KPI Tool Installation Instructions

(For help/assistance send an email to wireless-kpi-tool@cisco.com)

Contents

Table of Figures	1
Installation Prerequisites	1
Installation Steps	2
setup_config.yaml_readme	3
SSH2Influx: adding more WLCs and generating encrypted credentials	4
setup_telemetry_readme	5
grafana_email_alert_readme	5

Table of Figures

Figure 1	6
Figure 2	6
Figure 3	6
Figure 4	7
Figure 5	7
Figure 6	7
Figure 7	8
Figure 8	8
Figure 9	9
Figure 10	
Figure 11	
Figure 12	
Figure 13	
Figure 14	
Figure 15	12

Installation Prerequisites

- 1. 4 CPUs minimum
- 2. 16G RAM minimum
- 3. 150G HD minimum

- 4. Ubuntu 22.04.3 LTS or newer
- 5. Correct time and TZ configured
- 6. apt updated
- 7. If using a VM, only ESXi version 7.0 has been verified
 - a. If the server will be a VM, then you must 'Expose hardware assisted virtualization to the guest OS' under CPU before powering on, and starting installation. See <u>Figure 14</u> for where this can be found under VM

Installation Steps

- 1. Create a directory 'container_files' in a directory of the user's choosing
- 2. Copy the kpi-tool-files.tar into the ./container_files directory
- 3. Untar kpi-tool-files.tar

```
cisco@wireless-esc-auto-5:~/container_files$ tar -xvf kpi-tool-files.tar
```

- Edit the setup_config.yaml file. See section <u>setup_config.yaml_readme</u> in this document for an explanation of the different fields. Note: remove any unused 'wlc' entries
- 5. Run installer.sh

cisco@ wireless-esc-auto-5:~/container_files\$./install.sh

- 6. Following instructions as they appear:
 - a. You may be prompted to provide the password of the user logged in (for sudo access)
 - b. During postfix installation you will be presented with two (possible three) semi-GUI screens. See Figures 4-6 below for screen shots (*Note: figure 4 may or may not appear before the two prompts*). Figure 5 shows the selection (Internet Site) to choose while Figure 6 shows that the FQDN of the server is auto-populated. If for some reason it is not, using this figure as an example for what to supply based on the server hostname and domain.
 - c. The final step of the installation script will be to start Docker Desktop. The script will start the Desktop and then will immediately end. Instructions for what to do after Docker Desktop is up will be displayed. You will need to wait for the first GUI splash screen to appear (see Figure 1 below). You will need to respond to the splash screen and two others before the Desktop will continue. Figures 1–3 below are screen shots of all three screens. Please use the following selections for each:
 - i. Splash screen should be 'Accept the license agreement' (Figure 1)
 - ii. Second screen should be 'Continue without signing in' (Figure 2)
 - iii. Third screen should be 'Skip' (Figure 3)
- 7. Do not proceed until after Docker Desktop is fully up and running. <u>Figure 7</u> below shows what Docker Desktop will look like when it's fully up and running.
 - a. The first notice will be to add the logged in user to the kvm group and then to start the Container once Docker Desktop is fully up and running

```
cisco@ wireless-esc-auto-5:~/container_files$ sudo adduser $USER kvm
cisco@ wireless-esc-auto-5:~/container_files$ docker compose up
```

- Once the Docker Container is started (*Note: it will take several minutes to download, install, configure and start*) you can proceed with the second notice. <u>Figures 8 and 9</u> below show what the terminal screen and Docker Desktop GUI (respectively) will look like when the Container is up:
 - In a new terminal window, start the SSH2Influx scripts
 Caution: if you copy the commands below from this document it will insert a CRLF between 'python3' and the line below it. You'll need to remove them so everything is on a single line, before pasting the command.

At the end of the install.sh script the same commands will be printed to the terminal window (see Figure 15 below). Copying from there will result in everything remaining on a single line

cisco@ wireless-esc-auto-5:~/container_files/SSH2Influx\$ python3
SSH2Influx.py -p wncd-collector.yaml -f 15
cisco@ wireless-esc-auto-5:~/container files/SSH2Influx\$ python3

 Use the telemetry txt files found under ./container_files to copy/paste into the configuration for each WLC that will be monitored. See the section <u>setup_telemetry_readme</u> in this document for instructions.

SSH2Influx.py -p ap-collector.yaml -f 60

- 10. Update Grafana alert email address. See section <u>grafana email alert readme</u> for instructions.
- 11. The KPI Tool is now fully installed and configured. To see the graphs, do the following:
 - a. Connect to Grafana using a browser (see <u>Figure 10</u> below for login screen) <u>http://<server_ip>:3000</u>
 - b. Default credentials are admin/Cisco123 (see section <u>grafana email alert readme</u> for instructions on how to change)
 - c. Go to the hamburger menu at the top left, select Dashboards and then click on KPI Dashboard

If you need help/assistance please send an email to wireless-kpi-tool@cisco.com

setup_config.yaml_readme	
	Domain name for the server
<pre>initial_setup: domain name: mydomain.com</pre>	The server's host name
hostname: host1 server_network_and_mask: 192.168.0.64/26<	The server's network with matching mask



SSH2Influx: adding more WLCs and generating encrypted credentials

If in the future another WLC is to be monitored, the following steps must be taken

- 1. Stop the 'SSH2Influx' script that was started under <u>step 8</u> of the installation steps above, by using CTRL-BREAK/CTRL-C
- 2. Use crypto.py under ./container_files/SSH2Influx to generate a new pair of username/password encrypted credentials
 - a. Run the script

cisco@ wireless-esc-auto-5:~/container_files/SSH2Influx\$ python3
crypto.py

- b. Press 'Enter' when asked if the existing key file should be used
- c. Supply the username and press 'Enter'
- d. Supply the password (input will be masked) and press 'Enter'
- e. Copy the encrypted username and password that are displayed
- 3. Edit the optionsconfig.yaml file in the ./container_files/SSH2Influx directory
- 4. Add a new entry under the section 'device_inventory:', following the same format and indentation as the existing WLCs
- 5. For username and password, paste the encrypted values from step 2 above
- 6. Save the file
- 7. Edit the wncd-collector.yaml under ./container_files/SSH2Influx
- 8. Add a new entry under the second 'hosts:' following the same format and indentation as the existing WLCs
- 9. Save the file
- 10. Follow step 8 in the installation steps above to start the scripts again
- 11. Follow the instructions in the section <u>setup_telemetry_readme</u> to add the telemetry statements to the new WLC
 - a. Note: There will not be a telemetry_<alias>.txt file created so you will need to use one of the existing files, manually change the 'source-address' to reflect the new WLC's IP address and then copy/paste into the new WLC

setup_telemetry_readme

Each WLC alias entered in the setup_config.yaml under <u>step 4</u> of the installation steps above will have a corresponding telemetry_<alias>.txt file created in the ./container_files directory. Copy all the statements from the file and paste into the running configuration of the WLC, using the WLC CLI. Use the following steps to access the configuration mode and paste in the contents of the file:

- 1. Start a CLI session (ssh, telnet or console) to the WLC
- 2. Type 'config t' to enter configuration mode
- 3. Copy all lines from the corresponding telemetry_<alias>.txt file, and paste into WLC
- 4. Type 'end' to exist configuration mode
- 5. Type 'write' to save the changes

Repeat the steps for updating the next WLC

grafana_email_alert_readme

There are two alerts configured:

- Alert when CPU exceeds 85%
- Alert when memory drops below 21%

To update Grafana email address for alerts, do the following:

- Connect to Grafana using a browser (see <u>Figure 10</u> below for login screen) http://<server_ip>:3000 Default credentials are admin/Cisco123 (changing user/password can be found in this section)
- 2. Go to the hamburger menu at the top left, and then select Alerting (see Figure 11 below)
- 3. Under Alerting, select Contact points and then on the 'pencil' icon to the right of Dashboard Admin (see Figure 12 below)
- 4. Edit the 'Addresses' field and then click Save contact point (see Figure 13 below)

To change default credentials do the following:

- 1. Under the same hamburger menu mentioned in <u>step 2</u> above, select Administration
- 2. From the Administration menu select Users
- 3. In this screen you can create a new user as well as edit the default user by clicking on it in the list



<u></u>	
Welcome to Docker Desktop	
Sign in to connect to your Docker Desktop subscription or access online features.	
Sign up	
Already have an account? Sign in	
Continue without aigning in	

Tell us about	he work you do
What's your role?	w
What will you use Docker for?	
Testing applications	Data science
Deploying applications	AI/ML
Hobby projects	Learning or teaching
Local development	For work
Inspect images	Debugging images
I don't know	Other (specify)
Skip	Continue



Figure 5

kage configuration		
	Postfix Configuration General mail configuration type:	
	No configuration	
	Internet site Internet with smarthost	
	Local only	
	<ok> <cancel></cancel></ok>	

ail to and from <roo bot@example.org has his name will also b hus, if a mail addre kample.org.</roo 	<pre>rt: please do not make your told you to. we used by other programs. It ess on the local host is foo@</pre>	machine send out mail from root@example.org unless should be the single, fully qualified domain name (FQDN). example.org, the correct value for this option would be
ystem mail name:		



ন cisco@wireless-esc-auto-5: ~/container_files	Q = _ 0 ×
<pre>grafana logger=ngalert.state.manager t=2023-12-19T20:30:11.181044034Z level=info msg="Warming grafana logger=ngalert.state.manager t=2023-12-19T20:30:11.285079382Z level=info msg="State c tates=2 duration=104.03229ms</pre>	state cache for startup" ache has been initialized" s
<pre>grafana logger=ngalert.scheduler t=2023-12-19T20:30:11.285126067Z level=info msg="Starting sc grafana logger=ngalert.multiorg.alertmanager t=2023-12-19T20:30:11.285185077Z level=info msg= mer"</pre>	heduler" tickInterval=10s "Starting MultiOrg Alertmana
grafana logger=ticker t=2023-12-19T20:30:11.285200997Z level=info msg=starting first_tick=202 grafana logger=grafana.update.checker t=2023-12-19T20:30:21.187673029Z level=error msg="Updat d to get latest.json repo from github.com: Get \"https://raw.githubusercontent.com/grafana/grafan	3-12-19T20:30:20Z e check failed" error="faile a/main/latest.json\": dial t
cp 185.199.108.133:443: i/o timeout" duration=10.001201916s grafana logger=plugin.signature.key_retriever t=2023-12-19T20:30:21.251436603Z level=error ms manifest keys" error="Get \"https://grafana.com/api/plugins/ci/keys\": context deadline exceeded le awaition beaders\"	g="Error downloading plugin (Client.Timeout exceeded whi
grafana / logger=ngalert.sender.router rule_uid=b7b032bf-76bd-4b22-8ff8-a69bdeb0a7a8 org_id=1 t 92Z level=info msg="Sending alerts to local notifier" count=1	=2023-12-19T20:30:31.9803230
grafana logger=ngalert.sender.router rule_uid=ddd87f52-b906-4b99-ba9c-34c79eeefe7b org_id=1 t 78Z level=info msg="Sending alerts to local notifier" count=1	=2023-12-19T20:30:36.0990778
<pre>grafana logger=infra.usagestats t=2023-12-19720:31:08.8036168762 level=info msg="Usage stats telegraf 2023-12-19720:31:24Z I! Loading config: /etc/telegraf/telegraf.conf logger_angle_</pre>	are ready to report"
<pre>gradind p togger=ingatert.sender.router fute_fute=brosserrous-abs/dec2-ara-abs/dec0aras org_td=1 t 58Z level=info msg="Sending alerts to local notifier" count=1 grafana logger=plugin.signature.kev retriever t=2023-12-19T20:31:31.253695993Z level=error ms</pre>	======================================
manifest keys" error="Get \"https://grafana.com/api/plugins/ci/keys\": dial tcp 34.120.177.193:44 ut exceeded while awaiting headers)"	3: i/o timeout (Client.Timeo
grafana logger=ngalert.sender.router rule_uid=ddd87f52-b906-4b99-ba9c-34c79eeefe7b org_id=1 t 392 level=info msg="sending alerts to local notifier" count=1	=2023-12-19T20:31:37.6941900
grafana logger=ngalert.sender.router rule_uld=b/b0320F/000-4022-8TT8-a0900e00a/a8 org_ld=1 t 392 level=info msg="Sending alerts to local notifier" count=1 	=2023-12-19120:32:30.0840089 =2023-12-19T20:32:35.0823205
46Z level=info msg="Sending alerts to local notifier" count=1	

Docker Desktop Upgrade plan	Q Search for images, containers, volumes, extensions a	nd more Ctrl+K	😆 🏟 Sign	in e –	o ×
Containers	Containers Give feedback				
(①) Images					
Columes	Container CPU usage () 1 26% / 400% (4 cores available)	Container memory us 192 7MB / 3 650	sage 🕕	Show charts	~
A Builds NEW		172.71107 0.000			
Dev Environments BETA	Q Search	nly show running containers			
Docker Scout	Name Image	Status CPU (%)	Port(s) Last s	Actions	
Learning center	□ × Secontainer_files	Running (3/3) 1.26%	4 minu	• :	
Extensions •	b31612865a4e	Running 0.47%	8086:8086 🗹 4 minu		
Extensions :	telegraf 19cec96b19fe	Running 0.29%	57000:57000 🗗 4 minu		
Add Extensions	daveb2701e8d grafana/grafana;	Running 0.5%	<u>3000:3000</u> 🗗 4 minu		
				Showing 4	items
	Walkthroughs				×
	Multi-container applications 8 mins	\$ docker init	Containerize your app 3 mins	plication	
	View more in the Learning center		- 11		
👉 Engine running 🕨 🕕 🕛 🗄	RAM 2.87 GB CPU 0.76% Disk 61.31 GB avail. of 67.32 GB 💥	Not signed in		🛛 v4	.26.0 Q

Figure 10	
the state of the s	
the second s	
	Welcome to Grafana
	Email or usersame
	email or usemane
	password
	Log in
[] Documenta	tion O Support 62 Community Open Source v10.1.5 (849c612fcb)



	G			Q Search or jump to		□ ctrl+k		+- O 🔉 🕥
Click here then	E Home							© ^
	G Home							
	☆ Starred							n Tutorials Community Public Slack
	B Dashboards							
	Explore							Remove this panel
click here	Alerting	×						
	Connections							
	Administration ~	Grafana fundamentals Set up and understand Grafana if you have no prior experience. This tutorial goldes you through the entre process and covers the "Gata source" and "Dashboardi" steps to the right.					×	
					Latest	from the blog	19 19 19 19 19 19 Alama Labs in 2023: Top 10 moments of the ou ask unto score 2023, we would give it a 10 when Orot Awards and the lunch of a four-part of anded our OSS offerings (welcome to the family con fully managed Grafana Cloud Soliton, which Addition Observability, cost management tools, / 17 17 00 Tolemetry best practices: A user's guide	year or of 10. Noti only because we released of the Grafana project with the first-ever commentary series. But sho because we crafane Pyrococepe and Grafane Beyleff in new includes Frontend Observability, and more.
					and the second		enTelemetry ou've landed on this blog, you're likely either cor mey or you are well on your way. As OpenTelemy observability community but also internally at G	nsidering starting your OpenTelemetry etry adoption has grown, not only within irafana Labs and among our users, we

Fiaure	12
rigaro	

Ø		Q Search or jump to	📼 ctri+k		
Home > Alerting > Contact ;				, August 1	
Alerting Aert rules Contact points Notification policies	Contact points Choose how to notify your contact points when an alert instance Contact points Define where notifications are sent, for example, email or Stack. Contact point name			Choose Alertmanager C Grafann ~ + Add contact point More ~ Health Actions	
Silences				Unused / ⊜ eb	
Groups				Click h	here
	Notification templates Create notification templates to customize your notifications. Template No templates defined.		Actions	+ Add template	

Ó		Q. Search or jump to	🖾 ctrl+k				+~ 0	a c	۲
Home > Alerting > Contact p									
A Alerting	Contact points Choose how to notify your contact points when an alert instance f					Alertmanager			
Contact points	Update contact point								
Notification policies Silences Groups	Name * Dashboard Admin bitter								
Admin	Email ~		▷ Test	Duplicate	⊜ Delete				
Edit this field then click Save contact point	Addresses You can enter multiple amait addresses using a ⁴⁴⁷ "W" to ⁴⁴⁸ sensarisor Stefforre@cisco.com > Optional Email settings								
	Notification settings								
	Add contact point Integration Save contact point Cancel								

Edit settings - Ubuntu-Automat	ion-4 (ESXi 7.0 U2 virtual machine)				
Virtual Hardware VM Options	k adapter 🗉 Add other device				
✓ ⁽¹⁾ CPU	4 ~ 0				
Cores per Socket	1 Y Sockets: 4				
CPU Hot Plug	Enable CPU Hot Add				
Reservation	None V MHz V				
Limit	Unlimited V MHz V				
Shares	Normal V 1000 V				
Hardware virtualization	Expose hardware assisted virtualization to the guest OS 1				
IOMMU	Expose IOMMU to the guest OS				
Performance counters	Enable virtualized CPU performance counters				
Scheduling Affinity	Hyperthreading Status: Active Available CPUs: 28 (Logical CPUs)				
	CANCEL				

€ cisco@ubuntu-automation-5: ~/conta	iner_files	Q ≡	×
***************************************	ck*		
st Once Docker Desktop is fully up and running start Docker Container by executing the following			
* commands (without quotes) in a separate terminal session under ./container_files directory:			
* 'sudo adduser \$USER kvm'			
* 'docker compose up'			
* Unce bocker container is fully up and running you may proceed to the next step			

* Step: Start SSH2Influx Scripts			

 Unce Docker Container is fully up and running start the following scripts in two separate the following scripts in two separate 			
* terminal sessions under ./container_files/ssH2Influx directory:			
*			
* 'nython3 SSH2Influx ny -n wncd-collector yaml -f 15'			
* 'python3 SSH2Influx, py -p ap-collector, yam - f 60'			

SCRIPT ENDED 2024_03_15_10_55_AM			
cisco@ubuntu-automation-5:~/container_files\$			