groov USER'S GUIDE

Form 2027-140107—December 2014



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A:

1: Welcome

What's groov?

groov is Opto 22's web-based operator interface system that is *simple, mobile,* and *connects easily* to almost everything.

Simple: *groov* requires only a web browser to build and view interfaces. Because it puts ready-made gadgets at your fingertips and requires zero programming, it's simple to build, deploy, and view effective and 100% scalable operator interfaces.

Mobile: *groov* can be viewed on almost any mobile device or computer regardless of its manufacturer, operating system, or screen size, including smartphones, tablets, PCs, and even smart high-definition televisions. *groov* can augment existing human-machine interfaces (HMIs) and SCADA systems by making important information available at any time and in any location.

Connects easily: You can connect *groov* to Opto 22 controllers directly, or you can connect to devices from other manufacturers through a tag server that supports OPC UA (Unified Architecture). When connected to a tag server you can monitor and control PLCs and PACs such as Allen-Bradley ControlLogix and CompactLogix, Siemens SIMATIC S7, Schneider Electric Modicon, GE PACSystems, and many more.



1

In addition you can use *groov* with databases, SNMP devices, weather stations, OPC-DA servers, or any device or system supported by your tag server. *groov* gets important data from process control, OEM machines, and manufacturing systems into operators' hands. (For more information about OPC UA, go to opcfoundation.org/UA.)

groov Build

groov Build provides a collection of gadgets for developing a graphical, on-screen operator interface. It comes with the built-in ability to import tags from a variety of systems and equipment, including SNAP PAC controllers, OptoEMU energy monitoring units, and other companys' systems, devices, and databases. *groov* Build also allows you to manage user accounts and to import tags from multiple devices to use in the operator interface.



groov View

Runs a *groov* operator interface that resides on a *groov* Box or groov Server and can be accessed using View on a computer, smartphone, tablet, or other device with a web browser and a network connection to *groov*.



Difference Between groov Build and View

The following chart outlines the differences between groov Build and View.

	groov Build	groov View
What it's for	Building an operator interface:ConnectBuild screensAuthorize usersBack up projects	Viewing an operator interface: • Monitor and control equipment/system
Who uses it	Authorized <i>groov</i> Build users:An Admin has full controlAn Editor cannot authorize users	 Authorized groov users: An Operator can log in/out & change password Kiosk users cannot log out or change password
Password	 groov Build software password An Admin sets the username and password at first login to groov. An Admin user can assign usernames/passwords to Editors and other Admins. 	<i>groov</i> View password A username and password are assigned to each user by a <i>groov</i> Build Admin.

	groov Build	groov View
How to get there in a web browser	<pre>groov Box For the URL, enter: https://[hostname]/ Or: https://[IP address]/ groov Server For the URL, enter: https://localhost/ Or: https://[Server's host- name or IP address]/ Click Settings (gear in upper right), and choose Switch to groov Build</pre>	<pre>For the URL, enter: https://[hostname]/</pre>
How to get there in groov Find (Windows PC only)	Click Search for devices. Find the serial number of the <i>groov</i> Box. Click <i>groov</i> App.	[Not normally used]

Mobile Device Apps

groov View for iOS and *groov* View for Android are optional native apps for your tablet or smartphone. You can just use your browser to run *groov*, but unlike a browser these apps display View in full-screen mode without the address bar, toolbars, and so on. Also, you can configure the app with your username and password in order to skip the login screen.



View in browser

View app

The iOS and Android apps are ideal for OEMs and machine builders who want to use a tablet in kiosk mode as an operator interface to a machine. Kiosk mode locks the device to only run *groov*.

Try Before You Buy

A fully functional version of the software-based *groov* Server for Windows is available to download and try so you can see your own system's data on a smartphone, tablet, or other mobile device. If you need a tag server to connect to a third-party controller, Kepware Technologies' KEPServerEX 5 communication platform is also available for download and trial.

Just download and install *groov* Server for Windows (groov.com), and KEPServerEX 5 (www.kepware.com). Simple instructions walk you through software setup, connecting to one or more systems, and building simple interfaces so you can quickly see realtime system data on a mobile device. Both software packages operate for two hours without a license key.

NOTE: You must log on as an administrator to install groov Server for Windows.

A Note on Browsers

Thanks to technologies such as HTML5, SVG, and CSS3, modern browsers are now more similar than they are different. Consequently, our browser-based *groov* View and *groov* Build work reliably on a large number of device/OS/browser combinations. We've seen *groov* work on HDTVs, phones of many shapes and sizes, and new devices, and we test them as fast as we can get our hands on them. We can't test every single device/OS/browser version available. But we're happy to recommend those that work well, such as Firefox, Chrome, and Internet Explorer 10. We also encourage you to let us know your experiences with devices you find.

System Requirements

For groov Box and groov Server for Windows

To build operator interfaces with *groov* you'll need:

- Any computer with a modern web browser. This does not have to be a Windows PC.
- One or both of the following:
 - An Opto 22 SNAP PAC System (SNAP PAC S-series, R-series, or SoftPAC controller with firmware R9.2a or newer, running a PAC Control strategy).
 - Another manufacturer's automation system with tags accessible by your tag server. You'll
 need a tag server that supports OPC UA plus the appropriate drivers for your system
 installed on the server computer.

groov and KEPServerEX: If you don't already have a tag server installed that supports OPC UA, the KEPServerEX communication platform from Kepware Technologies is recommended by Opto 22 and tested to work with *groov*.

Kepware is a leader in OPC communications and has developed hundreds of device drivers to communicate with automation systems, industrial databases, and other software. For more information, go to www.kepware.com/Products/products_OPCServers.asp. See also, www.kepware.com/Support_Center/doc_auto_tag.asp

For groov Server for Windows

To install and run *groov* Server for Windows you'll need:

• A PC on the same network as your control device, with one of the following Microsoft operating systems. This can be the same computer where the tag server is installed, or a separate computer.

- Windows® 7 Professional (32-bit or 64-bit)
- Windows 8 Professional (32-bit or 64-bit)
- Windows Server 2008 R2
- Windows Server 2012

NOTE: .NET Framework 3.5 or greater is required for all operating systems. Use the "Add roles and features" option for Windows Server 2012.

 A minimum of 250 MB available disk space to install *groov* Server for Windows. Additional disk space is required to create projects. (Projects may be created on this PC or on another computer.)

About This Guide

This user's guide teaches you how to use the *groov* applications to build and use an operator interface.

This guide assumes that you have already set up your *groov* Box or installed and set up *groov* Server for Windows, and that you are already familiar with your personal computer's operating system and how to use your tablet or smart phone.

To set up a *groov* Box and get started with *groov*, see form 2063, the *groov* Quick Start. See also, form 2077, the *groov* Box User's Guide.

To install and get started with *groov* Server for Windows, see form 2078, the *groov* Server for Windows Quick Start.

Here's what is in this user's guide:

Chapter 1: Welcome introduces this user's guide and groov.

Chapter 2: Building an Operator Interface describes how to create pages and users, and add gadgets to the operator interface.

Chapter 3: Viewing Your Operator Interface describes how to open and use a *groov* HMI on any device with access to the Internet.

Chapter 4: Troubleshooting and Additional Help provides troubleshooting information and answers questions you may have about *groov*.

Appendix A: Extended Character Set lists the ASCII extended character set which you can use in gadget text when building an operator interface.

Appendix B: Network Cameras describes the IP cameras that work with the Video gadget.

Other groov Resources

Resources for *groov* and other related products—such as PAC Project—are also available on the Opto 22 website, www.opto22.com.

Product Support

If you have any questions about *groov*, you can call, fax, or e-mail Opto 22 Product Support.

Phone:	800-TEK-OPTO (800-835-6786) 951-695-3080 (Hours are Monday through Friday, 7 a.m. to 5 p.m. Pacific Time)	NOTE: Email messages and phone calls to Opto 22 Product Support are grouped together and answered in the order received.
Fax:	951-695-3017	
Email:	support@opto22.com	
Opto 22 website:	www.opto22.com	

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

- groov type (groov Box or Server)
- groov version. In Build, select Help > About
- A description of your system equipment:
 - Computer type, speed, memory, and operating system
 - Controller model and firmware version
- A description of the network
- Specific error messages or other diagnostic indications

2: Building an Operator Interface

groov Build provides a collection of gadgets that allow you to create graphical, on-screen operator interfaces to monitor and manage Opto 22 control applications (or *strategies*) running on Opto 22 SNAP PAC controllers, OptoEMU sensors, and a wide variety of other systems and devices. An operator interface created in Build resides on the *groov* Box or on the PC where *groov* Server is installed, and it can be accessed on a computer, smartphone, tablet, or other mobile device with a web browser.

This chapter describes all aspects of creating an operator interface in *groov* Build, including how to create users, pages, and groups, and how to configure gadgets.

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Getting Started

To install and get started with *groov* Server for Windows, see form 2078, the *groov* Server for Windows Quick Start.

To set up a *groov* Box and get started with *groov*, see form 2063, the *groov Quick Start*. For additional information, see form 2077, the *groov Box User's Guide*.

Opening Build

The first time you open *groov*, make sure to follow the instructions in one of the quick start guides mentioned above.

For groov Server for Windows

- a. Open Firefox, Chrome, or Internet Explorer 10 and do one of the following:
 - If groov Server is installed on the same computer, type https://localhost in the address bar of your browser.



If groov Server is installed on a different computer, type https:// and the computer's hostname. For example, if the computer's hostname is RStarr-w7, you type https://RStarr-w7

You can use the IP address of the host PC instead of the hostname. However, if the PC is on a network with DNS and DHCP, the IP address is subject to change.

NOTE: If groov does not open, see Troubleshooting in form 2027, the groov User's Guide.

b. Click the gear icon on the top right-hand side, and then click "Switch to groov Build."



Gear icon

For groov Box

NOTE: In order to use a URL hostname, your network must have DNS. If it doesn't, see page 61 for information on how to use groov Find.

a. Enter https:// and your *groov* Box's hostname as the URL. The hostname is printed on top of the *groov* Box.

For example, if the hostname is opto-01-ab-c2, you type https://opto-01-ab-c2

NOTE: If you've assigned a static IP address to the groov Box, use the IP address instead of the hostname to open groov.



b. *groov* opens first in *groov* View. To switch to Build, click the gear icon on the top right-hand side, and then click Switch to *groov* Build.



Adding a Page

You must add at least one page in order to build an operator interface.

1. In groov Build, click Add Page under Pages on the left side.

 Uncatego 	rized
Add fiage	

age Configuration	Page Permissi	ons	
Page Name:	Access Rights:	All Users	•
Background Color:	Select groups th	at may access th	is page
Category:	Manager		
 Uncategorized Shop Floor 	Engineer		
		ОК	Cano

- **2.** Type a new name for the page.
- **3.** If you want, select a background color, select a category for this page, or limit the access rights. A category is useful for grouping of pages by location, function, and so on.
- 4. Click OK.

Resizing a Page

If you need more room on a page, click the Increase Height button at the bottom of the workspace. If you switch to another page and then return, the page will shrink to fit the content or else return to the default page size.

Increase Height

Adding a Category

A category is used to organize pages in the operator interface. For example, if you have a multi-story building, you could make a category for each floor, and then add pages to it that apply only to that floor. Or categories can represent individual machines, or rooms, or any number of things.

1. In groov Build, click Add Category under Pages on the left side.

Uncated	jorized
Add Page	ory

2. Type a new name for the category.



3. Click OK.

Deleting a Page or Category

The process is similar for deleting either a page or a category. However, you can only delete a category that doesn't have any pages assigned to it. To delete a category with pages, first move or delete the pages. If you add a category and don't put any pages in it, the category will automatically be deleted for you when you save and open View.

1. Hover over the page or category name in the Pages panel, then click the red X that appears.



2. Click OK in the dialog box that appears.



Renaming a Page or Category

1. Right-click the name and select Rename.



2. Enter a new label, and press Enter or left-click in the work area.

1	
Boilers	
territori tetrativat	

Duplicating a Page

1. Right-click the name and select Duplicate.

lers
Rename
Duplicate

A duplicate of the page appears in the same category.

¥	Building 1
	Boilers
	Pumps
	Boilers

2. If you want you can drag it to a new position.



Adding an Opto 22 PAC Controller

Follow these steps to add an Opto 22 controller that the operator interface will communicate with. When you add a controller and the .idb.txt file associated with the strategy that runs on the controller, the strategy's tags become available in *groov* for you to use. Repeat the steps to add additional Opto 22 controllers and tags.

1. Under Gadget Palette on the right side, click Configure Devices & Tags, or select Configure > Devices and Tags.

Tags	Gadgets	

The Configure Controllers dialog box opens.

Name	Туре	Address	Add Opto 22 Controller
			Add OPC UA Server
			Configure Tags
			Import Tags
			Update Strategy
			Edit Address
			Delete

2. Click Add Opto 22 Controller.

Controller Address:		
Controller Port:	22001	
Strategy File (*.idb.bxt):	1	Browse

- **3.** Enter the hostname or IP address of the controller running the strategy you want to use.
- 4. Click Browse to locate the .idb.txt file you want to use.

NOTE: When PAC Control compiles a strategy it automatically generates an .idb.txt file and places it in the same directory as the strategy. If you are setting up groov on a computer other than the one used to develop the PAC Control strategy, copy the .idb.txt file into a directory that is accessible to the computer you are using to set up groov.

5. Click Import.

Build imports the .idb.txt file. The tag database is now available in groov.

Updating a Strategy

If a controller's strategy has been changed, you need to update it in *groov* by importing its new .idb.txt file.

- 1. Select Configure > Devices and Tags.
- **2.** Highlight the controller you want to update, and then click Update Strategy.

lame	Туре	Address	Add Opto 22 Controller
jroov_Example	Opto 22 Controller	DScarr-w7.Opto22.com:22001	
(en2	OPC UA Server	product-support-	Add OPC UA Server
		laptop.opto22.com:49320	Edit Address
			Delete
			Configure Dynamic Tags
			Import Tags
			Update Strategy

CAUTION: Be very sure you are updating the correct strategy. If you use the wrong one, all of the controller tag connections will break. This is critical because re-importing the correct strategy will not fix the broken gadgets. You can only fix the connections by restoring your project with a recent backup.

3. In the dialog box that opens, browse to the strategy you want to use, select the new .idb.txt file, and then click Open.

NOTE: When PAC Control compiles a strategy it automatically generates an .idb.txt file and places it in the same directory as the strategy. If you are setting up groov on a computer other than the one used to develop the PAC Control strategy, copy the .idb.txt file into a directory that is accessible to the computer you are using to set up groov.

4. Close the Configure Controllers dialog box.

Adding a System from Another Manufacturer

In order for *groov* to communicate with devices and automation systems from other manufacturers, *groov* requires a tag server that supports OPC UA. So, before you can add tags to *groov* from a system not manufactured by Opto 22, the system must first be configured to communicate with an OPC UA-compliant tag server.

If you don't already have a tag server installed that supports OPC UA, the KEPServerEX communication platform is recommended by Opto 22 and tested to work with *groov*. Kepware is a leader in OPC communications and has developed hundreds of device drivers to communicate with automation systems, industrial databases, and other software. For more information, go to

www.kepware.com/Products/products_OPCServers.asp. See also, www.kepware.com/Support_Center/doc_auto_tag.asp

Follow these steps to add an OPC UA-compliant tag server to *groov* that will communicate with the operator interface.

1. In the Gadget Palette in the lower-right corner of *groov* Build, click the Tags tab, and then click Configure Devices & Tags. Or select Configure > Devices and Tags from the menu bar.

Tags	Gadgets	
------	---------	--

2. Click Add OPC UA Server.

Name	Туре	Address	Add Opto 22	
No strategies loaded.			Controller	
			Add OPC UA Server	OPC UA Ser
	and the		onfigure Tags	
dd OPC UA S	Server		Import Tags	
Name:	A friendly server name		Update Strategy	
Server URL:	server.domain.com:49320/path		Edit Address	
Example: ip_address_or_hostname:49320/path			Delete	
		Add Server Cancel		

- **3.** Enter the Name of the OPC-UA server.
- **4.** For the Server URL, using the following format, enter the IP address or hostname of the computer where the OPC-UA server is installed, and enter the port (for Kepware the default is 49320). You can also enter the path of the OPC server endpoint.

MyComputer.MyCompany	.com:49320/path
Computer hóstname	Port

5. Click Add Server.

Adding Tags from an OPC-UA Tag Server

There are two ways that you can add tags from an OPC-UA tag server to your project, either by importing *static* tags or by adding *dynamic* tags. Both procedures are described below

Imported (Static) Tags. The Import Tags function imports all the static tags from an OPC-UA server. When imported into *groov*, static tags are called *imported* tags. They keep the server's tag hierarchy and are displayed in a tree format. You will see the names of the tags, not the addresses.

If a large number of tags are required for your project it can is to import the tags into *groov* rather than adding each individual tag in *groov* Build. This allows you to browse the tag hierarchy to find the tag you need.

Dynamic Tags. Dynamic Tags are tags that you enter manually one at a time in *groov*. Dynamic tags are not configured on the tag server, only on *groov*, so that once a device is configured on the server, the tags do not have to be imported into the server in order to be accessed by *groov*. One advantage is there is less maintenance required; if changes are made to a tag on the device, you do not have to make those same changes on the server, only on *groov*. Another advantage is that dynamic tags allow you to add as many or as few tags to *groov* as you want. This can make it easier to find specific tags if you only want to use a few.

Importing Static Tags

Unless your database is very large, the easy way to use *groov* is to import all of a controller's tags into *groov*. (If your database is very large and you only want to use a few of them, see page 20.)

1. In the Gadget Palette in the lower-right corner of *groov* Build, click the Tags tab, and then click Configure Devices. Or select Configure > Devices and Tags from the menu bar.

Tags	Gadgets	
------	---------	--

2. In the Configure Devices and Tags dialog box, select the OPC-UA server and click Import Tags.

he	Name	Туре	Address	Add Opto 22 Controller	
	KepServer	OPC UA Server	DScarr-w7.Opto22.com:49320		
	groov_Example	Opto 22 Controller	DScarr-w7.Opto22.com:22001	Add OPC UA Server	
				Edit Address	
				Delete	
				Configure Dynamic Tags	
				Import Tags	Click Impor
				Update Strategy	lays
				Update Strategy	

In a moment you should see the Imported Tags dialog box which lists the names of the imported tags.

New Tags	
Objects	
_System	
_ActiveTagCount	
_ClientCount	
_Date	
_Date_Day	
_Date_Month	
_Date_Year2	
_Date_Year4	
_DateTime	
_DateTimeLocal	
_FullProjectName	
_OpcClientNames	
_ProjectName	
_ProjectTitle	
_Time	
_Time_Hour	
_Time_Hour24	
_Time_Minute	*

- 3. Click Close.
- **4.** Close the Configure Devices and Tags dialog box.

The imported tags are now available on the Tags tab of the Gadget Palette.

adget Palette			
Tags Ga	dgets		
onfigure Devi	ces & Tags		
	ted tags	~	
Θ	Logix	E	
	😑 Global		
	diMomentaryInput	_	
	diToggleInput		
	doBubbler		— Imported tags
	doLED		
	f32Setpoint		
	f32Waveform		
		-	

- **5.** Now you're ready to add gadgets to a page using the tags you just imported. For instructions, see "Adding Gadgets" on page 26.
- **6.** After you've added some gadgets and associated tags to them, select File > Save All Changes and Switch to *groov* View.

It might take a few moments for the OPC-UA connection to be established and live values to appear.

Adding Dynamic Tags

Follow these steps to add tags manually:

1. In the Configure Devices dialog, select the OPC-UA server and click Configure Dynamic Tags.

Select the	Name	Туре	Address	Add Opto 22 Controller	
	KepServer	OPC UA Server	DScarr-w7.Opto22.com:49320		
SELVEL	groov_Example	Opto 22 Controller	DScarr-w7.Opto22.com:22001	Add OPC UA Server	
				Edit Address	
				Delete	
				Configure Dynamic Tags	Click Configure
				Import Tags	b y numici rugo
				Update Strategy	

- 2. In the Configure Tags dialog box, click Add.
- **3.** In the Add Dynamic Tag dialog box, enter a Name and select the Data Type. You must also make sure the Data Type selected in *groov* matches the type retrieved from the device.
- 4. If this tag is an array of objects with the same data type, select Array and enter the array size.
- 5. Choose the Access Read or Write attributes as needed.

Leave this dialog box open while you identify the Nodeld Value in the next step.

Name:	A human-readable name for the tag	
NodeId Value:	The tag's address as defined by the server's documentation	[?]
Namespace Index:	2 [?]	
Data type:	32-bit Signed Integer	
Array:		
Array size:		
Access:	Read Write	

6. To find the Nodeld Value for your device, open your OPC-UA server configurator and find the configured device associated with this tag.

You'll find part of the Nodeld information here. The remainder comes from the device itself. The addressing syntax is different for each type of device, so you'll need to check the OPC-UA server's documentation for this tag's device type.

As an example, here's how you find the Nodeld for an Rockwell Automation Logix tag on a KEPServerEX 5 server:

- a. Open the KEPServerEX 5 Runtime configurator.
- **b.** Locate the device and tag from which the dynamic tag in *groov* will obtain data.



Use this format for the Nodeld Value:

[Channel name].[Device name].[Tag group name].[protocol specific address] So now you can extract the information you need from the server's configurator and the device itself:

[Channel name]=**DTOL**

[Device name]=**Cmplx5370**

[protocol specific address]=Program:MainProgram.i32Counter@Long

NOTE: The protocol specific address is obtained from the device. If you have a Kepware server, the help file provides the protocol specific addressing information. To access help for a specific tag, click on the device name in the Kepware configurator, choose Properties, and click the Help button.

In this example, the "@Long" portion specifies the data type as an unsigned 32-bit integer. This forces the server to report data to this type. If the default data type on the Kepware server is different than the tag's data type, the link will fail in groov unless you specify the data type in the Nodeld Value. For more information on your specific data type, see the server's documentation.

Putting it all together, here's the Nodeld Value for this dynamic tag:

DTOL.Cmplx5370.Program:MainProgram.i32Counter@Long

- 7. In the groov Add Dynamic Tag dialog box you left open in groov Build, enter the Nodeld Value.
- 8. In most cases, the Namespace Index should stay at 2. However, for some servers (such as Ignition by Inductive Automation) you should change the Namespace Index to 1.

A tag's Namespace Index is an integer (0 or higher) that tells *groov* how to find the tag on the server.

- 9. Click Add Dynamic Tag.
- **10.** Close the open dialog boxes.

Gadget Palette
Tags Gadgets
Configure Devices & Tags...
E KepServer
Dynamic Tags
ABCounter
Imported tags
groov_Example
(Imported tags)

The new dynamic tag appears in the Gadget Palette.

- **11.** Now you're ready to add gadgets to a page using the new tags you just created. For instructions, see "Adding Gadgets" on page 26.
- **12.** After you've added some gadgets and associated tags to them, select File > Save All Changes and Switch to *groov* View.

It might take a few moments for the OPC-UA connection to be established and live values to appear.

Configuring the Windows Firewall for an OPC-UA Server

if you are using *groov* Server installed on a different computer than the OPC-UA server or a *groov* Box, inbound traffic to the OPC-UA server needs to be able get through the firewall on the port used by the server. This requires adding an Inbound Rule to the Windows Firewall on the computer where the tag server is installed.

NOTE: If you are using groov Server and it is installed on the same computer as the OPC-UA server, you do not need to configure the Windows Firewall as described here.

As an example, the following instructions describe how to add in Windows 7 the Inbound Rule for port 49320, the default port for the KEPServerEX 5 server.

- 1. After you have successfully installed the Kepware server, open the Windows Control Panel.
- **2.** If icons are displayed in the Control Panel, click Windows Firewall. If categories are displayed in the Control Panel, click System and Security and then click Windows Firewall.
- **3.** In the left panel, click Advanced settings.



The Windows Firewall with Advanced Security dialog box opens.

4. In the left panel, click Inbound Rules.



5. In the right panel, click New Rule.



6. For Rule Type, select Port. Click Next.



7. For Protocol and Ports, select Specific local ports and enter 49320 (the default Kepware port). Click Next.



8. For Action, select "Allow the connection." Click Next.



9. For Profile, select Domain and Private. Click Next.

W	nen does this rule apply?
V	Domain Applies when a computer is connected to its corporate domain.
7	Private Applies when a computer is connected to a private network location.
	Public Applies when a computer is connected to a public network location.

- 10. For Name, enter a descriptive name such as "Kepware OPC-UA Server."
- **11.** Click Finish.
- 12. Exit the Windows Firewall and Control Panel dialog boxes.

Editing a Controller's or OPC-UA Server's Address

If a controller's or OPC-UA server's hostname or static IP address has changed, you'll need to edit the hostname or address in Build.

1. Select Configure > Devices and Tags.

Name	Туре	Address	Add Opto 22 Controller
My OPC UA Server	OPC UA Server	SDcarr-w9.O22.com:49320	
Cookies	Opto 22 Controller	10.192.99.117:22001	Add OPC UA Server
			Edit Address
			Delete
			Configure Dynamic Tags
			Import Tags
			Update Strategy

- 2. Click Edit Address.
- 3. For an Opto 22 controller, enter a new IP address or hostname, then click OK.

Edit Add	ress for groov _.	_Example	
Address:	Drraarr-w7		
Port:	22001		
		ОК	Cancel

For an OPC-UA server, enter a new name or server URL, then click Update Server.

Name:	Кер2	
Server URL:	product-support-laptop.opto22.com:49320	
	Example: MyHostname.MyDomain.com:49320 [?]	

4. Close the Configure Controllers dialog box.

Deleting a Controller or OPC-UA Server

You can a delete a controller or OPC-UA server from your project. However, be aware that any tags associated with gadgets will be lost and have to be reassigned.

1. Select Configure > Devices and Tags.

Name	Туре	Address	Add Opto 22 Controller.
My OPC UA Server	OPC UA Server	SDcarr-w9.O22.com:49320	
Cookies	Opto 22 Controller	10,192,99,117;22001	Add OPC UA Server
			Edit Address
			Delete
			Configure Dynamic Tags
			Import Tags
			Update Strategy

- 2. Click Delete
- 3. Click OK.

4. Close the Configure Controllers dialog box.

Adding Gadgets

There are two basic methods for adding a gadget and associating a tag. You can start with gadget and add a tag to it. Or, you can start with a tag and then add the tag's gadget.

Method 1: Add a Tag to a Gadget

Drag a gadget from a toolbox onto the page, and then assign it a tag.

1. Select the Gadget tab in the Gadget Palette.

Gadget	Palette
Tags	Gadgets
	Group Header
Abc:	Line Header
—	Divider
Page	Page Navigator
	Video

- 2. Either double-click a gadget or drag it to the work area.
- 3. Select the gadget in the work area, and then click None Selected in Gadget Properties.

Round Gauge Properties		
Tag:	None Selected	
Min Value:	0	
Max Value:	200	

This opens the Update Tag for Gadget dialog box.

E
E
E
E
E
E
E

- 4. Browse to the tag you want to use, select it, and then click Update Gadget.
- 5. Configure the gadget's properties. See "Configuring Gadgets" on page 28.
- 6. Select File > Save All Changes.

Method 2: Add a Gadget to a Tag

Click a tag and assign an available gadget.

1. Click the Tags tab in the Gadget Palette area, expand the tag's category, and then click the tag.



Gadgets appear that work with the selected tag.

Freezer_Door_Status		
0	LED 🚓	
<	Checkbox	
ab	Button	
ab	Command Button	
a=1	Text Area	
~	Plot	

- 2. Either double-click a gadget or drag it to the work area.
- 3. Configure the gadget's properties. See the next section, "Configuring Gadgets."
- **4.** Select File > Save All Changes.

Configuring Gadgets

Once you have added a gadget and assigned it a tag, then you can resize or move it, and change the gadget properties.



- To move the gadget, grab it with the left mouse button and drag it.
- To resize the gadget, grab a graphic handle and drag to the new size.
- To change other gadget properties, click the gadget.

Change the properties as desired. For example, if you use the LED's default blue color, the LED will be bright blue when it's on and black when it's off. And you can type in a label.



Available Gadgets

Here are the gadgets you can use in your Build project.

TIP: When adding text to a gadget, in addition to basic ASCII, you can also use the extended character set. See "Appendix D: Extended Character Set" on page 79.

Gadget	Go to
Group Header	page 29
Abc Line Header	page 30
Divider	page 30
Page Page Navigator	page 30
Video	page 31
Image	page 31
led	page 31
Checkbox	page 32
ab Button	page 32
(ab) Command Button	page 33
C Horizontal Slider	page 33
💷 Horizontal Gauge	page 34
Text Text Area	page 34
ab Text Input	page 35
L:12 Value	page 35
🛞 Round Gauge	page 36
Range Indicator	page 37
Plot	page 38

Group Header Group Header

Use the Group Header gadget to define a group of objects. In Gadget Properties, enter a group name and select a font size.

TIP: If you need to move a Group Header (or any other gadget) behind another gadget, right click the gadget and select Send to Back.



Abc: Line Header Line Header

Use the Line Header gadget to provide a label for organizing objects on a page.

Compressors

Line Heade	er Properties	
Label:	Label	Enter a label.
Underline:	V	Check this box for a line under the label.
Horizontal:	Left 💌	Choose the horizontal placement and
Style:	Bold Italic	Bold or Italic for the label.

- Divider Divider

The Divider gadget provides a horizontal or vertical line to separate groups of objects. For a vertical line, choose Vertical. You can make the divider longer or shorter by selecting the object and dragging its handles.



Page Navigator Page Navigator

Use the Page Navigator gadget to provide a link to another page in the project. Select a target page. If there are a lot of pages, type the name of the page (or part of the name) in the search box.




The Video gadget displays an iFrame type video stream from an IP camera. This gadget does not interact with controller points/variables. For information on IP cameras and how to enter a URL, see "Appendix B: Network Cameras" on page 73.



IP-Cam:		3
Li Comi	Address of webcam-feed	

Video

Image Image

Use the Image gadget to place an image in your project. Click Select Image to browse to the image file location. For best performance, use images no larger than 2000 x 2000 pixels at 72 dpi with 8 bit color information, or a total of less than 300 KB in size.

When using animated GIFs, consider how to use it effectively in your HMI. Also, limit the file size to less than 300 KB, especially if the page you are building will be viewed on a smartphone that has reduced memory.



LED LED

An LED is a read-only gadget that indicates the on or off state of a numeric value. The LED is off when a tag's value is 0. It's on when the value is non-zero.

Select a tag, enter a label, and select a color for the true (on) and false (off) states.

The on and off states for a blue LED look like this:



Checkbox Checkbox

The Checkbox gadget is a read/write binary input which your user can toggle on or off by selecting the box. Off = Zero, On = non-Zero.

	Checkbo	ox Properties		
outside under 📿	Tag:	Outside_Light 'MainTest' at 10.110.54.110	Select a tag	
Outside Light	Label:	Outside Light	Enter a label	
Checkbox gadget	Confirm:	<	Select Confirm to display a Confirm Send dialog box	

Dab Button Button

The Button gadget is a read/write binary input which your user can toggle on or off by clicking it. Off = Zero, On = non-Zero. Select a color for the true (*on*) and false (*off*) states.



Command Button Command Button

The Command Button gadget sends a value to a numeric or string variable. You can configure the button's color, and you can resize the button and the text by selecting the box and then grabbing and dragging the object's handles.

	Comman	d Button Properties	
Alarm Off Command button gadget	Tag:	Alarm 'MainTest' at 10.110.54.110	Select a tag
	Value:	1	
	Label:	Alarm Off	—— Enter a label
	Color:		
	Confirm:		——Select Confirm to display a Confirm Send dialog box

Horizontal Slider Horizontal Slider

The Horizontal Slider gadget is a read/write gauge that displays an analog or float-type value using a bar that fills to indicate the present position or value. This is the same as the horizontal gauge except that your user can interact to change the value and write it to the controller by grabbing and moving the indicator button. You might use this gadget for room temperature setpoints, alarm values, PID settings, and so on.



- Horizontal Gauge Horizontal Gauge

The Horizontal Gauge gadget is a read-only gauge that displays an analog or float-type value using a bar that fills to indicate the present position or value. It displays a numeric value in a horizontal gauge. You might use it for a fuel gauge, a noise-level indicator, etc.

	Label	Value	Precision
	Steps Co	mpleted:195	00
Color	>		
Horizontal	Gauge Properties		
Tag:	None Selected		Click here to choose a tag.
Label:	Label: -		—— Enter a label.
Min Value:	0		
Max Value:	10		values that can be displayed.
Value:	Show Value		
Precision:	2		Value, Show Percent, or None.
Color:	Limits: 0 to 6		Enter the number of places to the right of the decimal point to be displayed.
L			— Choose the color of the indicator.

a=1 Text Area Text Area

The Text Area gadget is a read-only output for displaying numerical or string data. Enter text just as you want it to appear, and use enough pound signs (#) to display data. For example, ##.# might display 35.0, and ###.## might display 350.86. The data will be blue, but any other text will have the color you assign to it. You can also change the background color.





Text Input

The Text Input gadget is a write-only field that your user can change to send numerical or string data to the controller.

Text Inputs are linked with a Send/Submit button that is automatically generated on the page for each Edit Box. Text changes are sent when the Send/Submit button is pressed.

Label —— D	uration: 95 Value		
Text Input Pr	operties	Choose a tag.	
Tag: Box Size:	Int_1 'MainTest' at 10.110.54.110 Medium	Select a text box size. If you select Unlimited, you cannot enter a label.	
Label:	Label	Enter a label.	
Min Value:	0	Provide the minimum and maximum	Edit Textbox Value
Max Value:	100	values that your user can enter.	Enter time
Prompt (pre):		Enter pre and post prompts for	Limits: 0 to 100
Prompt (post):	/	the Edit Textbox Value dialog.	95
Confirm:		Select this box to display a confirm dialog	Seconds
Font:	Arial	when your user enters a new value.	OK Cancel
Style:	Bold Italie	Format the text.	

L:12 Value Value

The Value gadget is a read-only output for displaying numerical or string data. It has a uniform width to make it easy to line up multiple gadgets. The text format changes depending on the tag type so you don't have to configure it manually. For example a float type tag will have #.##, whereas an integer tag will have just #. In the Label text box, enter text just as you want it to appear. The data will be blue, but the label text will be black.

Label Data Level: 5 12 Value Properties Tag1 Tag: 'My OPC UA Server' at Click here to choose a tag. DrrcaS w2.2ptoO2.com:49320 Choose the field width. Field Width: Medium -Enter a label. Label: Label Font: Arial -Format the text. Bold Italic Style:



Round Gauge

The Round Gauge gadget is a read-only gauge that displays an analog or float-type value using a rotating needle and decimal numerical display to indicate the present position value. A configurable string indicates the units that the gauge is displaying, for example, "km/h," "Gallons," etc. Possible uses include water or gas pressure gauges, the speed of a conveyer belt, etc.



Major Interval: Enter the interval for numerical markers. If you use the default (0), markers will not be shown, although the end-points for the range are always displayed. If an interval creates more than 500 tic-markers, only the end-markers being displayed.

Minor Interval: Enter the interval for small tic-markers. If you use the default (0), markers will not be shown. If an interval creates more than 500 tic-markers, the markers will not be shown.

Range Indicator Range Indicator

Use the Range Indicator gadget to show on a horizontal or vertical scale where data appears in a range of numbers. This gadget is commonly used as a thermometer. But it can be used to indicate any kind of data within a range. By arranging several of these together on page, an operator can tell at a glance if a machine is operating correctly.



	Range Indicate	or Properties	
	Tag:	Temp_Sensor 'MainTest' at 10.110.54.110	Choose a tag.
Cauga tarminalagu	Vertical:	V	Select Vertical if you want a vertical range indicator.
Gauge terminology—	Min Value:	50	Enter the minimum value.
	Max Value:	100	Enter the maximum value.
	Units:		Enter the units (for example, degrees, GPM, PSI)
	Label:		Enter a label.
	Value Display:	Show Value	Enter Show Value, Show Percent, or None.
	Precision:	2 Limits: 0 to 6	Enter the number of places to the right of the decimal point to be displayed.
	Show Markers:		Select this option for visible markers.
	Override Tics: Major Interval:	0	Use these settings to override the default tic marks. See the descriptions below.
	Minor Interval: Zone-1	0 %	 Click here to delete this zone.
Zone terminology—	Start Value: End Value:	0	Enter the start and end values for this zone.
	Color:		-Choose the zone color.
	Add Zone		Click here to add another zone.

Major Interval: Enter the interval for numerical markers. If you use the default (0), markers will not be shown, although the end-points for the range are always displayed. If an interval creates more than 500 tic-markers, only the end-markers being displayed.

Minor Interval: Enter the interval for small tic-markers. If you use the default (0), markers will not be shown. If an interval creates more than 500 tic-markers, the markers will not be shown.

Plot Plot

Use the Plot gadget to create a graph that shows how a variable is changing over time. A plot starts graphing when you open the page it is on. The current version of *groov* does not support historical graphing.



NOTE: For the Value Limits property, Detected By Graph only works if the Show Graph Fill property is not selected.

Cutting and Pasting Gadgets

If you want to cut or copy a gadget, right-click it to open the popup menu, and then select Delete, Duplicate, Copy, or Cut. To paste a copied or cut gadget, left-click the workspace, right-click, and select Paste from the popup menu. As indicated on the pop-up menus you can also use keyboard

shortcuts for Copy (CTRL + c), Cut (CTRL + x), and Paste (CTRL + v). You can hold down the CTRL key to select more than one gadget at once.

Delete
Duplicate
Copy (ctrl + c)
Cut (ctrl + x)
Bring To Front
Send To Back
Lock Position
Unlock Position

Moving a Gadget to the Front or Back

If gadgets overlap and you want to change the order of the stack, right-click a gadget and select Bring To Front or Send To Back. If you don't want a gadget to move, choose Lock Position.

Delete
Duplicate
Copy (ctrl + c)
Cut (ctrl + x)
Bring To Front
Send To Back
Lock Position
Unlock Position

Viewing the Tags in Use

To see and edit all the tags being used in your project, select View > All Tags. The Tags in Use dialog box shows the tags in use and the associated controller or OPC-UA tag server, page, and gadget. Click the page button to navigate to the page the gadget appears on. Click a column heading to sort. For example, to see everything on one controller, click the Controller heading.

Tag	Device	Page	Gadget
pot	'My OPC UA Server' at DrrcaS- w7.O2toP2.com:49320	Pumps	Round Gauge
_EnableDiagnostics	'My OPC UA Server' at DrrcaS- w7.02toP2.com:49320	Pumps	Text Area
diMomentaryInput	'My OPC UA Server' at DrrcaS- w7.02toP2.com:49320	Pumps	Text Area
do07	'My OPC UA Server' at DrrcaS- w7.02toP2.com:49320	Pumps	LED
meter	'My OPC UA Server' at DrrcaS- w7.02toP2.com:49320	Pumps	Horizontal Slider
do07	'My OPC UA Server' at DrrcaS- w7.02toP2.com:49320	Pumps	Command Button
do07	'My OPC UA Server' at DrrcaS- w7.02toP2.com:49320	Pumps	Command Button
Tag2	'My OPC UA Server' at DrrcaS- w7.O2toP2.com:49320	Pumps	Value
	🕅 🔹 1-8 of 8 🕨 🎮		

Optimizing Layouts

In *groov* Build there are two different layouts: Desktop & Tablet and Handheld. The Desktop & Tablet layout allows you to organize the gadgets for viewing on a computer monitor or a tablet. The Handheld layout is for viewing on a handheld device such as a smartphone.

For any given page, both layouts contain identical gadgets and properties, but you can resize or move a gadget in one layout and not affect the gadget's size or position in the other layout. This way you can move the most important gadgets to the top when seen on a smartphone.

groov uses the appropriate layout for the device being used. Or, if you have *groov* View for iOS or *groov* View for Android on a mobile device, you can choose which layout to view.



To work on a layout:

1. Click either Desktop & Tablet or Handheld at the top of the page.





2. Drag each gadget into position, and resize as necessary.

NOTE: If you change the text size for a gadget in one layout, it changes it also in the other layout.

3. Click the other tab and adjust the size and position of the gadgets as necessary for that layout.



4. Select File > Save All or Save All and Switch to *groov* View.

Creating a User

1. In *groov* Build, select Configure > Accounts. Then click the Users tab.

n Admin		
	N/A	
Editor	N/A	Edit Liser
Opera	tor West Wing	Edit Oserini
KIOSK	East Wing	
		Reset Password
		Delete
		Delaterin
	III	•
	III	•

- 2. Click Create User.
- 3. Enter a username and password (in both boxes) for the new user.

Jsername:	Security Level: Operator 💌 🔇
	Groups:
Password:	East Wing

4. Select a security level (Admin, Editor, Operator, or Kiosk).

For example, if you want a user to be able to log in and out of *groov* View and change their password, choose the Operator security level. on the other hand, if you want to define a user who can use View but can't log in or out, or change their password, choose Kiosk.

This table shows the privileges available for each security level:

		Security Level			
		Admin	Editor	Operator	Kiosk
	Use and interact with the gadgets in <i>groov</i> View	•	•	•*	•*
lege	Log in and out, and change the password in <i>groov</i> View*	•	•	•*	
Privi	Use <i>groov</i> Build to import strategies, make pages, and set groups on pages	\bullet	•		
	Create users and groups, and assign users to groups	•			
* For the groups an Operator or Kiosk user belongs to.					

5. Select the groups the user belongs to.

Groups are used to restrict access to particular pages for Operator and Kiosk level users. If a page is restricted to members of the group called *West Wing*, then a Operator or Kiosk level user must be in the West Wing group to access that page.

6. Click OK.

Changing a User's Security Settings

- 1. In *groov* Build, select Configure > Accounts, then click the Users tab.
- 2. Highlight a username and click Edit User.

alam			create user
Ciditi	Admin	N/A	
red	Editor	N/A	
lary	Operator	West Wing	Edit User
ilda	Kiosk	East Wing	
			Reset Password
			Delete
		4	

3. If needed, change the security level (Admin, Editor, Operator, or Kiosk).

Security Level:	Operato 💌 🤣
Groups:	
West Wing	
-	

- 4. If needed, change the groups your user belongs to. See the table on page 43.
- 5. Click OK.

Managing User Groups

To add or edit a group, in Build select Configure > Accounts. Then click the Groups tab.

Group Name	Users	Pages	Create Group
Manager	Abram	Pumps	Edit Group
			Delete

Create Group. Enter the Group Name, and select the users to be included in the group. Check the pages this group should see.

Group Name:	Green Group	
Group Members:		Limited Access Pages:
☑ Mary ☑ Nilda		☑ Electrical

Edit Group. Highlight a group and then click this button. Select or deselect the users to be included in the group.

Delete. Highlight a group and click this button, and then click OK.

Resetting a User Account Password

When you reset a password, a new password is generated automatically. This can be useful if a password is lost. To create a specific new password, see "Changing the Current User's Password" on page 46.

Your user will need to enter this new password the next time they log in. The password is case sensitive.

- 1. In groov Build, select Configure > Accounts. Then click the Users tab.
- 2. Highlight a username and click Reset Password.

username	Security Level	Groups	Create User
Selam	Admin	N/A	
Fred	Editor	N/A	Edit User
Mary	Operator	West Wing	Reset Password.
Nilda	Kiosk	East Wing	
			Delete

A message appears that your user will need to enter this new password the next time they log in. The password is case sensitive.

3. Click OK.

A dialog box appears with a new temporary password. Give this password to the user.

assword reset	
	F 1. 7. 10. 70
Temporary password for	or Fred: 7WJ3pZ8

4. Click Close, and then click Close again.

Deleting a User Account

- 1. In groov Build, select Configure > Accounts, then click the Users tab.
- 2. Highlight a username and click Delete. The deleted user will no longer be able to log in.

Username	Security Level	Groups	Create User
Selam	Admin	N/A	
Fred	Editor	N/A	Edit User
Mary	Operator	West Wing	Reset Password
Nilda	Kiosk	East Wing	
			Delete. im

A confirmation message appears.

3. Click OK to confirm.

Changing the Current User's Password

You can change the password for the current user in either Build or View mode, or the user can change their own password in View. Your user will need to enter this new password the next time they log in. See also, "Resetting a User Account Password" on page 45.

1. In Build mode, select Security > Change Password.



In View mode, click the gear icon and select Change Password.



2. Fill in the form with the old and new passwords, then click OK.

Username:	Selam
Current Passwo	ord:
New Password	:
Confirm Passwo	ord:

3. Tell the user the new password.

Changing the Project Settings

1. Select Configure > Project.

Accounts Controllers	Show page list in <i>groov</i> View	
Project aroov Admin (Opens New Browser Tab)	Video Update Period (seconds):	0.5

- 2. Choose Project Settings options:
 - Show page list in *groov* View—If you deselect this option, a user using View can only see the first viewable page. All other pages will not be available to view.
 - Show logo in *groov* View—Deselect this option to hide the *groov* logo.
 - Video Update Period—Enter how often in seconds a video gadget will update the video feed. The default is 0.5 seconds, the fastest setting possible. The Video Update Period applies to all video feeds in your *groov* project.

If you have a fast Internet connection and are not concerned about data use, then you can use the fast setting (0.5 seconds) for a smoother video. However, if you have a slower connection, the video might not be able to keep up, and you should enter a higher value so the video updates less frequently. Also, if you have a data use cap, you should probably increase the time between updates.

Saving Your Project and Opening groov View

Click the File menu and select one of the following.

File	View	Configure	Security	Help
Save	All Chan	ges		
Save	All Chan	ges and Swite	h to groov	liew 2
Swite	ch to grod	v View		-0
Open	groov Vi	ew in New Ta	b	
Backu	up Projec	t to Computer	-	

Save All Changes. Saves your latest changes, but it does not update any open iterations of View.

Save All Changes and Switch to *groov* View. Saves your latest changes and opens an updated *groov* View.

Switch to *groov* View. Opens *groov* View without incorporating any changes you have made since your last save.

Open *groov* **View in New Tab**. Use this option if you want to have both *groov* Build and View open at the same time in separate tabs.

Backing Up and Restoring Your Project

To back up your project, select File > Backup Project to Computer. A backup file is saved to your computer.

File	View	Configure	Security	Help
Save	All Chang	jes		
Save	All Chang	ges and Swite	to groov \	liew
Swite	ch to <i>groc</i>	View		
Open	groov Vi	ew in New Ta	ab	
Backu	up Project	t to Computer	5	

To restore your project from a backup file (groov Server only):

NOTE: This feature is only available with groov Server. If you have a groov Box, see form 2077, the groov Box User's Guide to restore your project using groov Admin.

CAUTION: Only restore your project if you have to. You will lose all work done since the last backup, and all users will be logged out.

1. Select File > Restore Project from Computer.

File View	Configure	Security	Help
Save All Chan	ges		
Save All Chan	ges and Swite	h to groov	/iew
Switch to grod	View		
Open <i>groov</i> Vi	ew in New Ta	b	
Backup Projec	t to Computer		
Restore Projec	t from Comp	uter 📐	

2. In the Restore Project dialog box, browse to the Windows Download directory to locate the tar.gz backup file.

Project Backup (*.tar.gz):	Browse
Please provide the username and pa associated with this project.	ssword of the admin account
Username	

- 3. Enter the username and password for the Admin account.
- 4. Click Restore.

The following warning appears.



5. If you are sure you want to proceed, click OK.

When the restoration process is complete, the restored project opens in groov View.

Getting groov Updates

You are eligible to receive *groov* updates as long as your license is active. Updates add new capabilities and fix issues that may arise.

Each *groov* installation is treated independently, so you must activate each one; updates are valid for a specific *groov* installation only.

To check for updates, go to manage.groov.com.

To install an update, download the update file and then run the installation.

Updating Your License

In order to use updates for groov, your license must be up to date.

To check the expiration date, select Configure > Licensing. The expiration date appears below Enabled Features.



To update your license:

- **1.** Go to manage.groov.com and follow the on-screen instructions to purchase continued maintenance and acquire a new license file.
- 2. Save the license file to your computer.
- **3.** Select Configure > Licensing.
- 4. In the License Management dialog box, click Select License File.

Select License File In

- 5. Browse to the new license file, highlight it, and then click Open.
- 6. The message, Upload Successful, appears on the License Management dialog box.
- 7. Click Close.

3: Viewing Your Operator Interface

The operator interface developed in *groov* Build resides on a *groov* Box or on the *groov* Server and can be accessed in a computer's browser, or on a smartphone, tablet, or other mobile device that has a modern browser.

In this chapter:

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Opening a Page	52
Logging Out	52
Changing Your Password	53
Refreshing the Operator Interface	53
Using a groov View Mobile Device App	54
Using groov over the Internet	57

Opening View

1. Open your web browser or mobile device app (groov View for iOS or groov View for Android).

For groov Server:

- If groov Server is installed on the same computer, type https://localhost in the address bar of your browser.
- If groov Server is installed on a different computer, type https:// and the computer's hostname. For example, if the computer's hostname is RStarr-w7, you type https://RStarr-w7

You can use the IP address of the host PC instead of the hostname. However, if the PC is on a network with DNS and DHCP, the IP address is subject to change.

Make sure you type the **s**: http**s**://

For groov Box:

Type https:// and the *groov* Box's hostname or IP address as the URL. The hostname is printed on the top of the *groov* Box. (Your hostname will be different from this example.)

OPTO

N N

	ACTIVATION KEY: 0P225SW9TT7Q PRODUCT: GROOV-AT1 FRIENDLY NAME
Default hostname	Default opto-01-ab-c2 Serial 12000

For example, if the hostname is opto-06-ac-6f, you type https://opto-06-ac-6f Make sure you type http**s**. The **s** indicates it is a secure connection.

NOTE: If you've assigned a static IP address to the groov Box, use the IP address instead of the hostname to open groov.

2. Log in with your username and password.

Opening a Page

1. Click the navigation icon in the upper left of the screen.



- 2. Expand the page's category.
- 3. Click the link.

Logging Out

1. Click the gear icon on the top right-hand side.



2. Click Log out 'Username'. The login dialog box appears.

Changing Your Password

- 1. Click the gear icon on the top right-hand side.
- 2. Click Change Password.



3. Enter the current password and the new password two times.

Username:	Mary
Current Password:	
New Password:	
Confirm Password	:

4. Click OK.

Refreshing the Operator Interface

If the operator interface has been changed and saved, you can easily get the latest version. When you refresh View, the new changes appear.

- 1. Click the gear icon on the top right-hand side.
- 2. Click Refresh groov View.

	₽
Log out 'Mary'	
Change Password	
Refresh groov View	6

Using a groov View Mobile Device App

The free *groov* View apps for iOS and Android allow you to use View for one or more *groovs* on your smartphone or tablet in full-screen mode without the address bar, toolbars, and other things you see in a browser. To get a *groov* View app for your mobile device, go to your app store and search for "groov View."

To connect to groov the first time:

- 1. Install the *groov* View app on your iOS or Android device.
- 2. Tap the groov icon to start the app.

Connecting to groov in Android

1. Tap Connect to groov...

A prompt appears.

2. Type https:// and groov's hostname or IP address as the URL.

Using the iOS App

"Adding a groov to a groov App for iOS" (below) "Connecting, Editing, and Setting a groov as the Default" on page 55 "Using the iOS groov Settings" on page 57

Adding a groov to a groov App for iOS

Follow these steps in your iOS app to connect to *groov* the first time or whenever you want to add another *groov*.

1. Tap the groov icon to open a list view for adding one or more groovs.



2. Tap **to open the configurator**.

●०००० Verizon 중	1:15 PM	o 🖇 98% 💼
Cancel Ad	d New groov	Done
Hostname:	https://	
Port:		443
Username:		
Password:		
Full Screen:		
Passcode:		\bigcirc

- **3.** Enter the following information.
 - Hostname—Type https:// and groov's hostname or IP address.
 - **Port**—Enter the port number, usually 443.
 - Username and Password—Enter the username and password for this groov.

Additional Options

- Full Screen—Enable this for more space on the screen.
- Passcode—When enabled, the next time you connect to this *groov*, you will be prompted to enter a new passcode which will need to be entered each time for this *groov* on this device.
- 4. Tap Done.

Connecting, Editing, and Setting a groov as the Default

Follow these steps in your iOS app to connect, edit the configuration settings, or set a default groov.

1. Start the groov app to open a list of groovs.

If you haven't connected a *groov*, see "Adding a groov to a groov App for iOS" on page 54. If you have set and enabled a default *groov*, *groov* View opens instead. In this case, swipe right to return to the list view.

2. Tap a groov in the list to open its groov Options.



- **Connect**—Connects to the selected *groov*.
- Edit—Opens the configurator for the selected *groov* for you to edit the connection settings. The configurator screen screen is filled with the data from the selected device, and the title is the hostname or IP address of the device.
- Set as Default—Sets the selected groov as the default so that when you start the groov app it bypasses the list view and opens the default groov automatically in View. For this to work you also need to turn on Enable Default Device in the iOS Settings. See "Using the iOS groov Settings" on page 57. Only one device can be the default.
- Cancel—Exits groov Options.

Using the iOS groov Settings

To configure the following settings in iOS, open the Settings app and tap groov.

•०००० Verizon 🗢	3:25 PM	Ø∦ 84% ■ D			
Settings	groov				
GROOV® SETTI	NGS				
Hide Status B	ar	\bigcirc			
Enable Kiosk	\bigcirc				
Enable Defau	Enable Default Device				
Version R2.1a Copyright 2013	Opto 22				

- Hide Status Bar—ides the status bar that normally appears at the top of the screen.
- Enable Kiosk Mode—In Kiosk Mode the user cannot return to the list view with a right swipe.
- Enable Default Device—Use this option if you want to bypass the *groov* list when starting and go directly to the default *groov*. You will also need to assign a default *groov* in the *groov* Options. See "Connecting, Editing, and Setting a groov as the Default" on page 55.

Using groov over the Internet

If you're using a PC or mobile device to communicate with *groov* over the Internet rather than from inside your local area network, you can use either a VPN or port forwarding. However, a VPN is strongly recommended because it is much more secure. Talk with your IT Department to get a VPN set up. For more information on a VPN and port forwarding, see form 1796, the *Guide Networking Opto 22 Products*.

With a less-secure port forwarding connection, groov uses the following ports:

Port	For communication with
443 or 8443	groov Build and groov View (443 is the default)
10000	groov Admin (applies to groov Box only)

4: Troubleshooting and Additional Help

This chapter provides troubleshooting information and answers questions you may have about groov.

In this chapter:

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Basics	
Getting Started	
Working with groov	
Opto 22 Systems	

Troubleshooting

Q: In *groov* View on my laptop/HDTV/phone/tablet, all I see is a blank page. What's the matter?

A: Two possibilities:

- Your web browser may not fully support the modern standards *groov* is based on. Try downloading the latest version of your browser. Or try a different browser. We generally recommend Firefox or Chrome, but your device might work better with Safari or Internet Explorer.
- You may be logged in as a user who doesn't have access to any pages. Go to *groov* Build and check your users and groups to make sure the user has access. See Chapter 2: Building an Operator Interface for help.

Q: In *groov* View on my mobile device, I can't get the pages to load. How do I get to them?

A: First, make sure you have at least the minimum OS for your device:

- Android: 4.0.1 (Ice Cream Sandwich)
- iOS: 5.0

If you're still having problems, don't worry. We've seen some quirks depending on your device and browser. Here are some things to try.

• Try adding your own company domain to the hostname of the *groov* Box or *groov* Server PC. Sometimes the DNS (domain name server) won't resolve the hostname unless you add your

domain. Example: instead of https://opto-02-81-c2 try https://opto-02-81-c2.opto22.com (Your domain will be different. Note the period between the hostname and domain.)

 Try adding the port number to the hostname. Port 443 is the default; port 8443 is the secondary, so try them in that order. For example: instead of https://opto-02-81-c2 try https://opto-02-81-c2:443 (Note the colon between the hostname and port.)

Q: I'm in *groov* View, and some of the gadgets are grayed out with a yellow triangle. What's going on?

A: If a gadget is grayed out with a yellow triangle, either your HMI isn't communicating with *groov*, or *groov* isn't communicating with the controller or tag server, or the tag server isn't communicating with the control equipment.

Click the yellow triangle to display an information dialog box.



If the information dialog says that a tag is not available on the controller, make sure the strategy running on that controller matches the idb.txt you have associated with that IP address.

Once you've fixed communications, *groov* View will automatically restore the gadget to working order.

NOTE: The groov Box or groov Server polls the controller tag server for data once per second. This frequency cannot currently be changed.

Q: In *groov* View, some of the gadgets are grayed out with a manilla tag. What does this mean?

A: If a gadget is grayed out with a *no-tag* symbol, the gadget does not have a properly configured tag associated with it.



Once you've configured a tag for the gadget, *groov* View will automatically restore the gadget to working order.

Q: In *groov* Build, I can't see the dialog box buttons. How do I make them visible?

A: If you can't see dialog box buttons, your browser's font size may be set too high. Reduce the browser's font size so that you can see the buttons.

Q: I have groov Server and I'm not able to open groov. What should I do?

A: There might be a conflict with another service running on your computer. In this case, you might need to change one or both of the ports *groov* Server uses to run.

To change a port number, first consult with your IT manager, and then do the following:

1. Open the jetty.conf file installed on the *groov* Server computer. You'll find the file in Opto22\groov\jetty.

File	Edit	Format	View	Help	
slp	ort=	443			A
33					

- 2. Change the port as necessary.
- **3.** Save and close the file.
- 4. Restart groov Server and try again.

To restart groov Server:

- 5. Open the Windows Control Panel and click Administrative Services.
- 6. Select groov Server.
- 7. Click Restart.

Services			X
File Action View	v Help		
	Q 🗟 🛛 🖬 🐂 🖉 🖬 🖬 🚺		
Services (Local)	Services (Local)		
	groov Server	Name	De ^
		🔍 Function Discover	Pu
	Stop the service	端 Google Update Se	Kei
Res	Restart the service	Google Update Se	Kei
		groov Server	gro
		Group Policy Client	Th
	Description:	🔍 Health Key and Ce	Prc
	groov Server		
	Extended Standard		
	File Action View	File Action View Help Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Ser	File Action View Help Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Services (Local) Image: Ser

Q: I have a *groov* Box and a Windows computer, and I'm not able to locate my *groov* Box on the network. What should I do?

A: If you are using a Windows computer, you can use *groov* Find to locate the *groov* Boxes on your network. You *must* use *groov* Find if your network does not have DNS.

- 1. Insert the *groov* CD in your CD-ROM drive, then click the link to copy the Find application file to your computer.
- **2.** Open the Find application file.

If you have User Account Control (UAC) turned on, a message appears asking if you want Find to be allowed to make changes to your computer. Click Yes.



NOTE 1: If you are using a Windows account that does not have Administrator privileges (such as Guest), you will need to enter the Administrator User Name and Password in order to use groov Find. If you do not have this information, contact your IT department.

NOTE 2: Clicking Yes permits Find to have temporary administrative privileges to create an additional temporary IP address for each network interface on the computer. This enables Find to locate a groov Box on a network that does not have DNS and DHCP. If the network does not have DNS and DHCP, you will need to assign a static IP address to the groov Box in order to maintain communication. (See the groov Box User's Guide.) If the network does have DNS and DHCP, the temporary IP address is not used and is removed when you exit Find.

groov Find opens and automatically searches for groov Boxes on the network.

- ACTIVATION KEY: OP2255W9TT70 PRODUCT: GROOV-AT1 FRIENDLY NAME Default Inconstruction opto-01-ab-c2 Number Number
- **3.** Find the serial number on the top of the *groov* Box.

4. Locate the matching serial number in Find.

groov Find							
<i>groov</i> Fin	d		OF	PTO 22			
Use the Search For Devices button to find all of the <i>groov</i> Boxes that this computer can access. Search For Devices Find the serial number of your <i>groov</i> Box and select one of its links.							
Serial Number	Hostname	IP Address	Open in browser				
669005	opto-02-81-2F	10.122.0.233	Click togstart groov				
			· · · · · · · · · · · · · · · · · · ·				

If you do not see the serial number right away, wait 60 seconds and click Search for Devices.

5. Click the link "Click to start groov."

Q: I'm having trouble using Internet Explorer 10 with *groov*. What should I do?

A: You can try Chrome or Firefox instead if those browsers are available. But if you want to use Internet Explorer 10, do the following steps to make sure the browser is not reverting back to version 9 mode; *groov* is not compatible with Internet Explorer 9.

- 1. Open Internet Explorer 10.
- 2. If the menu bar is not already showing, right-click anywhere in the top border of the browser and select the Menu bar option.

~	Menu bar
	Favorites bar
	Command bar
	Status bar
	Snagit
	Adobe PDF

3. Open the Tools menu, and make sure that Compatibility View is not selected.

	Delete browsing history InPrivate Browsing Tracking Protection	Ctrl+Shift+Del Ctrl+Shift+P	
	SmartScreen Filter Manage add-ons	Same and	
Make sure this is option—— is not selected.	Compatibility View Compatibility View settings		
	Subscribe to this feed		

- **4.** Select Tools > Compatibility View settings.
- **5.** In the Compatibility View Settings dialog box, make sure that no *groov* IP addresses or hostnames are listed under "Websites you've added to Compatibility View."
- 6. Also, make sure that the compatibility options at the bottom of the dialog box are not checked.

	Compatibility View Settings You can add and remove websites to be displayed in Compatibility View.			
	Add this website:			
Make sure no <i>groov</i> IP addresses or hostnames are listed.	Websites you've added to Compatibility View:	e		
Make sure these options are not checked.	Display all websites in Compatibility View Display intranet sites in Compatibility View Download updated compatibility lists from Microsoft Learn more by reading the Internet Explorer privacy statement Qose			
7.	Click Close			

Basics

Q: Can I use a *groov* operator interface on my Android smartphone? my Mac laptop? my Linux computer? my MS Surface? my iPhone5?

A: Yes, yes, yes, yes, yes. You can use your *groov* HMI on virtually any device with a modern web browser, from an iPod touch all the way up to a browser-enabled high-definition TV.

That's because the HMI runs in the browser, and most modern web browsers adhere to open standards like HTML5, CSS3, and SVG. Using those standards without plugins, *groov* makes it possible to run your HMI on almost anything you want to use.

Minimum operating systems for mobile: Android 4.0.1 (Ice Cream Sandwich), iOS 5.0, Surface Windows 8.

Q: Does groov support different screen proportions, like 16:9 or 4:3?

A: Yes. *groov* supports all screen sizes, shapes, and proportions. The elements in your HMI flow to fit the shape of the screen.

Q: How safe is groov in terms of information security?

A: groov uses the same SSL (Secure Sockets Layer) as your bank: 256-bit encryption.

Q: You say I can use any modern web browser with *groov*. What does that mean?

A: Browser-based *groov* works reliably on a huge number of device, operating system, and browser combinations. Thanks to standards like HTML5, SVG, and CSS3, modern browsers are now more similar than they are different. We've seen *groov* work beautifully on HDTVs, phones of many shapes and sizes, and numbers of new devices, which we try out as fast as we can get our hands on them.

Have we tested every device, OS, and browser available? Of course not. And they're constantly changing. Fortunately browsers are free and download quickly, so if one doesn't give you the results you like, it's easy to try another. If you're having concerns, please share them with us.

Q: Can I use groov to build an HMI for my PLC system?

A: Absolutely! You can build an interface to monitor and control almost any automation system or equipment: Rockwell Automation/Allen-Bradley, Siemens, Wonderware, Schneider, Honeywell, Yokogawa, GE, Modbus, and many more.

We recommend Kepware Technologies' KEPServerEX as your communication platform. Huge numbers of drivers are available. Check the full list at www.kepware.com/Products/products_OPCServers.asp.

The cool thing is that you can build a *groov* operator interface to monitor and control everything on this list, even putting different systems or equipment in the same interface. You have the flexibility to design the interface you need.

Q: How can groov connect to all these automation systems?

A: It's simple: *groov* is built on industry standards rather than proprietary standards. *groov* operates as an OPC-UA client. If you have a communication platform like KEPServerEX, which includes an OPC-UA server, *groov* can talk to any driver you've purchased for the platform. That opens up a huge number of industrial automation systems, building automation systems, energy systems, and more.

Bottom line, your operators and other authorized users will be able to see pretty much whatever they need to in order to do their jobs better, save time, and keep equipment and processes in top condition.

Q: I'm a machine builder. What does groov do for me?

A: *groov* gives you an easy way to build an interface to your machine. And depending on where your machine is used (obviously not in harsh conditions), now you can use off-the-shelf commercial, networkable touchscreens (anything with a modern web browser) as the operator interface to your machine.

The easiest way to do this is to get the free *groov* View for iOS app for an iPad, iPhone, or iPod touch. Once your HMI is running on the app, use Apple's Guided Access feature to put the device into kiosk mode. Guided Access restricts the device to a single app, disables the hardware buttons, and keeps the device from sleeping, effectively providing a low-power, low-cost, wireless, touch-screen operator interface locked down for an intended use only.

Q: How often is the data from my control system updated?

A: Your interface in *groov* View polls the controller or tag server once per second, so you'll see the live data in blue text updated every second. Currently you can't change this rate.

Getting Started

Q: What's the hostname?

A: The hostname is the name your network a *groov* Box or other devices, like computers, on your network. The default hostname for a *groov* Box is on the label on the Box. For *groov* Server, the hostname is the name of the groov Server PC on the network. To get to *groov*, you type https:// and the hostname in your web browser.

Example for a *groov* Box: If the hostname on a *groov* Box label is opto-02-2b-a6, you open a browser and type: https://opto-02-2b-a6

Example for *groov* Server: If the hostname of the PC where *groov* Server is installed is win8-server, you open a browser and type: https://win8-server.

Notice for both examples that you have to type https, not just http. The "s" indicates it's a secure connection.

You can change the hostname from the default to whatever you want to use. See "Editing a Controller's or OPC-UA Server's Address" on page 24.

Q: Why are there two passwords for the groov Box?

A: When you first set up the *groov* Box, you have to enter two username and password combinations. That's because they're for two separate purposes:

- One is for administering the *groov* Box using *groov* Admin. Here you do things like change network settings or check the status of the Box.
- The other is for building and viewing your operator interfaces using *groov* Build and *groov* View. Here you'll also set up usernames and passwords for the other people in your company who will be using *groov*.

For system security, it's extremely important that you guard these login credentials carefully. Treat them as if they were passwords for your bank account. And **don't lose them**. Since they cannot be retrieved, **you will lose your work if you lose them**.

Q: Is it possible to back up my groov HMI project?

A: Absolutely, and it's really important that you do so. See the Chapter 2: Building an Operator Interface for backup and restoration steps.

Q: How does groov get my tag database?

A: For an Opto 22 system, you open *groov* Build in your browser and point it to two things: the hostname or IP address of your SNAP PAC or OptoEMU Sensor, and the strategy.idb.txt file (see next question).

For all other automation systems, you open *groov* Build in your browser, point it to your tag server (we recommend the KEPServerEX communications platform), and import your tag database.

With just these two pieces of information, the *groov* Box knows how to connect to your system, either to get data or to send data.

If you make changes to your tag database, import the tags again (or for an Opto 22 system, point *groov* to the .idb.txt file again) so you can use the changed data in *groov*.
Q: What's the strategy.idb.txt file and where do I find it?

A: For an Opto 22 system, your SNAP PAC controller is running the control program (strategy) you built in PAC Control. When you saved that strategy, the .idb.txt file was automatically created on your PC. It's a simple text file that includes all the tags in your tag database: I/O points, variables, and more. The *groov* Box stores this file and reads the tag information in it.

You'll find the .idb.txt file on your PC in the same directory as your other strategy files. If you're using *groov* with an OptoEMU Sensor, you can get the OptoEMU Sensor.idb.txt file on opto22.com.

Btw, some computers have common file type extensions hidden. Since .txt is a common file type, your computer might be hiding the extension from you, in which case you will see two files with the same name, the name of your strategy. Just select the file that does not have the PAC Control icon next to it.

Q: Can I VPN directly into my groov Box?

A: No, the *groov* Box is not a VPN server, which is required if you want to use VPN to communicate with *groov*. Find out if your company network has a VPN server. Many do, usually to let employees safely access the network from home or a remote site. Most smartphones have a VPN client built into them. For more information, see form 1796, the *Guide to Networking Opto 22 Products*.

Working with groov

Q: How do I build an HMI?

A: It's easy:

- 1. On your computer, open a web browser and log into *groov* Build. On the left under Pages, click Add Page.
- 2. In the lower-right corner of the screen, open your Tags tree. Choose a tag, pick a gadget from the list, and drag it onto the page. In the upper-right corner of the screen, assign gadget properties (labels, colors, etc.) as you wish. Or you can choose the gadget first and then assign a tag.
- **3.** Click the Handheld tab to see how the layout will look on a smartphone. You can move things around or change their sizes.
- **4.** Save and switch to *groov* View to see and test your HMI. Remember that live values from your system are always in dark blue text.

Q: Can I build an HMI from my smartphone or tablet?

A: Mostly no. Currently you'll use a computer—or a Windows Surface with Internet Explorer 10 and a mouse plugged into the USB port. Phones are mostly too small for the job, but a later version of *groov* will likely support more tablets for *groov* Build.

Q: Can I use tables in groov?

A: You can select individual elements (indices) of a table. *groov* supports all of these data types: integer, float, and string variables and tables, and analog and digital I/O.

Q: How do I use timers/PIDs/Scratch Pad in groov?

A: groov supports integer, float, and string variables and tables, and analog and digital I/O. To use a timer, elements in a PID loop, Scratch Pad elements, or other data you need in a groov HMI, just periodically move the data you want into a variable. Voilá! groov can see and use it.

Q: Can I change more than one tag with a single gadget, or stack gadgets to do two things at once?

A: Sorry, no. Currently *groov* supports only one tag per gadget. And if you stack gadgets, the one on top wins: it's the only one that will be functional.

Q: Can gadgets be restricted to particular operators?

A: Operator permissions are based on a page, so everything on one page must be OK for the operator to see and change. If some operators should be able to see a gauge and some should not, for example, just create two pages—one that includes the gauge and one that doesn't. Then assign user rights to the pages appropriately.

Q: Can you choose who can edit which pages?

A: At present anyone designated as an Editor can edit all pages on one *groov*. A second *groov* would give you the option to assign different Editors to different pages.

Q: Is the plot gadget realtime or historical?

A: Realtime

Q: In future versions, will there be historic graphs and reports?

A: While we can't comment on future features right now, we're interested in hearing what features you need. Note that you can get historic graphs now with most HMIs, including Opto 22's PAC Display. So you can have a full HMI that shows historical trends, plus a groov interface that shows current trends for specific items.

Q: Are future releases included in the annual maintenance cost?

A: The Maintenance Plan provides updates and upgrades for the feature set at the time you bought your *groov*. Major new features (which not all customers may want) will probably be sold separately.

Q: How do I get my free updates?

A: First, make sure you activate *groov*. Go to activate.groov.com and follow the steps. If you have more than one *groov*, be sure you activate each one.

Once you've activated and installed your license file, you can get updates at manage.groov.com. We'll also notify you by email when an update is available.

Opto 22 Systems

Q: I'm talking to Opto 22 equipment and I can't find my strategy .idb.txt file. Where is it?

A: Your SNAP PAC controller is running the control program (strategy) you built in PAC Control. When you saved that strategy, the .idb.txt file was automatically created on your PC in the same

directory as your other strategy files. If you're now using a different PC, you'll need to get the .idb.txt file from the other computer.

If your computer hides common file type extensions (some do), you'll see two files with the same name, the name of your strategy. Just select the file that does not have the PAC Control icon next to it.

NOTE: If you're using groov with an OptoEMU Sensor, you can get the OptoEMU Sensor.idb.txt file on opto22.com.

Q: What's the minimum PAC firmware requirement for groov?

A: The SNAP PAC controller your *groov* connects to must be running 9.2 or newer firmware. If you're using *groov* with an OptoEMU Sensor, you need update file R3.0a or newer.

Q: How many controllers does one groov support?

A: Lots. We've tested with large numbers of controllers and tags and have not yet seen any performance issues.

Q: If a PAC controller is connected to B3000 serial brains, can I get those tags in *groov*?

A: Yes. If the tag is in the controller, it can be displayed in *groov*.

Q: Can I use *groov* with my FactoryFloor system? I have an Ethernet card.

A: Yes, but not directly. *groov* works with all SNAP PACs running 9.2 firmware or higher (SNAP PAC S-series controllers, SNAP PAC R-series controllers, SoftPAC software-based controller), and with OptoEMU Sensor energy monitoring units running update file R3.0a or newer.

groov does not work with Opto 22 FactoryFloor, SNAP Ultimate I/O, SNAP-LCSX, or other legacy controllers, or pre-9.2 SNAP PACs.

However, it's still possible to use *groov* with these legacy systems by installing KEPServerEX with the OPC Connectivity Suite. Connect to your FactoryFloor OPC Server (which is an OPC-DA server). Then *groov* (which is an OPC-UA client) connects to KEPServerEX, and you can import your tags.

Normally *groov* references the names of I/O points in a SNAP PAC controller running a PAC Control strategy; *groov* does not directly access Opto 22 brains. If you have the Kepware Opto 22 Ethernet OPC Server, however, you can add tags to connect directly to I/O.

Q: Can I use groov to access I/O points on my SNAP PAC brain?

A: Yes, through a SNAP PAC controller. *groov* does not access the brain directly; it works through a SNAP PAC controller running a PAC Control strategy.

A: Extended Character Set

This appendix provides a list of the ASCII extended character set which you can use in gadget text when you are building an operator interface on a Windows PC. If you have a Mac, go to www.adobe.com/type/pdfs/characcessmac.pdf. To enter a character from this chart, hold down the ALT key and enter the number on the keypad. For example ALT+236 produces the infinity symbol, ∞ .

Dec	Sym	Dec	Sym	Dec	Sym	Dec	Sym								
128	Ç	144	É	160	á	176		192	L	208	Ш	224	α	240	≡
129	ü	145	æ	161	í	177		193	T	209	⊤	225	ß	241	±
130	é	146	Æ	162	ó	178		194	т	210	π	226	Γ	242	2
131	â	147	ô	163	ú	179		195	ŀ	211	L	227	п	243	\geq
132	ä	148	ö	164	ñ	180	-	196	-	212	F	228	Σ	244	ſ
133	à	149	ò	165	Ñ	181	╡	197	+	213	F	229	σ	245	J
134	å	150	û	166	a	182	╢	198	þ	214	Г	230	μ	246	÷
135	Ç	151	ù	167	o	183	П	199	┠	215	╉	231	τ	247	~
136	ê	152	ÿ	168	S	184	Ŧ	200	L	216	ŧ	232	Φ	248	ο
137	ë	153	Ö	169	F	185	╣	201	F	217	٦	233	Θ	249	•
138	è	154	Ü	170	٦	186		202	<u>ال</u>	218	Г	234	Ω	250	•
139	ï	155	¢	171	1⁄2	187	٦	203	T	219		235	δ	251	\checkmark
140	î	156	£	172	1⁄4	188	IJ	204	ŀ	220		236	8	252	n
141	ì	157	¥	173	i	189	Ш	205	=	221		237	φ	253	2
142	Ä	158	Rs	174	«	190	Ę	206	╬	222		238	3	254	
143	Å	159	f	175	»	191	٦	207	⊥	223		239	\cap	255	

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B: Network Cameras

The Video gadget works with IP cameras that can serve a single image in response to an http request without the need for an ActiveX control.

We have successfully used the following cameras in our projects:

- Foscam Fi8910w
- Foscam Fi9802w
- Vivotek FD8361
- Vivotek IP8352

If you are using a make or model camera other than ones listed here, you can try using one of the example URLs described in the sections below.

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Serving a Single Image in Response to an HTTP request

groov does not support streaming. Instead it uses a web browser to grab a snapshot of what the camera is currently aimed at. Therefore, when you set up a Video gadget you cannot simply paste the camera's IP address (like you can in your browser). Nor can you use the link that leads to the camera video stream. Instead you need to construct a link that will grab a snapshot of what your camera is currently aimed at. Your link will look something like this: http://123.123.123.123/snapshot.cgi

Every camera is different so you will have to look in your camera's documentation to find out what your specific camera uses. It might be called either a *snapshot* or *single shot*.

TIP: To find URL information for your camera on the Internet, try doing a search using your camera model number and the word "snapshot."

Setting up the Camera's Username and Password

If your camera requires a password, you will need to include the user name and password in the URL that the browser passes to the camera.

NOTE: Not all cameras use the same format, so you will need to refer to your camera's documentation for the exact syntax.

1. Construct the URL to include the user name and password.

For example:

http://123.123.123.123/snapshot.cgi?user=yourusername&pwd=yourpassword

Make sure to use your camera's IP address and link information, and use the appropriate user name and password to replace *yourusername* and *yourpassword*. If you do not provide the user name and password in the URL, View will display an empty box instead of the image and prompt you for the user name and password.

NOTE: The link will not be secure because you are passing the username and password in plain text, so it is easy to sniff.

2. Open the URL in a new browser tab.

You should see a static picture.

3. Try clicking Refresh or Reload in the browser.

If the static picture updates to a new picture, this means you've got a camera and a URL that will work with the *groov* app.

4. Copy and paste the URL into the video gadget, and then save the project.

In View the image is refreshed at the rate set in Configure > Project in groov Build.

NOTE: It is the browser that polls the camera, not the groov box. So the browser that needs to have network access, permissions, etc to access the camera, not the groov box.

If you use this procedure and cannot get the web browser to display a static image from the camera, it is not a *groov* issue. It is an issue with the camera itself or its configuration, the browser or browser settings, the network (e.g. not on same subnet), or network permissions.

Foscam Cameras

Foscam Fi8910w

See foscam.us/products/foscam-fi8910w-wireless-ip-camera.html

Sample URL:

http://123.123.123.123/snapshot.cgi?user=opto&pwd=opto22 Change the IP address to match your internal or external IP address.

For example, if this camera were set up at Opto 22, the URL would be as follows;: http://opto22.com/snapshot.cgi?usr=admin&pwd=masterpassword Change the user and password (pwd) to match the configuration of your camera.

Foscam Fi9802w

See foscam.us/outdoor-cameras/foscam-fi9802w-wireless-ip-camera.html

Sample URL:

http://123.123.123.123/cgi-bin/CGIProxy.fcgi?cmd=snapPicture2&usr=opto&pwd=opto22

- 1. Change the IP address to match your internal or external IP address.
- 2. Change the user and password (pwd) to match the configuration of your camera.
- 3. If you are using a different port than port 80, you will need to add that to the URL.

For example, some Foscam cameras use port 88, so 88 is added to the URL as follows:

http://123.123.123.123.123.88/cgi-bin/CGIProxy.fcgi?cmd=snapPicture2&usr=opto&pwd=opto22

Vivotek Cameras

Cameras tested:

- Vivotek FD8361
- Vivotek IP8352

For details on how to construct a URL for a Vivotek camera and configure security, see the documentation that came with the camera.

Example URL:

Here is an example of a URL to use with a Vivotek camera that is compatible with groov.

http://opto22.groov.com:8082/cgi-bin/viewer/video.jpg?channel=1&resolution=640x480&quality=3

This camera is on port 8082, and it has been configured with a user *viewer* that has no username or password. Your camera may be configured differently.

Viewing a Camera Outside the Network

If you wish to view a camera image from outside your network, you need to ensure your camera can be accessed from outside the local area network it is configured on. Please discuss this with your IT department to set up a VPN or allow a *port forward* on your router to the camera.

CAUTION: Be aware that anyone with access to groov Build can view the username and password to the camera in clear text. This should be accounted for when setting up access to groov Build and access to the camera.

Changing the Video Update Rate

To change the rate that *groov* updates the video feed, in Build go to Configure > Project to open the Project Settings dialog box. The Video Update Period determines how often in seconds a video

gadget will update the video feed. The default is 0.5 seconds, the fastest setting possible. The Video Update Period applies to all video feeds in your *groov* project.

If you have a fast Internet connection and are not concerned about data use, then you can use the fast setting (0.5 seconds) for a smoother video. However, if you have slower connection, the video might not be able to keep up, and you should back off the rate by entering a bigger value. Also, if you have a data use cap, you should probably back off the rate.

Satellite or cell modem networks may require refresh rates of 5 seconds or slower. For example, the default 0.5 seconds may be too fast for some ADSL connections.

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