

# SNAP PAC Sim Readme

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November 16, 2016

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## Introduction

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For enhancements and bug fixes for each release, see the controller firmware readme, form [RM\\_SNAP\\_PAC\\_FW](#).

SNAP PAC Sim is Microsoft Windows-based software that simulates the control engine of an Opto 22 programmable automation controller (PAC). You can use SNAP PAC Sim with Opto 22 PAC Project software to develop, download, and debug your PAC Control strategy without a hardware PAC.

**IMPORTANT:** SNAP PAC Sim is intended for demonstration use only and is NOT intended to be used in an actual application. SNAP PAC Sim is time limited and will operate for only twelve hours at one time. After this time has elapsed, the software must be restarted before it can be used again.

If you want a fully functional PC-based controller that is intended to be used in actual applications, Opto 22's SoftPAC is available for purchase. For more information, go to the [Opto 22 website](#) and search on the term SoftPAC.

**NOTE:** You cannot run two instances of PAC Sim or PAC Sim and SoftPAC at the same time. When one is running, attempting to start a second one will fail.

## **Version R9.5a**

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August 1, 2016

As of version R9.5a, Microsoft Windows 2000 and XP are no longer supported.

## **Version R9.3a**

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November 20, 2012

Updated 11/26/12, 11/30/12, 12/13/12

### Enhancement:

- The command GetAvailableFileSpace is now supported in PAC Sim.

## **Version R9.2a**

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March 15, 2012

The following commands should not be used in PAC Sim, because Windows already handles time for the PC:

- Set Time Zone Configuration
- Get Time Zone Offset
- Get Time Zone Description
- Synchronize Clock SNTP

## **Version R9.1b**

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July 8, 2011

The following commands do not work in PAC Sim:

- HTTP Get
- HTTP Post from String Table
- HTTP Post Calculate String Table Length
- Send Email
- Send Email with Attachments

## **Version R8.4a**

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March 9, 2009

SNAP PAC SIM will now operate for 12 hours at one time. After this time has elapsed, the software must be restarted before it can be used again.

## **Version R8.3a**

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December 17, 2008

Bug Fixes

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The following problems have been fixed in R8.3a:

[KB80380](#): Inspection window may display incorrect SNAP PAC Sim IP address

[KB80385](#): PAC Simulator's 'Store to Flash' doesn't work under Windows Vista

## **SNAP PAC Sim System Requirements**

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- A computer with at least the minimum processor required for your version of Microsoft Windows (1 GHz Pentium®-class or better recommended) and Ethernet capability
- VGA or higher resolution monitor (Super VGA recommended). Minimum size: 800x600 with small fonts.
- Mouse or other pointing device
- Microsoft Windows 7 Professional (32-bit or 64-bit), Windows Vista® Business (32-bit), or Windows XP Professional (32-bit, with Service Pack 2 or higher) NOTE: Microsoft Windows server and embedded Windows operating systems are not supported.
- At least 512 MB RAM
- Opto 22 Ethernet-based I/O unit (Opto 22 brain must have an Ethernet connection)

## **Starting SNAP PAC Sim**

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1) Download SNAP PAC Sim from the Opto 22 website:

[http://www.opto22.com/site/su\\_download\\_list.aspx](http://www.opto22.com/site/su_download_list.aspx)

2) Run the installer. Follow the prompts to complete software installation.

3) Select Start-->Programs-->Opto 22-->PAC Project-->PAC Sim.

NOTE: If you receive a Windows message that the firewall has blocked some features of the program, click Unblock.

SNAP PAC Simulator opens in a command window and will run for 12 hours. The PC will beep five minutes before time expires.

### **Running PAC Sim with Administrator Privileges**

If you do not have administrator privileges and are having trouble starting SNAP PAC Sim, do the following:

1. Right-click the PAC Sim icon in the Start menu and select Properties.
2. Click the Advanced button and select "Run as Administrator."
3. Click OK to close the open dialog boxes.

Now each time you start PAC Sim, you will get the normal message asking if you want to continue and run this app as an Administrator. You do not have to be logged in as an Administrator to make this change, and it can be done on a case-by-case basis.

### **Setting up SNAP PAC Sim as a Control Engine in PAC Project**

- 1) Open PAC Control or PAC Terminal software.
- 2) Add a control engine. (See the PAC Control User's Guide for instructions on adding a control engine.)
- 3) When you assign an IP address to the control engine, use one of the following:
  - If SNAP PAC Sim is running on the same PC that PAC Project software runs on, enter the loopback address 127.0.0.1
  - If SNAP PAC Sim is not running on the same PC that PAC Project software runs on, enter the IP address of the PC running SNAP PAC Sim.

Once added, the new control engine can be selected by PAC Control, PAC Display, and other PAC Project software applications.

IMPORTANT: When SNAP PAC Sim is running, a loop in a PAC Control

strategy can consume most of the PC's CPU capacity. To avoid this, simply add a delay -- even as short as 1 ms -- to the loop.

## **Configuring I/O Units**

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PAC Sim is not an I/O simulator, so if you have any I/O units configured in your strategy, and the I/O units are not on the network of the computer running PAC Sim, you will get errors.

Here are steps you can take to work around this:

In PAC Control's configure mode, open the Edit I/O Unit dialog box for each I/O unit and uncheck the box called "Enable communications from control engine". With communications disabled to the I/O units, the strategy logic uses the internal controller values instead. If your strategy has any logic to re-enable I/O units that have lost communication, make sure to comment out that logic as well.

PAC Sim works with Ethernet-based I/O units only, not serial. The Ethernet I/O units must be on the same network as the computer running PAC Sim, and the I/O units must have IP addresses and subnet masks that are compatible with the IP address and subnet mask of the network card on the computer.

In addition, use the Simulation commands in PAC Control to force the internal values (IVALs) in the control engine. The logic will take the right actions as if those were the actual I/O data values.

## Differences between a Hardware-based Controller and SNAP PAC Sim

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SNAP PAC Sim does not provide some capabilities available in SNAP PAC controllers. See the following list for a comparison of capabilities.

SNAP PAC Controller	SNAP PAC Sim
Memory map	No memory map
Communication handles supported: - tcp - file - serial - ftp	Communication handles supported: - tcp - file - ftp
No time limit	12-hour time limit
Communicate with local and remote I/O. (Local I/O available only with SNAP PAC R-Series brains.)	Communicate with remote I/O only
RAM available: 16 MB (user) 7 MB (persistent)	RAM available: 16 MB (user) 2 MB (persistent)

### For Help

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If you have any questions about SNAP PAC Sim, you can call, fax, or email Opto 22 Product Support.

Phone: 800-TEK-OPTO (835-6786)  
951-695-3080

(Hours are Monday through Friday, 7 a.m. to 5 p.m. Pacific Time)

Fax: 951-695-3017

Email: [support@opto22.com](mailto:support@opto22.com)

Opto 22 website: [www.opto22.com](http://www.opto22.com)

When calling for technical support, be prepared to provide the following information about your system to the Product Support engineer:

- Software and version being used
- PC configuration (type of processor, speed, memory, and operating system)
- A complete description of the Opto 22 Ethernet-based I/O unit you are using with SNAP PAC Sim.
- Specific error messages seen.