

4G Failover for Maya

It's very simple to provide 4G failover on the Maya M24 device. Configuring a secondary WAN interface takes only a few seconds and in less than a minute a backup interface is up and running.

Although any Internet service can work as a failover interface, costs and complexity deter many people. The simplest and lowest cost failover interface is 4G service from a carrier such as AT&T or Verizon and a fixed wireless device such as the Netgear LTE Modem.

Setting Up

Here's the pieces you need:



Netgear LTE Modem 1120¹



Modem, Ethernet Cable, Power Adapter



Prepaid Micro Sim Card (3FF)²



Maya M24 Device

¹ On Amazon, Netgear lb1120 Modem \$129.99: <u>https://www.amazon.com/NETGEAR-LTE-Modem-Broadband-Connection/dp/B01N5ASNTE</u>

² On Amazon, AT&T Micro Sim 3FF \$5: <u>https://www.amazon.com/AT-Micro-SIM-3FF-LTE-UICC-</u> G/dp/B00AEVX5N4/ref=sr 1 1?dchild=1&keywords=AT%26T+Micro+Sim+3FF&qid=1598131472&sr=8-1



Install Sim Card & Activate

Detailed instructions:

Remove the Sim from the credit-card holder.



Turn the modem over and remove the Sim cover:



Install the Sim in its socket. Use the on-line manual's illustrations to see how to fasten the Sim in its holder.

Next, for an AT&T card, go to the activation page:

https://www.att.com/checkmyorder/activations/activateDevice.rt

Choose AT&T Prepaid on the activation page. Go on to the next page in order to register the Sim and the modem:





ICCID is on the Sim credit card:

IMEI is on the bottom of the modem:





Use installation's ZIP Code

Next, choose a plan:





Choose the least expensive plan as backup usage is typically in the 1GB – 3GB range. As an example, the ATT 3GB plan is \$25/month. Assuming a usage of 10Mbps, the minimal plan provides 40 minutes/month downtime, which should be adequate for most Internet Service Providers.

After the account is activated, log in and disable Stream Saver. Stream Saver limits video streams to standard definition (SD) resolution, about 480p, which is not very good for videoconferencing.

Install Netgear device



Plug into wall outlet. Connect power.

Connect Ethernet to both devices.

Plug the Ethernet cable into either the OPT 1 or OPT 2 Interface. Make sure the power switch on Netgear is depressed (latched into the On position).



Configure Maya Device

▼ Interfaces			Save and Deploy	
DC 12V	OPT1 3	L LAN 2	WAN 1	
MAC Address:	Populated automatically after deploymen			
Name:	4G Failover			
Usage:	WAN			
Get IP address via DHCP:				
Ignore DHCP DNS:				
Use as Default Route:				
Use as Default Route: Use for Failover only:				

Login to the Maya Control Center and select <u>Manage</u> for the Maya Device. Select an available Interface, then select <u>WAN</u> in the Usage pulldown, check <u>Use for Failover only,</u> then press <u>Save and</u> <u>Deploy.</u>

Maya Control Center Management Page

Verify Operation

Check operation by first checking the LEDs on the cover of the Netgear device.



Netgear Operating Indicators



The Power LED should be solid green, one or more signal strength LEDs should be illuminated, and the Ethernet LED should be blinking.

Next, check the Maya device from the Maya Control Center. Select the device, then Charts, which should look similar to the figure below:





Maya Control Center During 4G Bring up

Follow the illustration by the numbers below:

- 1. The Netgear is named 4G Netgear on the timeline.
- 2. Before being configured in Maya, the timeline shows gray.
- 3. When Mays Deploys the Netgear, its timeline is pink, indicating no data. The Netgear was not powered.
- 4. Netgear is powered and booting up. In this case the Netgear was physically positioned so it had no signal until moved.
- 5. Upon Deployment Maya begins pinging the interface for the Netgear. The red line in the graph shows 100% packet loss as the Netgear hasn't been powered up.
- 6. When the Netgear comes up on Maya, the Maya Control Center displays pinged packets in the chart. In the chart the Netgear did not transmit or receive any packets for a few minutes showing 100% packet loss. Then when the Netgear powered up and received 4G signal, packet loss went to zero, and blue and green pings show up with about 100ms of latency.



7. The Netgear is working properly and is now in service. Maya continuously monitors the Netgear's performance and pale green indicates the network is in good health and is ready to take over service at the millisecond level.

Failover Demonstration

A Maya device was configured with Sonic as the ISP and the 4G Netgear in <u>Use for</u> <u>Failover Only</u> mode. A Zoom videoconference was run from 8:24am for 34 minutes. During the video conference, Sonic was shut down until after the conference was over.



The Control Center chart on the left shows the numerically highlighted sequence of events:

The videoconference is the golden area on the Sonic chart.
Notice the timeline at the top of the figure.
The 4G Netgear is operating, but will only pass customer data upon failover, which is indicated by its light green color.

Sonic is operating normally at 8:00 am as indicated by the green timeline.

Maya Control Center During Failover



- 2. At 8:47am the Sonic Interface fails (physically disconnected) as indicated by the red timeline, the videoconference data going to zero, and the packet loss going 50 100%.
- 3. The 4G Netgear takes over immediately. There was no frozen video, and audio continued normally. The golden area in the 4G Netgear chart shows the videoconference data.

The 4G Netgear timeline switches to green as it is passing customer data. There were a few packets with high latency during switchover, as shown by the two yellow stripes. (Although no video or audio issues were observed.)

- 4. The videoconference ending at 8:59am, as indicated by the golden area on the 4G Netgear chart.
- 5. The Sonic network is rec-connected, and the 4G Netgear stops passing customer data (it's timeline becomes light green), and customer data resumes on the Sonic Interface (as indicated by the green, blue, and yellow colors on the timeline).. The Sonic packet loss returns to zero along with normal ping times.



6. The videoconference is the golden area on the Sonic chart. Notice the timeline at the top of the figure. The 4G Netgear is operating, but will only pass customer data upon failover, which is indicated by its light green color.

Sonic is operating normally at 8:00 am as indicated by the green timeline.

- At 8:47am the Sonic Interface fails (physically disconnected) as indicated by the red timeline, the videoconference data going to zero, and the packet loss going 50 100%.
- 8. The 4G Netgear takes over immediately. There was no frozen video, and audio continued normally. The golden area in the 4G Netgear chart shows the videoconference data.

The 4G Netgear timeline switches to green as it is passing customer data. There were a few packets with high latency during switchover, as shown by the two yellow stripes. (Although no video or audio issues were observed.)

- 9. The videoconference ending at 8:59am, as indicated by the golden area on the 4G Netgear chart.
- 10. The Sonic network is rec-connected, and the 4G Netgear stops passing customer data (it's timeline becomes light green), and customer data resumes on the Sonic Interface (as indicated by the green, blue, and yellow colors on the timeline).. The Sonic packet loss returns to zero along with normal ping times.