**VRPN Sample Client (to test without using an application)**

1. Open Visual Studio 2010
2. New empty project
3. Copy and paste libs and includes from VRPN folder to project/project
4. Copy and paste VRPNClient.cpp (or equivalent) to project/project
5. Add .cpp file to Source Files in project
6. To setup the VRPN dependency in Visual Studio:
   1. > Right-click on the project
   2. > VC++ directories > library directories > added **..\dependencies\vrpn\lib**
   3. > C/C++ > other include directories > added **..\dependencies\vrpn\include**
   4. > Linker > Input > Additional dependencies > added **vrpn.lib**

**Configuring VRPN**

1. Configure VRPNClient.cpp in the Visual Studio project for whatever device is being used
   1. Eg button = addButton(‘Mouse0@localhost’);
2. Configure vrpn.cfg in VRPN folder for whatever device is being used (either uncomment or add)
   1. Eg remove the ‘#’ from: vrpn\_Mouse Mouse0

**Running VRPN**

1. Run vrpn\_server.exe from VRPN folder
2. Run client program (from Visual Studio)

**Leap Motion Setup**

Steps:

* Download the Leap Motion SDK: <https://developer.leapmotion.com/downloads>
* Download the mscv2013 packages: <http://www.microsoft.com/en-au/download/details.aspx?id=40784>
* Add “../leap/lib/x86” to the system PATH
* Download VRPN that supports Leap Motion from Git:
  + git clone <https://github.com/dborel/vrpn>
  + cd vrpn
  + git submodule init
  + git submodule update
  + mkdir build
  + cmake -G "Visual Studio 10" -Bbuild -H.
* Open CMake as admin, generate the project using VS10 as the compiler
  + Make sure to check all Leap options are enabled and paths are set for libs and includes
* Going to ../vrpn-leap/vrpn/build open VRPN.sln with VS10
  + Make sure all libs and includes are linked
  + Make sure leap.lib is added as an additional dependency
* Building ALL\_BUILD and then INSTALL in the VS10 project to generate executables
* Going to C:/usr/local/bin for the executables generated in VS10
* Updated the vrpn.cfg file for the following to be open (remove proceeding ‘#’):
  + Analog:
    - vrpn\_Leap leapraw0
  + Tracker:
    - # For a Leap Motion:
      * vrpn\_Tracker\_AnalogFly Tracker0 60.0 absolute
      * # axis\_name name\_of\_analog\_device channel\_of\_analog\_device offset threshold scale power
      * X \*leapraw0 0 0.0 0.0 0.001 1.0
      * Y \*leapraw0 1 256.0 0.0 0.001 1.0
      * Z \*leapraw0 2 0.0 0.0 0.001 1.0
      * RX \*leapraw0 3 0.0 0.0 -0.5 1.0
      * RY \*leapraw0 4 0.0 0.0 0.5 1.0
      * RZ \*leapraw0 5 0.0 0.0 -0.5 1.0
      * RESET NULL 0
      * CLUTCH NULL 0
* Run vrpn\_server.exe
* Run client with VRPN Leap Motion code enabled

**Vizard Setup**

* Open Vizard (version 5.0)
* Run VRPN server
* Run VRPN enabled script

**ParaView Compilation**

Uninstall all versions of Visual Studio and .NET framework.

download: msysgit: https://github.com/msysgit/msysgit/releases/download/Git-1.9.5-preview20141217/Git-1.9.5-preview20141217.exe

download: cmake: http://www.cmake.org/files/v2.8/cmake-2.8.8-win32-x86.exe

download: vc++ express 2010: http://go.microsoft.com/?linkid=9709949

download: vs2010 sp1 http://www.microsoft.com/en-us/download/details.aspx?displaylang=en&id=23691

download: qt4: http://qtmirror.ics.com/pub/qtproject/archive/qt/4.8/4.8.2/qt-win-opensource-4.8.2-vs2010.exe

download: mpi (x64): http://www.microsoft.com/en-us/download/details.aspx?id=14737

download: directx sdk: http://www.microsoft.com/en-au/download/details.aspx?id=6812

download: platform sdk: http://www.microsoft.com/en-au/download/details.aspx?id=3138

download: boost 1.57 vs2010 32-bit: http://downloads.sourceforge.net/project/boost/boost-binaries/1.57.0/boost\_1\_57\_0-msvc-10.0-32.exe?r=http%3A%2F%2Fsourceforge.net%2Fprojects%2Fboost%2Ffiles%2Fboost-binaries%2F1.57.0%2F&ts=1422174234&use\_mirror=softlayer-sng

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**Either use an already downloaded VRPN or compile VRPN from source:**

> git clone git://git.cs.unc.edu/vrpn.git

> cd vrpn

> git submodule init

> git submodule update

> mkdir build

> cmake -G "Visual Studio 10" -Bbuild -H.

open vrpn/build/vrpn.sln in vc++ 2010

spam "ok" through warnings about unloadable projects

up top, change release type from Debug to Release

right-click "ALL\_BUILD" on right, go build, wait

right-click "INSTALL" on right, go build

go to c:/usr/local/

executables are in bin/ (vrpn\_server.exe, etc)

libraries to build against are in lib/ (vrpn.lib)

headers are in include/

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**Compile Paraview:**

> git clone git://paraview.org/ParaView.git

> cd ParaView

> git submodule init

> git submodule update

> mkdir build

go to your cmake dir, e.g. c:\program files (x86)\cmake 2.8\share\cmake-2.8\Modules\ and open FindQT4.cmake

find line:

OUTPUT\_VARIABLE output ERROR\_VARIABLE output

replace with:

OUTPUT\_VARIABLE output

(if it says you don't have permission, start->notepad->right-click->open as admin and then file->open FindQT4.cmake)

go start->"path"->change system path

to the end of PATH in the bottom window, add "C:\QT\4.8.2\bin;"

open cmake-gui as administrator

source code: ParaView directory

binary: ParaView/build

click "advanced"

configure -> Visual Studio 10 -> ok

(wait forever until it says "configuring done" and a bunch of red errors appear)

make sure the following items are enabled:

BUILD\_SHARED\_LIBS

PARAVIEW\_USE\_MPI

PARAVIEW\_BUILD\_QT\_GUI

PARAVIEW\_BUILD\_PLUGIN\_VRPlugin

disable the following:

BUILD\_TESTING

add the following (add entry):

PARAVIEW\_USE\_VRPN, BOOL, enabled

VRPN\_INCLUDE\_DIR, PATH, c:/usr/local/include

VRPN\_LIBRARY, FILEPATH, c:/usr/local/lib/vrpn.lib

click generate

if errors come up about "PARAVIEW\_USE\_VRPN not used" come up, enable "PARAVIEW\_USE\_VRUI", run generate, then disable it and run generate again

(sit on hands)

After it generates, search “VR”, enable PARAVIEW\_USE\_VRPN (and PARAVIEW\_USE\_VRUI only if using Unix)  that has just become available

open ParaView/build/paraview.sln (run as administrator)

again, spam "ok" for project warnings

change type up top to Release

right-click ALL\_BUILD -> build

(wait, at least an hour)

right-click INSTALL -> build

(might come up with an administrator error here - re-run visual c++ as administrator, start->run->right click msvc->run as admin)

If some fail the build, just run it again and it should work.

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**How to run Paraview**

1. Start the Paraview server (pvserver.exe)
2. Start the VRPN server
3. Start Paraview as the client
   1. Add and object: sources > box
   2. Add VRPN connection in the VR Panel
   3. Add VRPN interaction in the VR Panel
4. Press “Start”

\*Note: Extra class must be added for this to work, refer to email from Paraview.