



# cPython support for NI VeriStand



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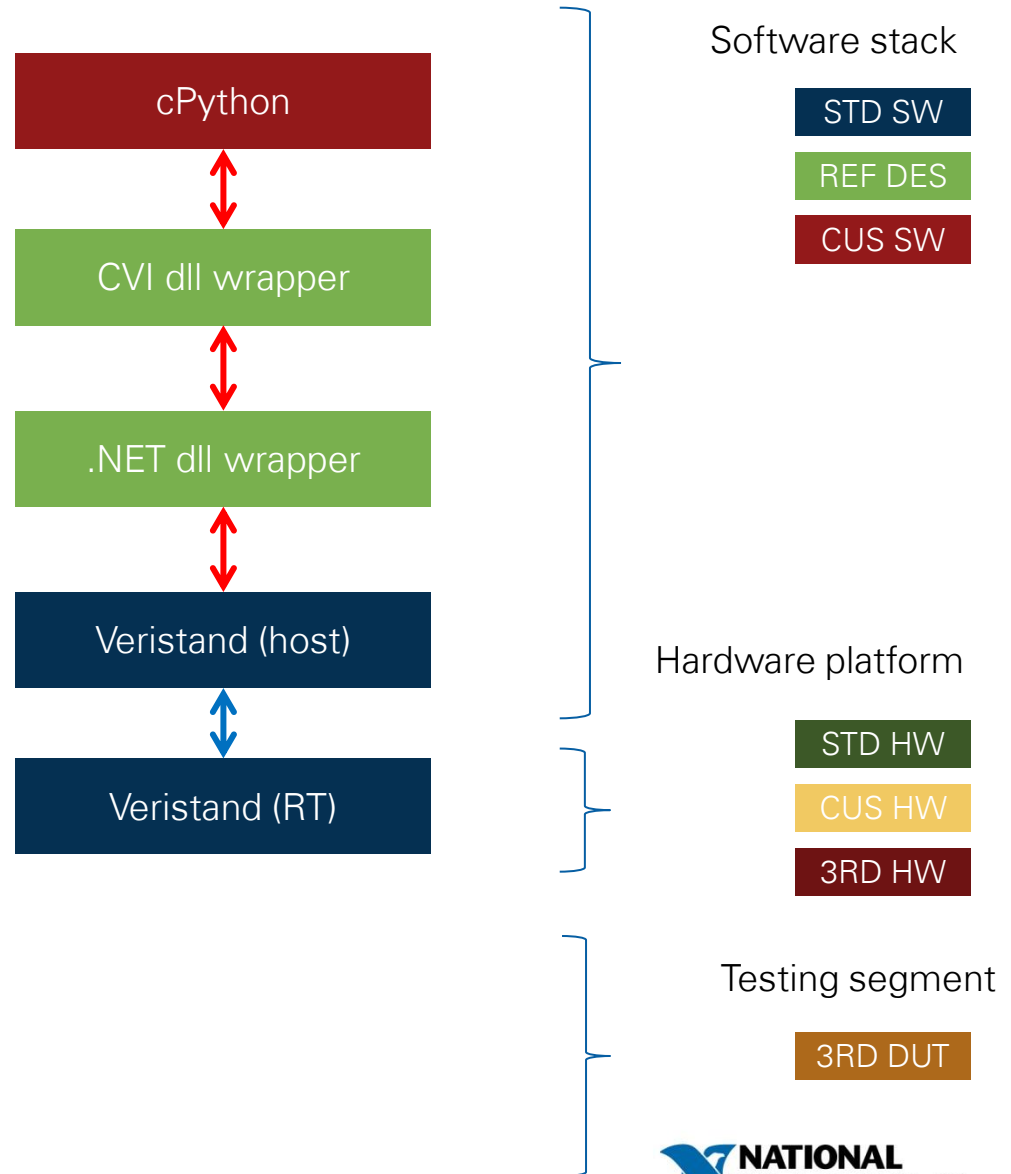
# Introduction

- For NI VeriStand automation from cPython the problem of managed/unmanaged code has to be solved, because NI VS API is written in C#
- The .NET dll wrapper was added to save effort in ANSI C and to have possibility to easily write unit test.
- Unit tests were done for all functions on .NET and also on C level.

# System architecture

↕ Communication

↕ API



# List of supported functions

- int **LaunchVeriStand**(void);
- int **OpenProject**(char \*pszFileName);
- int **CloseVeriStand**(void);
- int **RunProject**(void);
- int **CloseProject**(void);
- int **ShowProjectWindow**(void);
- int **GetChannelValue**(char \*pszChannelName, double \*pdValue);
- int **SetChannelValue**(char \*pszChannelName, double dValue);
- int **SetChannelValueSynch**(char \*pszChannelName, double dValue, double \*pWriteTime);
- int **OpenWorkspace**(void);
- int **CloseWorkspace**(void);
- int **DeployProject**(void);
- int **UndeployProject**(void);
- int **StopDataLogging**(char \*logConfigName);
- int **SetMultipleChannelValues**(char \*\*channelNames, double dValues[], int iLength, int iCharLineLength);
- int **SetMultipleChannelValuesSynch**(char \*\*channelNames, double dValues[], int iLength, int iCharLineLength, double \*pWriteTime);
- int **GetMultipleChannelValues**(char \*\*channelNames, double dValues[], int iLength, int iCharLineLength);
- int **GetActiveProject**(char \*ActiveProject,int RequestedProjectIndex, int \*numberOfProjects);
- int **GetAllDeployedSessions**(char \*DeployedSession,int RequestedSessionIndex, int \*numberOfSessions);
- int **StartDataLogging**(char \*logConfigName, char \*logDescription,char \*logFilePath,double ITriggerHighLimit, double ITriggerLowLimit,int IReplaceFile, NationalInstruments\_VeriStand\_ClientAPI\_LogInfo\_trigger ITriggerType, char \*ITriggerChannel, double IRate,char \*\* IFilePropertiesNames,int IFilePropertiesNamesLength, int IFilePropertiesNamesLineLength, char \*\* IFilePropertiesValues,int IFilePropertiesValuesLength, int IFilePropertiesValuesLineLength, char \*\* IChannelsToLog,int ChannelsToLogLength, int IChannelsToLogLineLength);
- char\* **GetLastErrorMessage** (void);
- int **IsOpenProjectRunning**(int \*running);

# List of supported functions

- int **GetAvailableChannelsToReadCount**(int \*numberOfChannels);
- int **GetTargetRate**(double \*TargetRate);
- int **GetAvailableChannelsToWriteCount**(int \*numberOfChannels);
- int **GetAvailableChannelToRead**(char \*channel,int requestedChannelIndex);
- int **GetAvailableChannelToWrite**(char \*channel,int requestedChannelIndex);
- int **GetDataLogging2SessionState**(char \*sLogConfigName,char \*sSessionState);
- int **GetDataLogging2State**(char \*sLogConfigName,int \*sessionState);
  
- int **GetTDMSLoggingRate**(double \*loggingRate);
- int **GetTDMSLogChannelCount**(int \*logChannelCount);
- int **GetTDMSLogLength**(\_\_int64 \*logLength);
- int **GetTDMSLogChannelProperty**(int channelIndex, char \*propertyName, char \*propertyValue);
- int **TDMSOpen**(char \*filePath);
- int **TDMSClose**(void);
- int **TDMSReadColumn**(double logColumnData[],int iColumnLength,int channelIndex);
- int **TDMSReadTimeColumn**(double logColumnData[],int iColumnLength);

# cPython example

```
TestScript - CVI dll - test functions 1.6.py - C:\EXAM\DIUCVI\TestScript - CVI dll - test funct...
File Edit Format Run Options Windows Help

from ctypes import *
import datetime
import traceback
import sys
import os

from time import sleep

#http://joule.ni.com/nidu/cds/view/p/id/3032/lang/cs
#http://www.microsoft.com/en-us/download/details.aspx?id=17718

def errorCheck(stat):
    """Check the error status and print if error"""
    if stat != 0:
        print stat
        print c_char_p(veristandInterOp.GetLastErrorMessage())
        quit()

print "TestScript - CVI dll - test functions 1.6.py"
veristandInterOp = cdll.LoadLibrary(".\VeriStandCviDll.dll")
print veristandInterOp

print "LaunchVeriStand"
errorCheck(veristandInterOp.LaunchVeriStand())

print "OpenProject"
errorCheck(veristandInterOp.OpenProject("C:\\EXAM\\VS\\Sinewave UnitTest.nivspro

print "ShowProjectWindow"
errorCheck(veristandInterOp.ShowProjectWindow())

print "DeployProject"
errorCheck(veristandInterOp.DeployProject())

print "OpenWorkspace"
errorCheck(veristandInterOp.OpenWorkspace())
sleep(2)

print "CloseWorkspace"
errorCheck(veristandInterOp.CloseWorkspace())
sleep(2)

print "OpenWorkspace"
errorCheck(veristandInterOp.OpenWorkspace())
```

# DEMO



# Questions & Answers

- Thank you