control database contains a syntax error.                                                                                                                                                                                                                                                                 |
| 71   | PVCS_E_WORK_MSG_SAME         | The workfile and message file are the same.                                                                                                                                                                                                                                                                                                         |

| Code | Return Value            | Description                                                                                                                                      |
|------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 72   | PVCS_E_NO_MSGFILE       | Developer's Toolkit cannot find a message file.                                                                                                  |
| 73   | PVCS_E_EDITFILE         | The program cannot open a temporary file specified by the VCSEdit directive.                                                                     |
| 74   | PVCS_E_CFG_VCSEEDIT     | A configuration file contains a syntax error in the VCSEdit directive.                                                                           |
| 75   | PVCS_E_VCSEEDIT_CANCEL  | The editor returned an error code as specified by the VCSEdit directive.                                                                         |
| 76   | PVCS_E_NOT_DIR          | The specified directory does not exist.                                                                                                          |
| 77   | PVCS_E_DISK_FULL        | A write error occurred. The disk is probably full.                                                                                               |
| 78   | PVCS_E_BRANCH_REVISION  | Version Manager cannot delete a revision because it contains a branch.                                                                           |
| 79   | PVCS_E_PROCESS_ABORTED  | The process was interrupted. For example, the user pressed Ctrl+C.                                                                               |
| 80   | PVCS_E_NO_ACCESS_DB     | You did not specify an access control database.                                                                                                  |
| 81   | PVCS_E_BAD_ACCESS_DB    | Corrupted access control database.                                                                                                               |
| 82   | PVCS_E_USER_EXPIRED     | Valid dates for this user have expired, and access to the access control database is denied.                                                     |
| 83   | PVCS_E_UNKNOWN_USER     | Developer's Toolkit did not find the user in the database specified by the <i>userName</i> parameter.                                            |
| 84   | PVCS_E_INVALID_PASSWORD | The user ID you specified does not exist in the access control database.                                                                         |
| 85   | PVCS_E_DIAG_FILE        | Developer's Toolkit cannot open the diagnostic file, tried to open it when it is already opened, or tried to close it and it was already closed. |
| 86   | PVCS_E_UNKNOWN_GROUP    | Developer's Toolkit did not find the group in the database specified by the <i>groupName</i> parameter.                                          |
| 87   | PVCS_E_USER_EXISTS      | The user you wanted to add using the <i>userName</i> parameter already exists in the database.                                                   |

| Code | Return Value                   | Description                                                                                                                                                                                                                                                      |
|------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 88   | PVCS_E_PRIVILEGE_EXISTS        | The name specified by the <i>newName</i> parameter for this privilege already exists in the database.                                                                                                                                                            |
| 89   | PVCS_E_BAD_DATABASE_HANDLE     | Trying to update access control database that is open as read-only.                                                                                                                                                                                              |
| 90   | PVCS_E_DLL_INUSE               | Trying to load the Toolkit DLL more than once (DLL is not reentrant).                                                                                                                                                                                            |
| 91   | PVCS_E_SCRIPT_NOT_FOUND        | Developer's Toolkit could not open the file specified by the <i>ScriptName</i> parameter                                                                                                                                                                         |
| 92   | PVCS_E_CANT_LOAD_DLL           | Developer's Toolkit cannot load the Configuration Builder DLL.                                                                                                                                                                                                   |
| 94   | PVCS_E_EVENT_REGISTERED        | Developer's Toolkit tried to register an event more than once.                                                                                                                                                                                                   |
| 95   | PVCS_E_NOT_IN_LIST             | User ID was not found in AccessList.                                                                                                                                                                                                                             |
| 96   | PVCS_E_BAD_SERIAL_NUMBER       | Developer's Toolkit detects a serial number mismatch.                                                                                                                                                                                                            |
| 97   | PVCS_E_BAD_VCONFIG_FILE        | The file specified by the <i>fileToConfigure</i> parameter cannot be configured.                                                                                                                                                                                 |
| 98   | PVCS_E_CANT_OPEN_VCONFIG_FILE  | Developer's Toolkit cannot open the file specified by the <i>fileToConfigure</i> parameter to modify it.                                                                                                                                                         |
| 99   | PVCS_E_CANT_READ_VCONFIG_FILE  | Developer's Toolkit either cannot find or read the file specified by the <i>fileToConfigure</i> parameter.                                                                                                                                                       |
| 100  | PVCS_E_CANT_WRITE_VCONFIG_FILE | Developer's Toolkit cannot write to the file specified by the <i>fileToConfigure</i> parameter.                                                                                                                                                                  |
| 101  | PVCS_E_UNKNOWN_ID_SOURCE       | Developer's Toolkit does not recognize the user identification source.                                                                                                                                                                                           |
| 102  | PVCS_E_PROJECT_BUSY            | Project semaphore exists in directory where archive update is to occur.                                                                                                                                                                                          |
| 103  | PVCS_E_TRIGGER_ABORTED         | Developer's Toolkit returns this error if an action being performed aborts because an event trigger returns a non-zero exit code. For example, a <b>PvcsPutRevision()</b> might return this error if a <i>PrePut</i> event trigger returns a non-zero exit code. |

| <b>Code</b> | <b>Return Value</b>             | <b>Description</b>                                                                                        |
|-------------|---------------------------------|-----------------------------------------------------------------------------------------------------------|
| 104         | PVCS_E_TRIGGER_ISLVDOS_MISSING  | Trigger execution failed because the ISLVDOS.386 VxD is not installed.                                    |
| 105         | PVCS_E_TRIGGER_WEXECDOS_MISSING | Trigger execution failed because WEXECDOS.PIF or WEXECDOS.EXE does not exist in the executable directory. |
| 106         | PVCS_E_TRIGGER_FAILED           | The trigger failed to execute for some other reason.                                                      |
| 107         | PVCS_E_CANT_OPEN_CONFIG_FILE    | Can't open a configuration file.                                                                          |
| 108         | PVCS_E_ACCESS_GROUP_EXISTS      | Group already exists in access control database.                                                          |
| 109         | PVCS_E_DIRECTIVE_DISALLOWED     | Configuration directive has been disallowed.                                                              |
| 110         | PVCS_E_NOT_SUPPORTED            | The action or item requested is not supported.                                                            |
| 111         | PVCS_E_NOT_DEFINED              | The action or item requested is not defined.                                                              |
| 112         | PVCS_E_CHECKSUM_ERROR           | Licensing error.                                                                                          |
| 113         | PVCS_E_LICENSE_ERROR            | Licensing error.                                                                                          |
| 254         | PVCS_E_FUNCTION_NOT_FOUND       | A wrapper function failed to find an address for function.                                                |
| 255         | PVCS_E_DTK_NOT_LOADED           | A wrapper function failed to load the toolkit.                                                            |



# Chapter 5

## Data Structures

### Data Structures

Data structures used by the API This chapter lists the data structures used by Developer's Toolkit functions. These structures are defined in the files PVCSVM.H and PVCSCB.H.

#### ARCHIVEINFO

```
Archive information typedef struct _ARCHIVEINFO {
 USHORT revcnt; /* Number of revisions */
 USHORT lockers; /* Number of locks */
 USHORT attributes; /* Attribute bits */
 USHORT reclen; /* Workfile fixed record length */
 PVCSDATE create_time; /* Workfile creation time */
 USHORT renum_start_col; /* Renumber start column */
 USHORT renum_end_col; /* Renumber end column */
 LONG renum_start_val; /* Renumber starting value */
 LONG renum_step_val; /* Renumber increment */
 USHORT archive; /* Offs to name of archive */
 USHORT workfile; /* Offs to name of workfile */
 USHORT owner; /* Offs to archive owner */
 USHORT access; /* Offs to archive access list */
 USHORT cmt_str; /* Offs to comment prefix str */
 USHORT newline; /* Offs to newline string */
 USHORT diffmask; /* Offs to column mask range */
 UCHAR info[1]; /* Variable length information */
} ARCHIVEINFO;
```

#### ARCHIVEINFO Attribute Definitions

```
Attribute definitions #define PVCS_ATTR_CHK_LOCK 0x0001 /* check lock on
 check-in */
#define PVCS_ATTR_WRT_PROT 0x0002 /* archive write
 protection */
#define PVCS_ATTR_EXCL_LOCK 0x0004 /* only one lock at
 a time */
#define PVCS_ATTR_EXP_KEYS 0x0008 /* expand keywords */
#define PVCS_ATTR_TRANSLATE 0x0010 /* do eol translation */
#define PVCS_ATTR_CMPRS_DELTA 0x0020 /* compress deltas */
#define PVCS_ATTR_CMPRS_TEXT 0x0040 /* compress full text
 revs */
```

#### CONFIG

```
Directive values typedef struct _CONFIG {
```

```
 BOOL quiet; /* Quiet */
 BOOL wrtProtArchive; /* WriteProtect */
 BOOL checkLock; /* CheckLock */
 BOOL branchWarn; /* BranchWarn */
 BOOL ignorePath; /* IgnorePath */
 BOOL forceUnlock; /* ForceUnlock */
 BOOL autoCreate; /* AutoCreate */
 BOOL firstMatch; /* FirstMatch */
 BOOL delMsgFile; /* DeleteMessageFile */
 BOOL useArchiveWork; /* ArchiveWork */
 BOOL signon; /* SignOn */
 BOOL ignIDCase; /* NoCase VCSID */
 BOOL shareLocal; /* Share Local */
 BOOL shareNet; /* Share Network */
 BOOL memswap; /* MemSwap */
 BOOL ctrlz; /* Ctrlz */
 BOOL writable_workfile; /* NoDeleteWork NoWriteProtect*/
 BOOL writable_accessdb; /* AccessDB NoWriteProtect*/
 USHORT semaphoreLocal; /* Semaphore Local */
 USHORT semaphoreNetwork; /* Semaphore Network */
 USHORT semRetry; /* SemaphoreRetry */
 USHORT semDelay; /* SemaphoreDelay */
 USHORT delWork; /* DeleteWork */
 USHORT multiLockUser; /* MultiLock User */
 USHORT multiLockRev; /* MultiLock Revision */
 USHORT exclusiveLock; /* ExclusiveLock */
 USHORT vloginInt; /* VLogIn */
 LONG diag; /* Internal diagnostic level */
 char pathSep; /* PathSeparator */
 UCHAR *translate; /* Translate */
 UCHAR *archsuf; /* ArchivSuffix */
 UCHAR *msgsuf; /* MessageSuffix */
 UCHAR *semsuf; /* SemSuffix */
 UCHAR *defVers; /* DefaultVersion */
 UCHAR *baseVers; /* BaseVersion */
 UCHAR *branchVers; /* BranchVersion */
 UCHAR *semDir; /* SemaphoreDir */
 UCHAR *workDir; /* WorkDir */
 UCHAR *archiveWorkDir; /* ArchiveWork */
 UCHAR *vcsEdit; /* VCSEdit */
 UCHAR *vcsid; /* VCSID */
 UCHAR *owner; /* Owner */
 UCHAR *journal; /* Journal */
 UCHAR *newline; /* NewLine */
 UCHAR *accessdb; /* AccessDB */
 UCHAR *columnMask; /* ColumnMask */
 UCHAR *renum; /* Renumber */
 UCHAR *vcmdir; /* VCSDir */
 UCHAR *compressImage; /* CompressWorkImage */
 UCHAR *compressDelta; /* CompressDelta */
 UCHAR *recordLength; /* RecordLength */
 UCHAR *expKeywords; /* ExpandKeywords */
 UCHAR *loginSource; /* LogIn */
} CONFIG;
```

## LOCK

Lock information This structure is used by **PvcsGetLockInfo**. The buffer that you pass to **PvcsGetLockInfo** must be large enough to contain this structure, plus room for the *revision*, *newRevision*, and *lockerdata*. In other words, **PvcsGetLockInfo** uses the storage that you provide to return the actual lock data.

**PvcsGetLockInfo** can return information about more than one lock. If this happens, your buffer will contain an array of LOCK structures. The LOCK structures contain pointers which point to the actual lock data.

Allocate 64 bytes per lock record.

```
typedef struct _LOCK {
 UCHAR *revision; /* The locked revision */
 UCHAR *newRevision; /* Revision to create at check in */
 UCHAR *locker; /* User ID of the locker */
} LOCK;
```

Example The following is a sample piece of code to walk the LOCK list:

```
LOCK *pLockInfo = malloc(256);
PvcsGetLockInfo(
 ARCHIVEHANDLE_NOT_OPEN, /* Archive handle */
 archive, /* Archive name
 NULL, /* Revision (any revision) */
 NULL, /* VCSID (any) */
 &lockCount, /* Count (unlimited) */
 pLockInfo, /* Buffer */
 sizeof(pLockInfo)); /* Buffer length */
while (lockCount-- > 0) {
 printf("Revision: %s NewRevision: %s locker: %s\n",
 pLockInfo->revision, pLockInfo->newRevision,
 pLockInfo->locker);

 // Advance pointer to next lock structure
 pLockInfo += 1;
}
```

## PVCSDATE

Time/date stamp

```
typedef struct _PVCSDATE {
 unsigned year : 7; /* Number of years since 1980 */
 unsigned month : 4; /* Month (1-12) */
 unsigned day : 5; /* Day of month (1-31) */
 unsigned hours : 5; /* Hour of day (24 hr. clock) */
 unsigned minutes : 6; /* Minutes (0-59) */
 unsigned twosecs : 5; /* 2-sec. increments (0-29) */
} PVCSDATE;
```

## REVINFO

Revision information

```
typedef struct _REVINFO {
 USHORT branch_count; /* Number of branches off this rev */
 USHORT lock_count; /* Number of locks on this rev */
 USHORT level; /* Revision tree level, 0 == trunk */
}
```

```
 PVCSDATE date; /* Check in date of revision */
 PVCSDATE mdate; /* Modification date of revision */
 USHORT ord; /* Ordinal number in archive */
 UCHAR revstr[64]; /* Revision number (ASCII string)*/
} REVINFO;
```

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