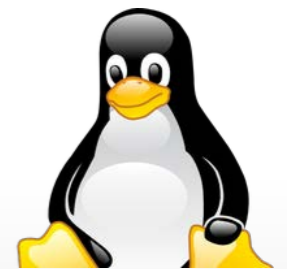


A Multi OS Hub Approach: Integrating the Windows Operating System Into the Hub

By Christopher J. Nuland



Windows



Linux

About Me



Chris and Melissa
Nuland

- ⑩ Graduated from Purdue University with a BS in Computer Science, 2012
- ⑩ Focused in information systems and virtualization
- ⑩ Development Manager of cdmHub (IN3) since 2013
- ⑩ Live in West Lafayette, IN, with my wife, Melissa

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Convene the composites community to advance certification by analysis by increasing the number and use of simulation tools by an order of magnitude through education and evaluation of existing and emerging simulation tools.

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POPULAR RESOURCES

Free Edge Elasticity Solution

TOOL By Johnathan Goodsell, Andrew J Ritchey, Oleksandr Kravchenko

Simulate stress, strain and displacements in an composite angle-ply laminate subjected to uniform axial extension, anticlastic curvature and thermoelastic deformation.

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Challenges for cdmHub

- Drop Java integration for running tools
- Integrate HTML5 for running tools
- Implement a backend system that is scalable
- Address industry related security concerns
- Implement a system that can run both Linux and **Windows** tools

Technology

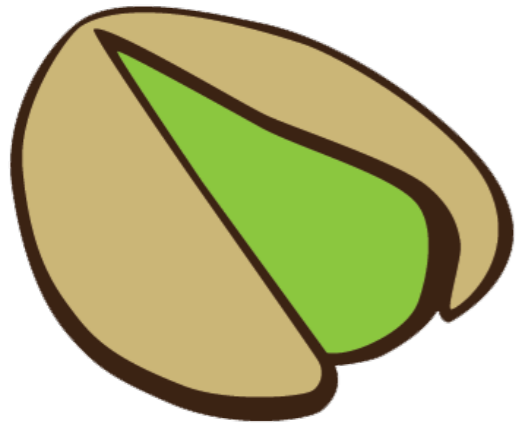


Guacamole (HTML5)



VMWare (Windows Support)

Pistachio Library



Pistachio Alpha
Version 0.5

Release Date
Late November
2014

- Backend tool system built around VMWare
- Uses Guacamole code for displaying tools (HTML5)
- Removes the need for separate graphics server
- Allows for future scalability
- Addresses some security concerns

Tool Upload Process

For the average user the upload process remains mostly the same

The screenshot shows the 'Tool Upload Process' form on the Composites Design & Manufacturing Hub website. The form is divided into several sections, each with a 'REQUIRED' label in red text. The sections are:

- Version:** A text input field containing '1.0'. Below it, a note reads: 'Optional version number for this release of the tool. Example: 1.0 or 2.1.5b. Spaces not allowed.'
- At a glance:** A text input field. Below it, a note reads: 'A one-line description of your tool. Example: Simulate 3-D confined states in simple quantum dot geometries.'
- Suggested Screen Size:** A form with two input fields for width and height. The width is '780' and the height is '600'. Below it, a note reads: 'Specify a screen size for your application in pixels.'
- Select Tool Operating System:** A dropdown menu with a blue highlight on the selected option '-Select Tool Operating System-'. The visible options are 'Windows' and 'Linux'. A 'REQUIRED' label is to the right.
- Access Level:** A dropdown menu with the selected option '-Select access level -'. A 'REQUIRED' label is to the right.
- Source Code Access:** A dropdown menu with the selected option '-Select access level -'. A 'REQUIRED' label is to the right.
- Project Area Access:** A dropdown menu with the selected option '-Select access level -'. A 'REQUIRED' label is to the right.

On the right side of the form, there is a section titled 'What is Source Code Access?' and another titled 'What is Project Area Access?'. The 'Source Code Access' section explains that users can choose to make their source code open or closed to the public. The 'Project Area Access' section explains that Project Area Access controls who can view the tool development area for this project.

The top navigation bar includes the 'COMPOSITES DESIGN & MANUFACTURING HUB' logo and links for Home, Resources, Communities, Explore, Support, and Report a problem. The user profile for Christopher Joseph Nuland (cnuland@in3applications.com) is visible in the top right corner.

Pros

- Allows cdmHub to run both Windows and Linux based tools
- Can move tools between servers more easily (scalability)
- Can more easily secure a single session
- Faster graphic card response time
- More easily guarantee resources for a session

Cons

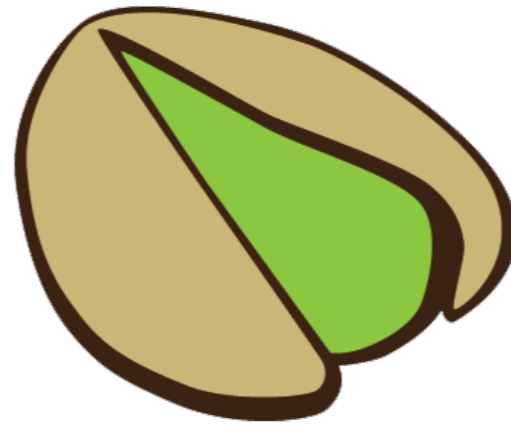
- More expensive compared to the open source HubZero system

HubZero running Pistachio	Open Source HubZero
20 Linux Sessions	100+ Linux Sessions
3 Linux Windows Sessions	
Windows and VMware License Fees	No Licence Fees
1 Server	4 Servers
\$1,000 per/month (SingleHop)	\$1,000 per/month (SingleHop)

Future

- Implement more cloud based technology into Pistachio
- Allow for local servers to create “MicroHubs”
- Add virtual desktop features for more work collaboration
- Release open source version of software

Conclusion



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