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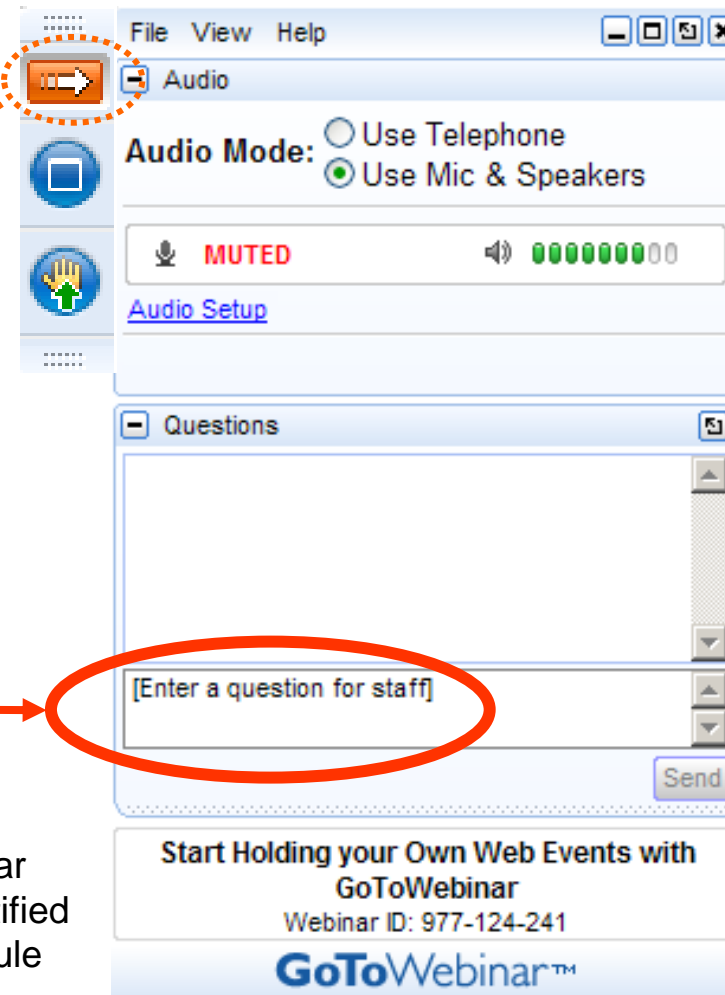
Episode #59

Transmitter Site Networking

Your questions please?

(if you don't see the control panel, click on the orange arrow icon to expand it)

Please enter your questions in the text box of the webinar control panel (remember to press send)



The screenshot shows a GoToWebinar control panel window. At the top, there is a menu bar with 'File', 'View', and 'Help'. Below the menu bar, there is a section for 'Audio' settings. An orange arrow icon is circled in red and has a dotted orange line pointing to it. The audio settings include 'Audio Mode' with two radio buttons: 'Use Telephone' (unselected) and 'Use Mic & Speakers' (selected). Below this, there is a 'MUTED' indicator with a microphone icon and a volume level indicator showing 00. A link for 'Audio Setup' is visible. Below the audio settings, there is a 'Questions' section. A text box with the placeholder '[Enter a question for staff]' is circled in red, and a red arrow points to it. A 'Send' button is located to the right of the text box. At the bottom of the control panel, there is a promotional banner for 'Start Holding your Own Web Events with GoToWebinar' with the Webinar ID: 977-124-241 and the GoToWebinar logo.



Remember: The completion of a Nautel webinar qualifies for $\frac{1}{2}$ SBE re-certification credit, identified under Category I of the Re-certification Schedule for SBE Certifications.

Ideas for things to cover

- Wired vs wireless
 - Can I get from here to there?
 - What kind of wireless?
 - LTE
 - PTP
- Partitioning – subnets, multiple domains, public IP or private network?
- Security
 - Firewalls
 - VPNs
 - Air Gaps
 - Education
- Other items
 - Cost vs. functionality vs. security
 - Layers

Submit a question now and we'll do our best to answer it in the session. If you have a relevant story to share please tell us now and we'll contact you for more information.

Why there is delay in webcasting and how to make it more real-time?

Working on VPN Tunnels for remote control. Contract Engineer. Want to observe transmitter conditions and monitor Tower Lights.

Please also address redundancy & other methods to achieve non-stop operations. Thanks, guys.

Do you think SNMP is going to replace GPIO as the universal interface for control at the Transmitter site?

A university radio station looking to grow from one transmitter site. What are your guidelines?

Is Ubiquiti still the go to for basic IP links?

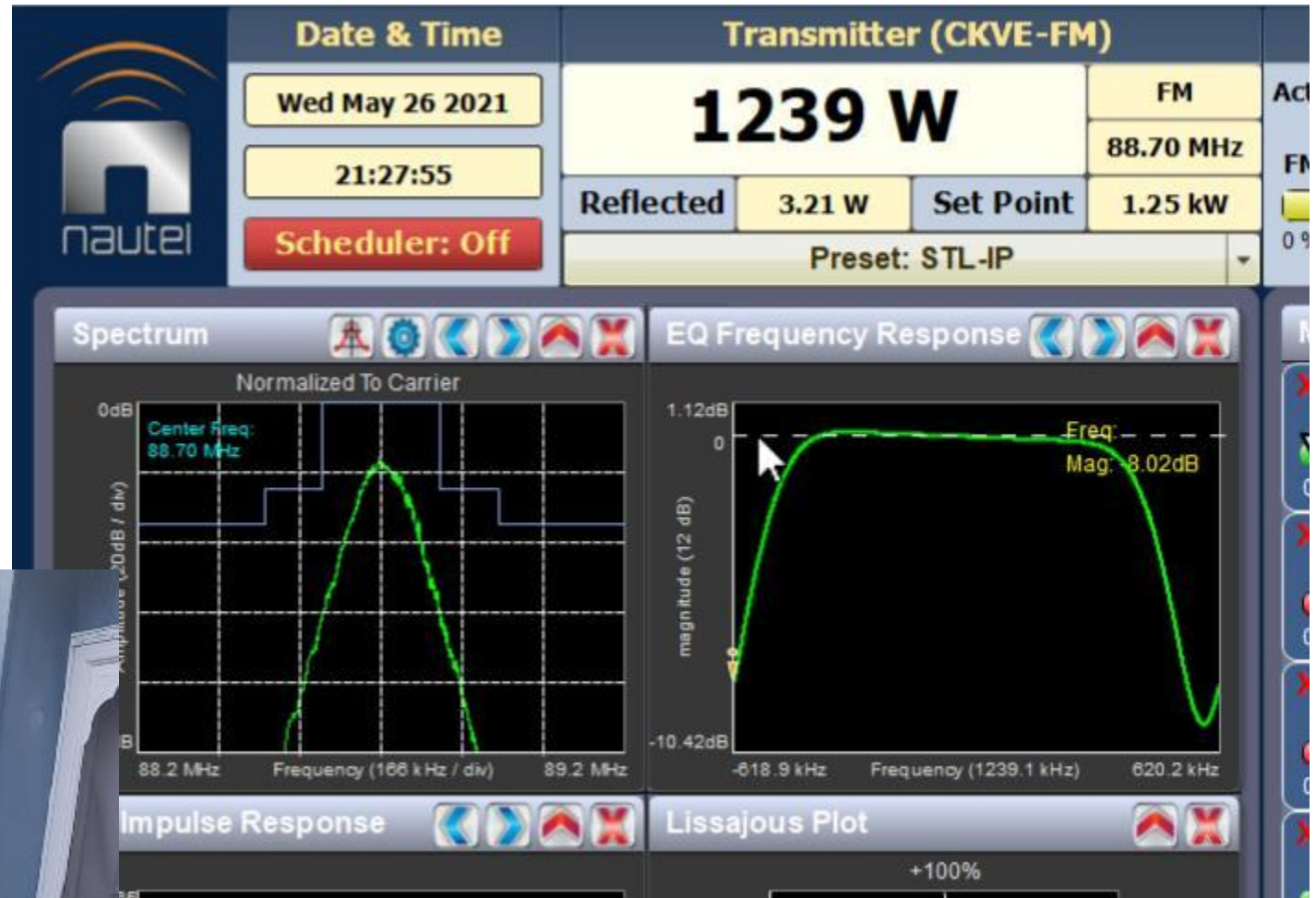


MUST MONITOR



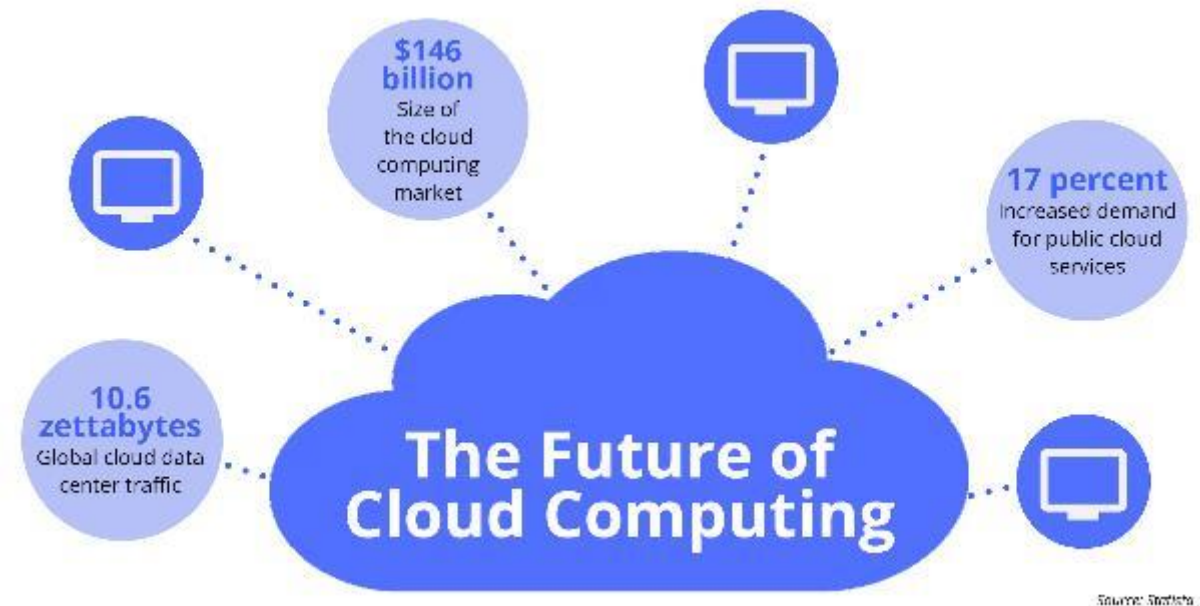
1. Use the transmitter's AUI (local or remote) or controller UI alarm status/logs to isolate the defective low voltage power supply (LVPS), noting there may be redundant (dual) supplies installed, or Power Supply module.
2. Open the transmitter front door and locate the suspect LVPS / Power Supply module. See Figure 4.1.15 on page 4.1.50.
3. Using Figure 4.1.16 on page 4.1.51 as a guide, remove the LVPS / Power Supply module from the front of the transmitter.
4. Locate or obtain a replacement LVPS / Power Supply module (Nautel Part # UG92*).
5. Using Figure 4.1.16 on page 4.1.51 as a guide, reinstall the new LVPS / Power Supply module.

Figure 4.1.16: Removing/Installing LVPS / Power Supply Modules



What is the “Cloud”?

- Virtualization vs Cloud based
 - Public cloud vs private
 - VMWare vs private server
 - On premises vs off prem
 - Security thoughts?
 - Redundancy discussion
 - How reliable is six 9s reliability if a backhoe cuts the fiber?



Source: <https://www.westagilelabs.com/blog/cloud-computing-is-the-future-of-enterprise-application-platform/>

Know what you have



RIPR IP Address Schema - public copy ☆ 🗑️ ☁️

File Edit View Insert Format Data Tools Add-ons Help Last edit was made yesterday at 2:10 PM by Tech RIPR



| | A | B | C | D | E | F | G | H | I | U |
|----|--------------|--------|---------|-----------|--------------------------|---------|-----------------|-----------------|-----------------|---|
| 1 | Location | ISP | IP | SUBDOMAIN | DESCRIPT | GATEWAY | MASK | DNS1 | DNS2 | |
| 2 | 1 Union Stn | OSHEAN | 102.18 | | ABS-managed Barracuda | 102.17 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 3 | 1 Union Stn | OSHEAN | 102.19 | | | 102.17 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 4 | 1 Union Stn | OSHEAN | 102.20 | | iPort1US | 102.17 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 5 | 1 Union Stn | OSHEAN | 102.21 | ipn.org | 89.3 IP Codec ETH0 | 102.17 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 6 | 1 Union Stn | OSHEAN | 102.22 | ipn.org | 89.3 UMD BRIC Link II | 102.17 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 7 | 1 Union Stn | OSHEAN | 102.23 | ipn.org | 88.1 IP Codec | 102.17 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 8 | 1 Union Stn | OSHEAN | 102.24 | ipn.org | 102.7 IP Codec | 102.17 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 9 | 1 Union Stn | OSHEAN | 102.25 | | No.PVD Bkup BRIC Link II | 102.17 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 10 | 1 Union Stn | OSHEAN | 102.26 | ipn.org | Telos Z/IPstream webcast | 102.17 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 11 | 1 Union Stn | OSHEAN | 102.27 | | StudioB BRIC Link II | 102.17 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 12 | 1 Union Stn | OSHEAN | 102.28 | | 89.3 HD2 BRIC Link II | 102.17 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 13 | 1 Union Stn | OSHEAN | 102.29 | ipn.org | Comrex Access | 102.17 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 14 | 1 Union Stn | OSHEAN | 102.30 | | | 102.17 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 15 | 1110 Douglas | OSHEAN | 102.132 | ipn.org | 1290 WAN x3 | 102.129 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 16 | 1110 Douglas | OSHEAN | 102.133 | | | 102.129 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 17 | 1110 Douglas | OSHEAN | 102.134 | | | 102.129 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 18 | 1110 Douglas | OSHEAN | 102.135 | | | 102.129 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 19 | 1110 Douglas | OSHEAN | 102.136 | | | 102.129 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 20 | 1110 Douglas | OSHEAN | 102.137 | | | 102.129 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 21 | 1110 Douglas | OSHEAN | 102.138 | | | 102.129 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 22 | 1110 Douglas | OSHEAN | 102.139 | | | 102.129 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 23 | 1110 Douglas | OSHEAN | 102.140 | | | 102.129 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 24 | 1110 Douglas | OSHEAN | 102.141 | | | 102.129 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 25 | 1110 Douglas | OSHEAN | 102.142 | | | 102.129 | 255.255.255.240 | 158.123.143.171 | 158.123.143.172 | |
| 26 | | | | | | | | | | |



VPNs and points to ponder

Entry-level to mid-level enterprise routers for the broadcaster

– I saw a good one at Walmart...

Vendors to look at for the station's IT deployment



Do These 10 Things

Essential

- Change default logins
- Use strong passwords (paraphrases)
- Separate Admin & User accounts on hosts (WIN)
- Segment your network (VLAN) – create multi-layer security zones
- Use packet filtering to control host access (ACL and/or firewall)
- Disable un-used services – close ports not used
- Monitor you network – know what is normal
- Use secure access (SSH not telnet)
- Use VPN for off-site access
- Don't be a social engineering victim – educate users



Do These 5 Things

(if nothing else)

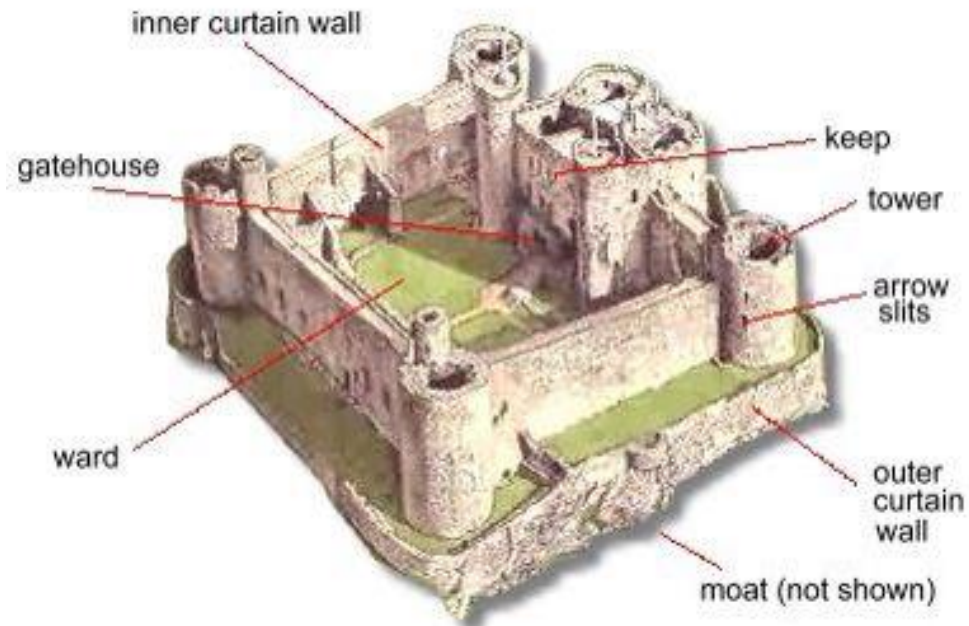
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- Use packet filtering to control host access (ACL and/or firewall)

1. 123456
2. Password
3. 12345678
4. qwerty
5. 12345
6. 123456789
7. letmein
8. 1234567
9. football
10. iloveyou

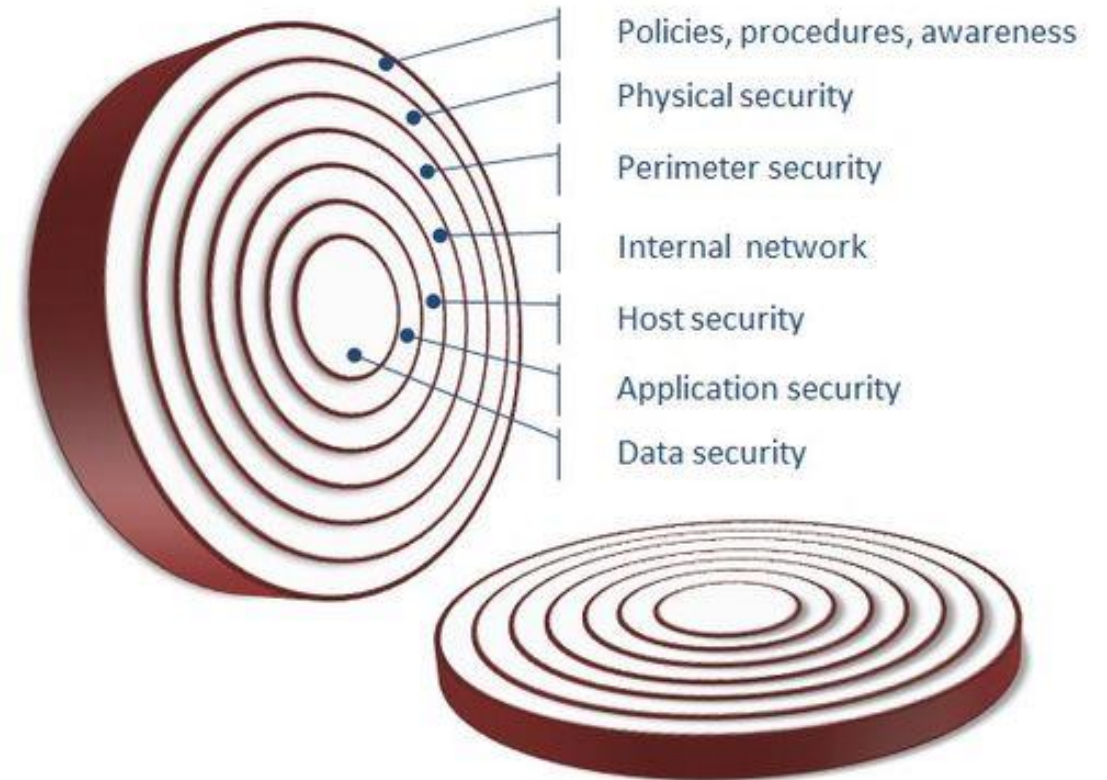


Security Zones

Segmented Network Architecture



Harlech Castle, North Wales, built in 1283 AD



The "Onion Approach"



Any FM Processor
with Stereo Generator



Omnia MPX
Node (Encoder)



Private IP Link
Public Internet
WAN, etc.

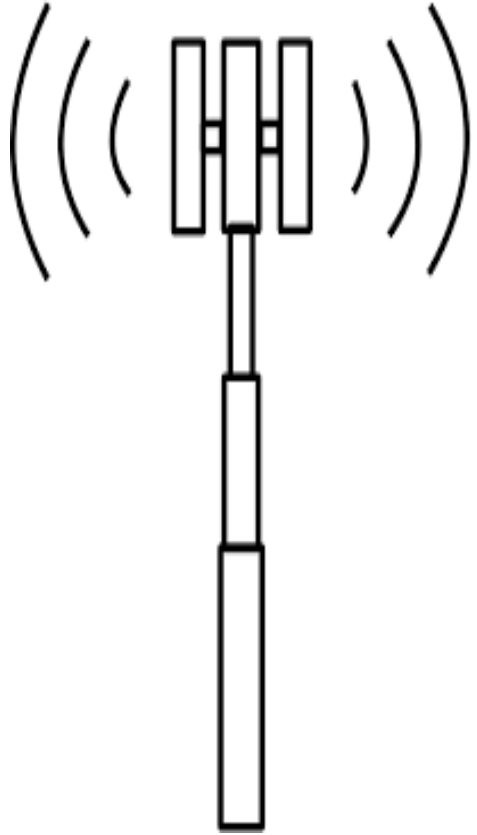


Private IP Link
Public Internet
WAN, etc.

FM Transmitter

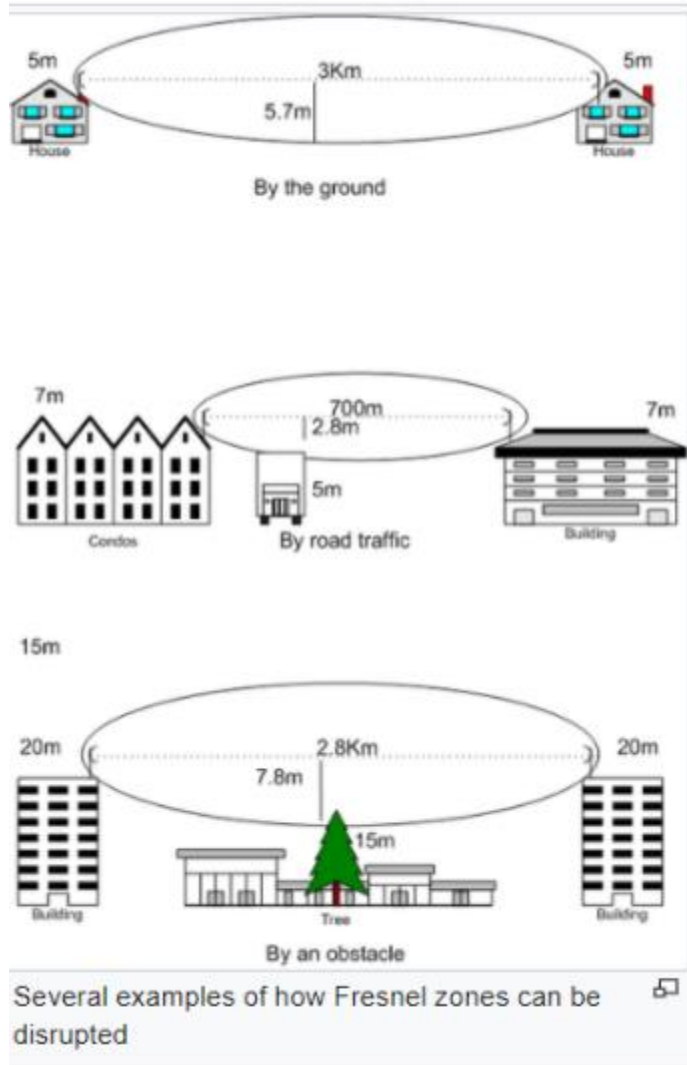


Omnia MPX
Node (Decoder)



LTE vs PTP vs Wireline (T1,DSL,Cable)





A **Fresnel zone** ([/fʁɛiˈnɛl/](#) *fray-NEEL*), named after physicist Augustin-Jean Fresnel, is one of a series of confocal prolate ellipsoidal regions of space between and around a transmitter and a receiver. Transmitted radio, sound, or light waves can follow slightly different paths before reaching a receiver, especially if there are obstructions or reflecting objects between the two. The waves can arrive at slightly different times and will be slightly out of phase due to the different path lengths. Depending on the magnitude of the phase shift, the waves can interfere constructively or destructively. The size of the calculated Fresnel zone at any particular distance from the transmitter and receiver can help to predict whether obstructions or discontinuities along the path will cause significant interference.

Source – Wikipedia (Fresnel zone)

Online Information



Webinars

<https://www.nautel.com/resources/webinars/>



Nautel Waves Newsletter

<https://www.nautel.com/newsletters/>



YouTube

<http://www.youtube.com/user/NautelLtd>



Online Info, such as the Broadcasters' Desktop Resource

<https://www.thebdr.net/>

THANK YOU!

