LSJ Preliminary Report

This is a preliminary report and items will be added as I look thru the network and equipment configurations.

Dragonwave

Login Credentials

The system had the default credentials. This was changed, because the dragonwave radios have public Ips, anyone from the internet could connect and this was a big security risk in terms of someone could change settings and cause the link to fail.

Recommendations: Credentials were changed and the Ip will be changed to private. This will restrict access to the management to our VPN and will integrate the link to Choice Monitoring system.

Firmware Bug

Currently there are two bugs that I have identified, One is non service affecting and the following is service affecting:

I've monitoring the link since Friday and there has been two drops in the dragonwave:

ID	Severity	Time	Node	Interface
92289658	Normal [+] [-]	12/7/15 12:30:52 [<] [>]	cust.stt.lsj.2921	
		uei.opennms.org/nodes/nodeUp [+] [-] Edit notifications for event		
		Node cust.stt.lsj.2921 is up.		
92288745	Major [+] [-]	12/7/15 12:15:30 [<] [>]	cust.stt.lsj.2921	
		uei.opennms.org/nodes/nodeDown [+] [-] Edit notifications for event		
		Node cust.stt.lsj.2921 is down.		
92222554	Normal [+] [-]	12/6/15 13:04:34 [<] [>]	cust.stt.lsj.2921	
		uei.opennms.org/nodes/nodeUp [+] [-] Edit notifications for event		
		Node cust.stt.lsj.2921 is up.		
92217839	Major [+] [-]	12/6/15 11:21:36 [<] [>]	cust.stt.lsj.2921	
		uei.opennms.org/nodes/nodeDown [+] [-] Edit notifications for event		
		Node cust.stt.lsj.2921 is down.		

Both times were due to a known bug on the firmware on the radios:

Notice:Dec 07 12:12:36 C1N14DGM0075 alarm[544789-1]: Major: Queue depth threshold q4 Alarm raised

Notice:Dec 06 11:21:08 C1N14DGM0075 alarm[544789-1]: Major: Queue depth threshold q4 Alarm raised

Currently LSJ Dragonwave radios are running Version 1.2.2

```
Active: Bank A

Component        | Version            | Validation
-----------------+--------------------+------------------
OMNI Release     | 1.2.2              | Valid
Frequency File   | 2.01.09            | Valid
MIB              | 3.0.0              | Valid
```

All of our radios that are Compaq+ are running Version 1.3.9

```
Active: Bank A

Component        | Version         | Validation
-----------------+-----------------+------------------
OMNI Release     | 1.3.9           | Valid
Frequency File   | 2.01.27         | Valid
MIB              | 5.0.0           | Valid
```

This is a known issue with older version of this firmware. So far both times have been triggered by the rain (Sunday and today) the wireless link did not drop, but due to the rain were some data errors and as the radios retransmitted the data (this is normal behavior) this alarm is raised and crashes data communications. Once the radios are rebooted or power cycle normal transmission begins until the next event.

Recommendation: To fix this issue a firmware upgrade needs to be done. I recommend once ViNGN is in place and this link can be taken offline to do the following:

- Reset this link to factory defaults.
- Reconfigured to Choice Standards.
- Change Management Ips to Private IPs Choice Management.
- Upgrade firmware on both radios.

Configuration (Modulation)

The radio currently is configured to its maximum speed (256 QAM 279 Megs) this is unnecessary since the customer does not have this bandwidth.

Recommendation: The link can be dropped to (16 QAM 122 Megs) by doing this, the link will be more stable and less susceptible to rain fade.

Alignment (Signal Strength)

The microwave link is outside of the optimal signal the coordination calls for -35.7 dBm (optimal would be +/- 4.0 dBm) and currently the signal strength is at -40.1 dBm. This can be caused by having the LSJ side of the link only at 10 ft. When you have links so low the ground can cause interference in what is call the Fresnel Zone. Basically this zone has to be obstruction free for a microwave link to be at its optimal. See following graph.

TX antenna Height 10m

1st Fresnel zone

RX antenna Height 49m

Obstacle zone

r: Fresnel radius
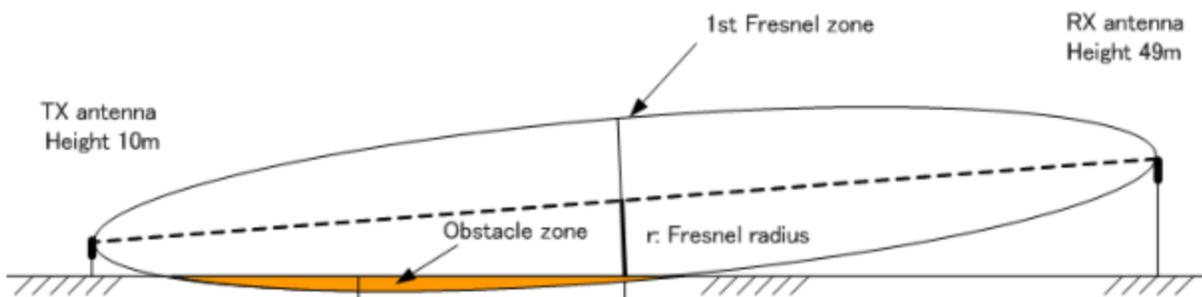
Recommendation: raise the link to a higher height.

For more detail about Fresnel Zone ███████████████████████████

Network Loop

At LSJ shelter the following equipment are installed:

- Netgear Prosafe JGS516PE
- 1 Dragonwave Compaq – Link to St Thomas
- 1 Rockus AP – Looking towards 5 Palms
- 1 Ruckus Bridge – Looking towards the Gym

There are 2 issues with this setup,

1) The dragonwave and the bridge are on the public side of this connection (internet) the AP (5 Palms) needs to be on the private side (internal network). Because there is no way to have communications to the internal network from the shelter, the AP to 5 palms was plugged into the public side of the network. This is why this AP is not working.
2) Both the Data and Management Ethernet cables of the Dragonwave radio were plugged in to the netgear. Creating a local network look between the Dragonwave and the Netgear. This is what created the unstable internet connection that caused between 5%-10% packet drop and caused real time applications and services like Netflix, Hulu, YouTube, and Etc. buffer or not to work. This can also cause websites to pause as the page was displaying (downloading) or a lag in clicking on a link.

Recommendation: to fix the issues:

- Issue #1 to fix the AP looking to 5 Palm the Rockus needs to be moved to the Choice 3560G switch by installing a POE power module. Once this is done I can create an internal port (Vlan) that will only talk to the private side. The Dragonwave and the Rockus Bridge will remain in the public side.
- Issue #2 was fixed (network loop) was fixed by disconnecting the local management Ethernet cable.

Configuration Drawing

Choice IP Addresses - 66.185.40.60/30
66.185.40.61 – Default Gateway
66.185.40.62– Free

Mask 255.255.255.252
DNS 66.185.33.226 and 66.185.33.230

VINGN IP Addresses - 208.50.78.188/27
208.50.78.190 – Default Gateway
208.50.78.188– Free

Mask 255.255.255.224
DNS 209.244.0.3 and 209.244.0.4

Choice Internet

Shelter
3560

DW CP+ 50 Megs

Stalley 3560
Trunk 39
Mngm 40

Master

????

Slave

Gym
3560

100 Megs

100 ESTT09-13MEINT-02Megs

VINGN
Internet

Vessup
Beach

Cisco 2921

Local LAN

192.168.8.253/24

LSJ Island

Southern Trust – Little St James		
Draft	12/7/2015	Ver 1.0