Visualization and Analysis with VisIt

Hank Childs, Cyrus Harrison, and Hari Krishnan

12th DOE ACTS Workshop

9:30-10:30 & 3:30-4:30, Aug 19th

- Basic usage
- Data analysis
- Derived quantities
- Scripting
- Moviemaking
- Comparisons
- + more!
## Tutorial Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>9:30-9:40:</td>
<td>VisIt project overview (powerpoint)</td>
</tr>
<tr>
<td>9:40-10:20:</td>
<td>VisIt basics: plots, operators, &amp; more…</td>
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<tr>
<td>10:20-10:30:</td>
<td>Mass installs</td>
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<td>3:30-3:55:</td>
<td>Scripting</td>
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<td>3:55-4:15:</td>
<td>Moviemaking</td>
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<tr>
<td>4:15-4:20:</td>
<td>Group client-server example</td>
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<tr>
<td>4:20-4:30:</td>
<td>How to Succeed With VisIt After This Tutorial (powerpoint)</td>
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VisIt is an open source, richly featured, turn-key application for large data.

- **Used by:**
  - Visualization experts
  - Simulation code developers
  - Simulation code consumers

- **Popular**
  - R&D 100 award in 2005
  - Used on many of the Top500
  - >>>100K downloads

217 pin reactor cooling simulation
Run on ¼ of Argonne BG/P
Image credit: Paul Fischer, ANL
Terribly Named!!!

... intended for much more than just visualization

Data Exploration

Visual Debugging

Analysis

Presentations
What sort of analysis is appropriate for VisIt?

- General techniques (e.g. integration, volumes, surface areas, etc.)
- Specialized analysis (e.g. hohlraum flux at AGEX)
VisIt has a rich feature set.

- **Meshes**: rectilinear, curvilinear, unstructured, point, AMR
- **Data**: scalar, vector, tensor, material, species
- **Dimension**: 1D, 2D, 3D, time varying
- **Rendering (~15)**: pseudocolor, volume rendering, hedgehogs, glyphs, mesh lines, etc...
- **Data manipulation (~40)**: slicing, contouring, clipping, thresholding, restrict to box, reflect, project, revolve, ...
- **File formats (~110)**
- **Derived quantities**: >100 interoperable building blocks
  - +,-,*,/, gradient, mesh quality, if-then-else, and, or, not
- **Many general features**: position lights, make movie, etc
- **Queries (~50)**: ways to pull out quantitative information, debugging, comparative analysis
VisIt employs a parallelized client-server architecture.

- Client-server observations:
  - Good for remote visualization
  - Leverages available resources
  - Scales well
  - No need to move data

- Additional design considerations:
  - Plugins
  - Heavy use of VTK
  - Multiple UIs: GUI (Qt), CLI (Python), more…

You don’t have to run VisIt this way! You can run all on localhost (like this tutorial!) You can tunnel through ssh and run all on the remote machine.

localhost – Linux, Windows, Mac

remote machine
VisIt recently demonstrated good performance at unprecedented scale.

- Weak scaling study: \(~62.5M\) cells/\#cores

### Machine | Model | Problem Size | \#cores
--- | --- | --- | ---
Franklin | Cray XT4 | 1T, 2T | 16K, 32K
Dawn | BG/P | 4T | 64K
JaguarPF | Cray XT5 | 2T | 32K
Juno | X86_64 | 1T | 16K
Purple | IBM P5 | 0.5T | 8K
Ranger | Sun | 1T | 16K

Two trillion cell data set, rendered in VisIt by David Pugmire on ORNL Jaguar machine
It has taken a lot of research to make VisIt work

<table>
<thead>
<tr>
<th>Systems research:</th>
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<tr>
<td>Adaptively applying algorithms in a production env.</td>
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<th>Algorithms research:</th>
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<tr>
<td>How to efficiently calculate particle paths in parallel.</td>
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<td>Hybrid parallelism + particle advection</td>
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<td>Reconstructing material interfaces for visualization</td>
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<th>Methods research:</th>
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<tr>
<td>How to incorporate statistics into visualization.</td>
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Don’t be scared! ... VisIt developers mostly wear their software engineering hats – not their research hats.
The VisIt team focuses on making a robust, usable product for end users.

- Manuals
  - 300 page user manual
  - 200 page command line interface manual
  - “Getting your data into VisIt” manual
- Wiki for users (and developers)
- Revision control, nightly regression testing, etc
- Executables for all major platforms
- Day long class, complete with exercises

Slides from the VisIt class
VisIt is a vibrant project with many participants.

- Over 75 person-years of effort
- Over 1.5 million lines of code
- Partnership between: Department of Energy’s Office of Science, National Nuclear Security Agency, and Office of Nuclear Energy, the National Science Foundation XD centers (Longhorn XD and RDAV), and more.

Timeline:
- 2000: Project started
- 2003: LLNL user community transitioned to VisIt
- 2004: User community grows, including AWE & ASC Alliance schools
- 2005: SciDAC Outreach Center enables Public SW repo
- 2006: Fall
- 2007: Spring
- 2008: Summer
- 2009: Summer
- 2010: Spring
- 2011: Spring
- 2012: Spring

Key Events:
- VACET is funded
- GNEP funds LLNL to support GNEP codes at Argonne
- Developers from LLNL, LBL, & ORNL start dev in repo
- Saudi Aramco funds LLNL to support VisIt
- UC Davis & UUtah research done in VisIt repo
- Partnership with CEA is developed
- More developers entering repo all the time
VisIt: What’s the Big Deal?

- Everything works at scale
- Robust, usable tool
- Features that span the “power of visualization”:
  - Data exploration
  - Confirmation
  - Communication
- Features for different kinds of users:
  - Vis experts
  - Code developers
  - Code consumers
- Healthy future: vibrant developer and user communities
Before we begin...

- Reminder: we will discuss file format issues, installation issues, and how to get help at the end of the tutorial

- Important: ask questions any time!
<demonstration>

- VisIt basics
- Queries and expressions
- Scripting
- Moviemaking
How does VisIt use Python?
Python Client Interface

A python interface for *driving* and *scripting* VisIt, the heart of:

- VisIt’s Command Line Interface (CLI)
- The VisIt Python Module
VisIt + Python

Python Filters
A python framework for creating new data processing filters in the compute engine.

- Enables custom *Expressions & Queries* written in python.
For this scripting tutorial we will focus on functionality provided by VisIt’s Python Client Interface.
Getting Started

- Launch VisIt
- Open ‘noise.silo’
- From the *Controls* Menu, select the *Commands* Window
- Type the following:

```
AddPlot("Pseudocolor","hardyglobal")
DrawPlots()
```

- Click ‘Execute’
Getting Started

- Launch VisIt
- Open ‘noise.silo’
- From the Controls Menu, select the Commands Window
- Type the following:
  ```python
  AddPlot("Pseudocolor","hardyglobal")
  DrawPlots()
  ```
- Click ‘Execute’

Tutorial Scripts

http://visitusers.org/index.php?title=VisIt_Tutorial_Python_Simple_Scripts
Tips for Learning the Client Interface

Python Interface Manual

VisIt Python Interface Manual

```python
>>> AddPlot("Pseudocolor", "handyGlobal")
>>> AddOperator("ThreeSlice")
>>> ts = ThreeSliceAttributes()
>>> ts
x = 0
y = 0
z = 0
interactive = 1
>>> ts.x = 10
>>> ts.y = 10
>>> ts.z = 10
>>> SetOperatorOptions(ts)
>>> DrawPlots()
```
Record your GUI actions to capture equivalent python.
Use `help(<obj>)` to display module documentation for `<obj>`.
“How to make VisIt work after you get home”

- How to get VisIt running on your machine
  - Downloading and installing VisIt
  - Building VisIt from scratch
- How to get VisIt to read your data
- How to get help when you run into trouble
- I like the power of VisIt, but I hate the interface
- How to run client-server
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Can I use a pre-built VisIt binary or do I need to build it myself?

- Pre-built binaries work on most modern machines.
- ... but pre-built binaries are serial only.
  - Why the VisIt team can’t offer parallel binaries: Your MPI libraries, networking libraries are unlikely to match ours
  - ... and it is difficult to use your own custom plugins with the pre-builts.

- Recommendation: try to use the pre-builts first and build VisIt yourself if they don’t work.
- Also: all VisIt clients run serial-only. If you want to install VisIt on your desktop to connect to a remote parallel machine, serial is OK.
How do I use pre-built VisIt binaries?

- A: Go to [http://www.llnl.gov/visit](http://www.llnl.gov/visit)
How do I use pre-built VisIt binaries?

- **Executables**—This page contains versions of VisIt that you can download for Unix and Windows systems.

- **Source Code**—This page contains the VisIt source code that you can download if you would like to build a version of VisIt for another system or to modify the source code.

- **Manuals**—This page contains the user's manuals that are available, including a getting started manual and user's manual.

- **Data Files**—This page contains links to interesting datasets that you can plot with VisIt.
How do I use pre-built VisIt binaries?

**VisIt Executables**

This page contains links to download VisIt executables for Unix, Windows, and Mac OS X systems. The page contains several versions of VisIt, organized from the most recent to the oldest. The unix and Mac OS X executables require downloading an install script along with the file containing the executable. The Windows executables are packaged in a self contained installer. Instructions for installing VisIt can be found in the install notes. Md5 and sha1 checksums, as well as file sizes are provided for checking that the files were properly downloaded if corruption of the files is suspected during the download process.

**VisIt 2.1.0**

- Visit release notes
- Visit install script
- Visit install notes
- Visit md5 checksums
- Visit sha1 checksums
- Visit file sizes

<table>
<thead>
<tr>
<th>platform</th>
<th>executable</th>
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<tbody>
<tr>
<td>Linux - x86 32 bit</td>
<td></td>
</tr>
<tr>
<td>Redhat Enterprise Linux 3, hoth.llnl.gov 2.4.21-27.0.2c.ELsmp, gcc 3.2.3</td>
<td>download</td>
</tr>
<tr>
<td>Will work on most Linux x86 systems.</td>
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<tr>
<td>Linux - x86_64 64 bit</td>
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<tr>
<td>Ubuntu 8.04, pion.llnl.gov 2.6.24-19, gcc 4.2.4</td>
<td>download</td>
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<tr>
<td>Linux - x86_64 64 bit</td>
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<tr>
<td>Redhat Enterprise Linux 4, photon.llnl.gov 2.6.9-89.0.20.ELsmp, gcc 3.4.6</td>
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<tr>
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### How do I use pre-built VisIt binaries?

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<tr>
<th>Platform</th>
<th>Version</th>
<th>Dependencies</th>
<th>Notes</th>
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<tr>
<td>Linux - x86_64 64 bit</td>
<td>Ubuntu 8.04, plon.orl.gov 2.6.24-19, gcc 4.2.4</td>
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<td>Redhat Enterprise Linux 5, yana.llnl.gov 2.6.18-76chaos, gcc 4.1.2</td>
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<tr>
<td>Scientific Linux SL release 5.4, euclid.nersc.gov 2.6.18-164.9.1.el5-bsdv3, gcc 4.1.2</td>
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<tr>
<td>Windows (Xp / Vista / 7) 32 bit</td>
<td>MSVC8, Visual Studio 2005</td>
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<tr>
<td>Mac OS X - Intel</td>
<td>Darwin 10.5</td>
<td>Darwin Kernel Version 9.7.0, gcc 4.0.1, OpenMPI</td>
<td>(Includes parallel VisIt compatible with MacOS X 10.5’s default MPI)</td>
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<td>AIX - 32 bit</td>
<td>AIX 5.3, up.llnl.gov 00C5D6DD4C00, xlc</td>
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<tr>
<td>Java client library (jar file, compiled classes, source code, examples)</td>
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How do I use the pre-built VisIt binaries?

- **Unix:**
  - Download binary
  - Download install script
  - Run install script
  - --or—
  - Download binary
  - Untar
  - Good for host profiles, maintaining multiple versions, multiple OSs
  - Quick & easy

- **Mac:**
  - Download and open disk image.
  - Follow instructions in the README file: run included install script

- **Windows:**
  - Download installer program & run

- **Full install notes:**
  - [https://wci.llnl.gov/codes/visit/2.2.1/INSTALL_NOTES](https://wci.llnl.gov/codes/visit/2.2.1/INSTALL_NOTES)
Important step: choosing host profiles

- Many supercomputing sites have set up “host profiles”.
  - These files contain all the information about how to connect to their supercomputers and how to launch parallel jobs there.

- You select which profiles to install when you install VisIt.

- Profiles that come with VisIt:
  - NERSC, LLNL Open, LLNL Closed, ORNL, Argonne, TACC, LBNL desktop network, Princeton, UMich CAC

- Other sites maintain profiles outside of VisIt repository.
  - If you know folks running VisIt in parallel at a site not listed above, ask them for their profiles.
“How to make VisIt work after you get home”

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- I like the power of VisIt, but I hate the interface
- How to run client-server
Building VisIt from scratch

- Building VisIt from scratch on your own is very difficult.
- ... but the “build_visit” script is fairly reliable.

Automatically build VisIt with the build_visit script!

Download build_visit script here.

VisIt can now be built automatically using the build_visit script on many Linux, MacOS X, and AIX platforms (more to come). The build_visit script takes care of downloading relevant VisIt and 3rd party source code, configuring, and building it all using your C++ compiler. We encourage users to build VisIt using the build_visit script when our binary distributions have trouble running on some systems. We also recommend using the build_visit script on your system if you plan to:

- Modify the VisIt source code.
- Run a parallel compute engine. Building a parallel version of VisIt on your system allows you to configure VisIt so it uses your MPI library, avoiding incompatibilities.
- Create your own VisIt plugins. Building VisIt on your system ensures that it is built with the same C++ compiler that you will use to develop your plugin, minimizing the chance for runtime library incompatibilities.

(build_visit screen shot)
What “build_visit” does

- Downloads third party libraries
- Patches them to accommodate OS quirks
- Builds the third party libraries.
- Creates “config-site” file, which communicates information about where 3rd party libraries live to VisIt’s build system.
- Downloads VisIt source code
- Builds VisIt
“build_visit” details

- There are two ways to use build_visit:
  - Curses-style GUI
  - Command line options through --console
    - Developers all use --console and it shows!!

- Tip:
  - Don’t build every third party library unless you really need to.
    - Set up a “--thirdparty-path”.
“build_visit” details

- Q1: How long does build_visit take?  A: hours
- Q2: I have my own Qt/VTK/Python, can I use those?
  - Hank highly recommends against
- Q3: What happens after build_visit finishes?
  - A1: you can run directly in the build location
  - A2: you can make a package and do an install like you would with the pre-built binaries
“build_visit” details

- Most common build_visit failures:
  - gcc is not installed
  - X11 development package is not installed
  - OpenGL development package is not installed
    - We should probably improve detection of this case, but we’re leery about false positives.

- Most common VisIt runtime failure: really antique OpenGL drivers.
  - Hank runs SUSE 9.1 (from 2005) at home.

- Build process for Windows is very different. Rarely a need to build on Windows, aside from VisIt development.
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How to get your data into VisIt

There is an extensive (and up-to-date!) manual on this topic: “Getting Your Data Into VisIt”

Three ways:

- Use a known format
- Write a file format reader
- In situ processing
  - Latter two covered in afternoon course
File formats that VisIt supports

- ADIOS, BOV, Boxlib, CCM, CGNS, Chombo, CLAW, EnSight, ENZO, Exodus, FLASH, Fluent, GDAL, Gadget, Images (TIFF, PNG, etc), ITAPS/MOAB, LAMMPS, NASTRAN, NETCDF, Nek5000, OpenFOAM, PLOT3D, Plaintext, Pixie, Shapefile, Silo, Tecplot, VTK, Xdmf, Vs, and many more

- 113 total readers

- Some readers are more robust than others.
  - For some formats, support is limited to flavors of a file a VisIt developer has encountered previously (e.g. Tecplot).
File formats that VisIt supports

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- Two readers that work common types of existing data:
  - BOV: raw binary data for rectilinear grid
    - you have a brick of data and you add an ASCII header that describes dimensions
  - PlainText: reads space delimited columns
    - Controls for specifying column purposes
File formats that VisIt supports

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- Common array writing libraries:
  - NETCDF: VisIt reader understands many (but not all) conventions
  - HDF5
    - Pixie is most general HDF5 reader
    - Many other HDF5 readers
File formats that VisIt supports

- ADIOS, BOV, Boxlib, CCM, CGNS, Chombo, CLAW, EnSight, ENZO, Exodus, FLASH, Fluent, GDAL, Gadget, Images (TIFF, PNG, etc), ITAPS/MOAB, LAMMPS, NASTRAN, NETCDF, Nek5000, OpenFOAM, PLOT3D, PlainText, Pixie, Shapefile, Silo, Tecplot, VTK, Xdmf, Vs, and many more

- Xdmf: specify an XML file that describes semantics of arrays in HDF5 file

- VizSchema (Vs): add attributes to your HDF5 file that describes semantics of the arrays.
File formats that VisIt supports

- ADIOS, BOV, Boxlib, CCM, CGNS, Chombo, CLAW, EnSight, ENZO, Exodus, FLASH, Fluent, GDAL, Gadget, Images (TIFF, PNG, etc), ITAPS/MOAB, LAMMPS, NASTRAN, NETCDF, Nek5000, OpenFOAM, PLOT3D, Plaintext, Pixie, Shapefile, Silo, Tecplot, VTK, Xdmf, Vs, and many more

- VTK: not built for performance, but it is great for getting into VisIt quickly

- Silo: higher barriers to entry, but performs well and fairly mature
The VTK file format has both ASCII and binary variants.

Great documentation at http://www.vtk.org/VTK/img/file-formats.pdf

Easiest way to write VTK files: use VTK modules

... but this creates a dependence on the VTK library

You can also try to write them yourself, but this is an error prone process.

Third option: visit_writer
VisItWriter writes VTK files

- It is a “library” (actually a single C file) that writes VTK-compliant files.
  - The typical path is to link visit_writer into your code and write VTK files.

- There is also Python binding for visit_writer.
  - The typical path is to write a Python program that converts from your format to VTK.

- Both options are short term: they allow you to play with VisIt on your data. If you like VisIt, then you typically formulate a long term file format strategy.

- More information on visit_writer:
import visit_writer
import math
import sys

nX = 20
nY = 20
conn = []
for i in range(nX-1):
    for j in range(nY-1):
        pt1 = j*(nX) + i;
        pt2 = j*(nX) + i+1;
        pt3 = (j+1)*(nX) + i+1;
        pt4 = (j+1)*(nX) + i;
        conn.append([ "quad", pt1, pt2, pt3, pt4 ])

pts = []
rad = []
for i in range(nX):
    for j in range(nY):
        pts.extend([[ float(i), float(j), 0 ]])
        rad.append( math.sqrt(i*i + j*j) )

var_datum = [ "radius", 1, 1, rad ]
vars = [ var_datum ]
visit_writer.WriteUnstructuredMesh( "ugrid.vtk", 0, pts, conn, vars)

sys.exit()
Silo file format

- Silo is a mature, self-describing file format that deals with multi-block data.
- It has drivers on top of HDF5, NetCDF, and “PDB”.
- Fairly rich data model

More information:
- https://wci.llnl.gov/codes/silo/
Welcome to Silo

A mesh and field I/O library and scientific database

- Structured Rectilinear Mesh
- Gridless Point Mesh
- Structured (Curvilinear) Mesh
- Arbitrary Subsets
- Constructive Solid Geometry (CSG) Mesh
- Sillex browser for Silo files
- Unstructured Zoo (UCD) Mesh
- Adaptive Mesh Refinement (AMR) Mesh
- Mixing Materials
- Arbitrary Polyhedral Mesh
- XY Curve
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How to get help when you run into trouble

- Six options:
  - FAQ
    - [http://visit.llnl.gov/FAQ.html](http://visit.llnl.gov/FAQ.html)
  - Documentation
    - [https://wci.llnl.gov/codes/visit/doc.html](https://wci.llnl.gov/codes/visit/doc.html)
    - [http://www.visitusers.org](http://www.visitusers.org)
  - VisIt-users mailing list
  - VisIt-users archives
  - VisIt users forum
  - VisIt-help-XYZ mailing list
FAQ: http://visit.llnl.gov/FAQ.html

Frequently Asked Questions

1. Contact information
2. Supported platforms
3. Optimal hardware/software
4. Debugging problems starting VisIt or opening files
5. Stereo rendering
6. VisIt won't run on Linux
7. Slow performance on Linux
8. Slow performance Using SSH
9. No output in visualization window
10. Accessing data on remote machine
11. Running VisIt in parallel
12. Supported data file formats
13. Getting your data into VisIt
14. Making a movie of your data
15. Setting your user name to connect to a remote machine
16. Cannot connect to a remote computer
17. Building VisIt on a Windows computer
18. Installing VisIt on a MacOS X computer
19. Hanging at 12% on Windows computers
20. Getting the Plugin Developer's Guide
21. Writing a plugin for VisIt
22. When new versions of VisIt are released
23. What is new in the latest version of VisIt
24. Compilers that can be used to build VisIt
25. VisIt's licensing agreement
26. Slow performance with ATI cards on Linux
27. Custom plugins with a downloaded VisIt binary
28. Getting HDF5 data into VisIt
29. Getting NETCDF data into VisIt
30. When I run VisIt on my Linux machine, I get a black screen
31. I get the message 'Publisher cannot be verified' when installing VisIt on Windows
32. Which libraries should I enable in build_visit?
Manuels & other documentation

- Getting started manual
- Users manual (old, but still useful)
- Python interface (to be updated in two weeks)
- Getting Data Into VisIt
- VisIt Class Slides
- VisIt Class Exercises
- This Tutorial
Visitusers.org

- Users section has lots of practical tips:
  - “I solved this problem with this technique”
  - “Here’s my script to do this functionality”
- In practical terms, this is a staging area for formal documentation in the future.

Misc
- Using VisIt in an mxterm
- Using derived data functions (DDFs)
- Using the command line interface
- How volume rendering works in VisIt
- Using cross-mesh field evaluations ... how to do differences, access other time slices, etc
- Keyframing example
- Exporting databases
- Directions for specific machines
- Using the VisIt Python API with a standard Python interpreter
- Pages that contain instructions specific to certain user groups and needs
- Issues related to running VisIt on Windows under cygwin
- VisIt's Camera model
- Using VisIt's mpeg2encode
- Molecular data features
- Extracting alpha
- (Very) High resolution rendering
- Elevating shapefiles
- Raytracing your visualizations with POV-Ray and a tutorial
  POV-Ray exporting example
VisIt-users mailing list
You may only post to mailing list if you are also a subscriber
Approximately 400 recipients, approx. 300 posts per month.
Developers monitor mailing list, strive for 100% response rate
Response time is typically excellent (O(1 hour))
International community really participates … not unusual for a question from Australia to be answered by a European all while I’m asleep

List: visit-users@ornl.gov
More information:
https://email.ornl.gov/mailman/listinfo/visit-users
Archive: https://email.ornl.gov/pipermail/visit-users/
<table>
<thead>
<tr>
<th>Board Topics</th>
<th>Views</th>
<th>Responses</th>
<th>Date/Time</th>
<th>By</th>
<th>IP Logged</th>
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<tbody>
<tr>
<td>3d vector on 2d mesh?</td>
<td>2</td>
<td>34</td>
<td>11/10/0 at 09:26:36</td>
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<td>150</td>
<td>11/09/10 at 12:14:29</td>
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<td>pseudocolor plot legend attributes in python</td>
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</tbody>
</table>

Google searches these pages.

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**pseudocolor plot legend attributes in python (Read 18 times)**

**Jennifer**

Posts: 4  Fort Collins, CO

Hello. I want to set the attributes for a pseudocolor plot legend in a python script such as the location of the legend (turn off Let Visit manage legend position), the X-scale & Y-scale, the number of Tic Marks, and the label appearance (number format, font height). Is it possible to set these properties in a python script? If so, how can I do this?

I tried to use the Command Control to record these changes, but the output states:

```
# Logging for AddAnnotationObject is not implemented yet.
# Logging for SetAnnotationObjectOptions is not implemented yet.
```

Thanks,

Jennifer

---

**Hank Childs**

YaBB Moderator

Online

Posts: 135  Davis, CA

I use Visit and I develop Visit

Hello Jennifer,

Each plot has an index and the plot's legend is referred to through that same index.

```python
>>> GetAnnotationObjectName()
('Plot0003',)
>>> a = GetAnnotationObject("Plot0003")
>>> a
active = 1
managePosition = 1
position = (0.05, 0.9)
xScale = 1
yScale = 1
```
Some customer groups pay for VisIt funding and get direct support.

- These customers can post directly to visit-help-xyz without being a subscriber
- The messages are received by all VisIt developers and supported collectively

Lists:
- Visit-help-asc, visit-help-scidac, visit-help-gnep, visit-help-ascem
How to get help when you run into trouble

- Six options:
  - FAQ
    - [http://visit.llnl.gov/FAQ.html](http://visit.llnl.gov/FAQ.html)
  - Documentation
    - [https://wci.llnl.gov/codes/visit/doc.html](https://wci.llnl.gov/codes/visit/doc.html)
    - [http://www.visitusers.org](http://www.visitusers.org)
  - VisIt-users mailing list
  - VisIt-users archives
  - VisIt users forum
  - VisIt-help-XYZ mailing list
“How to make VisIt work after you get home”

- How to get VisIt running on your machine
  - Downloading and installing VisIt
  - Building VisIt from scratch
- How to get VisIt to read your data
- How to get help when you run into trouble
- I like the power of VisIt, but I hate the interface
- How to run client-server
It is possible (although non-trivial) to write a custom user interface to VisIt
“How to make VisIt work after you get home”

- How to get VisIt running on your machine
  - Downloading and installing VisIt
  - Building VisIt from scratch
- How to get VisIt to read your data
- How to get help when you run into trouble
- I like the power of VisIt, but I hate the interface
- How to run client-server
How to run client-server

- There are two critical pieces:
  - Connecting to the remote machine
  - Getting an engine launched on the remote machine

This job is made substantially easier by host profiles.
(Demonstration)
Advanced Analysis and Visualization with VisIt

Hank Childs & David Pugmire

SciDAC 2011
July 10 - 14, 2011
Denver, Colorado

1:00 PM, July 15

Thank you for coming!!

• Moviemaking
• Comparisons
• + more!