COSTCO SDWAN INSTALL GUIDE V2.1

Section 1: Arrival to Site

1.1 Call NET Helpdesk 608.827.2285 to log in.
1.2 Check in with Manager and locate the new SDWAN package and Cradle point package.
1.3 Have Manager on duty perform a Manual store close out.
1.4 Complete Equipment Inventory

Inventory Shipped to Location (SDWAN Routers only):

- ISR1100 Router (SDWAN) (Qty 2)
- 2U rack mount tray (Qty 2)
- 2U rack mount spacer tray (Qty 2)
- Power cords (2 qty)
- VIP-SFP-1GE-BASET= (2 qty) or Finisar
- Cat6 blue 1 foot patch cord (1 qty)
- Cat6 10 ft blue patch cords (9 qty)

Inventory Shipped to Location (SDWAN Routers + Cradlepoint):

- Cradlepoint
- StarTech USB gear 4 port hub (1 qty)
- 2U rack mount tray (Qty 2)
- 2U rack mount spacer tray (Qty 2)
- DB9 to RJ45 adapters (4 qty)
- Rack Mount Ear Bracket (2 qty)
- USB – USB cable (1 qty)
- Cat6 10 ft blue patch cords (9 qty)
- Cat6 blue 1 foot patch cord (1 qty)
- VIP-SFP-1GE-BASET= (2 qty)
- Power cords (3 qty)
- ISR1100 Router (SDWAN) (Qty 2)
- 4 QTY LTE Antenna

Materials provided by technician:

- (8) 5ft yellow patch cord
- (6 qty) Rack mount screws (make sure tech brings)
- (6 qty) Cage nuts (make sure tech brings)
- Velcro
- Cable tester
- Cable labeler
- Laptop

1.5 Installation of equipment can begin after check in. **DO NOT disconnect connections from the existing routers until NOC gives the approval.** Call NET after pre installing all equipment to verify warehouse and fuel sales have completed prior to the start of testing.

Required Deliverables(Photos)

- Before & After EDP rack
- Before & After existing Hughes Modem
- Before and after photo of the FXO card moved to the Voice Gateway.
- Front & back new Cradlepoint
- Front & back new SD/WAN
- USB Hub
- Copper connection from Cradlepoint and SDWAN
- Penny Transaction Receipt
- Photo of power going to two separate tripplites
- Photo of old routers, 2 Hughes modem, Cisco300 switch boxed up and drop off to RTV with "ERI" written on box.
- Separate photo of old AT&T dip router boxed up by itself drop off to RTV with box label "NOC – Travis Cronin".
- Costco Tech Release Doc

SDWAN Equipment Inventory

- ISR1100 Router (SDWAN) (Qty 2)
- 2U rack mount tray (Qty 2)

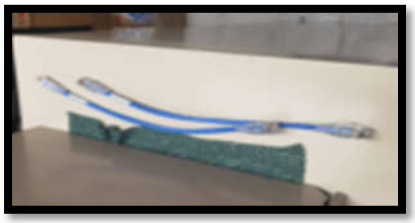
Qty (1) USB to USB-B cable

Cradlepoint Unit CP1200 MODEL (NOT the CP600 Model)

Qty (2) Rack Mount Ears for Cradle Point

USB Gear 4 Port Hub with Qty (4) DB9 to RJ45 adaptors

- 2U rack mount spacer tray (Qty 2)

Finisar SFPs (2 qty) 	Cat6 patch cords (15 qty or 9 qty depending on the install scenario) 
Cat6 blue 1 foot patch cord (1 qty) 	4 QTY LTE Antenna 

NOTE: There will be different scenarios at every location.
Scenario 1: Locations that already have a Cradle point CP1200 MODEL (NOT the CP600 Model) installed. Which you will install the SDWAN and update the connections on both devices per wire diagram provided.
Scenario 2 Broadband site: NOC will tell NET tech if there is a broadband modem onsite. Broadband modem should already be in EDP room. There is a possibility that modem could be installed in Electrical room.
Scenario 3 Hughes site: Locations with Hughes DSL Modem. **(Make sure it's NOT the Hughes modem for PRN as they both look the same, the PRN modem is connected to a PC in the EDP racks and has a media convertor box connected to it)** Both scenario two & three installations will be the same only difference is looking for the correct equipment for each situation (Hughes VS Broadband)All scenario will include remove Cisco 3945 (AT&T dip router), Hughes modem x2, remove Cisco 300 switch. Moving FXO card from old router to Voice Gateway.

1.6 Locate the new coaxial broadband/Hughes Modem or already installed Cradle point inside the EDP room. (Note: it can also be in the MPOE/electrical room). If the new broadband modem cannot be located, Contact NET HD immediately to report.

Scenario One

Scenario Two

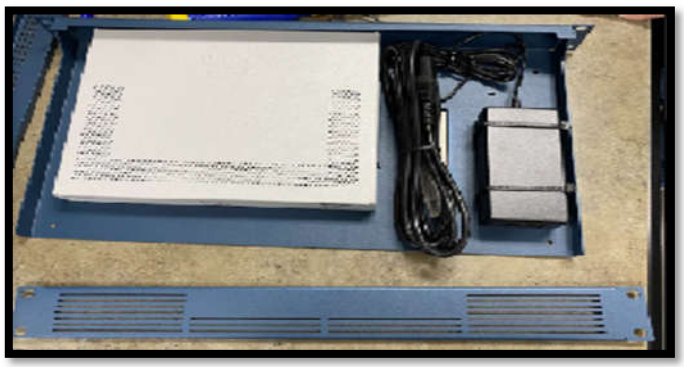
Scenario Three

Section 2: Pre-Installation Prep

2.1 Partner up with the manager and have them complete a manual store close right away at 9pm.
2.2 While the manager is completing the manual store close: Locate the packages that contain the SDWAN routers & Cradle point units.
NOTE: If tech sees a new Cradle point shipped to site, tech will need to check the EDP rack to see if there is already one installed. The correct one is the Model AER2200-1200M. If the model -600M is in the rack tech will need install the new model 1200 and de-install the 600 to be shipped back.

2.3 Attach the (2) ears to the Cradle point.

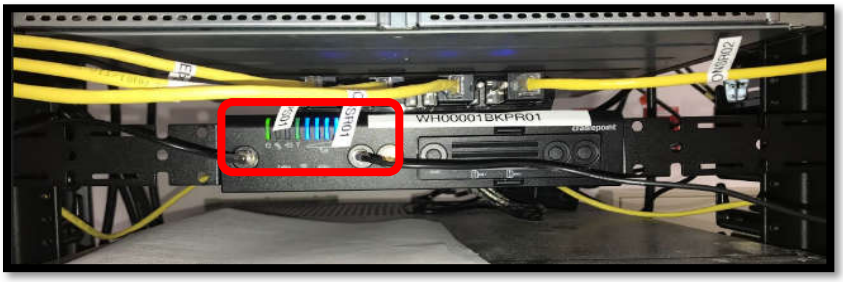
SDWAN routers will be pre-assembled out of the box



2.4 Start installing the Cradle point (CP1200M) and HUB in the rack right away so we can start testing the CP by 930pm. (**NOTE:** if there is already an existing CP installed in the EDP rack, the tech will need to check the model. If the model CP600 is on the rack tech will need install the new model 1200 and de-install the 600 to be shipped back. If there is no 1200 onsite partner up with NET and Costco NOC on how to proceed.

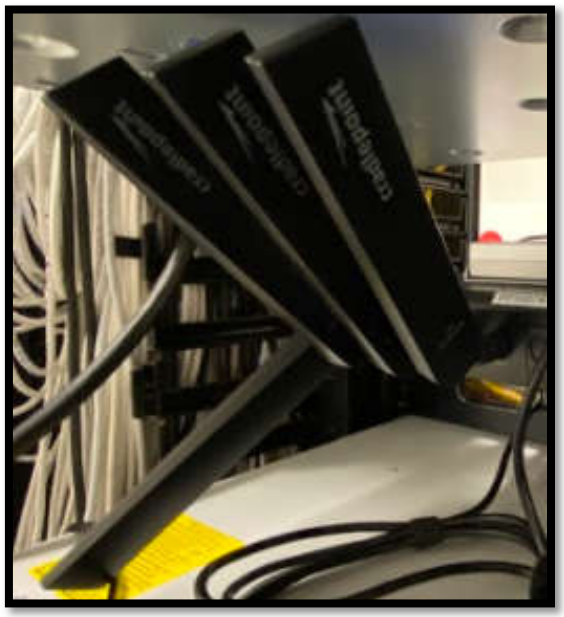
2.5 Connect USB cable from USB Hub to the Cradle point.

2.6 Plug the 1200 CP into an AC power point.



2.7 Check to make sure the CP shows full signal and 4 blue wireless bars

2.8 Connect the four antennas to the back of the cradle point on the Main and Aux, NOT the GPS port



2.9 Put the (4) DB9 to RJ45 connectors onto the USB Hub.
2.10 Use Velcro to secure the USB Hub to the top of the Cradlepoint.

Make the connections below for the HUB

USB HUB		
Note: USB Hub ports Left – Right is 4 – 1 		
	Destination	
Connection	**Switch/Router Name**	**Port**
USBgear 4 port hub port 1	New SDWAN Router 1	Console port
USBgear 4 port hub port 2	New SDWAN Router 2	Console port
USBgear 4 port hub port 3	Edps01	Console port
USBgear 4 port hub port 4	edps03	Console port *(If locations has 9300 switch (Sliver) stack then this 4th console connection isn't needed)*

Once the Cradle point and HUB are mounted, powered up, and copper connections made to the HUB: Call NET HD to partner up with Costco NOC to test the Speed on CP right away as testing may take up to 1hr.

Once NOC starts speed testing
2.11 install the copper SFP onto the routers first before powering up routers.(Use the Finisar SFPs. Do NOT use Cisco)
Put SFP cards in:

Router One: port 5

Router Two: port 4

2.12 Install the power cord for each SDWAN as shown below.
Put the SFP module (2 qty) into the correct slots on the SDWAN ports see below.

SDWAN router port numbers

2.13 Mount both SDWAN and Cradle point (CP1200) next to each other on the rack. Make sure R01 is on top and R02 is on the bottom. If possible, install closest to R02.

Example photo of how routers must look once completed and all clean.

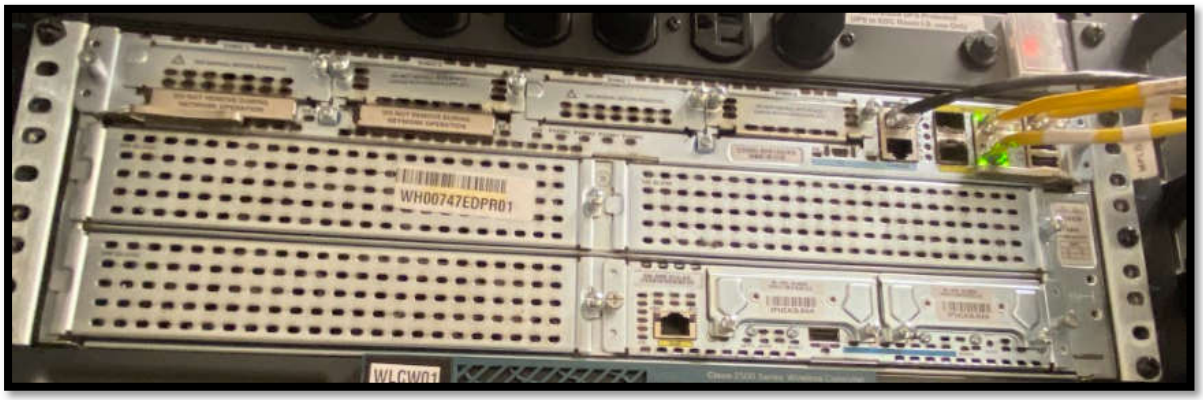
2.14 Plug the SDWAN into two separate power sources for redundant power.

(*__IMPORTANT__* __ONLY__ power up R02 for now, leave R01 power off

Only label, DO NOT disconnect connections from the existing routers until NOC gives the approval.
Contact NET HD at 608.827.2282 to confirm with Costco NOC all sales has gone through before moving forward with connections below.

Confirm which Variation connection you need to complete.

Go to Page 12 – Variation 1 would be Replacing Cisco 3945s routers
Go to Page 13 – Variation 2 would be replacing Viptela 1k vEges routers

Variation 1 Replacing Cisco 3945 routers

Variation 2 Replacing Viptela 1k vEges routers


Variation 1

1. Only label, DO NOT disconnect connections from the existing routers until NOC gives the approval.
2. Labeling OLD routers (label as LAN, MPLS, etc and not as numeral)
   a. Router 1 (whxxxxxedpr01) ***Label on router end *
      i. Ge0/0 label as LAN R01
      ii. Ge0/1 label as MPLS
      iii. Ge0/2 label as remove
   b. Router 2 (whxxxxxedpr02) ***Label on router end *
      i. Ge0/0 label as LAN R02
      ii. Ge0/1 label as LTE
      iii. Ge0/2 label as remove
3. STOP! Call NET first to confirm if ok to power off the old routers. Before proceeding to the next step make sure the power cords are pulled out of the old routers. (**NOTE**: If old routers are not powered off, NOC may not be able to see the new routers).
4. Move the patch cord in Old R02 port GE0/1 (LTE) to new SDWAN-R02 port 0. (Or make a new connection)
   IMPORTANT* Make sure only SDWAN R02 is powered up, Leave SDWAN R01 powered off until LTE testing is completed.
   a) If tech installed a new Cradle point, plug a new patch cord from Cradlepoint port 2 to SDWAN-R02 port 0)
   b) Cradlepoint will need to be rebooted after LTE connection is moved to port 0—

5. Call NET to verify LTE connectivity. Once verified: power down R02, reboot the CP, and power up SDWAN-R01. Connect CP port 1 to SDWAN-R01 port 0. Once NOC verifies LTE we move the MPLS connection. Once NOC verifies MPLS, the tech can power up R02 and make the rest of the connections.

2. Connect Labeled Cables to New Routers

a. SDWAN Router 1 (whxxxxxedpr01-sd)
   i. [New cable on new SDWAN Router]
      SDWAN R01 Port 0 <--> Cradlepoint Port 1 (Labeled LTE)
   ii. [New cable on new SDWAN Router]
      SDWAN R01 Port 1 <--> Cradlepoint Port 5
   iii. [New cable on new SDWAN Routers]
      SDWAN R01 Port 2 <--> SDWAN R02 Ge0/2
   iv. [Move cable labeled LAN R01 from the old router to the new SDWAN router]
      SDWAN R01 Port 3 <--> Switch EDPS1-1 port gi1/0/1 (Labeled LAN R01)
   v. [**Only disconnect the end of the cable from the old R01. DO NOT REMOVE the other end of the cable**] [Move cable labeled MPLS from old R01 to the new SDWAN router]
      (Labeled MPLS) SDWAN R01 Port 5 (copper SFP required unless location has fiber hand-off, then a fiber SFP should have been shipped with the equipment)

b. SDWAN Router 2 (whxxxxxedpr02-sd)
   i. [New cable on new SDWAN Router] SDWAN R02 Port 0 <--> Cradlepoint Port 2
   ii. [New cable on new SDWAN Router] SDWAN R02 Port 2 <--> SDWAN R01 Port 2
   iii. [Move cable labeled LAN RO2 from old R02 to new SDWAN]
   SDWAN R02 Port 3 <--> Switch EDPS1-3 port 1/0/1
   iv. SDWAN R02 Port 4(copper SFP required) <--> Broadband Modem

Variation 2

1. Only label, DO NOT disconnect connections from the existing routers until NOC gives the approval.

2. **Labeling OLD routers**
   - **a. Router 1 (whxxxxxedpr01-sd) ***Label on router end *****
     - i. Ge0/0 label as LTE R01
     - ii. Ge0/1 label as MPLS
     - iii. Ge0/5 label as Cradlepoint mgmt
     - iv. Ge0/6 label as TLOC
     - v. Ge0/7 label as LAN
   - **b. Router 2 (whxxxxxedpr02-sd) ***Label on router end *****
     - i. Ge0/0 label as Broadband
     - ii. Ge0/2 label as LTE R02
     - iii. Ge0/6 label as TLOC
     - iv. Ge0/7 label as LAN 2.

3. STOP! Partner up with NET first to confirm if ok to power off the old routers. Before proceeding to the next step. Make sure the power cords are pulled out of the old routers. (**NOTE**: If old routers are not powered off, NOC may not be able to see the new routers).

4. Move the patch cords in Old R02 port 1 (LTE) to new SDWAN R02 port 0.

IMPORTANT* Make sure only R02 is powered up, Leave R01 powered off until LTE testing is completed.

c) *If tech installed a new Cradle point, plug a new patch cord from Cradle point port 1 to SD-R01 port 0)*

d) *Cradlepoint will need to be rebooted after LTE connection moved to port 0—*

5. Call NET to verify LTE. Once LTE is verified, power down SDWAN-R02, reboot the CP, and power up SDWAN-R01. We connect CP port 1 to SDWAN-R01 port 0 and verify LTE on R01. Once NOC verifies LTE we make the MPLS connection. Once MPLS connection is verified with NOC, the tech can power up R02 and make the rest of the connections.

2. Connect Labeled Cables to New Routers
   - **a. Router 1 (whxxxxxedpr01-sd)**
     - i. LTE <--> Ge0/0
     - ii. Cradlepoint mgmt <--> Ge0/1
     - iii. TLOC <--> Ge0/2 (Connection to R02)
     - iv. LAN R01 <--> Ge0/3 (Router 1 <--> Switch EDP1-1 port gi1/0/1
     - v. MPLS <--> Ge0/5 (copper SFP required Unless location has fiber hand-off then will be the fiber optic that was shipped with gear.)
   - **b. Router 2 (whxxxxxedpr02-sd)**
     - i. LTE <--> Ge0/0
     - ii. TLOC <--> Ge0/2 (Connection to R01)
     - iii. LAN R02 <--> Ge0/3 that it connects to EDP1-3 port 1/0/1
     - iv. Broadband <--> Ge0/4(copper SFP required)

Section 3: Testing

3.1 Contact NET HD 608.827.2282 to partner up with Costco NOC after making the connections

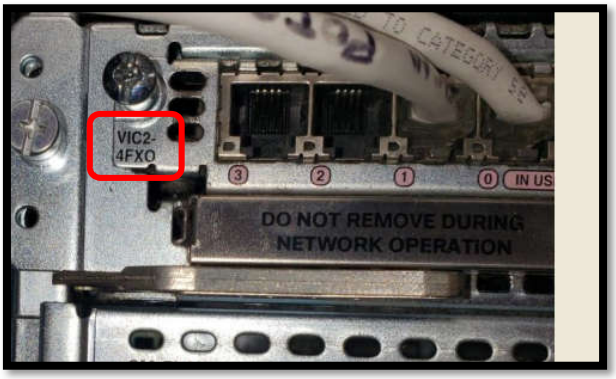
a. Confirm with NOC that the configuration are Syncing
b. Verify NOC has moved the Configuration Template to “Valid” from “Staging”
c. Confirm with NOC that SDWAN is stable and ready for system and onsite testing.

3.2 Once completed with NOC, have a Manager run through a series of tests

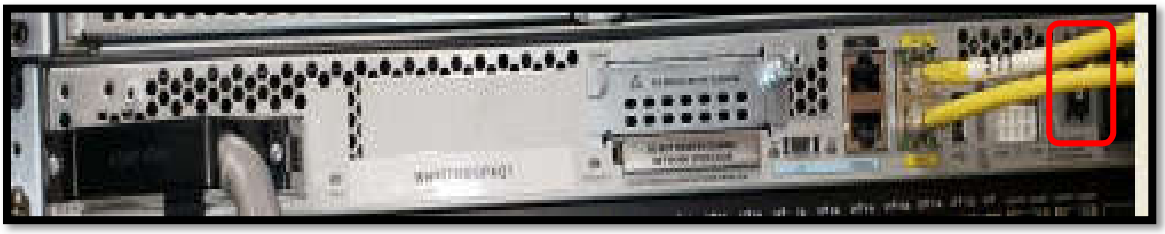
a. Phone call to test inbound and outbound in Admin Office. Call into the store with a cell phone, and call a cell phone from a store phone.
b. Penny transaction test with manager on duty at any Front End register
c. Test print from CC controller in EDP to Admin printer.
d. Call NET HD to ping the gas server and the 1st pump.

Section 4: Moving FXO Card

4.1 Locate the FXO card on the old R02 EHWIC card slot. Make sure the bottom left corner is label “FXO” and not “FXS”. The FXS will be left alone. (Verify there are phone cables in the card and move the cables with the card)



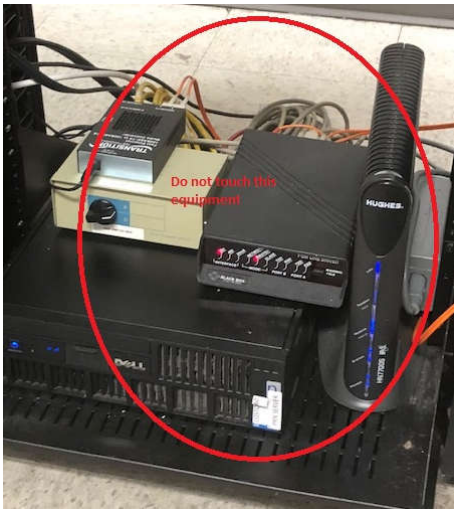
4.2 Locate the VG310 (AG1) and power it off with the power button on the right hand side.



4.3 Remove the FXO card from R02 leaving all patch cords intact and relocate it to the VG310 (AG1) card slot after removing the metal plate.

4.5 Power the VG310 back up but leave the old R01 & R02 off.

Section 5 Remove old equipment

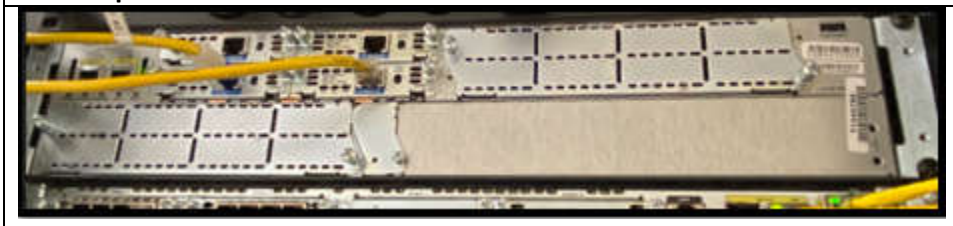


5.1 **DO NOT** Touch or remove the PRN network it is also utilizing a Hughes brand modem as well.

5.2 Box up the 2 old routers, 2 Hughes modems (connected to the Cisco300), Cisco 300 switch, Cradle point model 600, then drop off to RTV with "ERI" written on the box. **ONLY disconnect the Hughes Modem that are connected to the cisco 300 switch.**

2 Hughes modem and Cisco 300 switch


5.3 Remove the old AT&T dip router (may be labeled as RE1) (If there is one in rack) Box it up by itself, label the box "NOC-Travis Cronin" and drop it off in RTV.

AT&T dip router


5.4 Dress up all patch cords from the SDWAN, Cradle point, and Routers. Clean up all work areas get WO signed.

5.5 Send all required photos to NET DSS. Call NET HD 608.827.2282 to log out.

SDWAN Project FY20

Technician Release Document

Site # and Name:	
Tech Name:	
Date:	

❑**WYSE Clients** confirmed online by having a Warehouse user launch the Costco Intranet site or the AS400/iSeries program

❑**Lexmark Printer(s)** confirmed online by performing a single test print from CC controller to printer.
❑**Cisco Phones -** Tech/Whse personnel is able to make and receive a phone call from the phones. (Dial "8", to call out from Cisco phone)
❑**Registers** Warehouse Personnel performing a penny transaction on **one single** register.

By signing this document, I am acknowledging that the entire above checklist has been tested and confirmed online. The install Technician is clear to be released and any issues going forward will be dealt through the normal Costco Service Desk process.

Date and Time:	
Manager Name:	
Manager Signature:	

Notes:

SDWAN Project FY20

Gas Station and Car Wash Areas

Site # and Name:	
Tech Name:	
Date:	

❑**Gas Pumps are** confirmed online by: Warehouse personnel to perform a Debit or Costco Cash Card Transaction on a single pump. *Credit transactions will not be sufficient method of testing.*

❑**Car Wash** (*Not applicable in all warehouses*) Warehouse personnel to perform a Debit or Costco Cash Card Transaction. *Credit transactions will not be sufficient method of testing.*

By signing this document, I am acknowledging that the entire above checklist has been tested and confirmed online. The install Technician is clear to be released and any issues going forward will be dealt through the normal Costco Service Desk process.

Date and Time:	
Manager Name:	
Manager Signature:	

Notes: