



Agilent E2977A System Validation Package 2.1

Test API Reference



Agilent Technologies

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Introduction

The Test API library is a C++ library that provides all functionality of the System Validation Package 2.1. The System Validation Package 2.1 is based on the application interfaces (C-API) of Agilent PCI and PCI-X testcards.

The Test API library provides a number of tests that can be run immediately or be configured for individual test needs.

This library uses an object-oriented, class-based approach. The SVP Test API Reference describes all classes and their public members that are recommended for direct use.

Structure of the Test API Reference

The SVP Test API Reference is divided into the following sections:

- **Classes of the Test API Library**

Describes the classes of the `SVPBase`, `SVPList` and the `SVPPropBase` packages and all their public members that are recommended for direct use.

Every class description starts with an overview of the class members in logical order, followed by the full description of the characteristic members in alphabetical order.
- **Classes of the Service Library**

Describes the classes of the Service library and all their public members that are recommended for direct use.

In addition to the Test API library, the Service library `servlib` provides a number of classes for general purposes, such as error handling.
- **Enumeration Definitions**

Describes all defined enumerations that are used in the methods of Test API library and Service library classes.
- **Setup File Reference**

Describes all properties, along with their names and value ranges that are needed when you modify the SVP settings files.
- **Overall Example Programs**

Shows a simple command line executable program and a custom test function.

Basic Information for Using the Test API

You can find basic information on using the SVP Test API library in the following sections:

Platform-Relevant Information

Platform Independence Portability of the Test API software is ensured by avoiding platform-dependent code. Most parts are implemented using plain ANSI C++, which can be compiled by any standard C++ compiler.

Systems that do not have a stable operating system or no C/C++ compiler can be tested using an external host and the Front Side Interface (FSI).

Platform-Dependent Features Communication with E2920 series PCI testcards uses the E2920 series C-API. Communication with PCI-X testcards uses the PCI-X C-API. Both contain the necessary drivers to communicate with the testcards.

PCI C-API and PCI-X C-API are available in binary form for a number of operating systems, and as compilable source code for other systems.

The platform and operating system determine, which drivers are necessary for internal communication with the testcard and for the memory.

Drivers for Windows NT are available and shipped with the product, other operating systems may need to be ported and compiled by the user.

Conventions

In the libraries, the following conventions are used for naming classes, methods, enumerations, variables and constants.

Naming of Classes Classes are written with lowercase and uppercase letters. The prefixes of the classes indicate to which library they belong:

- Classes of the Test API library begin with `SVPxxx`.

Example: `SVPBase`

- Classes of the Service library begin with `Bxxx`.

Example: `BErr`

Naming of Methods Methods are written with lowercase and uppercase letters and indicate the action.

Example: `RemoveObject`

Naming of Enumerations Enumerations are written with uppercase and lowercase letters. Each enumeration name begins with `Exxx`.

Example: `ECardType`

Naming of Variables Variables are written with uppercase and lowercase letters, but the prefix is always lowercase.

Example: `strID`

Naming of Constants Constants are written with uppercase letters.

Example: `S_WAIT`

Exception/Error Handling

The Test API uses the C++ mechanism for handling exceptions. All methods of the various objects will handle some C++ exceptions internally and throw `BErr` error objects in case of unrecoverable errors.

Example:

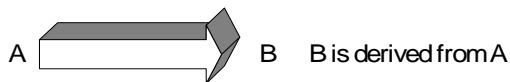
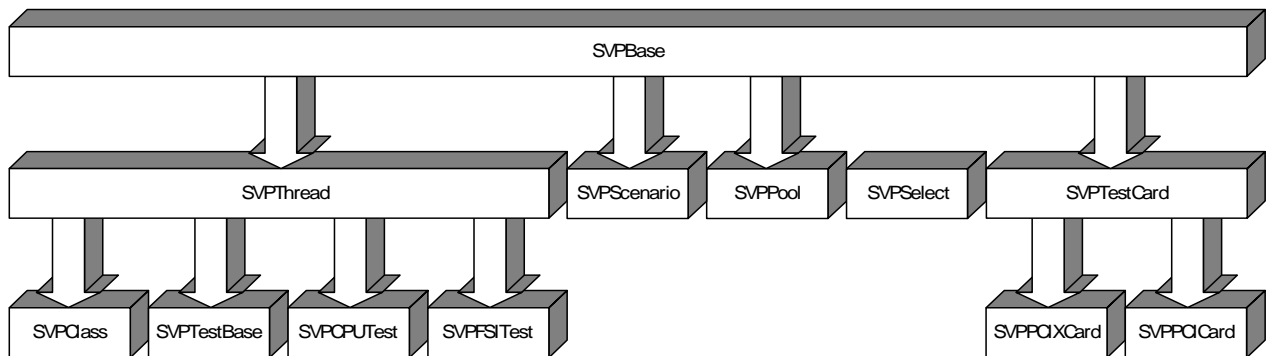
When trying to open a file that does not exist, a method would throw a `BErr::FILENOTFOUND` error along with a descriptive error message. The `BErr` object can be used to analyze the error, or may simply be printed as an error message to the console.

A user program should therefore encapsulate all calls to Test API functions and class methods in `try` blocks; see “*Overall Example Programs*” on page 119.

Classes of the Test API Library

The Test API Library includes three independent packages of classes: the SVPBase package, the SVPList package and the SVPropBase package.

SVPBase Package Overview The following figure shows the class architecture of the SVPBase package:



SVPBase Package Classes SVPBase Class is a base class that implements all fundamental features of an object and provides a standard means for accessing objects. In this context, objects are the whole SVP application (SVPClass), a scenario (SVPScenario), a test (SVPTestBase) or a testcard (SVPTestCard and derived from it SVPPCICard and SVPPCIXCard).

From this class, the following classes are derived:

- SVPThread Class

Provides basic threading functionality for running several tests in parallel. From this class, the following classes are derived:

- SVPClass Class

Represents the whole SVP application.

- SVPTestBase Class

Provides all testing functionality of the SVP application.

- SVPCPUTest Class

Is used to perform tests with CPU interaction.

- SVPFSITest Class

Is used to perform tests with FSI interaction.

- SVPScenario Class

Provides the features of a scenario. A scenario is used to put several tests together for running these tests in parallel.

- SVPPOOL Class

Is used to manage the available tests and testcards.

- SVPTestCard Class

From this class, the following classes are derived:

- SVPPCICard Class

Covers all E2926/7/8 and E2940 testcards.

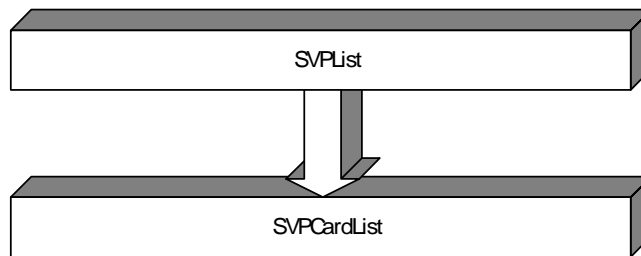
- SVPPCIXCard Class

Covers all E2922/9 testcards.

SVPSelect Class The Test API library includes also the SVPSelect class, which is independent from all other classes in the SVPBase package. The SVPSelect class is normally not needed in the user program. It is mainly used by the GUI.

Each class of this package has its own SVPPropBase package.

SVPList Package Overview The following figure shows the class architecture of the `SVPList` package:



SVPList Package Classes The `SVPList` package provides the following classes for administration of SVP objects (scenarios, tests and testcards):

- `SVPList` Class

This class provides a container class for SVP objects. It provides methods:

- for handling the deletion and creation from settings files
- for walking through the lists

- `SVPCardList` Class

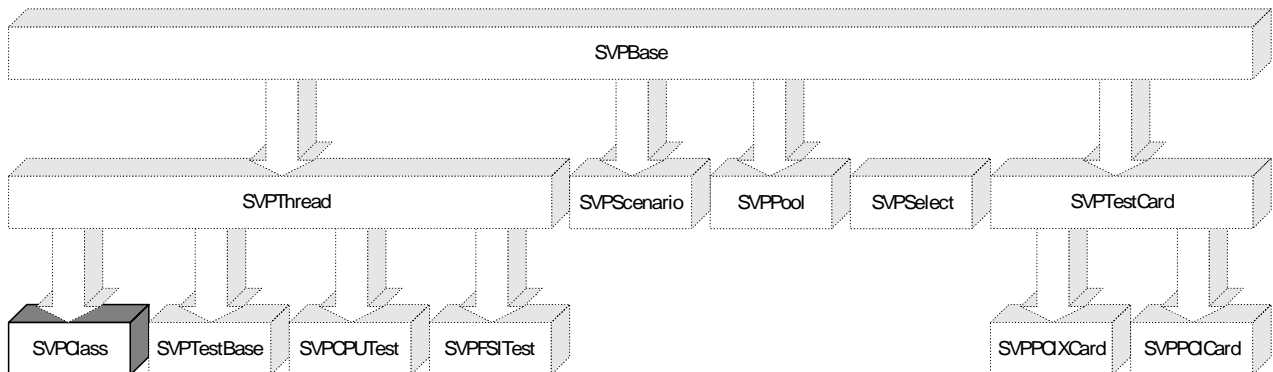
This class is derived from `SVPList`. This class provides methods for scanning and listing available testcards.

SVPPropBase Class The `SVPPropBase` class provides functionality for handling properties and settings.

This class includes the `CPropEl` class that allows you to assign different types of values (for example, integer, string or boolean values) to the same class.

SVPClass Class

Description The SVPClass class provides the main interface to the user programs.

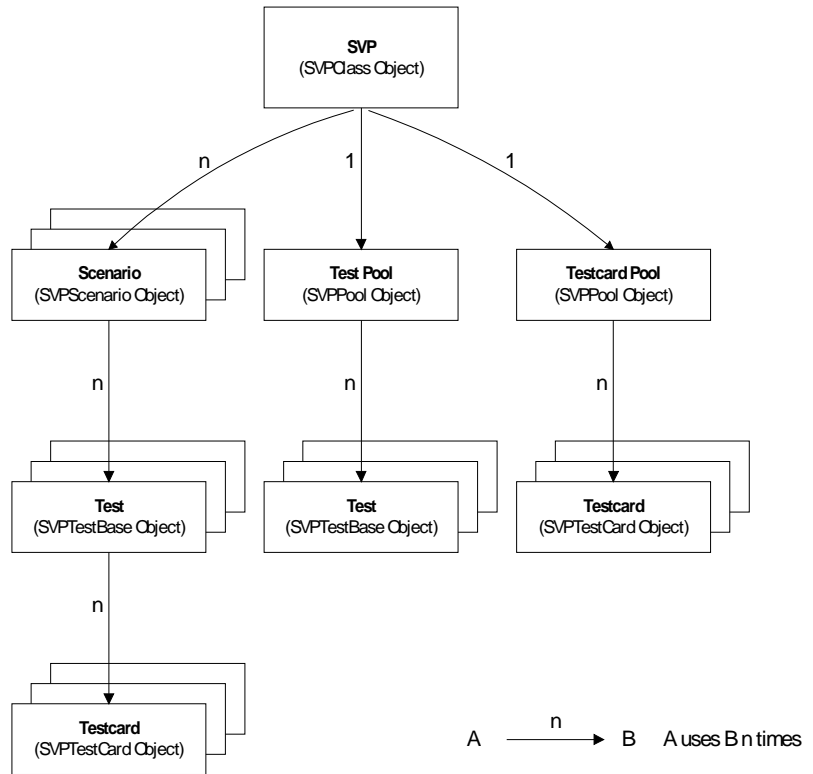


SVPClass provides methods for the following purposes:

- Accessing objects for direct modification
- Initialization and file handling
- Test execution
- Reporting

- Creation and deletion of objects

The objects can be scenarios, tests and testcards. The hierarchy of the objects is shown below.



Characteristic Members The following tables list all public members of the SVPClass class that are recommended for direct use.

Constructor	
public	SVPClass (void)

Destructor	
public virtual ~	SVPClass (void)

Public Methods	
SVPCBase *	CreateObject (const BString & name)
SVPCSelect	GetSelectionObject (SVPCBase * theObject)

Initialization and File Handling	
const char *	CommandLineUsage (void) const
void	CommandLineInit (int argc, char * const argv[])
void	FileLoad (const char * pLoadFileName, bool isOfflineMode=B_TRUE)
void	FileSave (void)
void	FileSaveAs (const char * savefile)
virtual bool	OfflineMode (bool goOffline)

Other Public Methods Overriding SVPBase	
void	Run (void)
void	Stop (void)
void	Check (BErr & errLog)
void	Default (void)
virtual void	RemoveObject (const ESVPObject objectType, const BString & strID)
virtual void	InsertObject (SVPBase * pSvpObject)
virtual ostream &	GetNewLog (ostream & o)

Access to Lists of Enumerations/Direct Object Access	
virtual const SVPList *	GetTestList ()
virtual const SVPList *	GetCardList () const

Reporting	
virtual ostream &	StaticReport (ostream & o)
time_t	GetTotalDuration (void) const

Inherited Members from SVPThread

The following table lists the members inherited from the SVPThread class:

Public Methods	
virtual void	Run (void)
virtual void	Stop (void)

For detailed description of the inherited members, refer to “SVPThread Class” on page 83.

Inherited Members from SVPBase The following tables list the members inherited from the SVPBase class:

Various Public Methods	
virtual void	PrepareRun (SVPPropSection * propsection)
virtual EState	Status (void) const
virtual EState	UpdateStatus (void)

Access to Lists of Enumerations/Direct Object Access	
virtual const SVPList *	GetChildList (void)

Static Member Methods	
static const ESVPObjectType	GetObjectTypeByName (const BString & name)
static const BString	GetNameByObjectType (const ESVPObjectType objectType)

Identification Routines	
virtual const ESVPObjectType	GetObjectType (void) const
virtual const BString	Name (void) const
virtual void	SetID (const BString & theID)
virtual const BString &	GetID (void) const

Property Publication	
virtual CPropEl &	GetProp (const BString & key) const
virtual bool	CheckProp (const BString & key) const

Reporting	
virtual BLog &	Log (void)
virtual ostream &	GetLog (ostream & o)
virtual void	ClearLog (void)
virtual const BErr &	GetErr (void) const

For detailed description of the inherited members, refer to “SVPBase Class” on page 65.

Check

Include Files #include <svpclass.h>

Call public virtual void Check(BErr & errLog);

Description Checks if the SVP application has been correctly initialized. This method is called by Run() as well.

Return Value No return value.

Output Parameters **errLog** Reference to a BErr object. The object contains:

- a list of all error messages that occurred – if the run is not permitted.
- BErr::OK – if the run is permitted.

See Also “Run” on page 26

CommandLineInit

Include Files #include <svpclass.h>

Call void * CommandLineInit(
 int argc,
 char * const argv[]);

Description Passes command line arguments to the SVPClass object (as passed from main()).

Return Value No return value.

Input Parameters **argc** Number of arguments on command line.

argv Array of arguments.

See Also “CommandLineUsage” on page 19

CommandLineUsage

Include Files `#include <svpclass.h>`

Call `const char * CommandLineUsage(void) const;`

Description Returns the string that contains the information for using the command line.

Return Value Pointer to the char array that contains the text string.

See Also *“CommandLineInit” on page 18*

CreateObject

Include Files `#include <svpclass.h>`

Call `SVPBase * CreateObject(const ESVPObjType objectType);`

Description Creates a new object specified by its type. Use this function to create:

- scenarios (SVPScenario objects)
- tests (SVPTestBase objects)
- testcards (SVPPCICard or SVPPCIXCard objects)

CreateObject inserts the objects into the corresponding pool. To add tests to a scenario or testcards to a test, use InsertObject.

Return Value The return values are:

- Pointer to the new object.
- NULL – if object creation was not successful.

Input Parameters **objectType** Type of the object that is created. See *“ESVPObjType” on page 109*.

See Also *“InsertObject” on page 24*

Example

```
// create a new test object
SVPTestBase * newTest = (SVPTestBase *) svp.CreateObject(T_TEST);
SVPAssert(newTest);
```

Default

Include Files #include <svpclass.h>

Call virtual void Default(void);

Description Sets this object to default values. That means:

- One empty scenario is configured.
- All available test functions are defined as test objects.
- In online mode, the available testcards found in the system are defined as objects of the type testcard. In offline mode, no testcards will be configured.

Return Value No return value.

See Also –

FileLoad

Include Files #include <svpclass.h>

Call void FileLoad(
 const char * pLoadFileName,
 bool isOfflineMode = B_FALSE);

Description Loads SVP settings from the specific file.

Return Value No return value.

Input Parameters **pLoadFileName** Name of the file from which the settings are to be loaded.

isOfflineMode Forces the offline mode, regardless of whether or not it is specified in the settings file.

See Also “FileSave” on page 21
“FileSaveAs” on page 21

FileSave

Include Files `#include <svpclass.h>`

Call `void FileSave(void);`

Description Saves the settings to the file from which the settings were loaded with the `FileLoad` call.

Return Value No return value.

See Also *“FileLoad” on page 20*
“FileSaveAs” on page 21

FileSaveAs

Include Files `#include <svpclass.h>`

Call `void FileSaveAs(const char * savefile);`

Description Saves the SVP settings to the specified file.

Return Value No return value.

Input Parameters **savefile** Name of the file to which the settings are to be saved.

See Also *“FileSave” on page 21*
“FileLoad” on page 20

GetCardList

Include Files `#include <svpclass.h>`
`#include <svplist.h>`

Call `virtual const SVPList * GetCardList() const;`

Description Returns a pointer to the testcard pool list. This method is used for list enumeration.

Return Value Pointer to the testcard pool list.

See Also *“InsertObject” on page 24*

Example `// gets the first testcard in the list`
`SVPBase * theCard = (*(svp.GetCardList()))[0];`

GetNewLog

Include Files `#include <svpclass.h>`

Call `virtual ostream & GetNewLog(ostream & o);`

Description Writes to the selected ostream object whatever has been added to the report since the last GetLog or GetNewLog call.

Return Value Reference to the ostream object input parameter.

Input Parameters **o** ostream object. This object can be, for example, cout, cerr, or an ofstream file. To get the pointer to the ostream object, use the GetOStream call.

See Also *“GetLog” on page 72*
“Log” on page 78
“GetOStream” on page 106

Example `while (svp.Status() == SVPBase::S_RUN || svp.Status() ==`
`SVPBase::S_WAIT)`
`{`
`// wait for ten seconds`
`Sleep (10000);`
`// additional test code`
`...`
`// writes latest additions to the test report to stdout`
`svp.GetNewLog(cout);`
`}`

GetSelectionObject

Include Files `#include <svpclass.h>`

Call `SVPSelect GetSelectionObject(SVPBase * theObject);`

Description Creates a `SVPSelect` object for selecting this object's children.

NOTE You must remove the created object when you have finished selecting the object's children.

Return Value The return values are:

- Pointer to the `SVPSelection` object.
- `NULL` – if creation was not successful.

Input Parameters **theObject** Pointer to the object for which the selection takes place.

See Also *“GetID” on page 72*
“SetID” on page 80

GetTestList

Include Files `#include <svpclass.h>`
`#include <svplist.h>`

Call `virtual const SVPList * GetTestList();`

Description Returns a pointer to the test pool list. This method is used for list enumeration.

Return Value Pointer to the test pool list.

See Also *“InsertObject” on page 24*

Example `// gets the first test in the list`
`SVPBase * theTest = (*(svp.GetTestList()))[0];`

GetTotalDuration

Include Files #include <svpclass.h>

Call time_t GetTotalDuration(void) const;

Description Returns the total duration of the whole testing.

Return Value Total duration as time_t value. For more information about time_t, see the C-standard library.

See Also –

InsertObject

Include Files #include <svpclass.h>

Call virtual void InsertObject(SVPBase * pSvpObject);

Description Inserts the specified object into this object's pool. Use this function to insert:

- a test into the test pool
- a testcard into the testcard pool
- a scenario into the SVP object's child list

Return Value No return value.

Input Parameters **pSvpObject** Pointer to an object. The object can be:

- a test (defined by SVPTestBase)
To get the pointer to a specific test, use the CreateObject call.
- a testcard (defined by SVPPCICard or SVPPCIXCard)
To get the pointer to a specific testcard, use the GetCardList call.

See Also *“CreateObject” on page 19*
“GetCardList” on page 22

Example // assign one testcard to the test (first testcard that was found)
SVPBase * theCard = (*(svp.GetCardList()))[0];
newTest->InsertObject(theCard);

OfflineMode

Include Files `#include <svpclass.h>`

Call `void OfflineMode(bool goOffline);`

Description Switches between offline and online mode. The offline mode allows you to configure tests without actually having a testcard plugged into the system under test. The online mode allows you to run tests and to generate a test report.

Return Value No return value.

Input Parameters **goOffline** The values are:

- `B_TRUE` – offline mode is switched on.
- `B_FALSE` – offline mode is switched off.

See Also *“Run” on page 26*
“GetLog” on page 72

RemoveObject

Include Files `#include <svpclass.h>`
`#include <bstring.h>`

Call `virtual void RemoveObject(
 const ESVPObjectType objectType,
 const BString & strID);`

Description Removes an object completely (from pool and all references). The object is specified by its string ID and type.

To get the pointer of the string ID, use the `GetID` call. To set the string ID, use the `SetID` call.

Return Value No return value.

Input Parameters **objectType** Type of the object that is removed; see *“ESVPObjectType” on page 109*.

strID String that identifies the object.

See Also *“GetID” on page 72*
“SetID” on page 80

Run

Include Files `#include <svpclass.h>`

Call `virtual void Run(void);`

Description Runs the SVP testing within a thread.

Return Value No return value.

See Also *“Stop” on page 27*

StaticReport

Include Files `#include <svpclass.h>`

Call `virtual ostream & StaticReport(ostream & o);`

Description Generates the static report for this object. The static report is generated after the setup has been finished and before any actual testing takes place.

This report gives information about:

- Software
Version, build number or DLL versions
- System configuration
Operating system, number of processors, number of busses
- Testcard configuration
Number of cards, types of cards, firmware version(s), possibly serial numbers to uniquely identify cards
- Test setup and the number of scheduled tests

Return Value Reference to the `ostream` object input parameter.

Input Parameters **o** `ostream` object. The `ostream` object can be, for example, `cout`, `cerr`, or an `ofstream` file.

See Also –

Stop

Include Files `#include <svpclass.h>`

Call `virtual void Stop(void);`

Description Requests a thread and stops it.

Return Value No return value.

See Also *“Run” on page 26*

SVPClass, Constructor

Include Files `#include <svpclass.h>`

Call `public SVPClass(void);`

Description Default constructor.

Initializes this object and allocates a sufficient memory space.

Return Value No return value.

See Also *“SVPClass, Destructor” on page 27*

SVPClass, Destructor

Include Files `#include <svpclass.h>`

Call `public virtual ~SVPClass(void);`

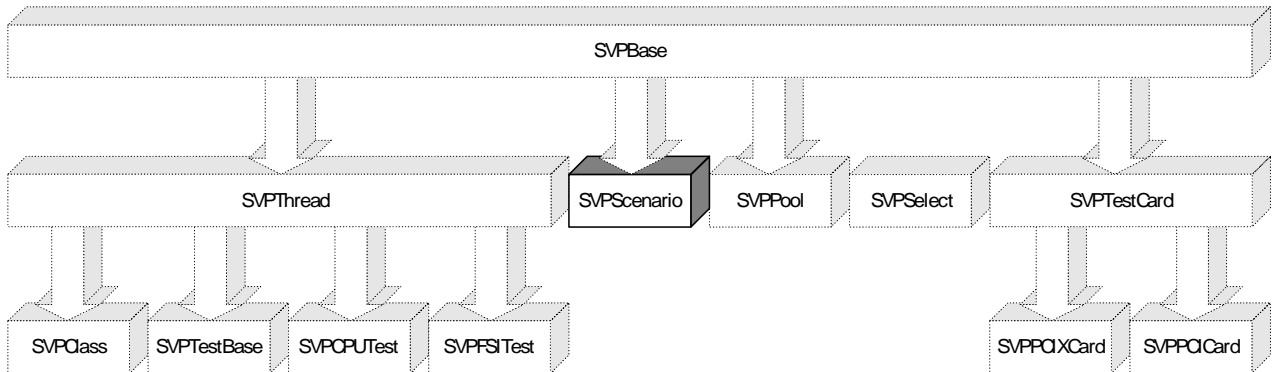
Description Frees the memory space that has been allocated for this object.

Return Value No return value.

See Also *“SVPClass, Constructor” on page 27*

SVPSscenario Class

Description The SVPSscenario class provides the features of a scenario.



Characteristic Members The following tables list all public members of the SVPSscenario class that are recommended for direct use.

Constructor

No public constructor available. Use SVPSclass::CreateObject instead.

Destructor

No public destructor available. Use SVPSclass::RemoveObject instead.

Public Method

time_t	GetTotalDuration (void) const
--------	-------------------------------

Inherited Members The following tables list the members inherited from the SVPBase class.

Various Public Methods	
virtual void	Init (void)
virtual void	Run (void)
virtual void	Stop (void)
virtual void	Check (const BErr & errLog)
virtual void	PrepareRun (SVPPropSection * propsection)
virtual EState	Status (void) const
virtual EState	UpdateStatus (void)
virtual void	RemoveObject (const ESVPObjType objectType, const BString & strID)
virtual void	InsertObject (SVPBase & pSvpObject)

Access to Lists of Enumerations/Direct Object Access	
virtual const SVPList *	GetChildList (void)

Static Member Methods	
static const ESVPObjType	GetObjectByName (const BString & name)
static const BString	GetNameByObjectType (const ESVPObjType objectType)

Identification Routines	
virtual const ESVPObjType	GetObjectType (void) const
virtual const BString	Name (void) const
virtual void	SetID (const BString & theID)
virtual const BString &	GetID (void) const

Default Settings	
virtual void	Default (void)

Property Publication	
virtual CPropEl &	GetProp (const BString & key) const
virtual bool	CheckProp (const BString & key) const

Reporting	
virtual BLog &	Log (void)
virtual ostream &	GetLog (ostream & o)
virtual ostream &	GetNewLog (ostream & o)
virtual void	ClearLog (void)
virtual ostream &	StaticReport (ostream & o)
virtual const BErr &	GetErr (void) const

For detailed description of the inherited members, refer to “*SVPBase Class*” on page 65.

GetTotalDuration

Include Files `#include <svpscena.h>`

Call `time_t GetTotalDuration(void) const;`

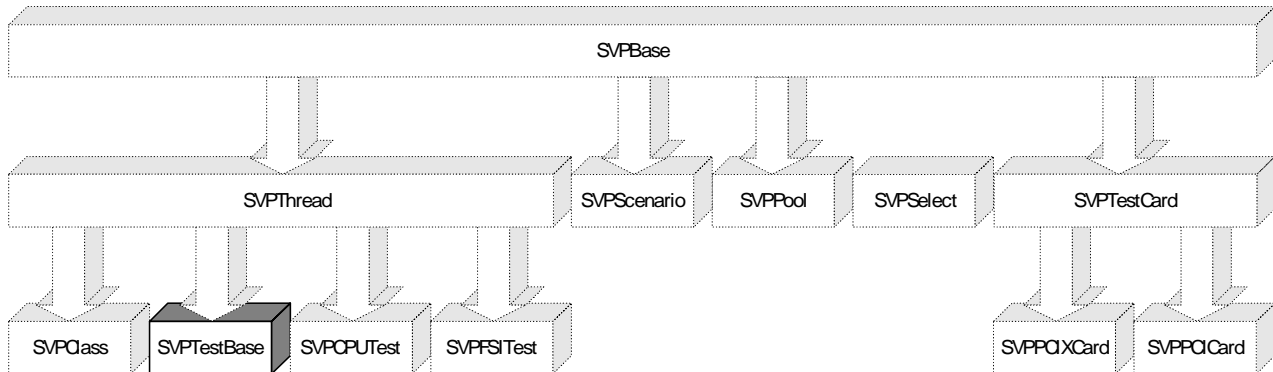
Description Returns the total duration of testing for the specified scenario. The total duration of a scenario is the maximum period of time that results from the sum of start delay and test duration.

Return Value Total duration as `time_t` value. For reference to `time_t`, see the C-standard library.

See Also –

SVPTestBase Class

Description The SVPTestBase class provides all testing functionality of the SVP application. The most useful methods are overrides from SVPBase and SVPThread, and provide the same functionality.



Characteristic Members The following tables list all public members of the SVPTestBase class that are recommended for direct use.

Constructor

No public constructor available. Use SVPClass::CreateObject instead.

Destructor

No public destructor available. Use SVPClass::RemoveObject instead.

Public Method

time_t	GetTotalDuration (void) const
--------	-------------------------------

Inherited Members from SVPThread The following table lists the members inherited from the SVPThread class.

Public Methods

virtual void	Run (void)
virtual void	Stop (void)

For detailed description of these inherited members, refer to “SVPThread Class” on page 83.

Inherited Members from SVPBase The following tables list the members inherited from the SVPBase class.

Constructor	
No public constructor available. Use SVPClass::CreateObject instead.	

Destructor	
No public destructor available. Use SVPClass::RemoveObject instead.	

Various Public Methods	
virtual void	Init (void)
virtual void	Check (const BErr & errLog)
virtual void	PrepareRun (SVPPropSection * propsection)
virtual EState	Status (void) const
virtual EState	UpdateStatus (void)
virtual void	RemoveObject (const ESVPObjType objectType, const BString & strID)
virtual void	InsertObject (SVPBase & pSvpObject)

Access to Lists of Enumerations/Direct Object Access	
virtual const SVPList *	GetChildList (void)

Identification Routines	
virtual const ESVPObjType	GetObjectType (void) const
virtual const BString	Name (void) const
virtual void	SetID (const BString & theID)
virtual const BString &	GetID (void) const

Default Settings	
virtual void	Default (void)

Property Publication	
virtual CPropEl &	GetProp (const BString & key) const
virtual bool	CheckProp (const BString & key) const

Reporting	
virtual BLog &	Log (void)
virtual ostream &	GetLog (ostream & o)
virtual ostream &	GetNewLog (ostream & o)
virtual void	ClearLog (void)
virtual ostream &	StaticReport (ostream & o)
virtual const BErr &	GetErr (void) const

Static Member Methods	
static const ESVPObjectType	GetObjectTypeByName (const BString & name)
static const BString	GetNameByObjectType (const ESVPObjectType objectType)

For detailed description of these inherited members, refer to “*SVPBase Class*” on page 65.

GetTotalDuration

Include Files `#include <testbase.h>`

Call `time_t GetTotalDuration(void) const;`

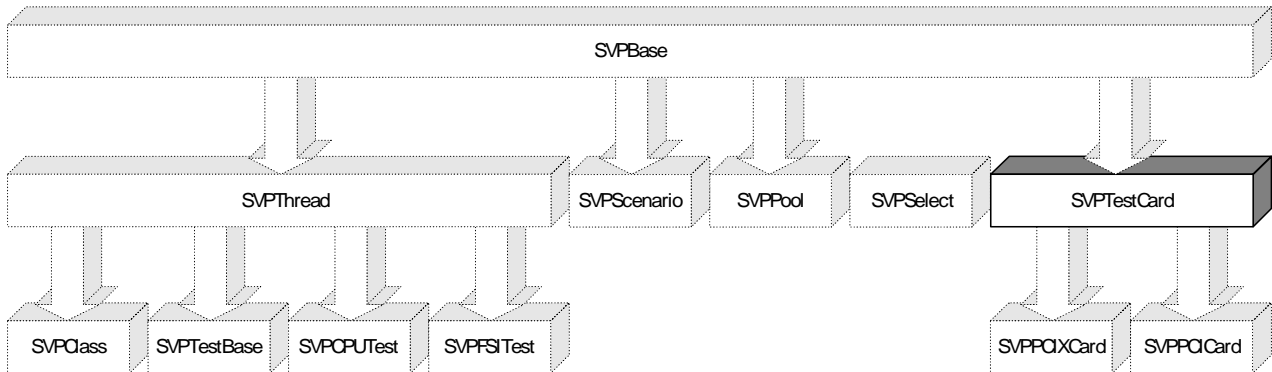
Description Returns the total duration of the specified test. The total duration of a test is the sum of start delay and test duration.

Return Value Total duration as `time_t` value. For reference to `time_t`, see the C-standard library.

See Also –

SVPTestCard Class

Description The SVPTestCard class includes the members of the SVPBase class.



Characteristic Members The following tables list all public members of the SVPTestCard class that are recommended for direct use.

Defined Operator	
public virtual bool	operator == (const SVPBase & other) const

Constructor
No public constructor available. Use SVPClass::CreateObject instead.

Destructor
No public destructor available. Use SVPClass::RemoveObject instead.

Default Settings	
virtual void	Default (void)
virtual void	ResetFactoryDefault (void)
virtual const BString	Ping (void)

Reporting	
virtual ostream &	StaticReport (ostream & o)

Public Methods Overriding Base Class's Methods	
void	Run (void)
void	Stop (void)

Various Public Methods	
virtual bool	CheckPPR (DWORD fmFlags, BString * pprReport)
virtual void	BandwidthSet (double theBandwidth)
virtual ECardType	CardType (void) const
virtual const BLocation &	GetLocation (void)
virtual DWORD	GetSystemID (void)
virtual bool	GetAddress (BAddress::EAddressSpace space, int isPrefetch, BAddress & address)
virtual void	AllocateBuffer (BAddress & Address

Testcard Setup Methods	
virtual void	MasterWRCSetup (const BAddress & address)
virtual void	MasterReadSetup (const BAddress & address)
virtual void	MasterWriteSetup (const BAddress & address)
virtual const BString	ConfigScan (void)
virtual void	CPUTargetSetup (const BAddress::EAddressSpace space, int prefetch, LPRUN_FCT runFct)
virtual void	ObserverTestSetup (void)

Protocol Rules	
virtual DWORD	GetRuleCount (void) const
virtual const SSvpPropRule	GetRule (DWORD dwIndex) const
virtual const BString	GetRuleDescription (DWORD dwIndex) const
virtual void	SetRule (DWORD dwIndex, bool bState)

Static Members	
static ECardType	CardTypeFromString (const BString & cardStr)
static SVPTestCard *	New (SVPBase * parent., const BString & modelStr="E2928A")

Inherited Members The following tables list the members inherited from the `SVPBase` class.

Various Public Methods	
virtual void	Init (void)
virtual void	Run (void)
virtual void	Stop (void)
virtual void	Check (const BErr & errLog)
virtual void	PrepareRun (SVPPropSection * propsection)
virtual EState	Status (void) const
virtual EState	UpdateStatus (void)
virtual void	RemoveObject (const ESVPObjType objectType, const BString & strID)
virtual void	InsertObject (SVPBase & pSvpObject)

Access to Lists of Enumerations/Direct Object Access	
virtual const SVPList *	GetChildList (void)

Static Member Methods	
static const ESVPObjType	GetObjectByName (const BString & name)
static const BString	GetNameByObjectType (const ESVPObjType objectType)

Identification Routines	
virtual const ESVPObjType	GetType (void) const
virtual const BString	Name (void) const
virtual void	SetID (const BString & theID)
virtual const BString &	GetID (void) const

Property Publication	
virtual CPropEl &	GetProp (const BString & key) const
virtual bool	CheckProp (const BString & key) const

Reporting	
virtual BLog &	Log (void)
virtual ostream &	GetLog (ostream & o)
virtual ostream &	GetNewLog (ostream & o)
virtual void	ClearLog (void)
virtual const BErr &	GetErr (void) const

For detailed description of the inherited members, refer to “*SVPBase Class*” on page 65.

AllocateBuffer

Include Files #include <testcard.h>

Call virtual void AllocateBuffer(BAddress & address);

Description Allocates buffer on the system under test for this testcard object.

Return Value No return value.

Output Parameters **address** Reference to the BAddress object.

See Also –

Example DWORD size = 1024; // must be power of two
const BAddress & address = theCard->AllocateBuffer(size);

BandwidthSet

Include Files #include <testcard.h>

Call virtual void BandwidthSet (double theBandwidth);

Description Sets the bus bandwidth that is to be occupied by the test in percent. The test tries to occupy the bus with this bandwidth. Please be aware that the selected bus bandwidth cannot always be achieved.

Return Value No return value.

Input Parameters **theBandwidth** Desired value for the bandwidth. Valid values are in the range of 0.0 ... 1.0, where 1.0 means 100%.

See Also –

CardType

Include Files `#include <testcard.h>`

Call `virtual ECardType CardType(void) const;`

Description Returns the type of the testcard.

Return Value Type of the card; see “*ECardType*” on page 108.

See Also “*CardTypeFromString*” on page 41

CardTypeFromString

Include Files `#include <bstring.h>`
`#include <testcard.h>`

Call `virtual ECardType CardTypeFromString(const BString & cardStr);`

Description Returns the type of the testcard, according to the model number.

Return Value Type of the card; see “*ECardType*” on page 108.

Input Parameters **cardStr** String that contains the model number. Valid strings are:

- “E2925B”
- “E2926A”
- “E2926B”
- “E2927A”
- “E2928A”
- “E2940A”
- “E2929A”
- “E2922A”

See Also “*New*” on page 53
“*CardType*” on page 41

CheckPPR

Include Files `#include <testcard.h>`

Call

```
virtual bool CheckPPR(  
    DWORD      mFlags;  
    BString    * pprReport);
```

Description Checks the PPR software and generates a report.

Return Value The return values are:

- `B_TRUE` – if no errors occurred.
- `B_FALSE` – if an error occurred.

Input Parameters **mFlags** Flag mask that indicates which report is to be generated. Relevant bits are:

- `fm_USE_MASTER` – if the testcard is using the master.
- `fm_USE_TARGET` – if the testcard is using the target.

Output Parameters **pprReport** Report as a string.

See Also –

Example

```
BString reportStr;  
DWORD mFlags = fm_USE_MASTER | fm_USE_TARGET;  
  
// report message  
if (testCard->CheckPPR(mFlags, &reportStr) == B_TRUE)  
{  
    cout << "Check OK:" << (const char *)reportStr << endl;  
}  
else  
{  
    cerr << "Check failed:" << (const char *)reportStr << endl;  
}
```

ConfigScan

Include Files `#include <bstring.h>`
`#include <testcard.h>`

Call `virtual const BString ConfigScan(void);`

Description Scans the whole configuration space of the PCI-X bus system.

Return Value The results of the configuration space scan as a string.

See Also *“MasterReadSetup” on page 50*
“MasterWRCSetup” on page 51
“MasterWriteSetup” on page 52
“CPUTargetSetup” on page 44
“ObserverTestSetup” on page 54

CPUTargetSetup

Include Files #include <testcard.h>

Call virtual void CPUTargetSetup(
 const BAddress::EAddressSpace & space,
 int prefetch,
 LPRUN_FCT runFct;

Description Sets up the target and the CPU test. You need this method also to set up the FSI test.

Return Value No return value.

Input Parameters **space** Address space. See “*EAddressSpace*” on page 107.

prefetch Valid values are:

- 0 Use decoder that has prefetch “on”.
- 1 Use decoder that has prefetch “off” (don’t care).

runFct Pointer to the run function for internal testing. The run function is a part of the *STestFct* structure. See the example.

See Also “*GetAddress*” on page 46
“*MasterReadSetup*” on page 50
“*MasterWRCSetup*” on page 51
“*MasterWriteSetup*” on page 52
“*ConfigScan*” on page 43
“*ObserverTestSetup*” on page 54

Example // The following struct contains the actual test definitions including the run function

```

STestFct g_customFct =
{
    "Custom Memory Read", // descriptive name
    "custommemread", // short name
    custommemread_init, // init function
    custommemread_run, // run function
    0, // no stop function
    1, 1, // one card only
    "Reads from main memory and does other custom testing", // long
    description
    tpf_FULL_ADDRESS | tpf_BANDWIDTH // test flags
};

```

For a detailed example of a custom test function, refer to “*Custom Test Function*” on page 122.

Default

Include Files #include <testcard.h>

Call virtual void Default(void);

Description Sets all properties of this testcard object to default values.

See Also “*GetProp*” on page 75
“*ResetFactoryDefault*” on page 55
“*Ping*” on page 55

Example SVPTestCard card;
...
// Sets all properties of the testcard object to default values
card.Default();

GetAddress

Include Files #include <testcard.h>

Call virtual int GetAddress(
 BAddress::EAddressSpace space,
 bool isPrefetch,
 BAddress & address);

Description Gets the base address of the desired address space. For the address space, you can select between configuration space, memory space and I/O space. The obtained base address can be used as input parameter in the following methods:

- MasterWRCSetup
- MasterReadSetup
- MasterWriteSetup

Return Value The return values are:

0 ... 5	BAR 0 ... 5
-1	no BAR is found

Input Parameters **space** Address space. See “*EAddressSpace*” on page 107.

isPrefetch The valid values are:

-1	don't care
0	no
1	yes

Output Parameters **address** Reference to the BAddress object that contains the base address.

See Also “*MasterReadSetup*” on page 50
 “*MasterWRCSetup*” on page 51
 “*MasterWriteSetup*” on page 52

Example

```
BAddress::EAddressSpace space = BAddress::SPACE_MEM;

int prefetch = -1;

BAddress address;

// get address of second card to program first one
secondCard->GetAddress(space, prefetch, address);

// setup test for first card
firstCard->MasterWRCSetup(address);
```

GetLocation

Include Files #include <testcard.h>

Call virtual const BLocation & GetLocation(void);

Description Gets the location of this testcard object in the system under test. For external connections, FSI is needed.

Return Value BLocation object with bus number, device number and function number of this testcard object.

See Also –

GetRule

Include Files #include <testcard.h>

Call virtual const SSvpProtRule GetRule(DWORD dwIndex) const;

Description Gets the rule with the specified index.

Return Value SsvpProtRule object with name and state.

Input Parameters **dwIndex** Index of the rule.

See Also “*GetRuleDescription*” on page 48

“*GetRuleCount*” on page 48

“*SetRule*” on page 56

GetRuleCount

Include Files #include <testcard.h>

Call virtual DWORD GetRuleCount(void) const;

Description Returns the number of rules that are observed by this testcard object.

Return Value Number of rules as DWORD.

See Also *“GetRule” on page 47*
“GetRuleDescription” on page 48
“SetRule” on page 56

GetRuleDescription

Include Files #include <testcard.h>

Call virtual const BString GetRuleDescription(DWORD dwIndex) const;

Description Gets a detailed description of the rule with the specified index.

Return Value String that contains the description of the rule.

Input Parameters **dwIndex** Index of the rule.

See Also *“GetRule” on page 47*
“GetRuleCount” on page 48
“SetRule” on page 56

GetSystemID

Include Files #include <testcard.h>

Call virtual DWORD GetSystemID(void);

Description Gets the unique system ID.

Return Value System ID. The values are:

0 Unknown

1 Controlling host

A unique random number All other systems that are controlled by FSI

See Also –

MasterReadSetup

Include Files `#include <testcard.h>`

Call `virtual void MasterReadSetup(const BAddress & address);`

Description Sets up a *Read* test.

When you want to access this testcard from another testcard or from the CPU, you can use the `GetAddress` call to define its address and to get the reference to the defined `BAddress` object.

Return Value No return value.

Input Parameters **address** `BAddress` object that defines the address, the size of the address space and the kind of address space (mem or I/O). See “*GetAddress*” on page 46.

See Also “*MasterWRCSetup*” on page 51
“*MasterWriteSetup*” on page 52
“*ConfigScan*” on page 43
“*CPUTargetSetup*” on page 44
“*ObserverTestSetup*” on page 54
“*GetAddress*” on page 46

Example

```
BAddress address (0xb8000, 0x0, BAddress::SPACE_MEM, 1024);  
// part of video memory  
  
theCard->MasterReadSetup(address);  
// read from the specified address
```

MasterWRCSetup

Include Files `#include <testcard.h>`

Call `public virtual void MasterWRCSetup(const BAddress & address);`

Description Sets up a *Write*, *Read* and *Compare* test.

When you want to access this testcard from another testcard or from the CPU, you can use the `GetAddress` call to define its address and to get the reference to the defined `BAddress` object.

Return Value No return value.

Input Parameters **address** `BAddress` object that defines the address, the size of the address space and the kind of address space (mem or I/O). See *“GetAddress” on page 46*.

See Also *“MasterReadSetup” on page 50*
“MasterWriteSetup” on page 52
“ConfigScan” on page 43
“CPUTargetSetup” on page 44
“ObserverTestSetup” on page 54
“GetAddress” on page 46

Example

```
BAddress address (0xb8000, 0x0, BAddress::SPACE_MEM, 1024);  
// part of video memory  
  
theCard->MasterWRCSetup(address);  
// write/read/compare from the specified address
```

MasterWriteSetup

Include Files #include <testcard.h>

Call public virtual void MasterWriteSetup(const BAddress & address);

Description Sets up a *Write* test.

When you want to access this testcard from another testcard or from the CPU, you can use the `GetAddress` call to define its address and to get the reference to the defined `BAddress` object.

Return Value No return value.

Input Parameters **address** BAddress object that defines the address, the size of the address space and the kind of address space (mem or I/O). See “*GetAddress*” on page 46.

See Also “*MasterReadSetup*” on page 50
“*MasterWRCSetup*” on page 51
“*ConfigScan*” on page 43
“*CPUTargetSetup*” on page 44
“*ObserverTestSetup*” on page 54
“*GetAddress*” on page 46

Example

```
BAddress address (0xb8000, 0x0, BAddress::SPACE_MEM, 1024);  
// part of video memory  
  
theCard->MasterWriteSetup(address);  
// write to the specified address
```

New

Include Files `#include <testcard.h>`

Call `static SVPTestCard * New(
 SVPBase * parent,
 const BString & modelStr = "E2928A");`

Description Defines a new testcard object, which is specified by the parent object and the model number.

`New` is only used in **offline** mode to create a testcard of a specific type. In **online** mode, `New` is not needed: testcards are created by the `SVPClass` object.

NOTE To insert the testcard into the pool, you **MUST** use `SVPClass::InsertObject`.

Return Value Pointer to the new testcard object.

Input Parameters **parent** Pointer to the parent object.

modelStr String that contains the model number. Valid strings are:

- "E2925B"
- "E2926A"
- "E2926B"
- "E2927A"
- "E2928A"
- "E2940A"
- "E2929A"
- "E2922A"

See Also *"CardTypeFromString" on page 41*

ObserverTestSetup

Include Files #include <testcard.h>

Call virtual void ObserverTestSetup(void);

Description Sets up this testcard object for an observer-only test. That means that master and target are not used.

Return Value No return value.

See Also *“MasterReadSetup” on page 50*
“MasterWRCSetup” on page 51
“MasterWriteSetup” on page 52
“ConfigScan” on page 43
“CPUTargetSetup” on page 44

Operator ==

Include Files #include <testcard.h>

Call virtual bool operator == (const SVPBase & other) const;

Description Checks if two testcard objects refer to the same testcard. For example, this method can be used to check if one testcard object is connected to two ports.

Return Value The return values are:

- B_TRUE – if the testcard objects refer to the same testcard.
- B_FALSE – if the testcard objects refer to different testcards.

Input Parameter **other** Reference to the second testcard.

See Also –

Example

```
if (firstCard == secondCard)
{
    // if firstCard and secondCard are identical (connected by
    // different ports, maybe), peer-to-peer testing is not possible
}
else
{
    myPeertoPeer(firstCard, secondCard);
}
```

Ping

Include Files `#include <bstring.h>`
`#include <testcard.h>`

Call `virtual void BString Ping(void);`

Description Checks the connection to this testcard object. The green and the red LEDs on the card flash. An error message will report any connection errors.

Return Value The method returns:

- An empty string – if the testcard connection is correct.
- An error message – if connection errors occurred.

See Also *“Default” on page 45*
“ResetFactoryDefault” on page 55

ResetFactoryDefault

Include Files `#include <testcard.h>`

Call `virtual void ResetFactoryDefault(void);`

Description Resets testcard settings for this testcard object to default values. For the changes to become effective, you must reboot the testcard.

Return Value No return value.

See Also *“Default” on page 45*
“Ping” on page 55

Run

Include Files #include <testcard.h>

Call public virtual void Run(void);

Description Runs this object. The object can be the entire SVP application, a scenario or a test. This method also checks if a test or a testcard has been locked. If the object has been locked, an error is thrown.

Before you use this function, call `PrepareRun` to verify the settings.

NOTE For running single tests and scenarios, use `UpdateStatus` to query the current object status.

Return Value No return value.

See Also “*Stop*” on page 58

SetRule

Include Files #include <testcard.h>

Call virtual void SetRule(
 DWORD dwIndex,
 bool bState);

Description Enables or disables the rule with the specified index.

Return Value No return value.

Input Parameters **dwIndex** Index of the rule.

bState The values are:

- B_TRUE – the rule is disabled.
- B_FALSE – the rule is enabled.

See Also “*GetRuleDescription*” on page 48

“*GetRule*” on page 47

“*GetRuleCount*” on page 48

StaticReport

Include Files `#include <testcard.h>`

Call `public virtual ostream StaticReport(ostream & o);`

Description Generates the static report for this object. This method overrides the SVPBase class StaticReport method.

The static report is generated after the setup has been finished and before any actual testing takes place.

This report gives information about:

- Software
Version, build number or DLL versions
- System configuration
Operating system, number of processors, number of busses
- Testcard configuration
Number of cards, types of cards, firmware version(s), possibly serial numbers to uniquely identify cards
- Test setup and the number of scheduled tests

Return Value Reference to the ostream object input parameter.

Input Parameters **o** ostream object. The ostream object can be, for example, cout, cerr, or an ofstream file.

See Also –

Stop

Include Files `#include <testcard.h>`

Call `virtual void Stop(void);`

Description Stops this running object. The object can be the entire SVP application, a scenario or a test.

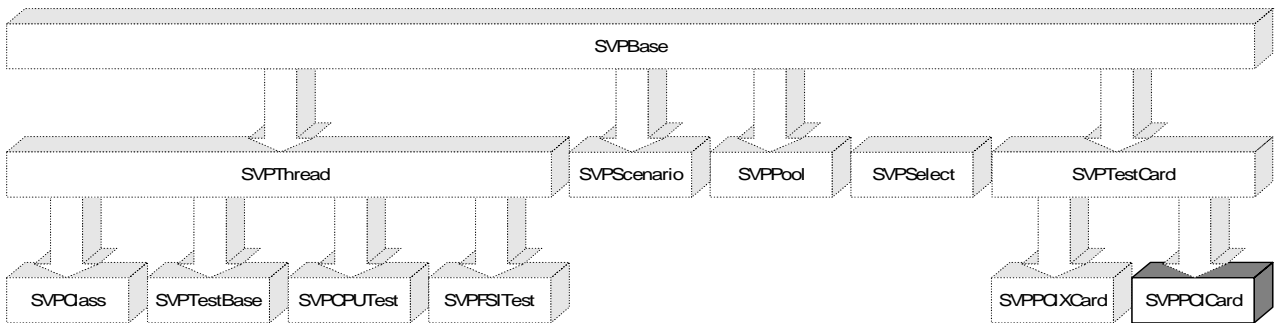
Return Value No return value.

See Also *“Run” on page 56*

SVPPCICard Class

Description The SVPPCICard class is used for PCI series cards and provides all functionality of the SVPTestCard class. The following testcards are supported:

- E2925B
- E2926A/B
- E2927A
- E2928A
- E2940A CompactPCI



Characteristic Members This class contains no additional members that can be directly called by the user.

Inherited Members The SVPPCICard class includes the members of the SVPTestCard class. The following tables list the members inherited from the SVPTestCard class.

Defined Operator	
public virtual bool	operator == (const SVBase & other) const

Constructor
No public constructor available. Use SVPClass::CreateObject instead.

Destructor
No public destructor available. Use SVPClass::RemoveObject instead.

Default Settings	
virtual void	Default (void)
virtual void	ResetFactoryDefault (void)
virtual const BString	Ping (void)

Reporting	
virtual ostream &	StaticReport (ostream & o)

Public Methods Overriding Base Class's Methods	
void	Run (void)
void	Stop (void)

Various Public Methods	
virtual bool	CheckPPR (DWORD fmFlags, BString * pprReport)
virtual void	BandwidthSet (double theBandwidth)
virtual ECardType	CardType (void) const
virtual const BLocation &	GetLocation (void)
virtual DWORD	GetSystemID (void)
virtual bool	GetAddress (BAddress::EAddressSpace space, int isPrefetch, BAddress & address)
virtual void	AllocateBuffer (BAddress & Address

Testcard Setup Methods	
virtual void	MasterWRCSetup (const BAddress & address)
virtual void	MasterReadSetup (const BAddress & address)
virtual void	MasterWriteSetup (const BAddress & address)
virtual const BString	ConfigScan (void)
virtual void	CPUTargetSetup (const BAddress::EAddressSpace space, int prefetch, LPRUN_FCT runFct)
virtual void	ObserverTestSetup (void)

Protocol Rules	
virtual DWORD	GetRuleCount (void) const
virtual const SSvpPropRule	GetRule (DWORD dwIndex) const
virtual const BString	GetRuleDescription (DWORD dwIndex) const
virtual void	SetRule (DWORD dwIndex, bool bState)

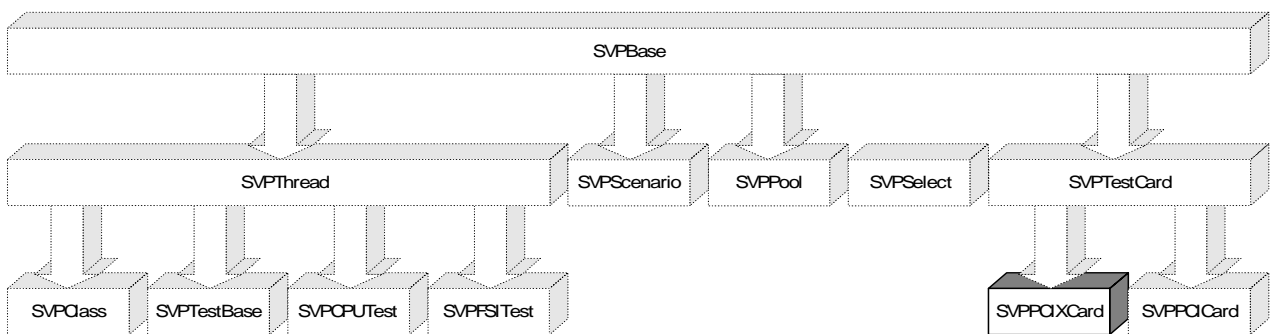
Static Members	
static ECardType	CardTypeFromString (const BString & cardStr)
static SVPTestCard *	New (SVPBase * parent., const BString & modelStr="E2928A")

For detailed description of the inherited members, refer to “*SVPTestCard Class*” on page 36.

SVPPCIXCard Class

Description The SVPPCIXCard class is used for PCI-X series cards and provides all functionality of the SVPTestCard class. The following testcards are supported:

- E2929A
- E2922A



Characteristic Members This class contains no additional members that can be directly called by the user.

Inherited Members The SVPPCIXCard class includes the members of the SVPTestCard class. The following tables list the members inherited from the SVPTestCard class.

Defined Operator	
public virtual bool	operator == (const SVPBase & other) const

Constructor
No public constructor available. Use SVPClass::CreateObject instead.

Destructor
No public destructor available. Use SVPClass::RemoveObject instead.

Default Settings	
virtual void	Default (void)
virtual void	ResetFactoryDefault (void)
virtual const BString	Ping (void)

Reporting	
virtual ostream &	StaticReport (ostream & o)

Public Methods Overriding Base Class's Methods	
void	Run (void)
void	Stop (void)

Various Public Methods	
virtual bool	CheckPPR (DWORD fmFlags, BString * pprReport)
virtual void	BandwidthSet (double theBandwidth)
virtual ECardType	CardType (void) const
virtual const BLocation &	GetLocation (void)
virtual DWORD	GetSystemID (void)
virtual bool	GetAddress (BAddress::EAddressSpace space, int isPrefetch, BAddress & address)
virtual void	AllocateBuffer (BAddress & Address)

Testcard Setup Methods	
virtual void	MasterWRCSetup (const BAddress & address)
virtual void	MasterReadSetup (const BAddress & address)
virtual void	MasterWriteSetup (const BAddress & address)
virtual const BString	ConfigScan (void)
virtual void	CPUTargetSetup (const BAddress::EAddressSpace space, int prefetch, LPRUN_FCT runFct)
virtual void	ObserverTestSetup (void)

Protocol Rules	
virtual DWORD	GetRuleCount (void) const
virtual const SSvpPropRule	GetRule (DWORD dwIndex) const
virtual const BString	GetRuleDescription (DWORD dwIndex) const
virtual void	SetRule (DWORD dwIndex, bool bState)

Static Members	
static ECardType	CardTypeFromString (const BString & cardStr)
static SVPTestCard *	New (SVPBase * parent., const BString & modelStr="E2928A")

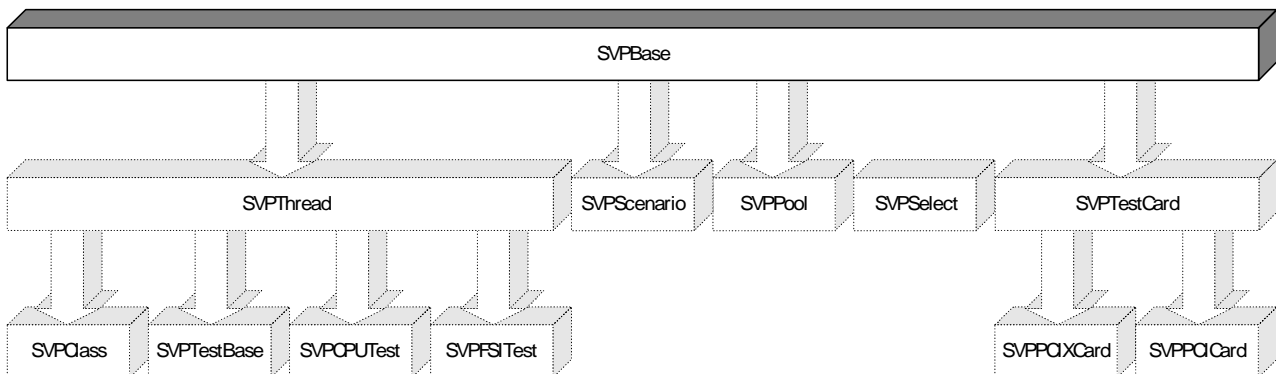
For detailed description of the inherited members, refer to “*SVPTestCard Class*” on page 36.

SVPBase Class

Description SVPBase is the base class for all SVP objects. This class includes fundamental features and provides a standard means for accessing objects. Objects can be:

- the whole SVP application (SVPClass)
- a scenario (SVPScenario)
- a test (SVPTestBase)
- a testcard (SVPTestCard)

NOTE SVPBase objects must not be created directly. SVPClass creates and deletes objects.



Characteristic Members The following tables list all public members of the SVPBase class that are recommended for direct use.

Constructor
No public constructor available. Use SVPClass::CreateObject instead.

Destructor
No public destructor available. Use SVPClass::RemoveObject instead.

Various Public Methods	
virtual void	Init (void)
virtual void	Run (void)
virtual void	Stop (void)
virtual void	Check (const BErr & errLog)
virtual void	PrepareRun (SVPPropSection * propsection)
virtual EState	Status (void) const
virtual EState	UpdateStatus (void)
virtual void	RemoveObject (const ESVPObjType objectType, const BString & strID)
virtual void	InsertObject (SVPBase & pSvpObject)

Access to Lists of Enumerations/Direct Object Access	
virtual const SVPList *	GetChildList (void)

Static Member Methods	
static const ESVPObjType	GetObjectByName (const BString & name)
static const BString	GetNameByObjectType (const ESVPObjType objectType)

Identification Routines	
virtual const ESVPObjType	GetType (void) const
virtual const BString	Name (void) const
virtual void	SetID (const BString & theID)
virtual const BString &	GetID (void) const

Default Settings	
virtual void	Default (void)

Property Publication	
virtual CPropEl &	GetProp (const BString & key) const
virtual bool	CheckProp (const BString & key) const

Reporting	
virtual BLog &	Log (void)
virtual ostream &	GetLog (ostream & o)
virtual ostream &	GetNewLog (ostream & o)
virtual void	ClearLog (void)
virtual ostream &	StaticReport (ostream & o)
virtual const BErr &	GetErr (void) const

Check

Include Files `#include <svpbases.h>`

Call `public virtual void Check(BErr & errLog);`

Description Checks if an object has been correctly initialized. The object can be:

- the whole SVP application (SVPClass object)
- a scenario (SVPScenario object)
- a test (SVPTestBase object)
- a testcard (SVPPCICard or SVPPCIXCard object)

Return Value No return value.

Output Parameters **errLog** Reference to an BErr object that contains all error messages that occurred when checking the initialization of the regarding object. If initialization is correct, it contains BErr: :OK.

See Also –

Example

```
BErr errLog;
theObject->Check(errLog);

if (errLog)
{
    cerr << "Error checking object: " << errLog << endl;
}
```

CheckProp

Include Files `#include <bstring.h>`
`#include <svpbases.h>`

Call `public virtual bool CheckProp(const BString & key) const;`

Description Returns the status of a boolean property.

Return Value The return values are:

- `B_TRUE` – if the property has been activated.
- `B_FALSE` – if the property has not been activated.

Input Parameters **key** Specifies the boolean property to be checked, such as "use.master", which determines if the master of the testcard is used. For the available properties, see "Setup File Reference" on page 111.

See Also "GetProp" on page 75

Example

```
int prefetch;
if (svptest->CheckProp("address.prefetch"))
{
    prefetch =
        (bool)(svptest->GetProp(pAddressPrefetch)) == B_TRUE ? 1 : 0;
}
else
{
    prefetch = -1;
}
```

ClearLog

Include Files #include <svpbases.h>

Call virtual void ClearLog(void);

Description Clears the log (test report) of the entire SVP application.

See Also *“GetLog” on page 72*
“Log” on page 78
“GetNewLog” on page 74

Default

Include Files #include <svpbases.h>

Call virtual void Default(void);

Description Sets all properties of an object to default values. The object can be:

- the whole SVP application (defined by SVPClass)
- a scenario (defined by SVPScenario)
- a test (defined by SVPTestBase)
- a testcard (defined by SVPPCICard or SVPPCIXCard)

See Also *“GetProp” on page 75*

Example SVPClass svp;

...

```
// Sets all properties of the SVP application object to default values
```

```
svp.Default();
```

GetChildList

Include Files `#include <svpbases.h>`
`#include <svplist.h>`

Call `virtual const SVPList * GetChildList(void) const;`

Description Returns a pointer to an object's child list.

Return Value The return values are:

- Pointer to the object's child list.
- NULL – if no pointer is available.

See Also *“RemoveObject” on page 79*

Example

```
SVPScenario * theSc;  
SVPTestBase * theTest;  
  
// get pointer to first scenario  
theSc = (SVPScenario *) (*svp.GetChildList())[0];  
  
// get pointer to first test  
theTest = (SVPTestBase *) svp.GetTestList()[0];  
  
// insert test into scenario  
theSc.InsertObject (theTest);
```

GetErr

Include Files `#include <svpbases.h>`

Call `virtual const BErr & GetErr(void) const;`

Description Returns the latest error that occurred during the SVP application.

Return Value Reference to the error object that contains the latest error.

See Also –

GetID

Include Files `#include <bstring.h>`
`#include <svpbase.h>`

Call `virtual const BString & GetID(void) const;`

Description Returns the user-defined name of the regarding object.

Return Value Name of the object.

See Also *“SetID” on page 80*

GetLog

Include Files `#include <svpbase.h>`

Call `virtual ostream & GetLog(ostream & o);`

Description Writes the log (test report) of this object to the specified ostream object.

Return Value Reference to the ostream object input parameter.

Input Parameters

- ostream object. This object can be, for example, cout, cerr, or an ofstream file. To get the pointer to the ostream object, use the GetOStream call.

See Also *“Log” on page 78*
“GetNewLog” on page 74
“GetOStream” on page 106

Example `// print log (test report) to std out`
`svp.GetLog(cout);`

GetNameByObjectType

Include Files `#include <bstring.h>`
`#include <svpbases.h>`

Call `static const BString GetNameByObjectType(
const ESVPObjectType objectType);`

Description Reads the name that identifies the object with the specified object type. For example, if you select the object type `T_TESTCARD`, “Testcard” will be read.

Return Value Name of the object.

Input Parameters **objectType** Type of the object of which the name is read; see “*ESVPObjectType*” on page 109.

See Also “*GetObjectTypeByName*” on page 74

Example

```
SVPBase * theObject;  
// assign valid object to theObject...  
// ...  
BString theString = SVPBase::GetNameByObjectType( theObject);  
cout << "Object is a " << theString << endl;
```

GetNewLog

Include Files `#include <svpbases.h>`

Call `virtual ostream & GetNewLog(ostream & o);`

Description Writes an additional log (test report) of an object to the selected ostream object.

Return Value Reference to the ostream object input parameter.

Input Parameters **o** ostream object. This object can be, for example, cout, cerr, or an ofstream file. To get the pointer to the ostream object, use the GetOStream call.

See Also *“GetLog” on page 72*
“Log” on page 78
“GetOStream” on page 106

Example

```
while (svp.Status() == SVPBase::S_RUN || svp.Status() ==
SVPBase::S_WAIT)
{
    ...
    // report additions to test report to stdout
    svp.GetNewLog(cout);
}
```

GetObjectByName

Include Files `#include <bstring.h>`
`#include <svpbases.h>`

Call `static const ESVPObjType GetObjectTypeByName(
const BString & name);`

Description Returns the object type for the selected name.

Return Value Object type; see *“ESVPObjType” on page 109*.

Input Parameters **name** Name of the object.

See Also *“GetNameByObjectType” on page 73*

GetObjectType

Include Files `#include <svpbases.h>`

Call `virtual const ESVPObjectType GetObjectType(void);`

Description Returns the type of an object.

Return Value Object type; see “*ESVPObjectType*” on page 109.

See Also “*GetObjectTypeByName*” on page 74

GetProp

Include Files `#include <bstring.h>`
`#include <svpbases.h>`

Call `virtual CPropEl & GetProp(const BString & key);`

Description Used to access a property by its name. You can then set this property to the desired value. For properties and values, see “*Setup File Reference*” on page 111.

Return Value Reference to an CPropEl object. The class CPropEl is needed to assign different types of values (for example, integer, string or boolean) to the same class.

Input Parameters **key** String that specifies the property. For all available properties, see “*Setup File Reference*” on page 111.

See Also “*CheckProp*” on page 69

Example

```
// set the test duration to 120 seconds
newTest->GetProp("duration") = 120UL;
// set the address property of the test
newTest->GetProp("address") = testAddress;
```

Init

Include Files #include <svpbase.h>

Call public virtual void Init(void);

Description Initializes an object. The object can be:

- the whole SVP application (SVPClass)
- a scenario (SVPScenario)
- a test (SVPTestBase)
- a testcard (SVPPCICard and SVPPCIXCard)

Return Value No return value.

See Also –

InsertObject

Include Files `#include <svpbases.h>`

Call `virtual void InsertObject(SVPBase * pSvpObject);`

Description Inserts an object into an object's child list and increments its reference count. You can use this function to insert:

- a test into a scenario
- a testcard into a test

To insert a scenario into the SVP application object, use `CreateObject(T_SCENARIO)`.

Return Value No return value.

Input Parameters **pSvpObject** Pointer to an object. The object can be:

- a test (defined by `SVPTestBase`)

To get the pointer to a specific test, use the `SVPClass::GetTestList()` call.

- a testcard (defined by `SVPPICard` or `SVPPICIXCard`)

To get the pointer to a specific testcard, use the `SVPClass::GetCardList()` call.

See Also *"CreateObject" on page 19*
"GetCardList" on page 22

Example

```
// assign testcard to a new test (the first testcard that has been
scanned is used)
SVPBase * theCard = (*(svp.GetCardList()))[0];
newTest->InsertObject(theCard);
```

Log

Include Files #include <svpbases.h>

Call virtual BLog & Log(void);

Description Gets reference to m_log. m_log is a BLog object that records the test report. (Each SVPBase object owns a BLog object for reporting.) See *“BLog” on page 105*.

Return Value Reference to m_log.

See Also *“GetLog” on page 72*
“GetNewLog” on page 74

Name

Include Files #include <bstring.h>
#include <svpbases.h>

Call virtual const BString Name(void) const;

Description Reads the name of an object.

Return Value Name of the object.

See Also *“GetNameByObjectType” on page 73*

PrepareRun

Include Files #include <svpbases.h>

Call virtual void PrepareRun(void);

Description Prepares this object for running. This method verifies the settings of the object that is to be run.

Return Value No return value.

See Also *“Run” on page 80*

RemoveObject

Include Files `#include <bstring.h>`
`#include <svpbases.h>`

Call `virtual void RemoveObject (`
`const ESVPObjectType objectType,`
`const BString & strID);`

Description Removes a child from the object's child list. The child object is specified by its string ID and type.

You can query the string ID of an object with the `GetID` call. The `RemoveObject` call decrements the reference count of the object by one.

Return Value No return value.

Input Parameters **objectType** Type of the object that is removed; see "*ESVPObjectType*" on page 109.

strID String that identifies the object.

See Also "*GetChildList*" on page 71
"*GetID*" on page 72
"*SetID*" on page 80

Example `// remove second testcard from test:`
`SVPTestCard * theCard = (*theTest->GetChildList())[1];`
`theTest->RemoveObject(T_TESTCARD, theCard->GetID());`

Run

Include Files `#include <svpbases.h>`

Call `public virtual void Run(void);`

Description Runs an object. The object can be the entire SVP application, a scenario and a test. This method also checks if a test or a testcard has been locked. If the object has been locked, an error is thrown.

Before you use this function, call `PrepareRun` to verify the settings.

NOTE To run single tests and scenarios, you must call `UpdateStatus` to query the current object status.

Return Value No return value.

See Also *“Stop” on page 82*
“PrepareRun” on page 78

SetID

Include Files `#include <bstring.h>`
`#include <svpbases.h>`

Call `virtual void SetID(const BString & theID);`

Description Assigns a user-specific name to this object.

Return Value No return values.

Input Parameters **theID** User name of the object.

See Also *“GetID” on page 72*

Example

```
// assign a custom test function
newTest->SetTestFct(&g_customFct);
newTest->SetID("My custom test");
```


StaticReport

Include Files `#include <svpbases.h>`

Call `virtual ostream & StaticReport(ostream & o);`

The static report is generated after the setup has been finished and before any actual testing takes place.

This report gives information about:

- Software
Version, build number or DLL versions
- System configuration
Operating system, number of processors, number of busses
- Testcard configuration
Number of cards, types of cards, firmware version(s), possibly serial numbers to uniquely identify cards
- Test setup and the number of scheduled tests

Return Value Reference to the ostream object input parameter.

Input Parameters **o** ostream object. The ostream object can be, for example, cout, cerr, or an ofstream file.

See Also *“GetLog” on page 72*
“GetNewLog” on page 74

Status

Include Files `#include <svpbases.h>`

Call `virtual EState Status(void) const;`

Description Queries status information of an object. For status information, see *“EState” on page 108*.

Return Value Status of the object.

See Also *“UpdateStatus” on page 82*

Stop

Include Files #include <svpbases.h>

Call virtual void Stop(void);

Description Stops the running object. The object can be the entire SVP application, a scenario or a test.

Return Value No return value.

See Also *“Run” on page 80*

UpdateStatus

Include Files #include <svpbases.h>

Call virtual EState UpdateStatus(void);

Description Returns the updated status of this object. For status information, see *“EState” on page 108*.

Return Value Updated status of the object.

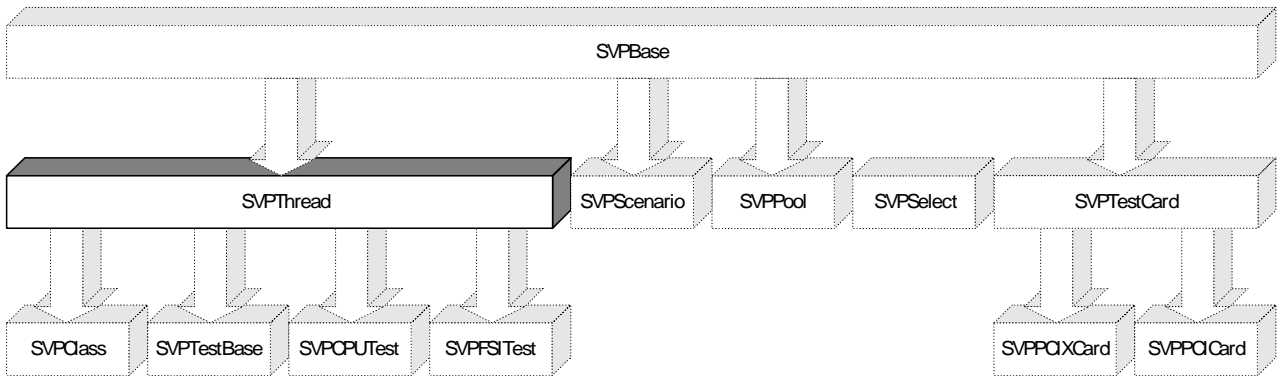
See Also *“Status” on page 81*

SVPThread Class

Description The SVPThread class includes the SVPBase members. This class overrides some of the SVPBase methods to provide basic threading functionality for the following classes:

- SVPClass
- SVPCPUTest
- SVPTTestBase
- SVPFSITest

All members of the SVPThread class are platform-dependent.



Characteristic Members The following table lists all public members of the SVPThread class that are recommended for direct use.

Public Methods	
virtual void	Run (void)
virtual void	Stop (void)

Inherited Members The following tables list the members inherited from the SVPBase class.

Constructor
No public constructor available. Use SVPCClass::CreateObject instead.

Destructor
No public destructor available. Use SVPCClass::RemoveObject instead.

Various Public Methods	
virtual void	Init (void)
virtual void	Check (const BErr & errLog)
virtual void	PrepareRun (SVPPropSection * propsection)
virtual EState	Status (void) const
virtual EState	UpdateStatus (void)
virtual void	RemoveObject (const ESVPObjectType objectType, const BString & strID)
virtual void	InsertObject (SVPBase & pSvpObject)

Access to Lists of Enumerations/Direct Object Access	
virtual const SVPList *	GetChildList (void)

Identification Routines	
virtual const ESVPObjectType	GetObjectType (void) const
virtual const BString	Name (void) const
virtual void	SetID (const BString & theID)
virtual const BString &	GetID (void) const

Default Settings	
virtual void	Default (void)

Property Publication	
virtual CPropEl &	GetProp (const BString & key) const
virtual bool	CheckProp (const BString & key) const

Reporting	
virtual BLog &	Log (void)
virtual ostream &	GetLog (ostream & o)
virtual ostream &	GetNewLog (ostream & o)
virtual void	ClearLog (void)
virtual ostream &	StaticReport (ostream & o)
virtual const BErr &	GetErr (void) const

Static Member Methods	
static const ESVPObjType	GetObjectByName (const BString & name)
static const BString	GetNameByObjectType (const ESVPObjType objectType)

For detailed description of the inherited members, refer to “*SVPBase Class*” on page 65.

Run

Include Files `#include <svpthrd.h>`

Call `public virtual void Run(void);`

Description Executes the thread.

Return Value No return value.

See Also “*Stop*” on page 85

Stop

Include Files `#include <svpthrd.h>`

Call `public virtual void Stop(void);`

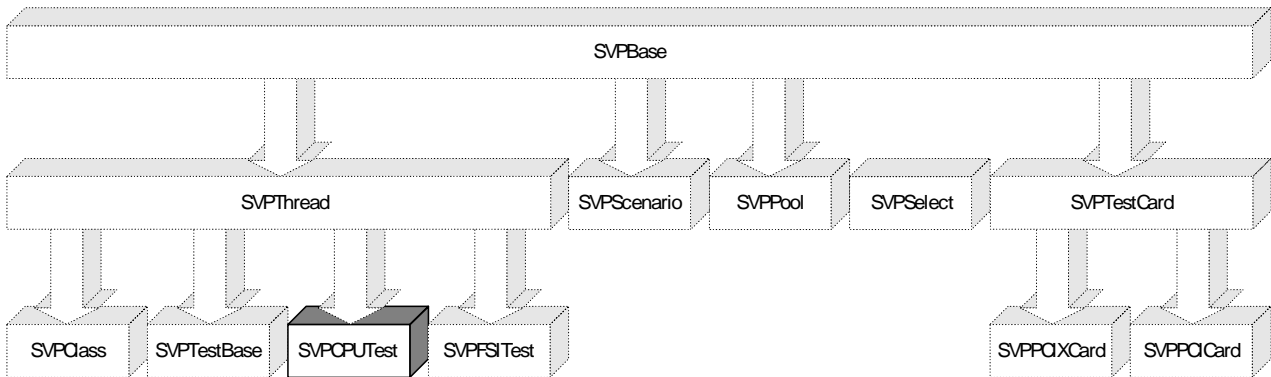
Description Stops the running thread.

Return Value No return value.

See Also “*Run*” on page 85

SVPCPUTest Class

Description The SVPCPUTest class is used to perform tests with CPU interaction.



Characteristic Members This class contains no additional members that can be directly called by the user.

Inherited Members from SVThread The following table lists the members inherited from the SVThread class.

Public Methods	
virtual void	Run (void)
virtual void	Stop (void)

For detailed description of these inherited members, refer to “SVThread Class” on page 83.

Inherited Members from SVPBase The following tables list the members inherited from the SVPBase class.

Constructor
No public constructor available. Use SVPClass::CreateObject instead.

Destructor
No public destructor available. Use SVPClass::RemoveObject instead.

Various Public Methods	
virtual void	Init (void)
virtual void	Check (const BErr & errLog)
virtual void	PrepareRun (SVPPropSection * propsection)
virtual EState	Status (void) const
virtual EState	UpdateStatus (void)
virtual void	RemoveObject (const ESVPObjectType objectType, const BString & strID)
virtual void	InsertObject (SVPBase & pSvpObject)

Access to Lists of Enumerations/Direct Object Access	
virtual const SVPList *	GetChildList (void)

Identification Routines	
virtual const ESVPObjectType	GetObjectType (void) const
virtual const BString	Name (void) const
virtual void	SetID (const BString & theID)
virtual const BString &	GetID (void) const

Default Settings	
virtual void	Default (void)

Property Publication	
virtual CPropEl &	GetProp (const BString & key) const
virtual bool	CheckProp (const BString & key) const

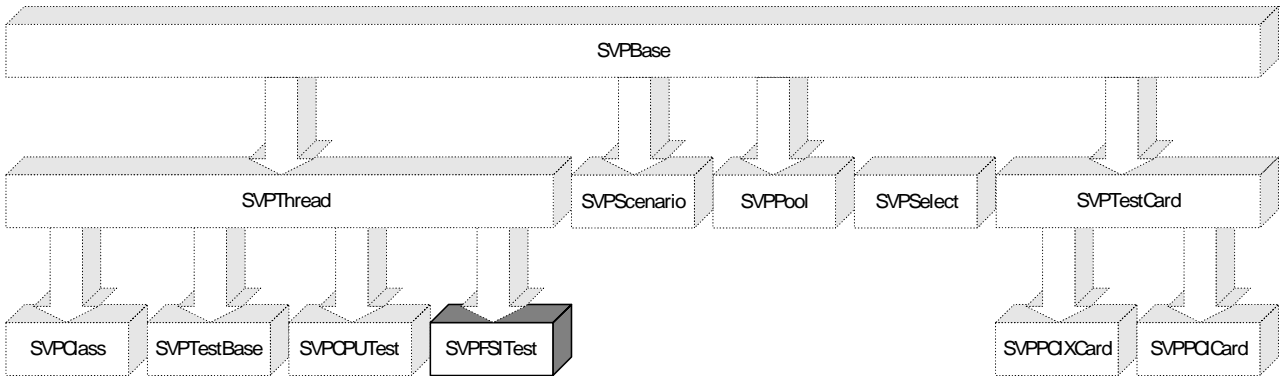
Reporting	
virtual BLog &	Log (void)
virtual ostream &	GetLog (ostream & o)
virtual ostream &	GetNewLog (ostream & o)
virtual void	ClearLog (void)
virtual ostream &	StaticReport (ostream & o)
virtual const BErr &	GetErr (void) const

Static Member Methods	
static const ESVPObjType	GetObjectByName (const BString & name)
static const BString	GetNameByObjectType (const ESVPObjType objectType)

For detailed description of these inherited members, refer to “*SVPBase Class*” on page 65.

SVPFSITest Class

Description The SVPFSITest class is used to perform tests with FSI (Front Side Interface) interaction. The FSI is used whenever internal control of testcards is not desired or cannot be achieved.



Characteristic Members This class contains no additional members that can be directly called by the user.

Inherited Members from SVPThread The following table lists the members inherited from the SVPThread class.

Public Methods	
virtual void	Run (void)
virtual void	Stop (void)

For detailed description of these inherited members, refer to “SVPThread Class” on page 83.

Inherited Members from SVPBase The following tables list the members inherited from the SVPBase class.

Constructor
No public constructor available. Use SVPClass::CreateObject instead.

Destructor
No public destructor available. Use SVPClass::RemoveObject instead.

Various Public Methods	
virtual void	Init (void)
virtual void	Check (const BErr & errLog)
virtual void	PrepareRun (SVPPropSection * propsection)
virtual EState	Status (void) const
virtual EState	UpdateStatus (void)
virtual void	RemoveObject (const ESVPObjectType objectType, const BString & strID)
virtual void	InsertObject (SVPBase & pSvpObject)

Access to Lists of Enumerations/Direct Object Access	
virtual const SVPList *	GetChildList (void)

Identification Routines	
virtual const ESVPObjectType	GetObjectType (void) const
virtual const BString	Name (void) const
virtual void	SetID (const BString & theID)
virtual const BString &	GetID (void) const

Default Settings	
virtual void	Default (void)

Property Publication	
virtual CPropEl &	GetProp (const BString & key) const
virtual bool	CheckProp (const BString & key) const

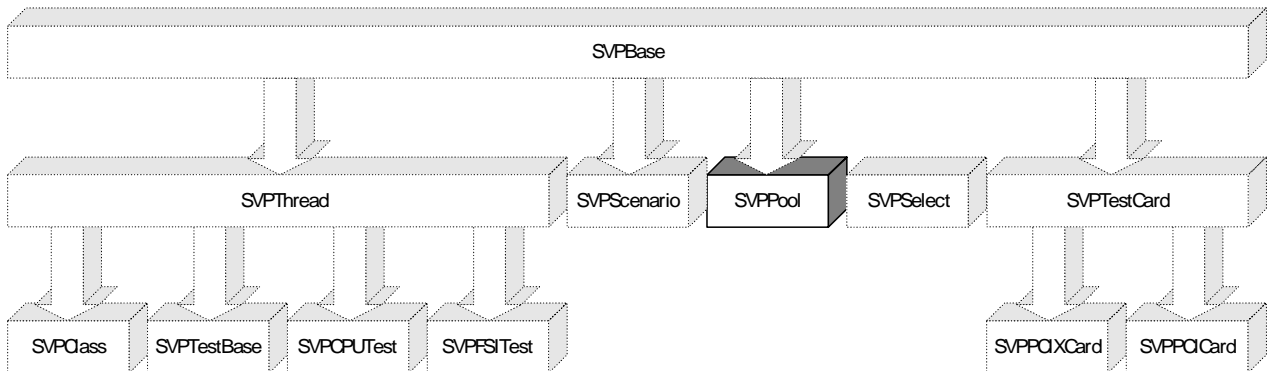
Reporting	
virtual BLog &	Log (void)
virtual ostream &	GetLog (ostream & o)
virtual ostream &	GetNewLog (ostream & o)
virtual void	ClearLog (void)
virtual ostream &	StaticReport (ostream & o)
virtual const BErr &	GetErr (void) const

Static Member Methods	
static const ESVPObjectType	GetObjectByName (const BString & name)
static const BString	GetNameByObjectType (const ESVPObjectType objectType)

For detailed description of these inherited members, refer to “*SVPBase Class*” on page 65.

SVPPool Class

Description The SVPPool class is not to be used directly. It is used by SVPClass to handle the pool of testcards and the pool of tests.



Characteristic Members This class contains no additional members that can be directly called by the user.

Inherited Members The following tables list the members inherited from the SVPCard class.

Constructor

No public constructor available. Use SVPCard::CreateObject instead.

Destructor

No public destructor available. Use SVPCard::RemoveObject instead.

Various Public Methods	
virtual void	Init (void)
virtual void	Run (void)
virtual void	Stop (void)
virtual void	Check (const BErr & errLog)
virtual void	PrepareRun (SVPPropSection * propsection)
virtual EState	Status (void) const
virtual EState	UpdateStatus (void)
virtual void	RemoveObject (const ESVPObjType objectType, const BString & strID)
virtual void	InsertObject (SVPBase & pSvpObject)

Access to Lists of Enumerations/Direct Object Access	
virtual const SVPList *	GetChildList (void)

Static Member Methods	
static const ESVPObjType	GetObjectByName (const BString & name)
static const BString	GetNameByObjectType (const ESVPObjType objectType)

Identification Routines	
virtual const ESVPObjType	GetObject (void) const
virtual const BString	Name (void) const
virtual void	SetID (const BString & theID)
virtual const BString &	GetID (void) const

Default Settings	
virtual void	Default (void)

Property Publication	
virtual CPropEl &	GetProp (const BString & key) const
virtual bool	CheckProp (const BString & key) const

Reporting	
virtual BLog &	Log (void)
virtual ostream &	GetLog (ostream & o)
virtual ostream &	GetNewLog (ostream & o)
virtual void	ClearLog (void)
virtual ostream &	StaticReport (ostream & o)
virtual const BErr &	GetErr (void) const

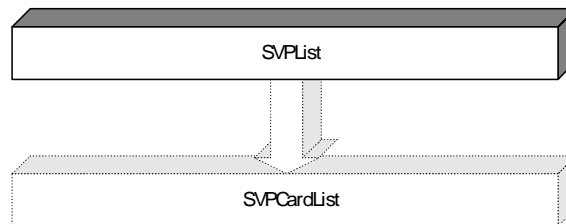
For detailed description of the inherited members, refer to “*SVPBase Class*” on page 65.

SVPList Class

Description The *SVPList* class provides a container class for SVP objects. SVP objects can be:

- scenarios (SVPScenario objects)
- tests (SVPTestBase objects)
- testcards (SVPTestCard, SVPPCICard or SVPPCIXCard objects)

This class provides methods for modifying settings files and methods for walking through the lists.



Characteristic Members The following tables list all public members of the *SVPList* class that are recommended for direct use.

Constructor	
	SVPList (SVPBase * parent, const ESVPObjType objectType)

Destructor	
virtual ~	SVPList (void)

Other Public Methods	
virtual void	DiscardList (void)

Identification Routines	
const ESVPObjType	GetObjectType (void) const

Element Access	
virtual SVPBase *	operator [] (int index) const
virtual SVPBase *	operator [] (const BString & strID) const
virtual int	Count (void) const

String List of all Object IDs	
BString	GetObjectIDList (void) const

Count

Include Files #include <svplist.h>

Call virtual int count(void) const;

Description Counts the number of objects in this list object.

Return Value Number of objects as integer.

See Also –

DiscardList

Include Files #include <svplist.h>

Call virtual void DiscardList(void);

Description Removes all elements of this list object.

Return Value No return value.

See Also –

GetObjectIdList

Include Files `#include <bstring.h>`
`#include <svplist.h>`

Call `BString GetObjectIdList(void) const;`

Description Gets a string with a list of all object strings that are included in this list object.

Return Value BString object that contains all object strings of this list.

See Also *"GetObjectType" on page 98*

Example

```
BString theStr;  
theStr = svp.GetChildList()->GetObjectIdList();  
cout << "Names of all scenarios: " << theStr << endl;
```

GetObjectType

Include Files #include <svplist.h>

Call const ESVPObjType GetObjectType(void) const;

Description Gets the type of the objects that are included in this list object.

Return Value Type of the objects; see “*ESVPObjType*” on page 109.

See Also –

Operator [] (int index)

Include Files #include <svplist.h>

Call virtual SVPBase * operator [] (int index) const;

Description Gets the list element (object) with the specified number.

NOTE The index starts at 0. The last element in the list is (Count() -1).

Return Value Pointer to the object.

Input Parameter **index** Index.

See Also –

Operator [] (const BString & strID)

Include Files #include <svplist.h>

Call virtual SVPBase * operator [] (const BString & strID) const;

Description Gets the list element (object) with the specified user-defined ID.

Return Value Pointer to the object.

Input Parameter **strID** User-defined name of the object.

See Also –

SVPList, Constructor

Include Files `#include <svplist.h>`

Call

```
public SVPList(  
    SVPBase      * parent,  
    const ESVPObjectType & objectType);
```

Description Defines a list of objects. This list is specified by the parent object. The objects within this list are specified by the object type.

Return Value SVPList object.

Input Parameters **parent** Pointer to the parent object of this list.

objectType Type of the objects in this list; see “*ESVPObjectType*” on page 109.

See Also “*SVPList, Destructor*” on page 99

SVPList, Destructor

Include Files `#include <svplist.h>`

Call

```
public virtual ~SVPList( void );
```

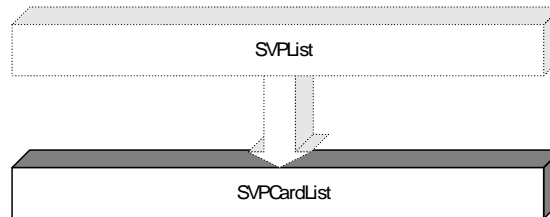
Description Frees the memory space that has been allocated for this SVPList object.

Return Value No return value.

See Also “*SVPList, Constructor*” on page 99

SVPCardList Class

Description The SVPCardList class is able to scan the system for available testcards and to build a list of these testcards.



Characteristic Members This class contains no additional members that can be directly called by the user.

Inherited Members The SVPCardList class includes the members of the SVList class. The following tables list the members inherited from the SVList class.

Constructor	
	SVList (SVPBase * parent, const ESVPObjecType objectType)

Destructor	
virtual ~	SVList (void)

Other Public Methods	
virtual void	DiscardList (void)

Identification Routines	
const ESVPObjecType	GetObjectType (void) const

Element Access	
virtual SVPBase *	operator [] (int index) const
virtual SVPBase *	operator [] (const BString & strID) const
virtual int	Count (void) const

String List of all Object IDs	
BString	GetObjectIDList (void) const

For detailed description of the inherited members, refer to “*SVPList Class*” on page 95.

Classes of the Service Library

The Service Library includes a number of classes with the following general purposes:

- Error handling; see “*BErr*” on page 103.
- String handling; see “*BString*” on page 104.
- Address handling; see “*BAddress*” on page 104.
- Generation and access of random data fields; see “*BRandomData*” on page 104.
- Live report handling; see “*BLog*” on page 105.
- Testcard’s and other device’s location handling; see “*BLocation*” on page 106.

BErr

The `BErr` class handles all errors that occur within the SVP application. It is used both in the Test API library (see “*Classes of the Test API Library*” on page 11) and the FSILib library. (The FSI library is not needed for direct use. For detailed information, refer to header file `<fsilib.h>`.)

The `BErr` class provides methods for passing back and forth error messages and other error information.

For further reference information, refer to header file `<berr.h>`.

BString

The `BString` class provides a common class for handling strings. This class provides basic functionality such as string concatenation, formatting and stream insertion.

For further reference information, refer to header file `<bstring.h>`.

BAddress

The `BAddress` class provides methods for address handling in configuration space, memory space and I/O space. This class also provides the functionality for converting physical to virtual addresses and vice-versa.

For further reference information, refer to header file `<baddress.h>`.

BRandomData

The `BRandomData` class provides a container for generation and access of random data fields. This class also provides random functions and can be used in environments where random data generation needs to be customized.

For further reference information, refer to header file `<brandom.h>`.

BLog

Description The BLog class is a stream class for handling live reports. Each SVPBase object (see “SVPBase Class” on page 65) owns a BLog object for reporting.

Characteristic Members Only one public method is user-callable. Neither the public constructor nor the public destructor are needed outside the TestAPI library.

Constructor	
Public constructor is not needed outside the Test API library.	

Destructor	
Public constructor is not needed outside the Test API library.	

Public Method	
ostream &	GetOStream (void)

GetOStream

Include Files `#include <blog.h>`

Call `ostream & GetOStream(void);`

Description Returns the reference to an ostream object. The ostream object can be, for example, cout, cerr, or an ofstream file.

Return Value Reference to the ostream object. This reference can be used for streaming strings into the live report.

See Also *“GetLog” on page 72*
“GetNewLog” on page 74

BLocation

The BLocation class provides an interface for handling the locations of testcards and other devices in the system under test. This class handles bus numbers, device numbers and function numbers and provides methods for storing and printing the bus widths and the bus speeds.

For further reference information, refer to header file <brandom.h>.

Enumeration Definitions

All enumeration definitions are listed in alphabetically order:

- “*EAddressSpace*” on page 107 defines available address spaces such as I/O or system memory.
- “*ECardType*” on page 108 defines available types of testcards for PCI and PCI-X bus systems.
- “*EState*” on page 108 defines different states of an object, for example, whether a test object is running or waiting.
- “*ESVPObjectType*” on page 109 defines available object types, such as test or testcard objects.

EAddressSpace

enum EAddressSpace	Description
SPACE_IO	I/O address space.
SPACE_MEM	System main memory or memory of the testcard (depends on the kind of test).
SPACE_CONF	Configuration address space.

ECardType

enum ECardType	Description
UNKNOWN	Unknown testcard
PCI	PCI testcard (for example, E2925B, E2926B)
COMPACT_PCI	Compact PCI testcard (E2940A)
PCI-X	PCI-X testcard (E2929A, E2922A)

EState

enum Estate	Description
S_UNKNOWN	Unknown state.
S_INIT	Object is initialized and ready to run.
S_WAIT	Object is preparing to run.
S_STOP	Object is stopped.
S_RUN	Object is running.
S_PAUSE	Object is paused.
S_ERROR	Object has encountered a run-time error (recoverable).
S_EXCLUDE	Object is excluded or has an unrecoverable error condition.

ESVPObjectType

enum ESVPObjectType	Description
T_TESTCARD	Defines the object type of a testcard.
T_SVP	Defines the object type of the whole SVP application.
T_SCENARIO	Defines the object type of a scenario.
T_TEST	Defines the object type of a test.
T_CPUTEST	Defines a test that performs CPU interaction.
T_FSITEST	Defines a test that performs FSI interaction.



Setup File Reference

All settings of the System Validation Package 2.1 can easily be set or modified by the user via C++ programming.

For property setting and modifying, use the names and value ranges that are listed in all following tables. You can find:

- One scenario property and properties of the available tests

The scenario property and the test properties with their value ranges are described in “*Scenario and Test Parameter*” on page 112.

- Properties of the available testcards

The testcard properties and their value ranges are described in “*Testcard Parameters*” on page 113.

For more information, especially on PPR properties, please refer to the *E2975A PCI Protocol Permutator & Randomizer Software User’s Guide* (pdf-file), which is delivered with the testcard.

Scenario and Test Parameter

Scenario Property Scenarios allow several tests to be run concurrently. Any testcard can only be used once per scenario. Scenarios have no special settings except for the list of tests that are used.

Scenario Property	Scenario Property used in the User Program	Values	Description
Scenario	items.list	string list	List of tests (by names) that are used in this scenario

Test Properties All tests share some or all of the following properties:

Test Property	Test Property used in the User Program	Values	Description
Address Offset	address	address value	Physical address of the memory
Address Space	address.space	"mem" or "io"	Memory space or I/O space is used
Bytes to Transfer	size	DWORD	Size of the memory (in bytes) that is use.
Prefetchable Decoder	address.prefetch	True or False	The pre-fetchable decoder is used if available
Bandwidth %	bandwidth	0 ... 100	Value of the maximum bandwidth. Note: Using a bandwidth < 1.0 will cause that the PPR testcard setting B_M_DELAY is overridden.
Description	description	string	User-defined description
Function	function	string	Short name of test function
Start Delay	starttimeoffset	DWORD	Start Delay in seconds (from start of scenario)
Duration	duration	DWORD	Duration of the test (in seconds)

Testcard Parameters

Testcard parameters can be divided into:

- Testcard and Location Information
- Card Features Settings
- Master Settings
- Target Settings
- Protocol Checker (Rule Masking)

Testcard and Location Information

Card Property	Testcard Property used in the User Program	Type	Range	Description
Serial Number	card.serialnumber	string	valid serial number	Serial number of the testcard
Port	connection.port	port string	rs232 fhif pci usb (PCI-X only)	Connection port of the testcard
Port Number	connection.portnum	DWORD	depends on port	Connection port number
Model Number	card.model	string	valid models	Model number of the testcard
Location	card.location	string	valid locations	Location of the testcard (for example, Bus 0 Device 13 Function 0)

Card Features Settings

Testcard Property	Testcard Property used in the User Program	Type	Range	Description
Use Performance	use.performance	boolean	True or False	Performance counters of the testcard are enabled or disabled
Use Protocol Checker (Rule Masking)	use.observer	boolean	True or False	Protocol Observer of the testcard is enabled or disabled
Use Master	use.master	boolean	True or False	Master of the testcard is enabled or disabled
Use Target	use.target	boolean	True or False	Target of the testcard is enabled or disabled
Use PPR	use.ppr	boolean	True or False	Attribute permutation is enabled or disabled
Use Analyzer	use.tracememory	boolean	True or False	Analyzer of the testcard is enabled or disabled
Use Trigger I/O Lines	use.triggerio	boolean	True or False	Cross-triggering is enabled or disabled
Upload Trace on Trigger	tracememory.upload	boolean	True or False	Trace memory upload is enabled or disabled
Inhibit FSI	inhibit.fsi	boolean	True or False	Inhibit connection to FSI on host
File	tracememory.upload.file	string		Name of the file to which the card's trace memory is written (without extension)
n/a	performance.measure	DWORD	0 ... 7	Measure used by performance
n/a	performance.cardmeasure	DWORD	0 ... 7	Measure used by card's performance

Master Settings

Testcard Property	Testcard Property used in the User Program	Type	Range	Description
n/a	master.blockpage	DWORD	0 ... 16	Blockpage used by the master
Write Command	master.block.cmd.write	DWORD	mem_write, mem_writeinvalidate	PCI bus command for the block transfer (mem)
Read Command	master.block.cmd.read	DWORD	mem_read, mem_readline, mem_readmultiple	PCI bus command for the block transfer during address phase (mem)
Master Internal Address	master.address.internal	DWORD	0 ... size of data memory	Internal address of the testcard's data memory; used by the master

Testcard Property	Testcard Property used in the User Program	Type	Range	Description
Block Size List (Master PPR)	ppr.master.block.size.list	string	Multiple of 4 in the range of 4 ... 128k	List of numeric values for block sizes, measured in bytes
Block Algorithm (Master PPR)	ppr.master.block.alg	DWORD	0 ... 3	Algorithm used to pick values from the value list of master block properties
Block Byte Enable List (Master PPR)	ppr.master.block.byten.list	string	0 ... 15	List of numeric values for C/BE byte enables
Block Commands List (Master PPR)	ppr.master.block.cmds.list	DWORD	0 ... 15	List of PCI bus commands used for permutations
Block Alignment List (Master PPR)	ppr.master.block.align.list	string	<i>Granularity:</i> Power of 2 between cache-line size and 8192. <i>Offset:</i> Multiple of 4 between 0 and 8188	Granularity and offset within this granularity that restrict the start of a block
PPR Report (Master Block)	ppr.master.block.report	boolean	True or False	Writing of the PPR report is enabled or not
PPR Block Report File (Master Block)	ppr.master.block.report.file	string		Name of the file used for the PPR report or master block permutations
Master Attribute Page (memory)	master.attrpage.memory	DWORD	0 ... 63	Attribute page used for access to the memory space by testcard
Master Attribute Page (i/o)	master.attrpage.io	DWORD	0 ... 63	Attribute page used for access to the I/O space by testcard
Waits List (Master PPR Attribute)	ppr.master.attr.waits.list	string	0 ... 30	List of numbers of waits
Burst Length List (Master PPR Attribute)	ppr.master.attr.last.list	string	0 ... 2 ³²	List of last phases of bursts (this is, burst lengths)
Release Request (Master PPR Attribute)	ppr.master.attr.rreq.list	string	0 ... 15	List of number of cycles after which REQ# is released after assertion of FRAME#
DPERR List (Master PPR Attribute)	ppr.master.attr.dperr.list	string	0 or 1	List of parity errors, signaled or not signaled
SPERR List (Master PPR Attribute)	ppr.master.attr.dserr.list	string	0 or 1	List of system errors in the data phase, signaled or not signaled
APERR List (Master PPR Attribute)	ppr.master.attr.aperr.list	string	0 or 1	List of system errors in the address phase, signaled or not signaled
DWRPAR List (Master PPR Attribute)	ppr.master.attr.dwp.list	string	0 or 1	List of wrong parities set one clock after a write data transfer, inverted or not inverted
AWRPAR List (Master PPR Attribute)	ppr.master.attr.awp.list	string	0 or 1	List of wrong parities set one clock after the address phase, inverted or not inverted

Testcard Property	Testcard Property used in the User Program	Type	Range	Description
WAITMODE List (Master PPR Attribute)	ppr.master.attr.waitmode.list	string	0 or 1	List of values to keep the address constant during the WAITS phases or not
STEPMODE List (Master PPR Attribute)	ppr.master.attr.stepmode.list	string	0 or 1	List of values to keep the address constant during the STEPS phases or not
STEPS List (Master PPR Attribute)	ppr.master.attr.steps.list	string	0 or 1	List of numbers of additional clocks during an address phase They are added between assertion of GNT# and assertion of FRAME#.
TRYBACK List (Master PPR Attribute)	ppr.master.attr.tryback.list	string	0 or 1	List of Fast Back-to-Back cycle tries
DELAY List (Master PPR Attribute)	ppr.master.attr.delay.list	string	2 ... 2 ²¹	List of numbers of clocks a master transaction is delayed before its start Note: Delay will be modified if bandwidth < 100 % (specified in test).
REQ64 List (Master PPR Attribute)	ppr.master.attr.req64.list	string	0 or 1	List of 64-bit transfer tries
AWRPAR64 List (Master PPR Attribute)	ppr.master.attr.awp64.list	string	0 or 1	List of wrong parities (PAR64) set one clock after the address phase, inverted or not inverted
DACWRPAR (Master PPR Attribute)	ppr.master.attr.dacwp.list	string	0 or 1	List of wrong parities signaled in the second cycle of a dual address cycle, inverted or not inverted
DACWRPAR64 (Master PPR Attribute)	ppr.master.attr.dacwp64.list	string	0 or 1	List of wrong parities (PAR64) signaled in the second cycle of a dual address cycle, inverted or not inverted
DACPERR List (Master PPR Attribute)	ppr.master.attr.dacperr.list	string	0 or 1	List of system errors in the second cycle of a dual address cycle, signaled or not signaled
DWRPAR64 List (Master PPR Attribute)	ppr.master.attr.dwp64.list	string	0 or 1	List of wrong parities (PAR64) set one clock after a write data transfer, inverted or not inverted
RESUMEDELAY List (Master PPR Attribute)	ppr.master.attr.resumedelay.list	string	2 ... 127	List of clock numbers after which the master resumes after a target termination
PPR Report (Master Attribute)	ppr.master.attr.report	boolean	True or False	Writing of the PPR report is enabled or not
PPR Report File (Master Attribute)	ppr.master.attr.reportfile	string		Name of the file used for the PPR report of master attribute permutations

Target Settings

Testcard Property	Testcard Property used in the User Program	Type	Range	Description
n/a	target.attrpage	DWORD	0 ... 63	Attribute page used by the target
Termination List (Target PPR Attribute)	ppr.target.attr.term.list	string	0 ... 3	List of termination modes, for example, "32*noterm, 2*retry, disconnect, abort"
WAITS List (Target PPR Attribute)	ppr.target.attr.waits.list	string	0 ... 30	List of number of waits
DPERR List (Target PPR Attribute)	ppr.target.attr.dperr.list	string	0 or 1	List of parity errors, signaled or not signaled
SPERR List (Target PPR Attribute)	ppr.target.attr.dserr.list	string	0 or 1	List of system errors in the data phase, signaled or not signaled
APERR List (Target PPR Attribute)	ppr.target.attr.aperr.list	string	0 or 1	List of parity errors in the address phase, signaled or not signaled
WRPAR List (Target PPR Attribute)	ppr.target.attr.wp.list	string	0 or 1	List of wrong parities set one clock after a write data transfer, inverted or not inverted
ACK64 List (Target PPR Attribute)	ppr.target.attr.ack64.list	string	0 or 1	List of 64-bit requests, acknowledged or not acknowledged
Target Attribute DACPERR List	ppr.target.attr.dacperr.list	string	0 or 1	List of address parity errors, signaled or not signaled
Target Attribute WRPAR64 List	ppr.target.attr.wp64.list	string	0 or 1	List of wrong parities set one clock after a write data transfer, inverted or not inverted
Target Attribute Report	ppr.target.attr.report	Boolean	True or False	Writing of the PPR report is enabled or not
Target Attribute Report File	ppr.target.attr.reportfile	string		Name of the file used for the PPR report or target attribute permutations

Protocol Checker (Rule Masking)

Testcard Property	Testcard Property used in the User Program	Type	Range	Description
Protocol Rule Masking State Disabled (lower bits)	protocolrule.mask.lo	DWORD	32	Masked protocol rules (bit 0 ... 31).
Protocol Rule Masking State Disabled (higher bits)	protocolrule.mask.hi	DWORD	20	Masked protocol rules (bit 32 ... 51).
Mask Rule(s) After x Occurrences	protocolrule.mask.count	DWORD	0 ... (2 ³² - 1)	Number of occurrences after which a rule is masked automatically. (0 : rule(s) will never be masked)



Overall Example Programs

The following sections provide example programs of setting up tests for system validation:

- A simple command line executable shows how to run tests immediately.
- A custom test function shows how to configure tests for individual test needs. In this example, a custom memory read test will be set up.

Both example programs show how to encapsulate calls to Test API functions and class methods in `try` blocks. A `try` block identifies a code block in which an exception can occur.

Simple Command Line Executable

The following example shows:

- How to run tests.
- How to get the static report.
- The C++ exception handling mechanism.

You will find this example under `svp\samples\svpexe.cpp`.

```
#include <iostream.h>

// include servlib (for BErr mainly)
#include <servlib.h>

// include testapi
#include <testapi.h>

//-----
// int main (int argc, char * argv[])
//
// Purpose : main function
// Returns : error code on error, 0 on success
//-----

int main (int argc, char * argv[])
{
    SVPClass svp; // The SVP object

    int retval = 0; // return value of program (0 - no errors)

    try
    {
        cerr << "Initializing SVP class..." << endl;
        // initialize svp from command line
        // call svpexe -h for help on command line options
        svp.CommandLineInit(argc, argv);
        cerr << "Printing out static report..." << endl;
        // print static report to stdout
        svp.StaticReport(cout);
        cerr << "Running Tests..." << endl;
        // run tests
        svp.Run();
    }
}
```



```
// print log (test report) to std out
svp.GetLog(cout);
cerr << "Querying status..." << endl;

while (svp.Status() == SVPBase::S_RUN || svp.Status() ==
      SVPBase::S_WAIT)
{
    // wait for ten seconds
    Sleep (10000); // replace this with/add additional test
                  code

    // report additions to test report to stdout
    svp.GetNewLog(cout);
}
} // end of try block

// any errors? All TestAPI functions will throw BErr objects as
error

catch (BErr theErr)
{
    // print error report to std err
    cerr << argv[0] << ": ERROR condition:" << endl << theErr <<
    endl;

    // convert error code to return value
    retval = (int) theErr();
}

// catch other errors generated elsewhere
catch (...)
{
    cerr << "Caught unknown exception somewhere" << endl;
}

cout << flush; // make sure everything is on console here
// wait for return key pressed
cout << "Press return key to finish" << flush;
getchar();
cout << endl;
return retval;
}
```

Custom Test Function

The following example shows you how to set up a custom memory read test. It shows you:

- How to create a new test.
- How to set test properties.
- How to assign a testcard to a test.
- How to assign a test to a scenario.
- The C++ exception handling mechanism.
- Two custom memory read functions, one of these functions initializes the test and the other runs it.

You will find this example under `svp\samples\svpcustom.cpp`.

```
#include <iostream.h>
#include <servlib.h>
#include <testapi.h>

//*****
// function declarations:
// declare your custom test functions here
// NOTE: declare these before setting up STestFct object!
//*****

void custommemread_init (SVPTestBase * svpTest);
void custommemread_run (SVPThread * svpThread);
// no stop function
```

```

/*****
 * this struct contains the actual test definitions
 *****/

STestFct g_customFct =
{
    "Custom Memory Read", // descriptive name
    "custommemread", // short name
    custommemread_init, // init function
    custommemread_run, // run function
    0, // no stop function
    1, 1, // one card only
    "Reads from main memory and does other custom testing", // long
description
    tpf_FULL_ADDRESS | tpf_BANDWIDTH // test flags
};

/*****
 * main function body
 *****/

//-----
// int main (int argc, char * argv[])
//
// Purpose : main function
// Returns : error code on error, 0 on success
//-----

int main (int argc, char * argv[])
{
    SVPClass svp; // THE SVP object
    int retval = 0; // return value
    try
    {
        // some initial setup
        cerr << "Initializing SVP class..." << endl;
        svp.Default(); // set everything to default
        svp.Init(); // initialize SVP object
        // create new test object
        SVPTestBase * newTest = (SVPTestBase *) svp.CreateObject(T_TEST);
        SVPAssert(newTest); // make sure there are no errors
    }
}

```

```
// assign custom test function
newTest->SetTestFct(&g_customFct);
newTest->SetID("My custom test");
// set some test properties
newTest->GetProp("duration") = 120UL; // duration 120 seconds
BAddress testAddress(0xb8000UL, 0UL, BAddress::SPACE_MEM);
// address to use for test
newTest->GetProp("address") = testAddress;
// set address property of test
// assign card to test (first testcard found)
SVPBase * theCard = (*(svp.GetCardList()))[0];
newTest->InsertObject(theCard);
// insert test into first scenario
(*svp.GetChildList())[0]->InsertObject(newTest);
// run test
cerr << "Running Tests..." << endl;
svp.Run();
// print report to cout
svp.GetLog(cout);
// start query loop
cerr << "Querying status..." << endl;

while (svp.Status() == SVPBase::S_RUN || svp.Status() ==
       SVPBase::S_WAIT)
{
    Sleep (10000); // replace this with/add additional test code
    svp.GetNewLog(cout); // place additions to log on standard out
}
}
```

```
// any errors?
catch (BErr theErr)
{
    // print program name and error msg:
    cerr << argv[0] << ": ERROR condition:" << endl;
    // print error message to std err:
    cerr << theErr << endl;
    // prepare main's return value
    retval = (int) theErr();
}

// catch unknown errors (SVP will only throw BErr objects)
catch (...)
{
    cerr << "Caught unknown exception" << endl;
}

cout << flush; // make sure everything is on console here
// wait for return key pressed
cout << "Press return to exit" << flush;
getchar();
cout << endl;
return retval;
}
```

```

//*****
// custom memory read test
//*****
//-----
// custommemread_init
// Purpose : initialize custom memory read test
// Inputs : testbase pointer
//-----

void
custommemread_init (SVPTestBase * svpTest)
{
    BErr::DbgPrint("Entering custommemread_init\n");
    SVPAssert (svpTest);
    // get address of test (from address property)
    BAddress address = svpTest->GetProp("address");
    address.SetSize(svpTest->GetProp("size"));
    // get first card in test's list
    SVPTestCard * theCard = (SVPTestCard *) svpTest->GetCardList()[0];
    theCard->MasterReadSetup(address);
    // important: give info about test function to testcard!
    SVPThread * newCPU = new SVPCPUTest(
        theCard, svpTest->GetTestFct(), address);
    theCard->InsertObject(newCPU);
}
//-----
// custommemread_run
// Purpose : run custom memory read test
//-----

void
custommemread_run (SVPThread * svpThread)
{
    BErr::DbgPrint("Entering custom memread test run \n");
    SVPAssert (svpThread->GetObject() == T_CPUMENTEST);
    SVPCPUTest * svpCPUTest = (SVPCPUTest *) svpThread;
    const BAddress & theAddr = svpCPUTest->GetAddress();
    BLog & cpuLog = svpCPUTest->Log();
    // the following line is put in the test log...
    cpuLog.GetOStream() << "Entered Run Function" << endl;
    // this is the place to code your own test function, e.g.
    // (...)
}

```

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