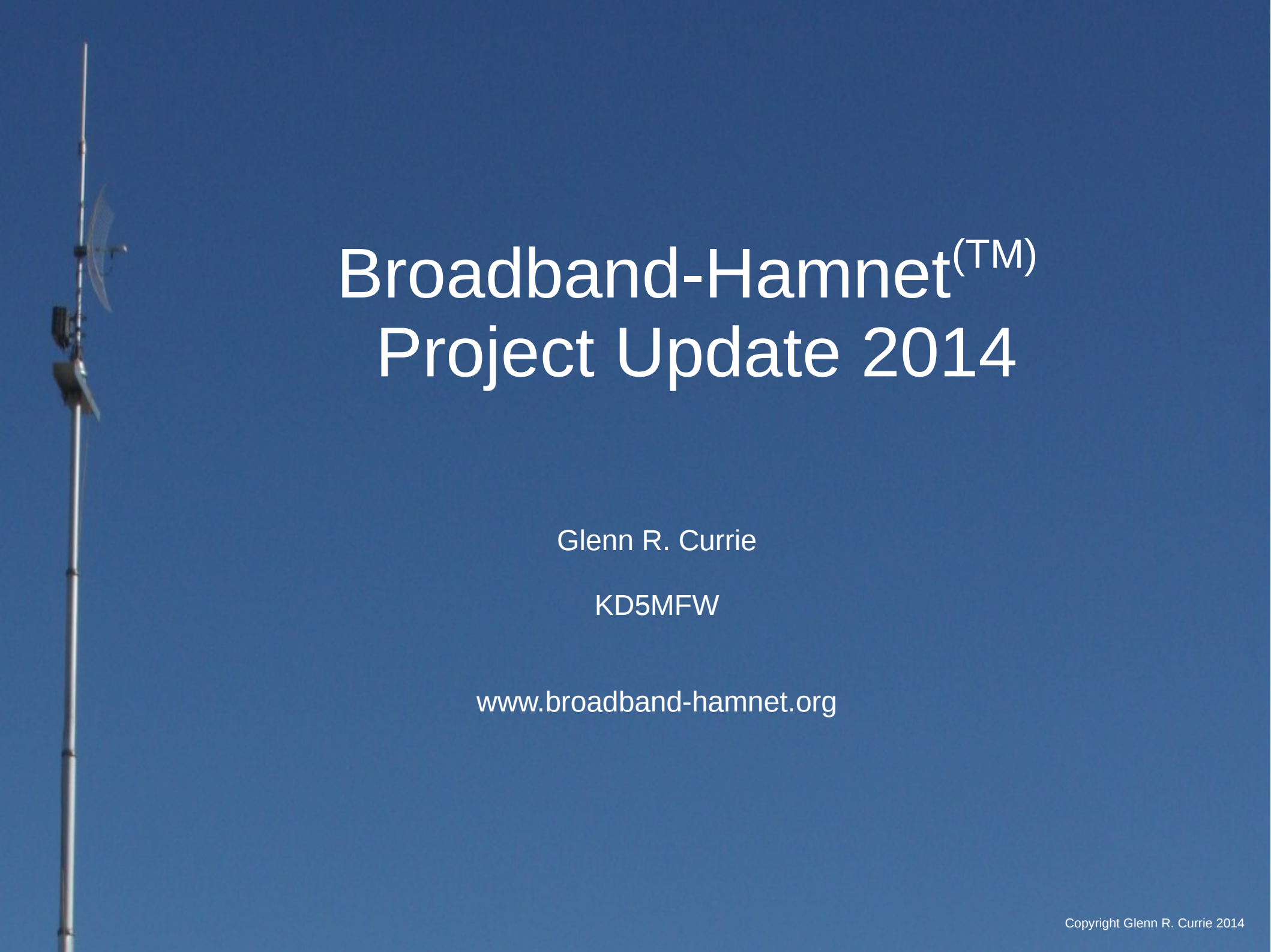


Broadband-Hamnet(TM) Project Update 2014

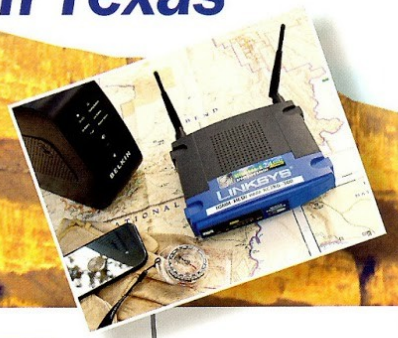
Glenn R. Currie

KD5MFW

www.broadband-hamnet.org

QST
DEVOTED ENTIRELY TO AMATEUR RADIO
July 2013 WWW.ARRL.ORG

Putting *High Speed Multimedia* to Work in Texas



QST reviews:

44 | **Antenna Tuners: MFJ-9982, Palstar AT2K and AT2KD**

49 | **Array Solutions VNAuhf Vector Network Analyzer**

Inside:

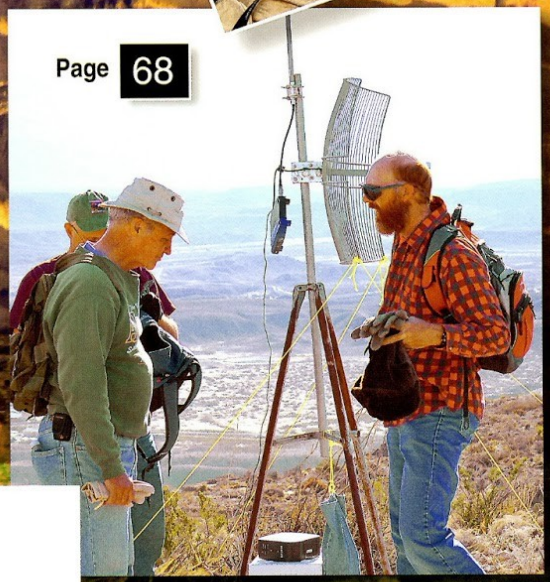
34 | **Use a PIC to Control a Miniature Slow Scan TV Camera**

37 | **Build the *Real* 2 Meter Q-Pole Antenna**

41 | **Add a Digital Display to an Older Transceiver**

65 | **Go Behind the Scenes with Amateur Radio at the Boston Marathon**

Page 68

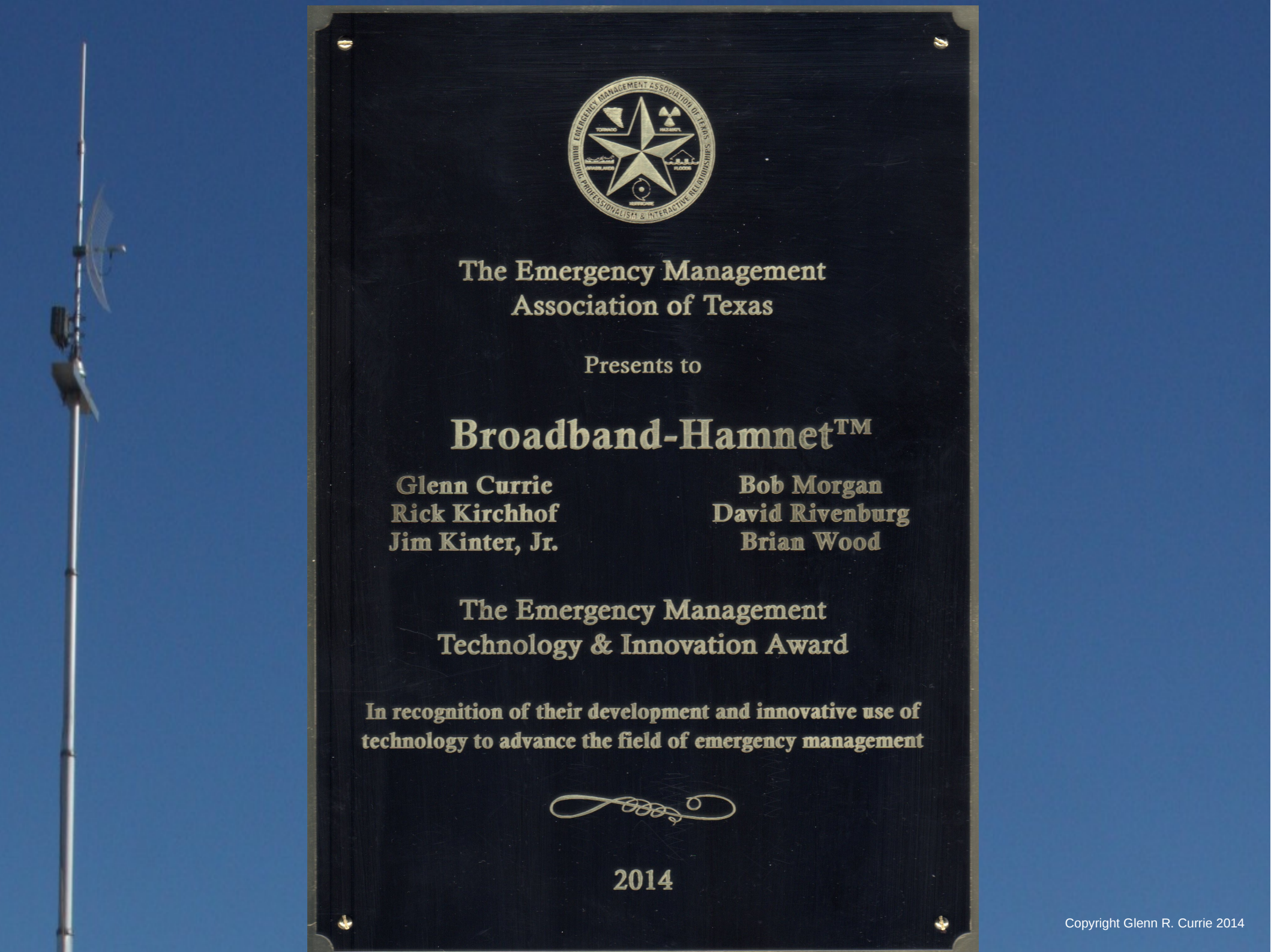


Official Journal of ARRL The national association for AMATEUR RADIO®

Rick, NG5V new ARRL West Gulf Division
Assistant Director for Broadband Networks
Appointed by N5RAV, Dr. Woolweaver

Awards from served agencies

- State



Awards from served agencies

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IAEM 2013 Awards Competition

IAEM-USA First Place Award

Technology & Innovation Award

Division 2

Broadband Hamnet™

In recognition of the creation of a high-speed digital wireless communications mesh network for Amateur Radio Operators.

IAEM
International Association of Emergency Managers

Presented this 29th day of October, 2013
IAEM Annual Conference, Reno, NV

Jeff Walker, CEM
IAEM-USA Council President

Elizabeth B. Armstrong, MAM, CAE
IAEM-USA Executive Director

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Ellis M. Stanley Sr.
IAEM-Global Chair

Elizabeth B. Armstrong, MAM, CAE
Chief Executive Officer

“We stand with you
and the
Broadband-Hamnet(TM) Project.”

Williamson County, Texas

Commissioner's Court

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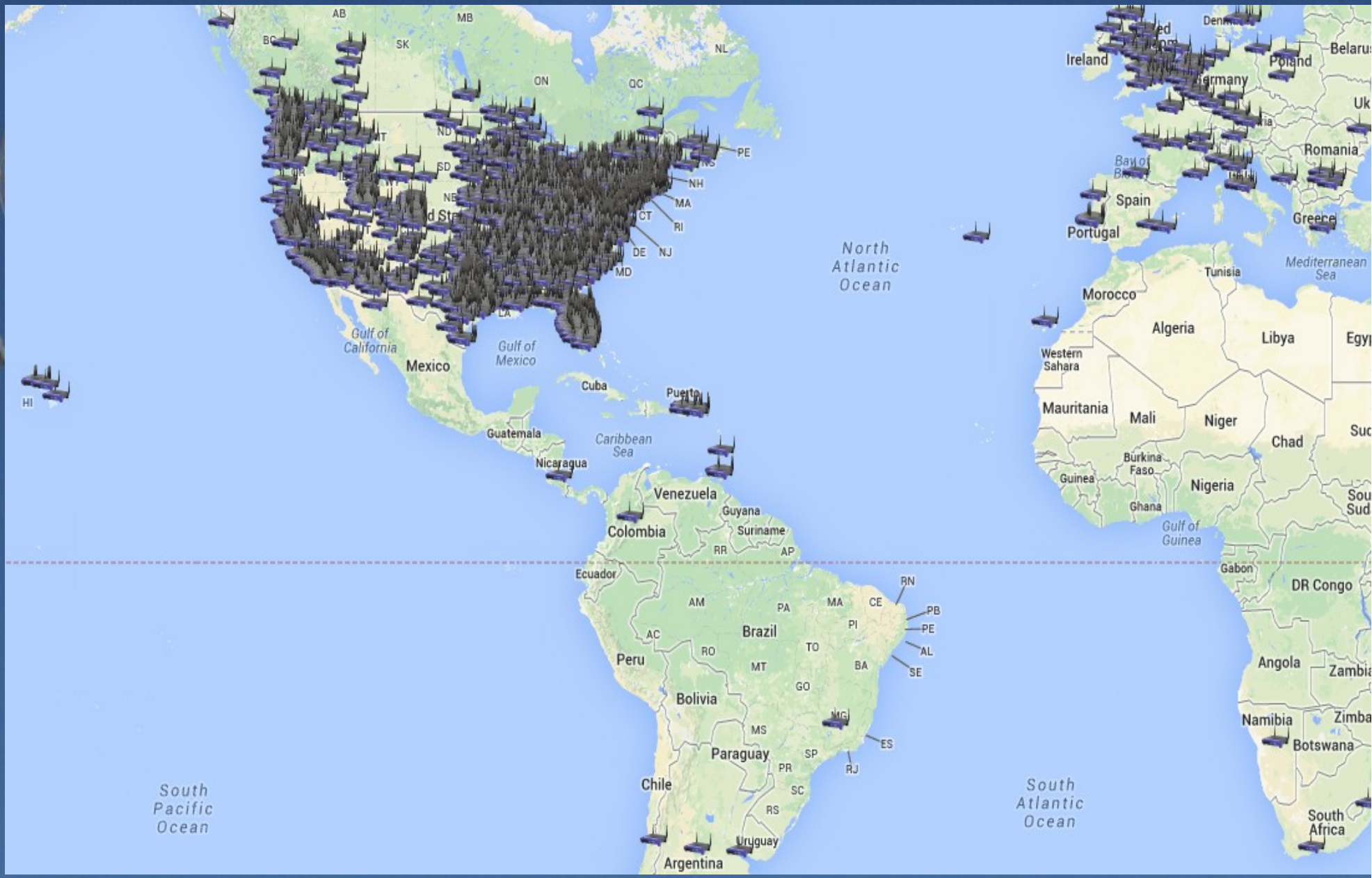
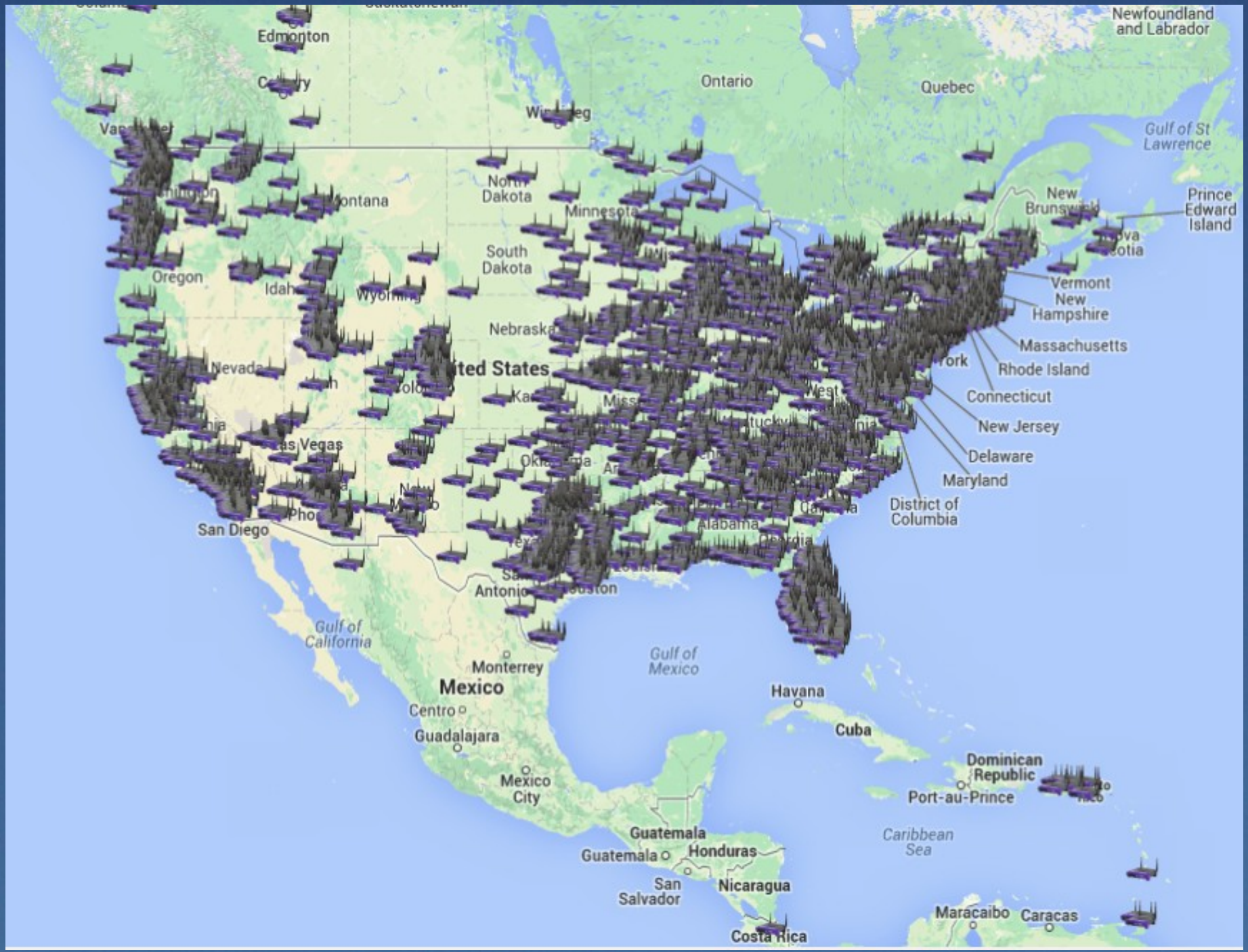
- National
- International

Awards From: Served Agencies

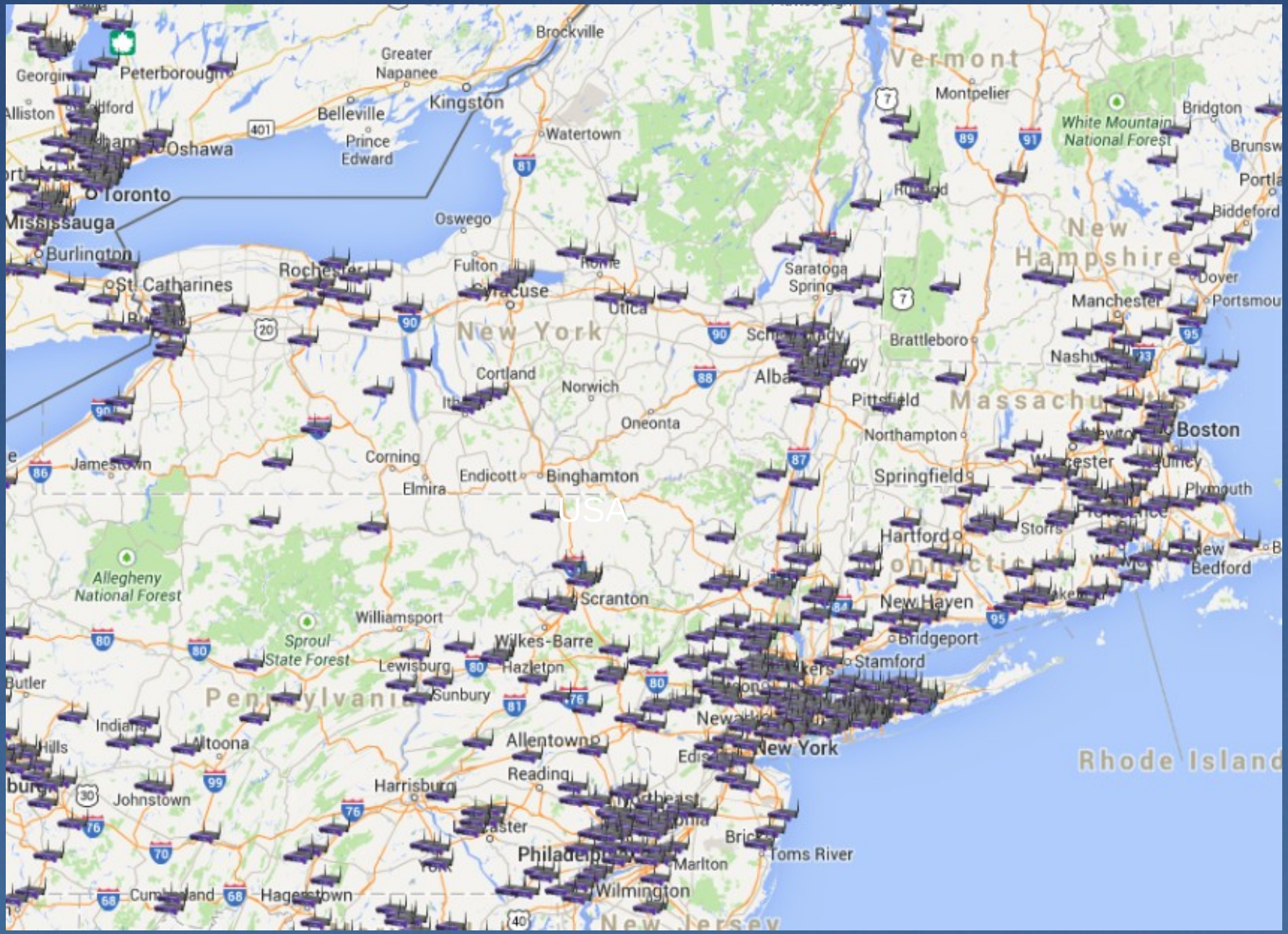
Broadband-Hamnet(TM)



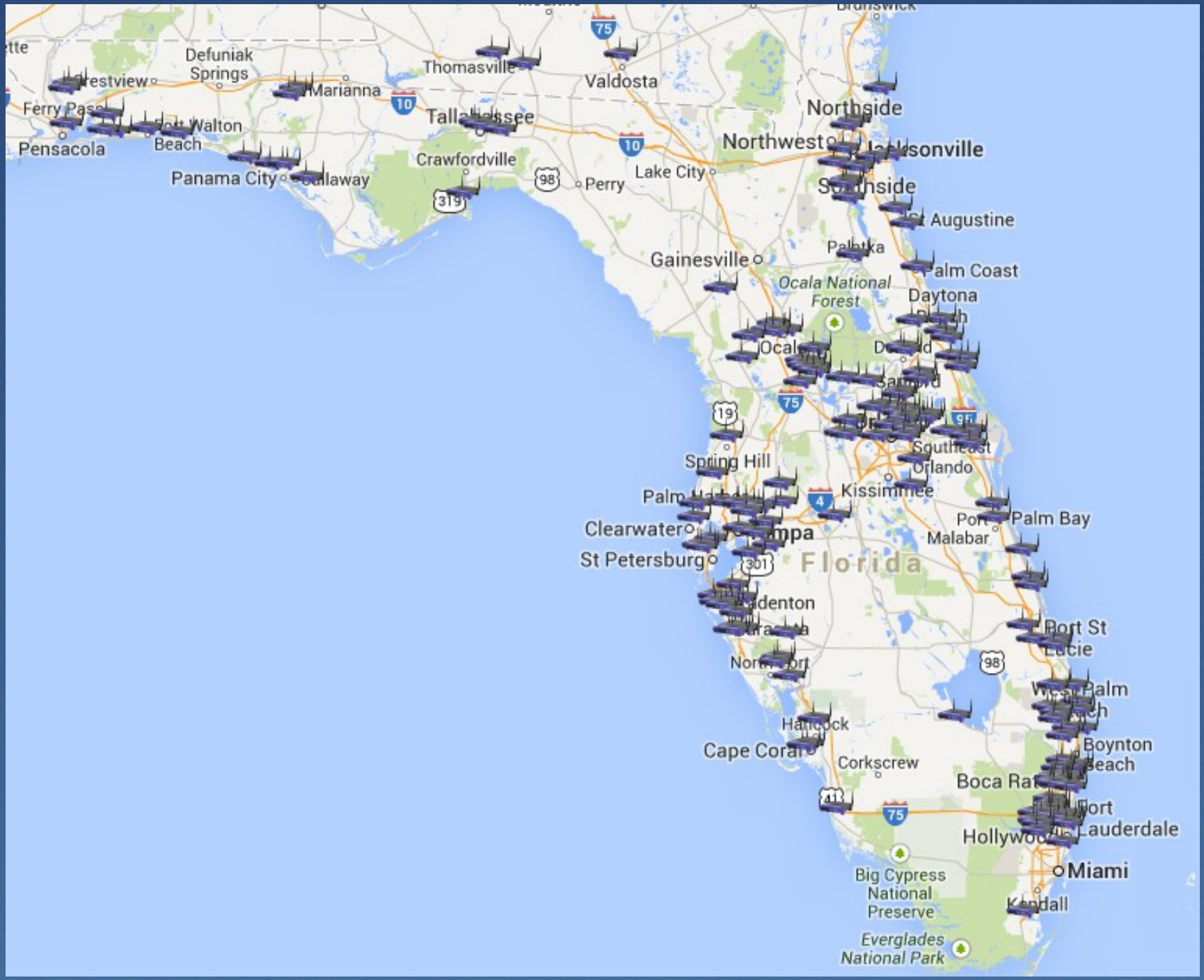
Nodes around the world



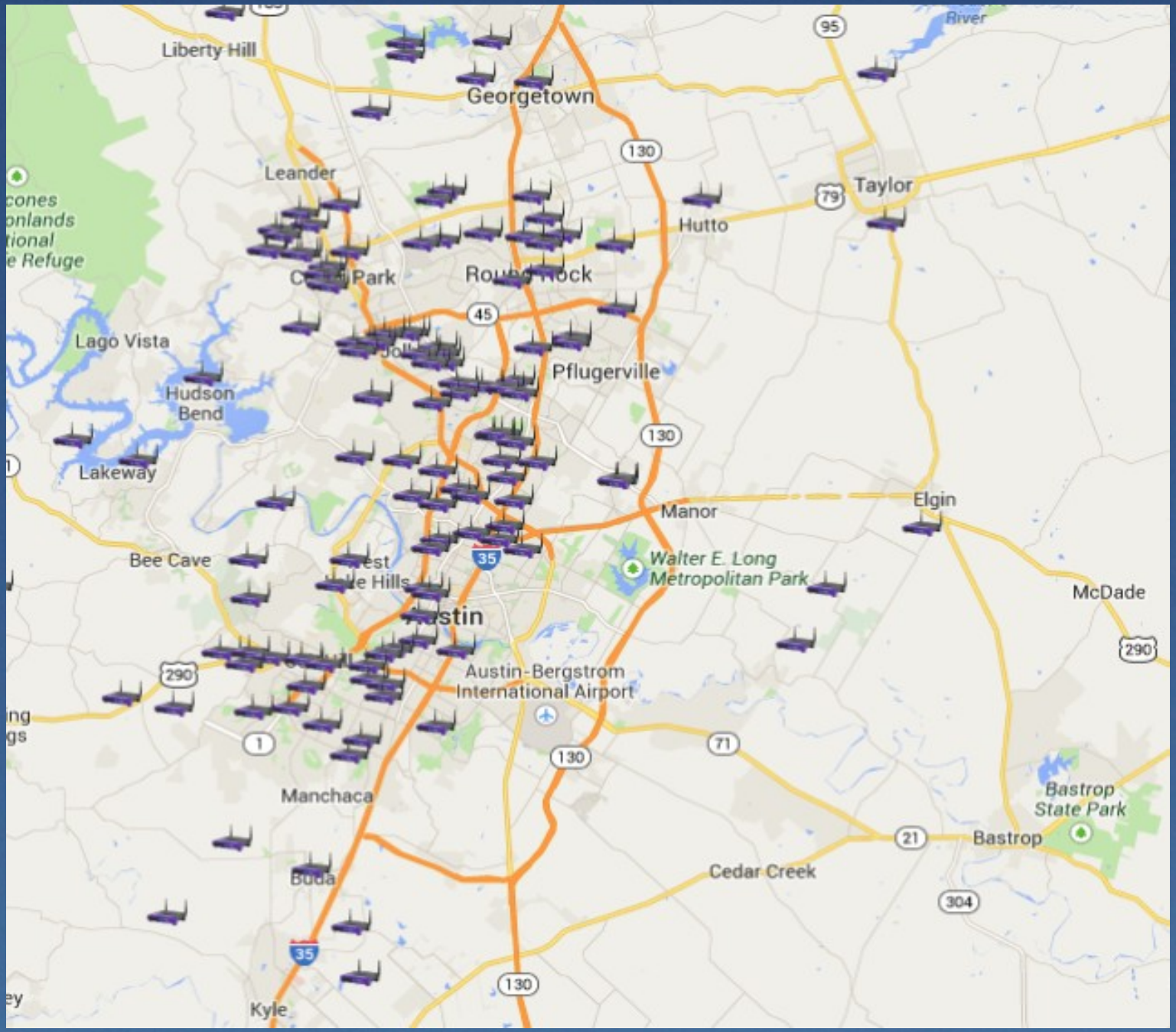
USA



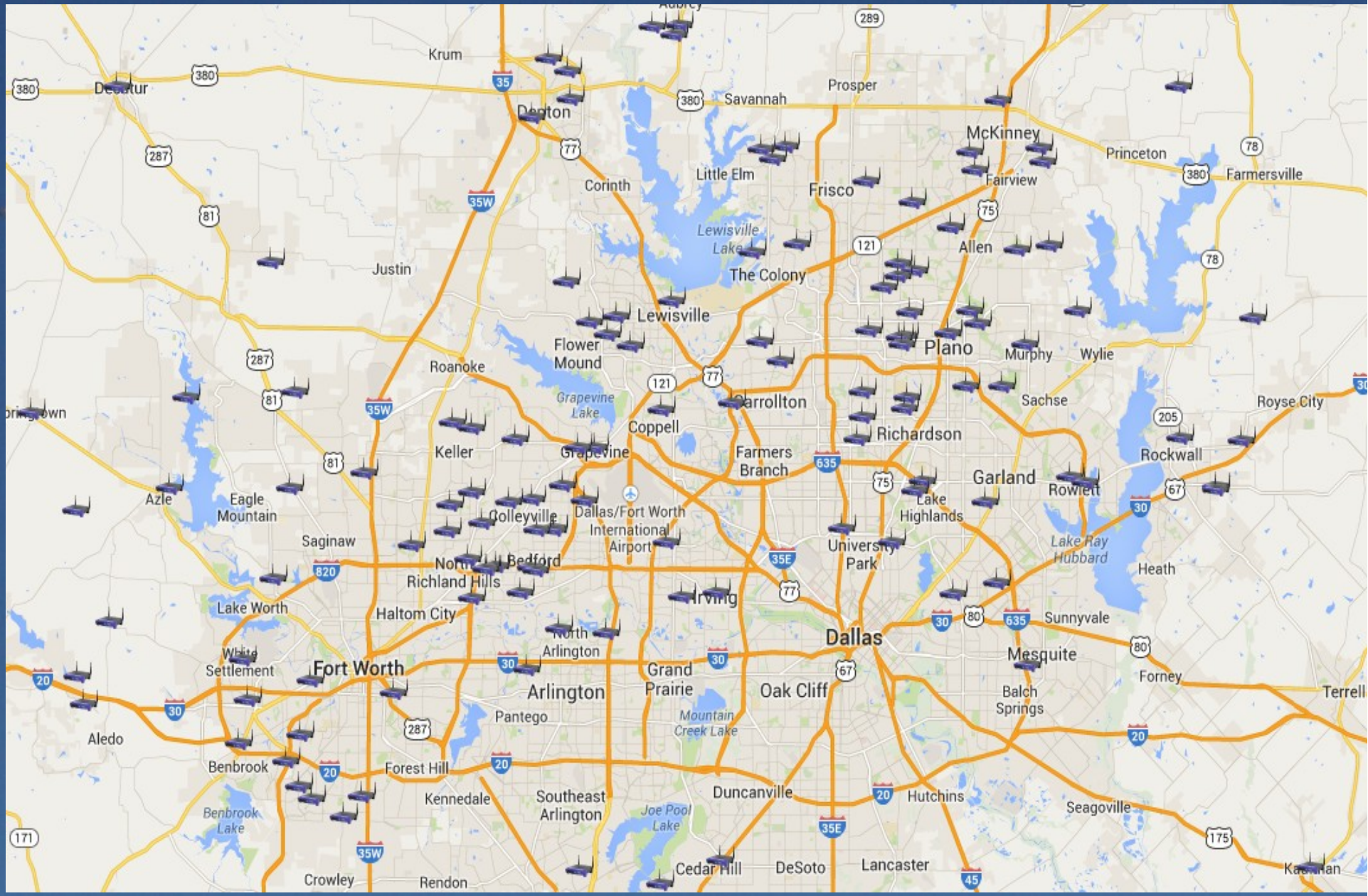
North East



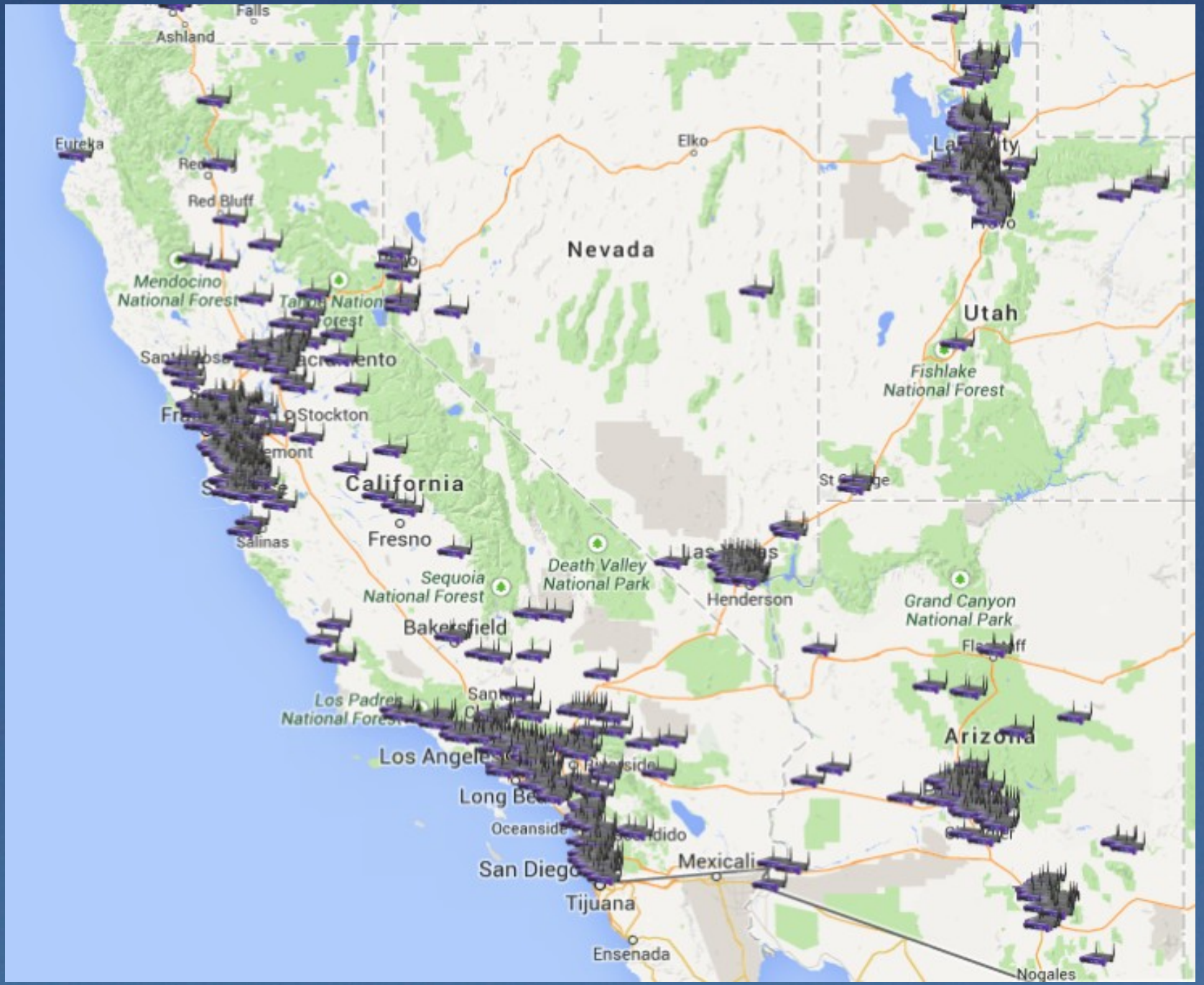
Florida



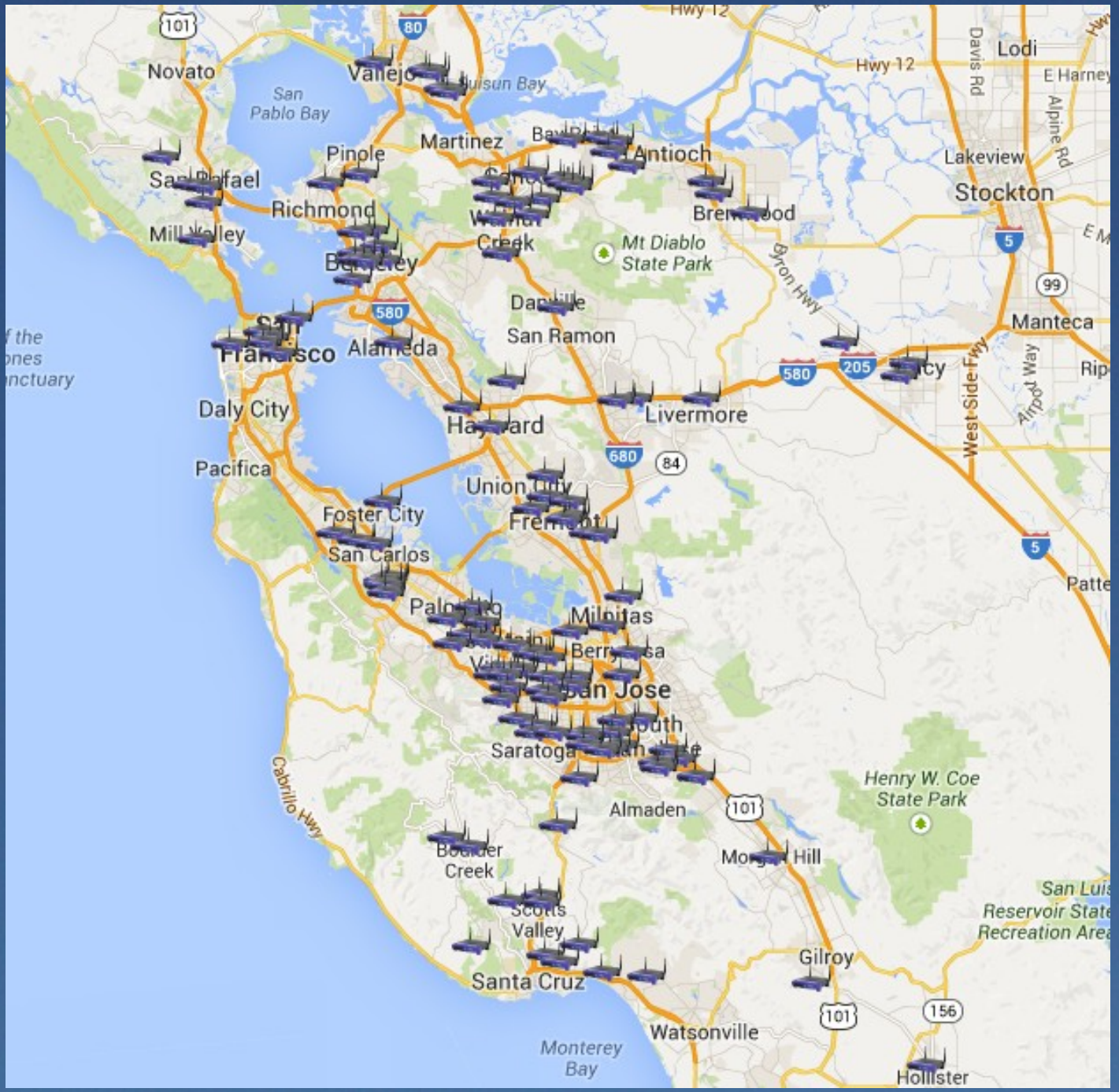
Austin



Dallas – Fort Worth



South West



North West

Europe

Mediterranean

New Firmware

New Firmware

New Ubuiquiti hardware supported

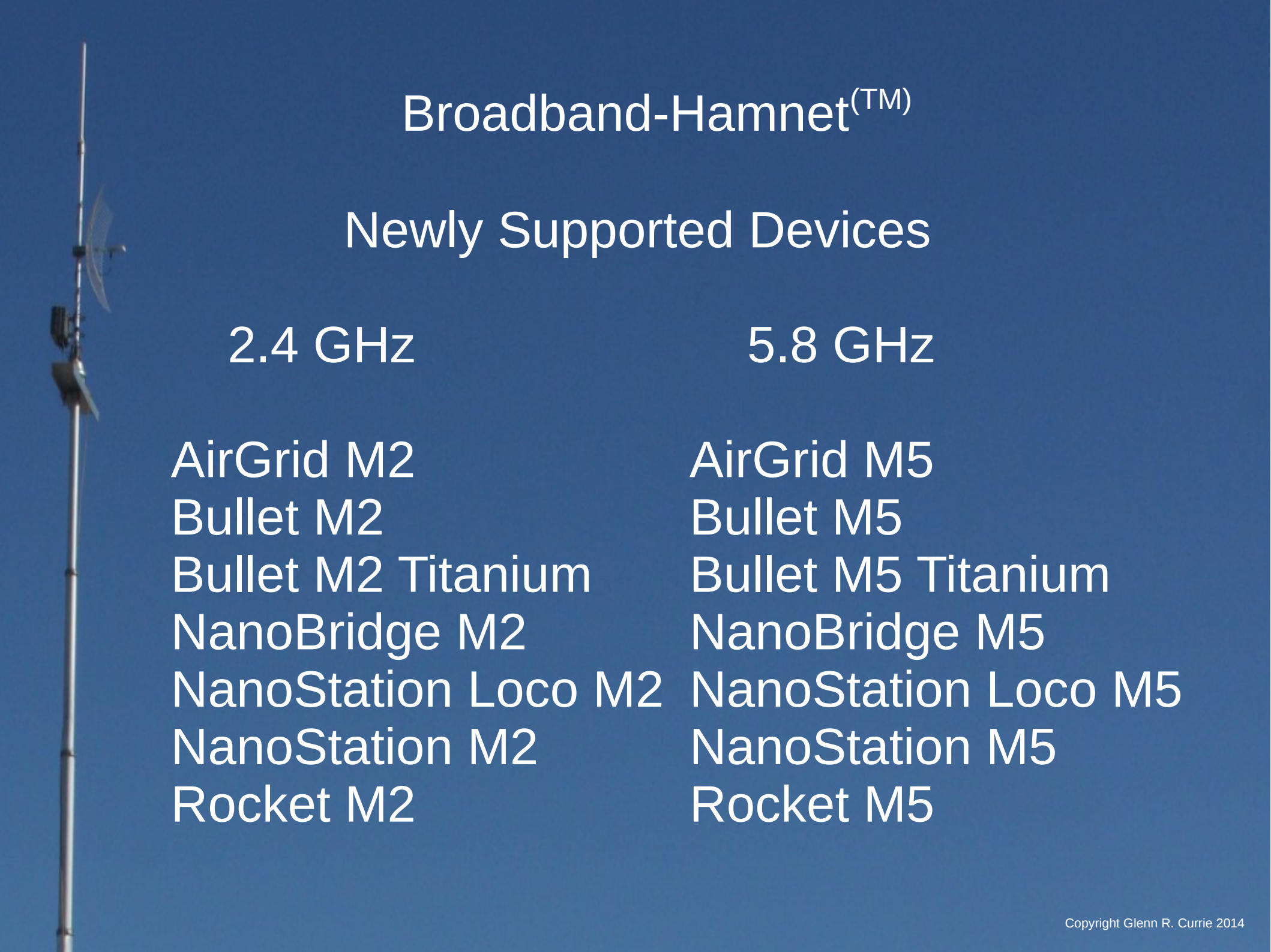
New Firmware

New Ubuiquiti hardware supported

WRT54G will continue to be supported

Andre Hansen, K6AH, Development Mgr.

Conrad Lara, KG6JEI, FW Engineer



Broadband-Hamnet(TM)

Newly Supported Devices

2.4 GHz	5.8 GHz
AirGrid M2	AirGrid M5
Bullet M2	Bullet M5
Bullet M2 Titanium	Bullet M5 Titanium
NanoBridge M2	NanoBridge M5
NanoStation Loco M2	NanoStation Loco M5
NanoStation M2	NanoStation M5
Rocket M2	Rocket M5

New Firmware

Full release notes for the new firmware release will be posted on the website when the firmware is released.

Please see the full release notes for details

What follows is a summary of the fw changes

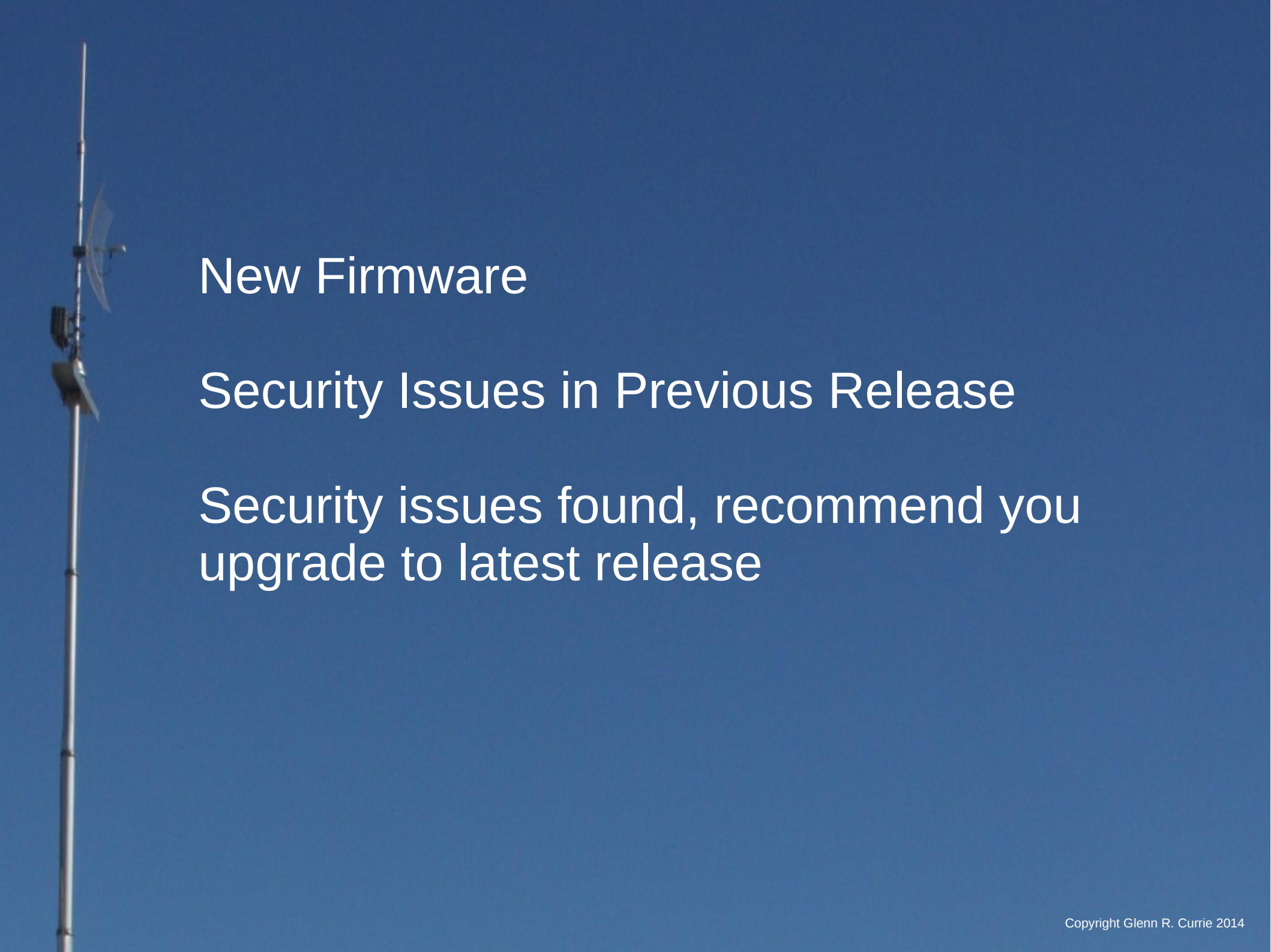
New Firmware

Compatibility with Earlier Releases

Upgrade required for all existing

Linksys and Ubuiquiti devices

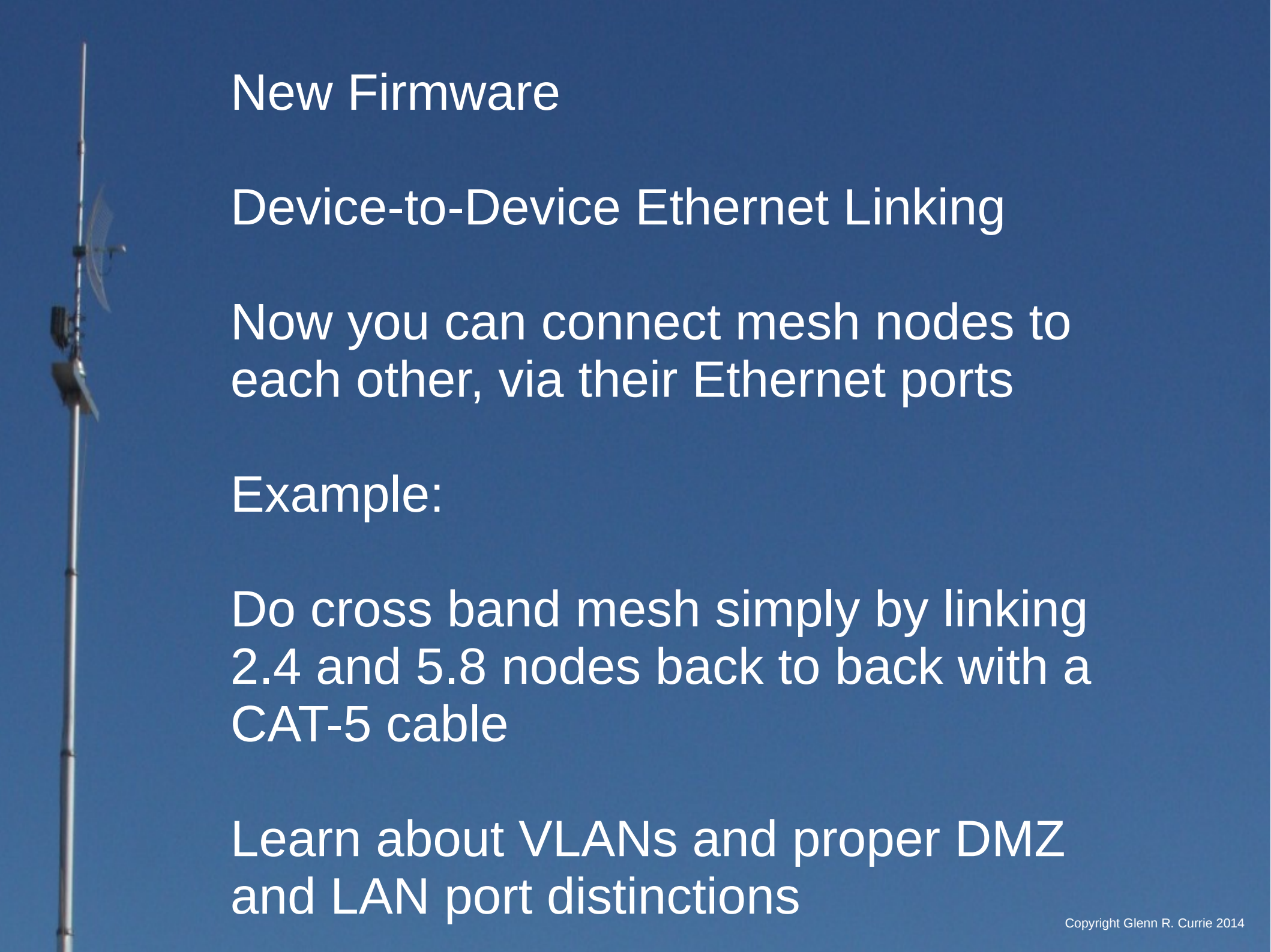
SSID incremented to 'v2'



New Firmware

Security Issues in Previous Release

Security issues found, recommend you upgrade to latest release



New Firmware

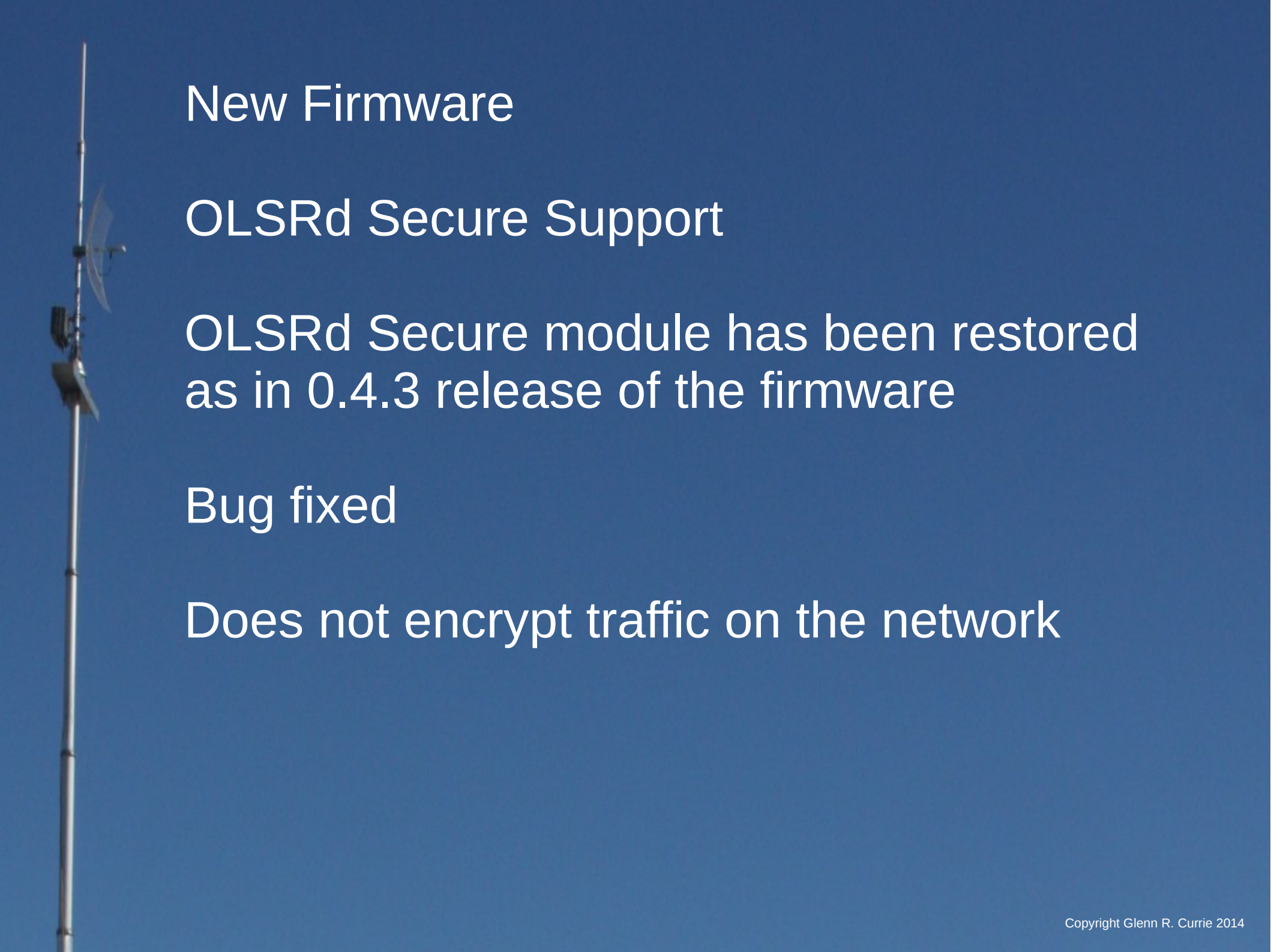
Device-to-Device Ethernet Linking

Now you can connect mesh nodes to each other, via their Ethernet ports

Example:

Do cross band mesh simply by linking 2.4 and 5.8 nodes back to back with a CAT-5 cable

Learn about VLANs and proper DMZ and LAN port distinctions



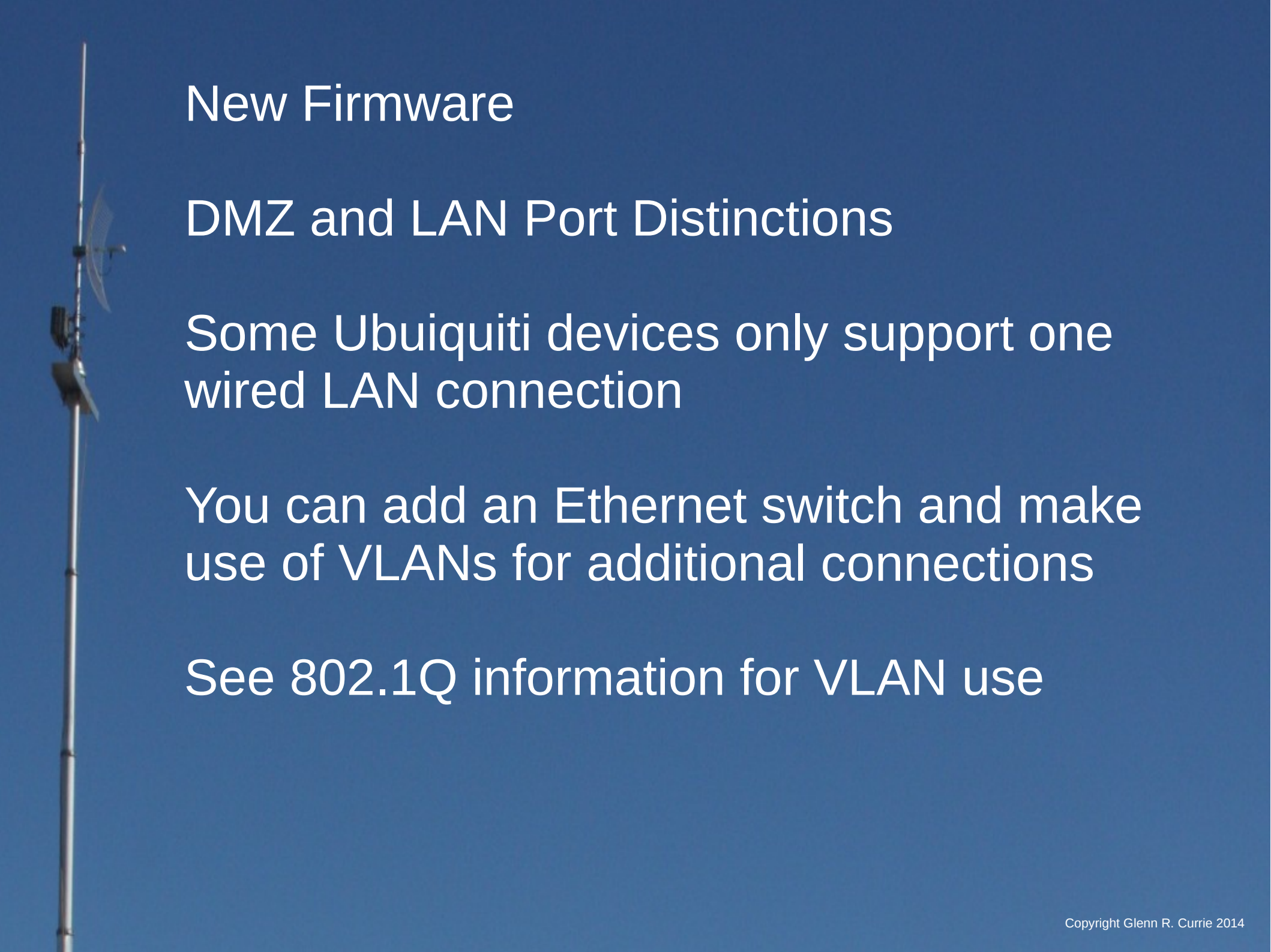
New Firmware

OLSRd Secure Support

OLSRd Secure module has been restored as in 0.4.3 release of the firmware

Bug fixed

Does not encrypt traffic on the network



New Firmware

DMZ and LAN Port Distinctions

Some Ubuiquiti devices only support one wired LAN connection

You can add an Ethernet switch and make use of VLANs for additional connections

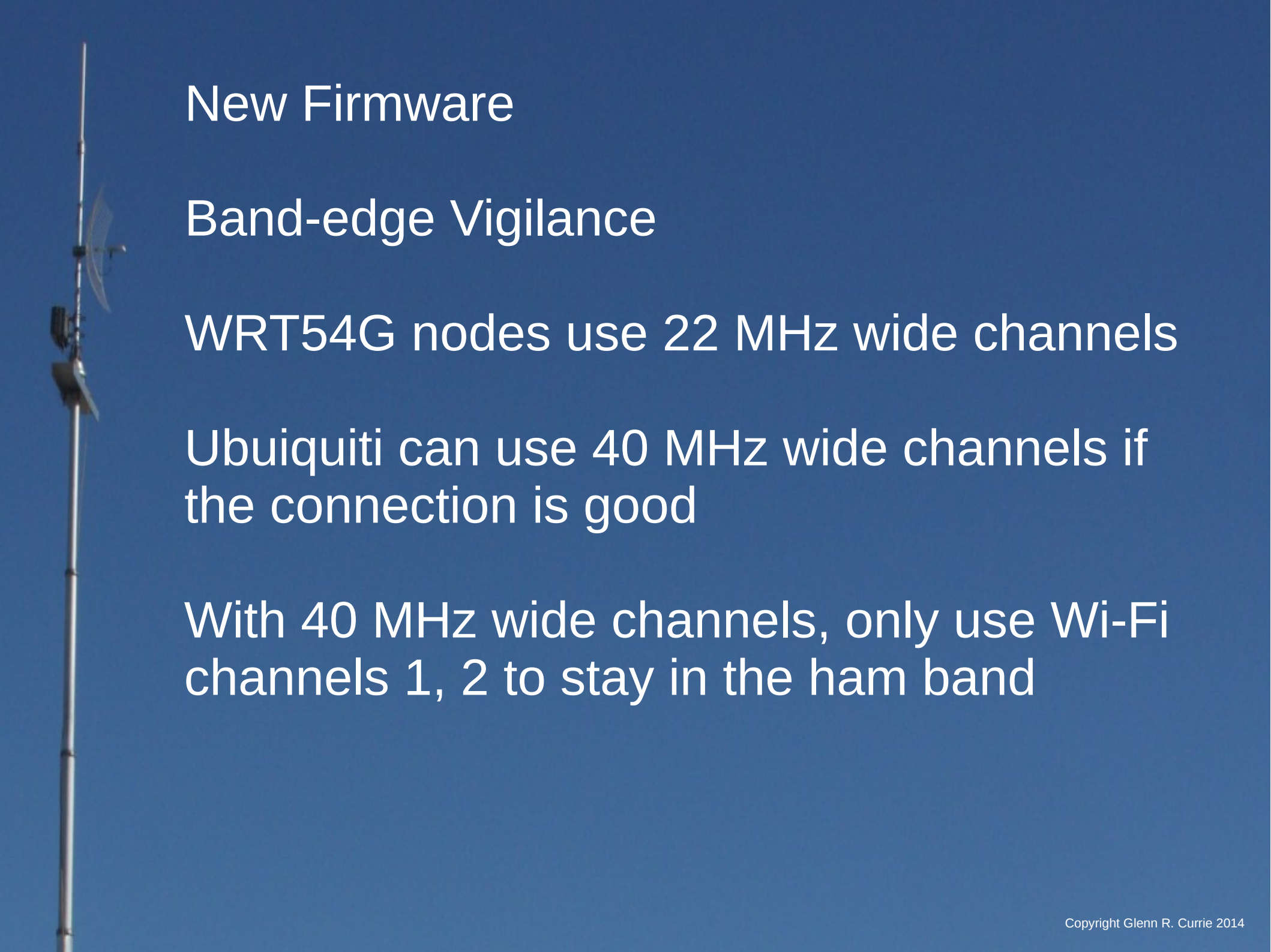
See 802.1Q information for VLAN use

New Firmware

Off-Channel Operation

Ubuiquiti devices will not search for BBHN nodes off-channel.

Uses only configured channel



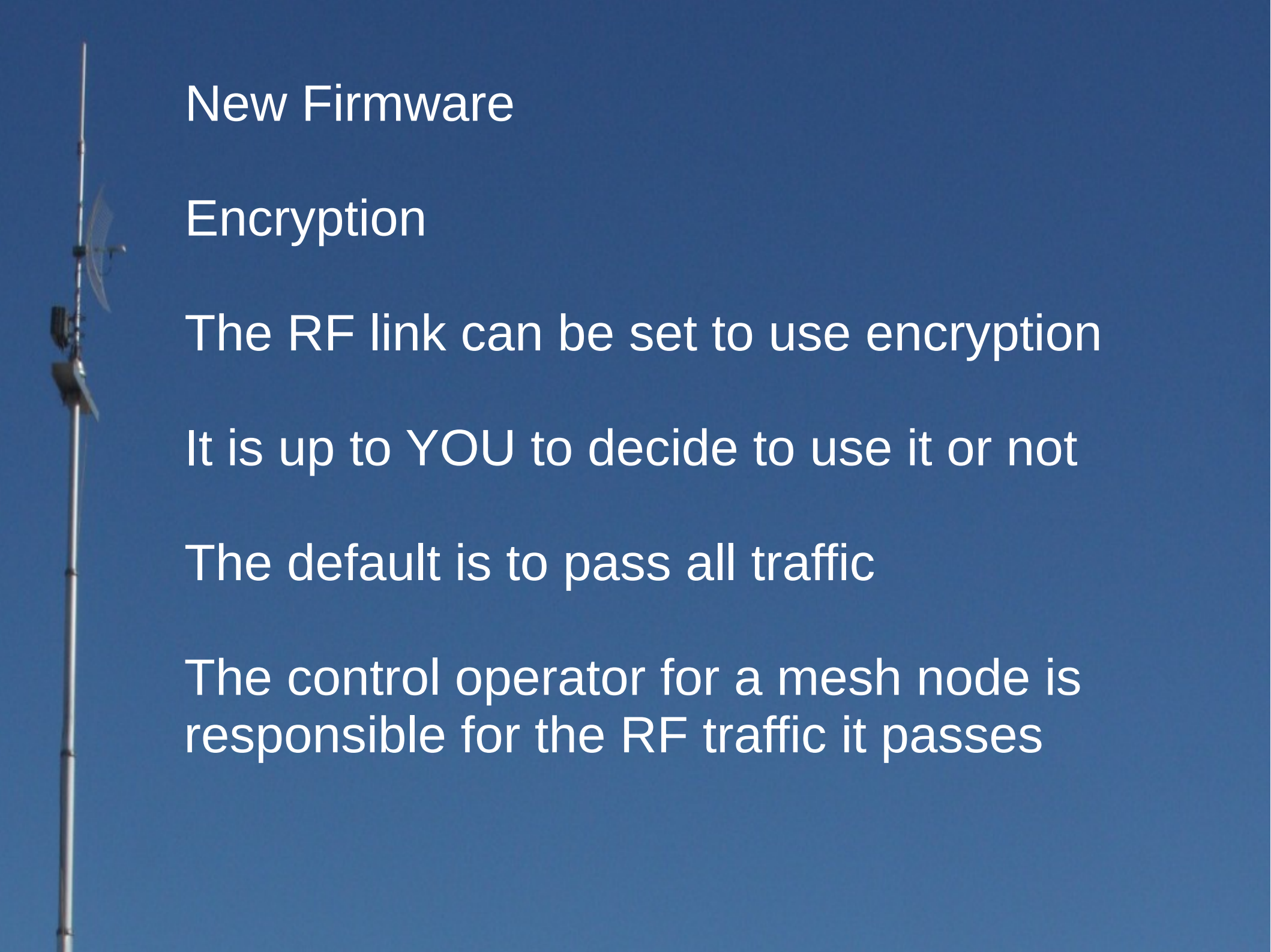
New Firmware

Band-edge Vigilance

WRT54G nodes use 22 MHz wide channels

Ubuiquiti can use 40 MHz wide channels if the connection is good

With 40 MHz wide channels, only use Wi-Fi channels 1, 2 to stay in the ham band



New Firmware

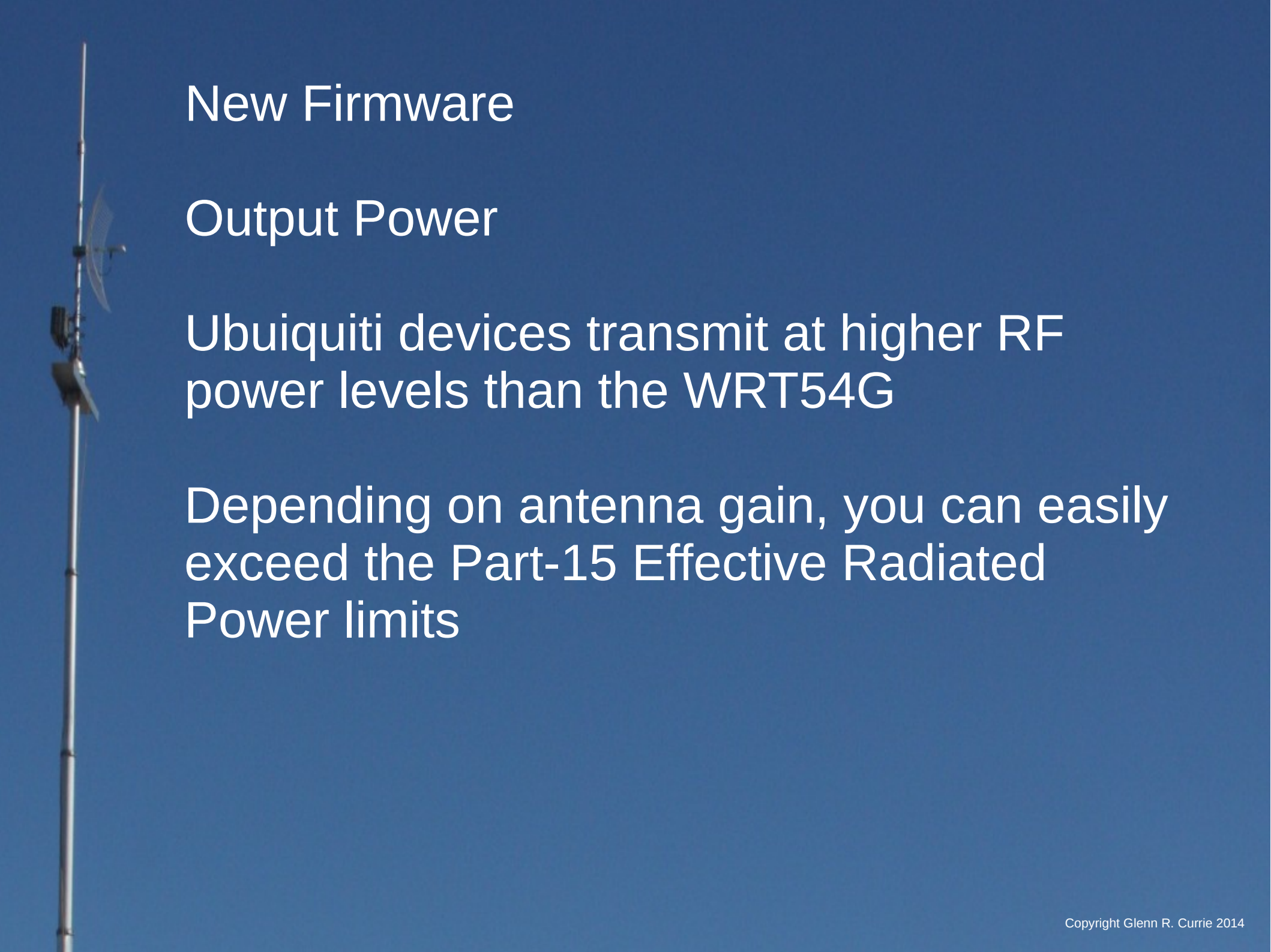
Encryption

The RF link can be set to use encryption

It is up to YOU to decide to use it or not

The default is to pass all traffic

The control operator for a mesh node is responsible for the RF traffic it passes



New Firmware

Output Power

Ubuiquiti devices transmit at higher RF power levels than the WRT54G

Depending on antenna gain, you can easily exceed the Part-15 Effective Radiated Power limits

New Firmware

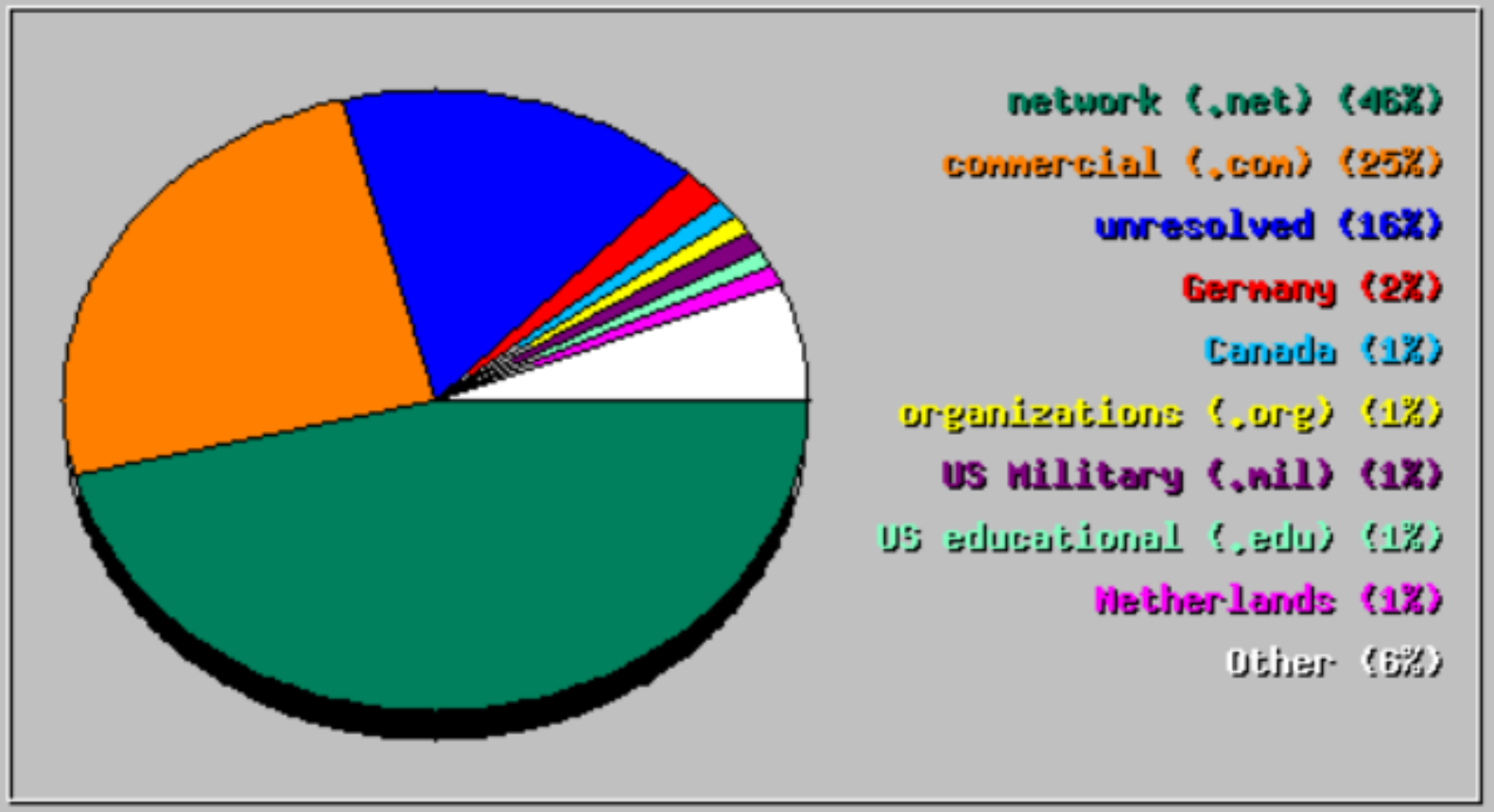
Firmware Beta Test Team Members

Clint	AE5CA
Doug	W1DUG
Garry	KD2DDK
Gordon	W2TTT
Karl	W2KBF
Mark	KD5RXT
Randy	WU2S
Richard	W2LCN

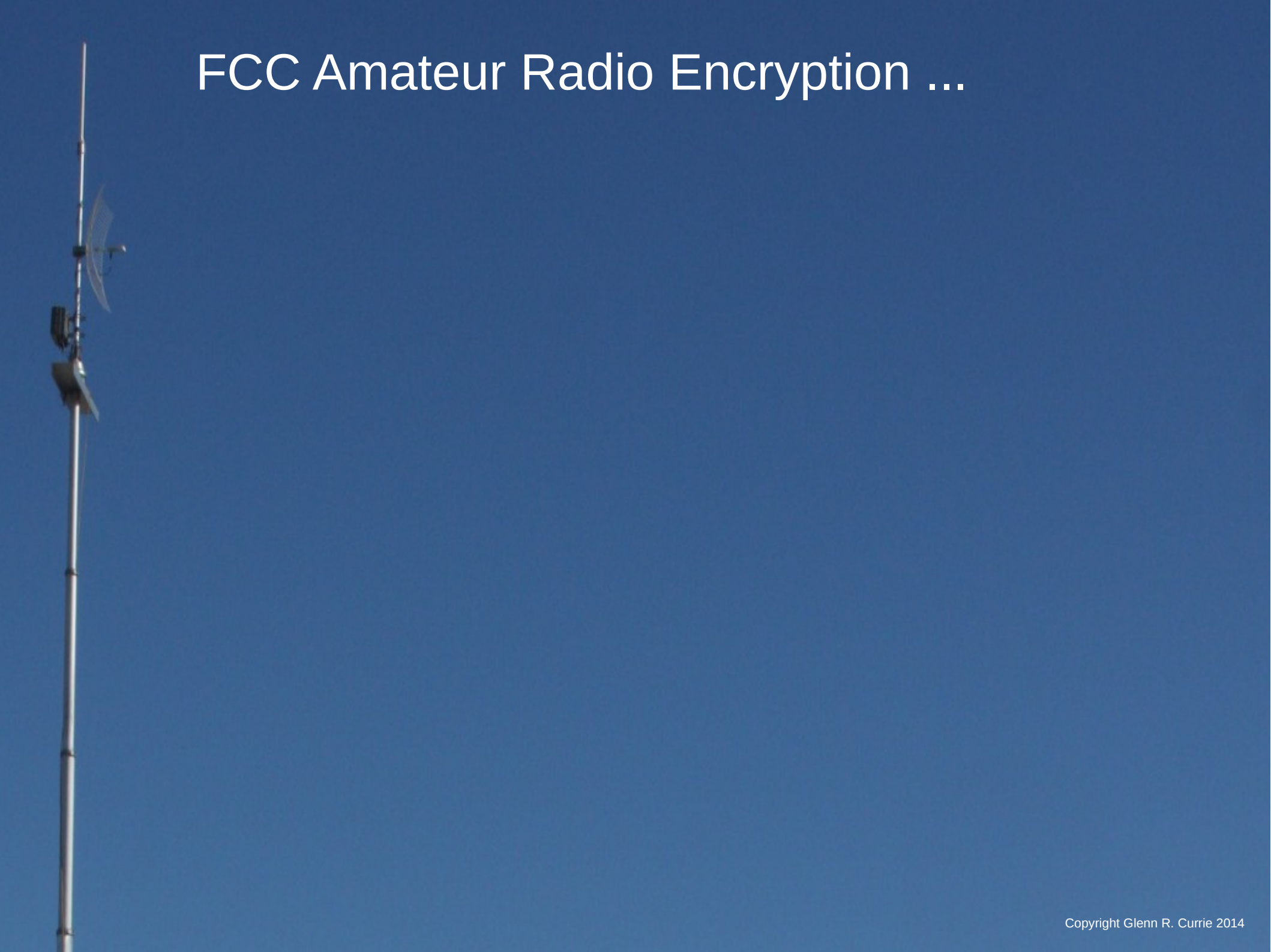
Monthly Statistics for April 2014	
Total Hits	**881812**
Total Files	**677875**
Total Pages	**302570**
Total Visits	**63032**
Total KBytes	**25547396**
Total Unique Sites	**17418**
Total Unique URLs	**9401**
Total Unique Referrers	**5346**
Total Unique User Agents	**3103**

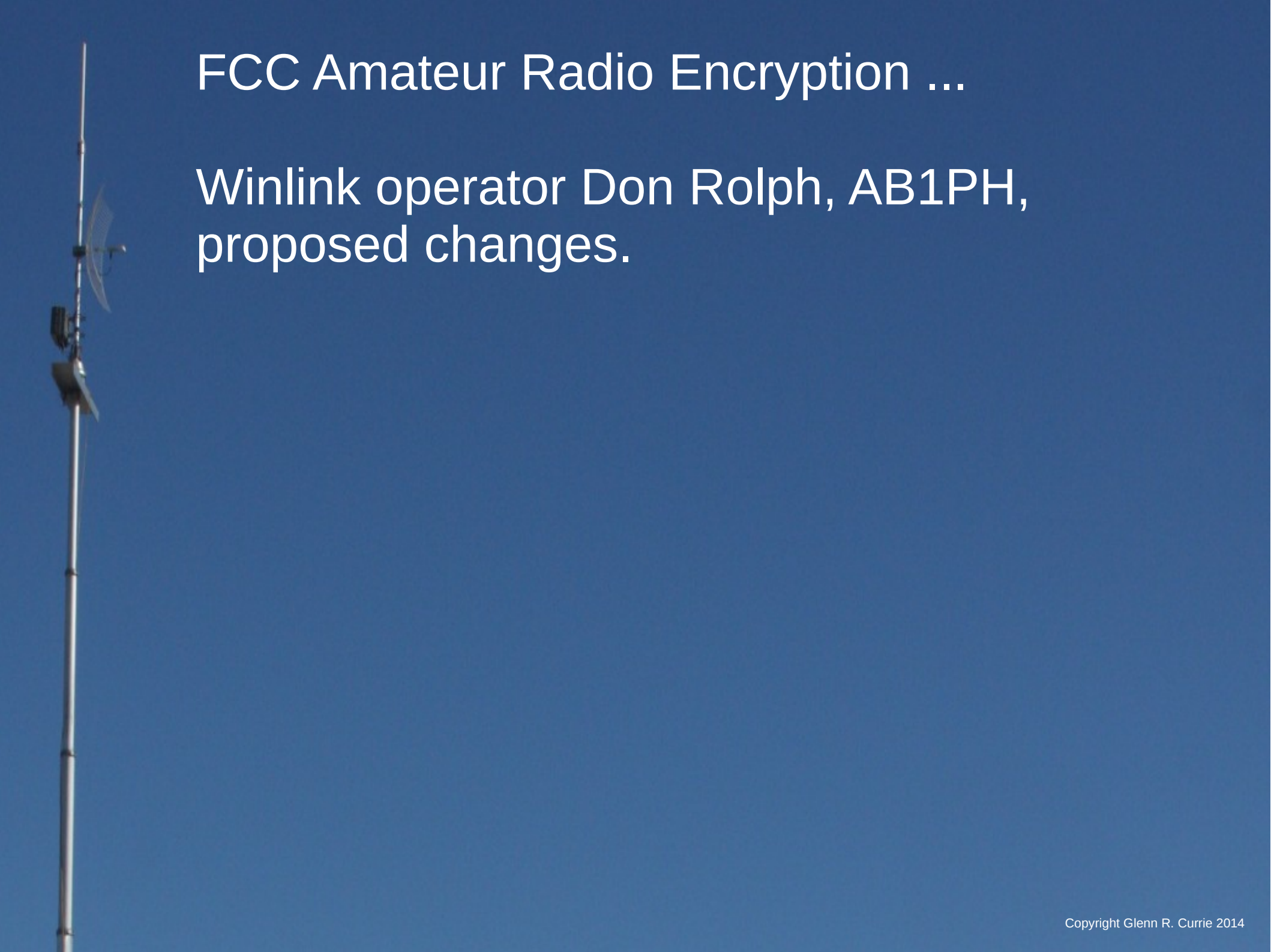
	Avg	Max
Hits per Hour	**1224**	**5630**
Hits per Day	**29393**	**47500**
Files per Day	**22595**	**29586**
Pages per Day	**10085**	**30248**
Visits per Day	**2101**	**2581**
KBytes per Day	**851580**	**1270461**

Usage by Country for April 2014



FCC Amateur Radio Encryption ...





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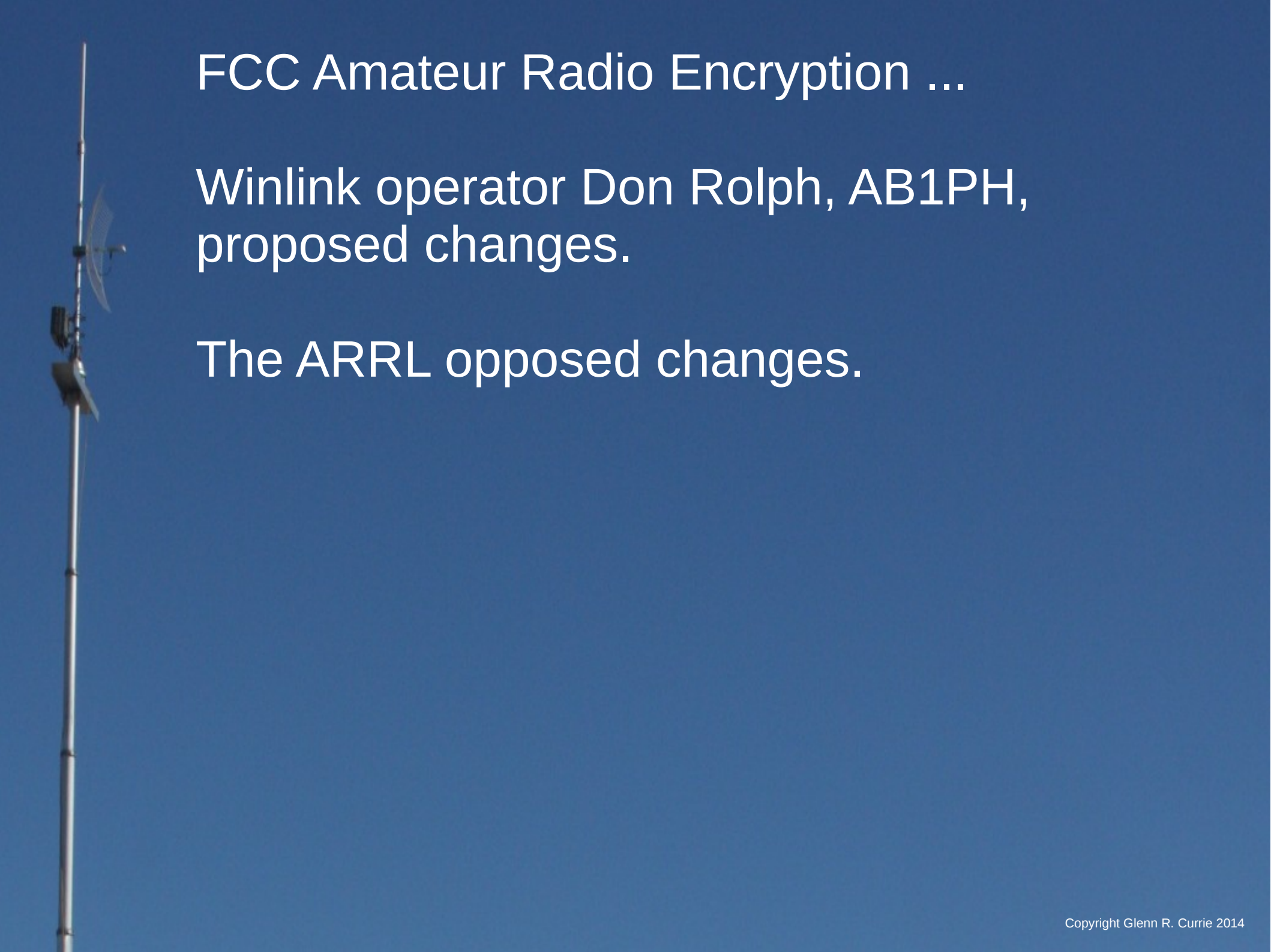
Winlink operator Don Rolph, AB1PH, proposed changes.



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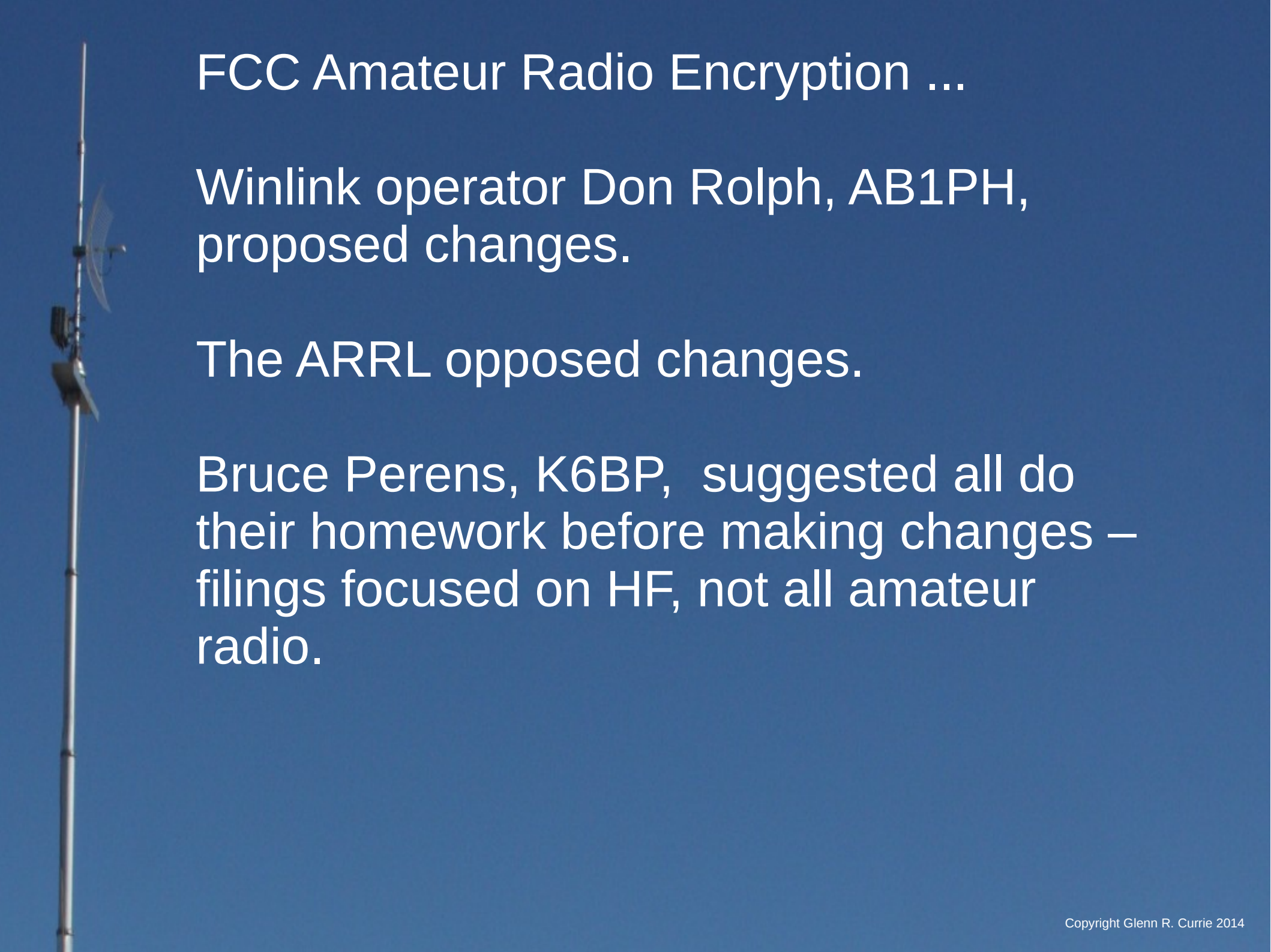

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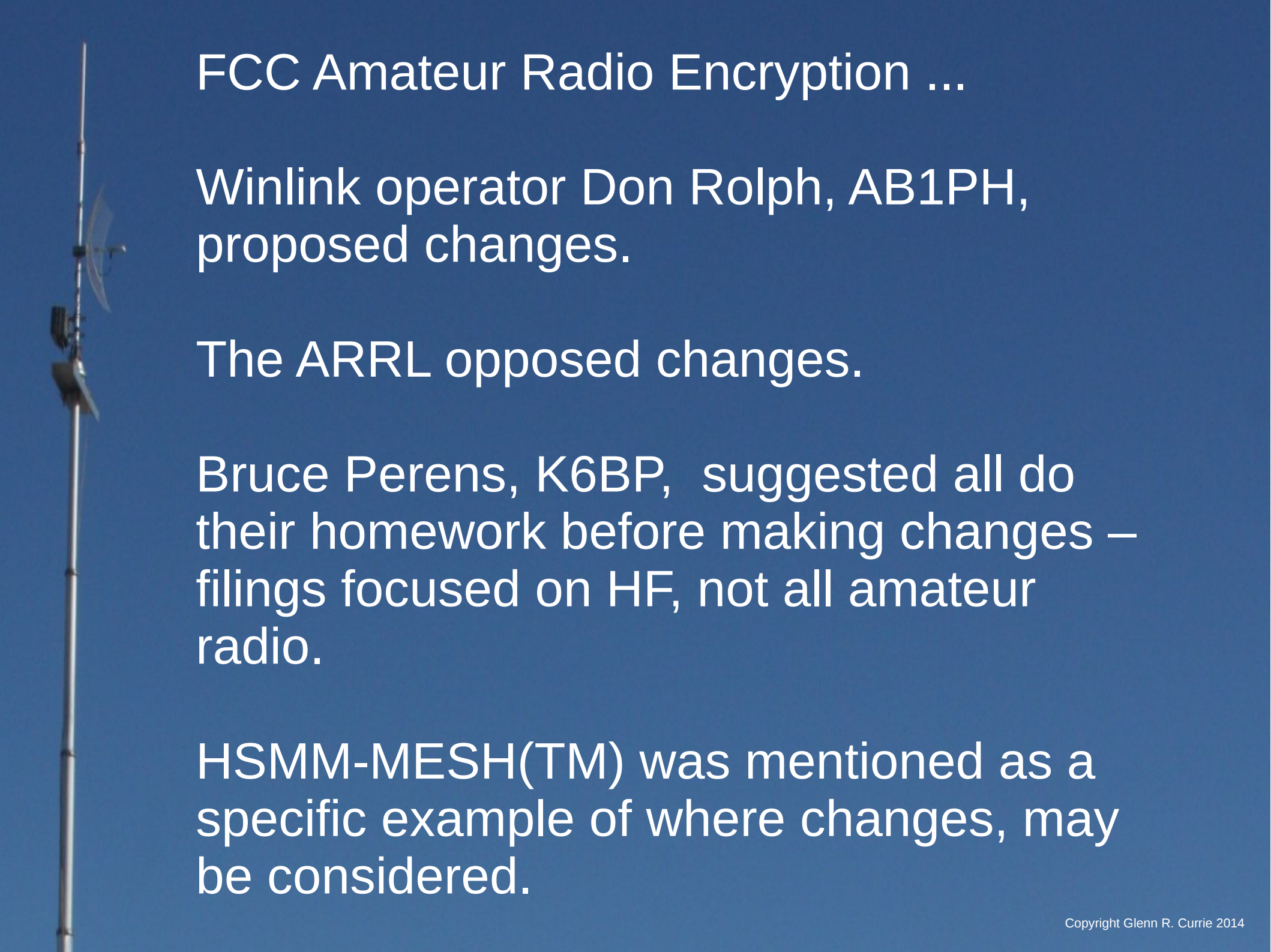

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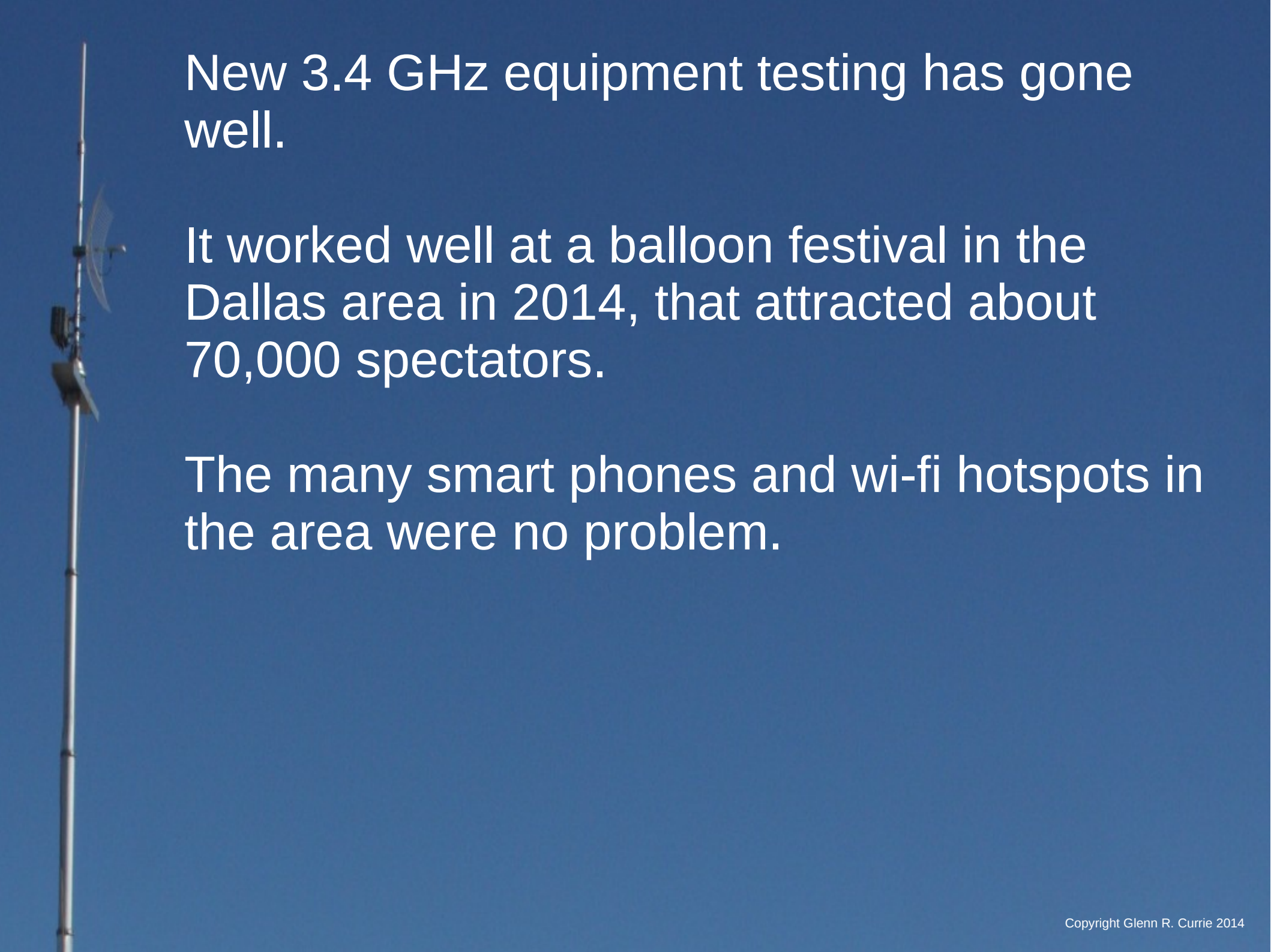
HSMM-MESH(TM) was mentioned as a specific example of where changes, may be considered.

New 3.4 GHz equipment testing has gone well.

It worked well at a balloon festival in the Dallas area in 2014, that attracted about 70,000 spectators.



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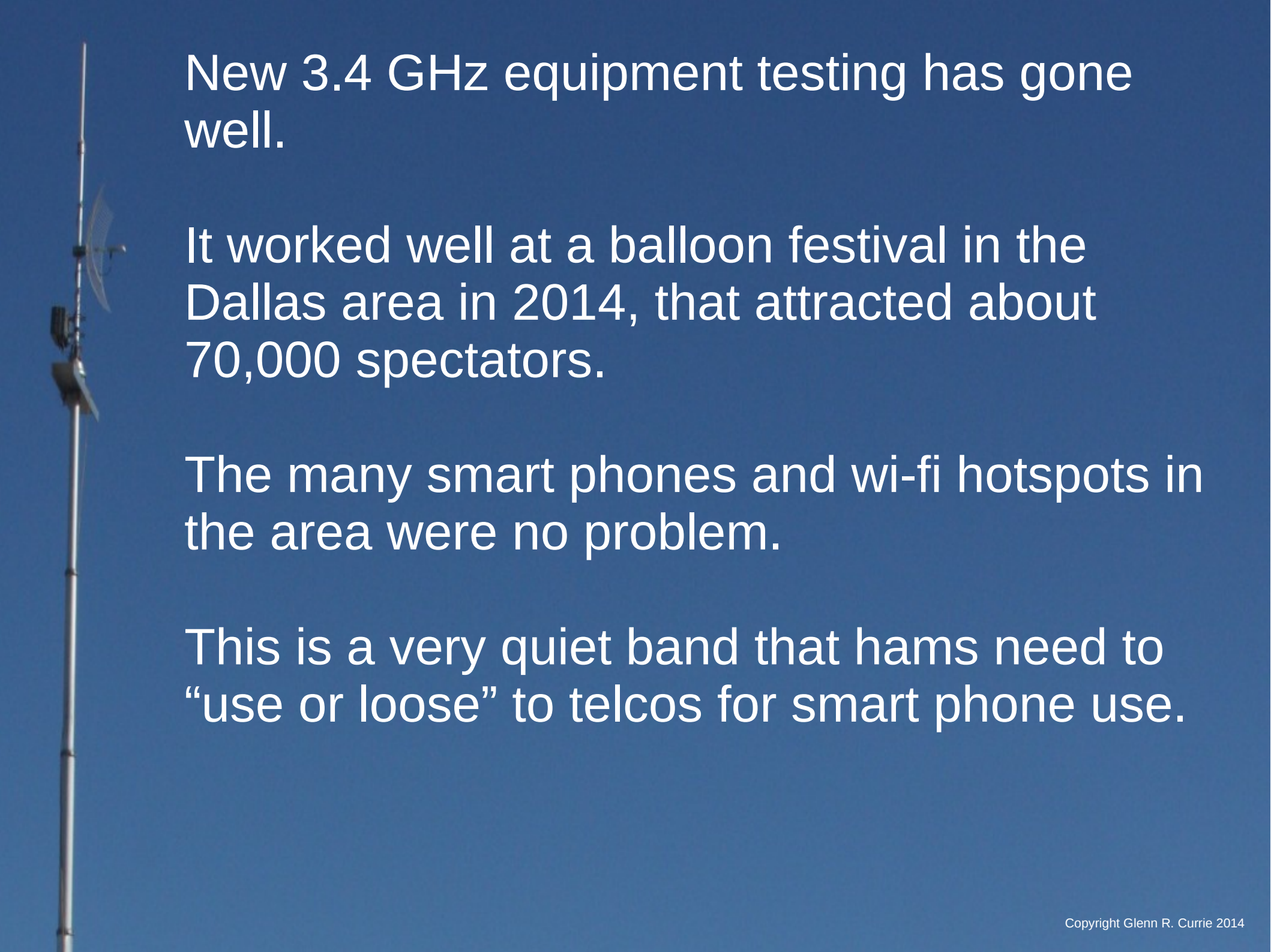

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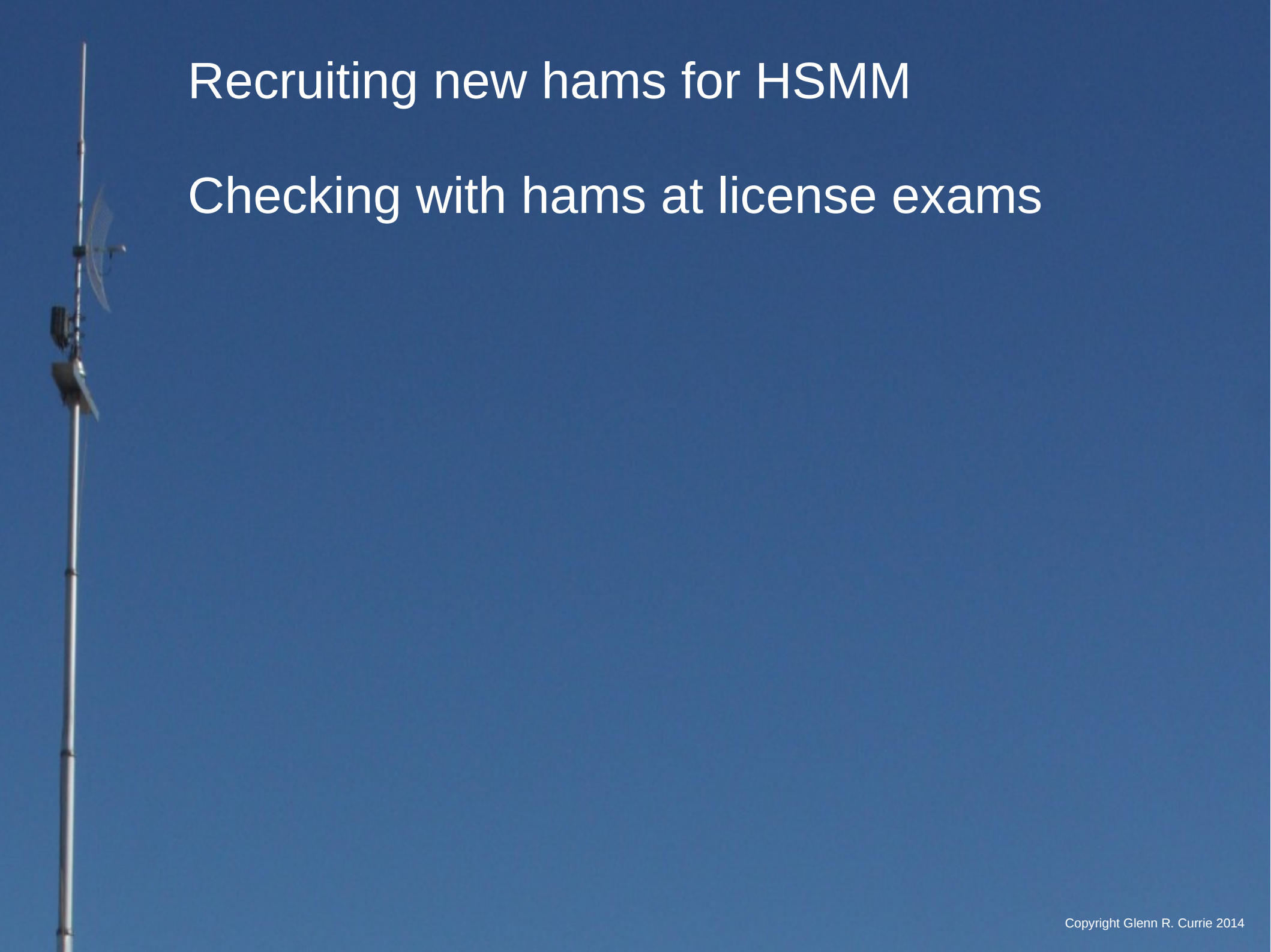
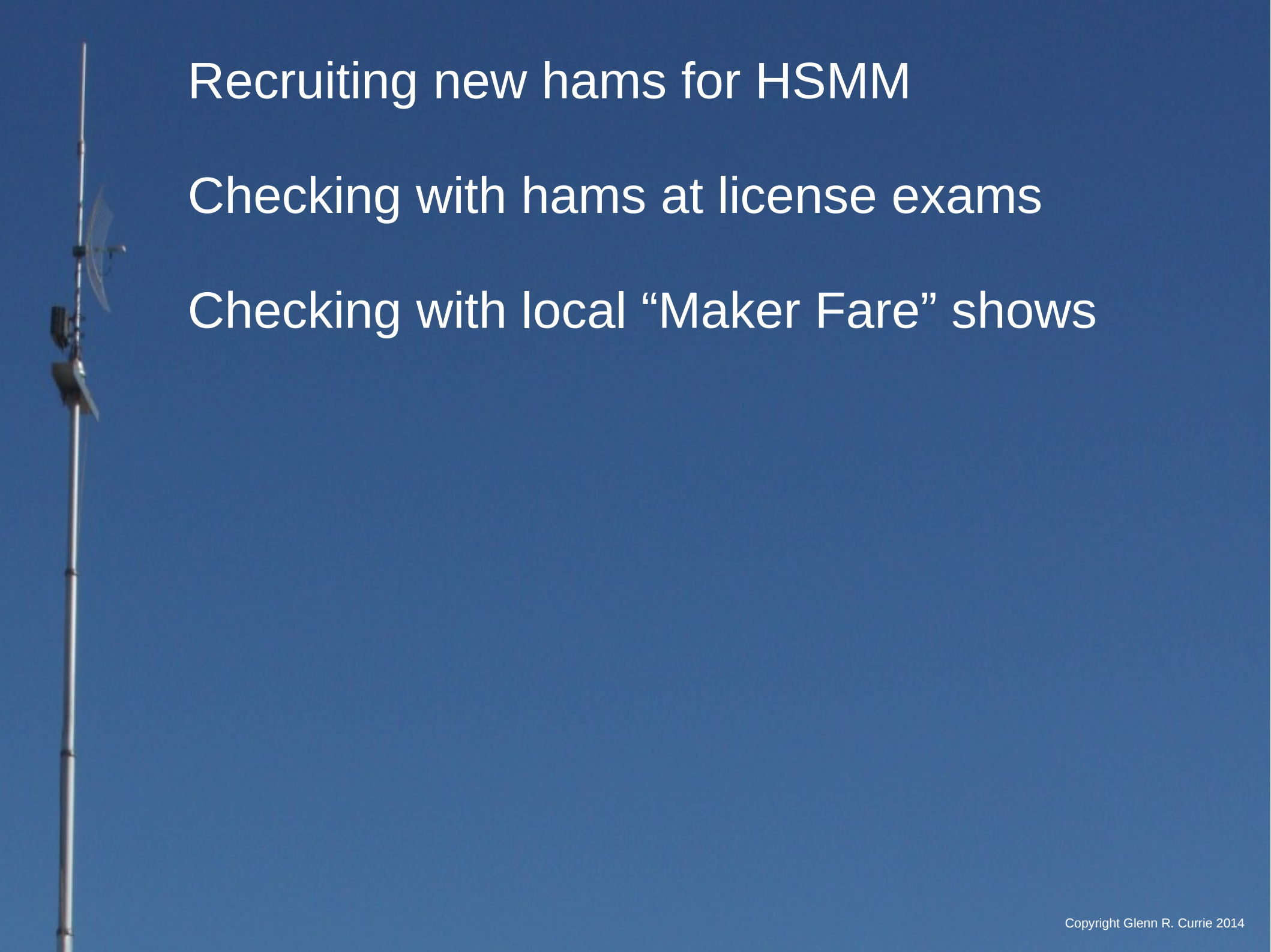
This is a very quiet band that hams need to “use or loose” to telcos for smart phone use.

Recruiting new hams for HSMM



Recruiting new hams for HSMM

Checking with hams at license exams

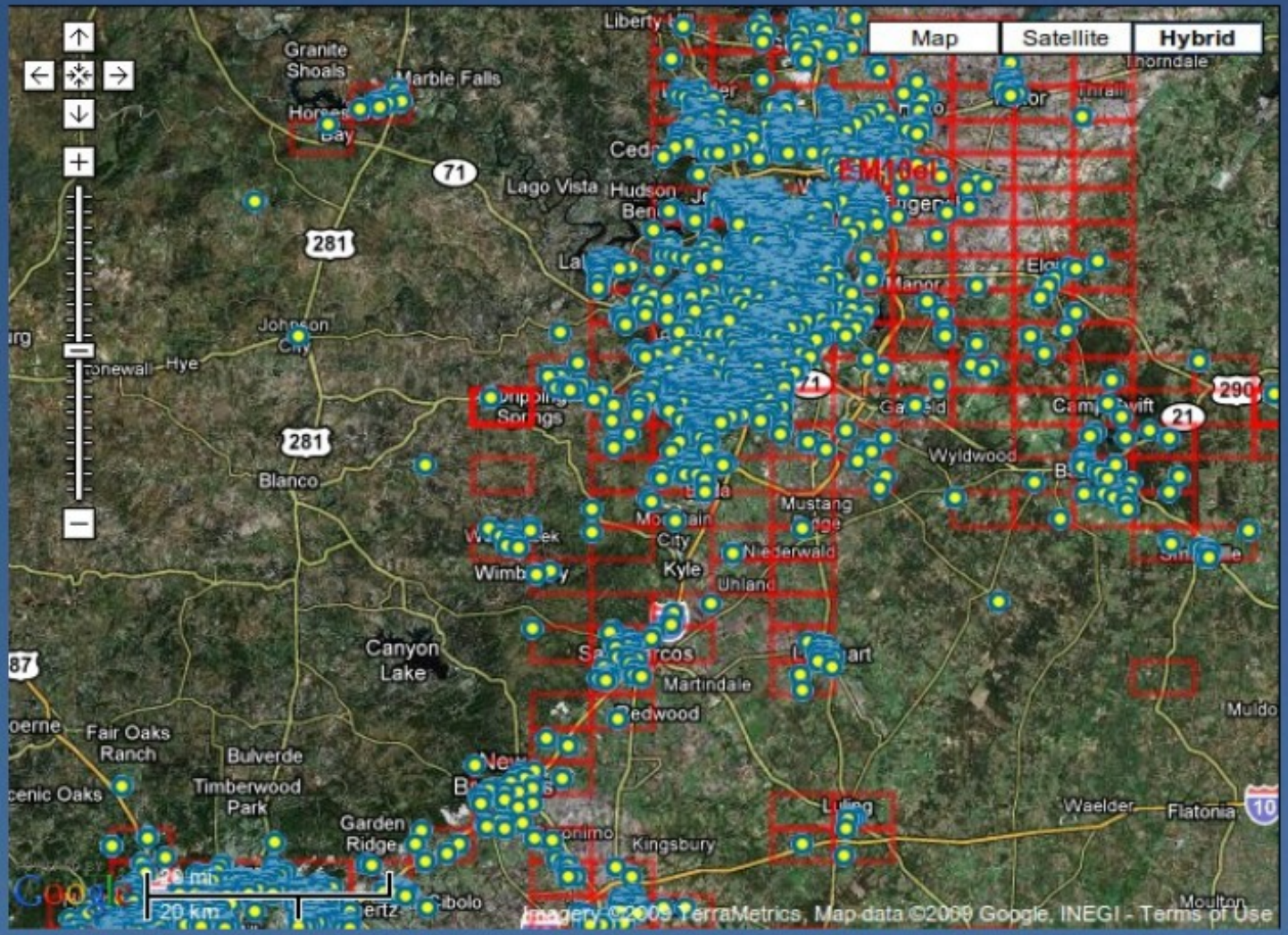


Recruiting new hams for HSMM

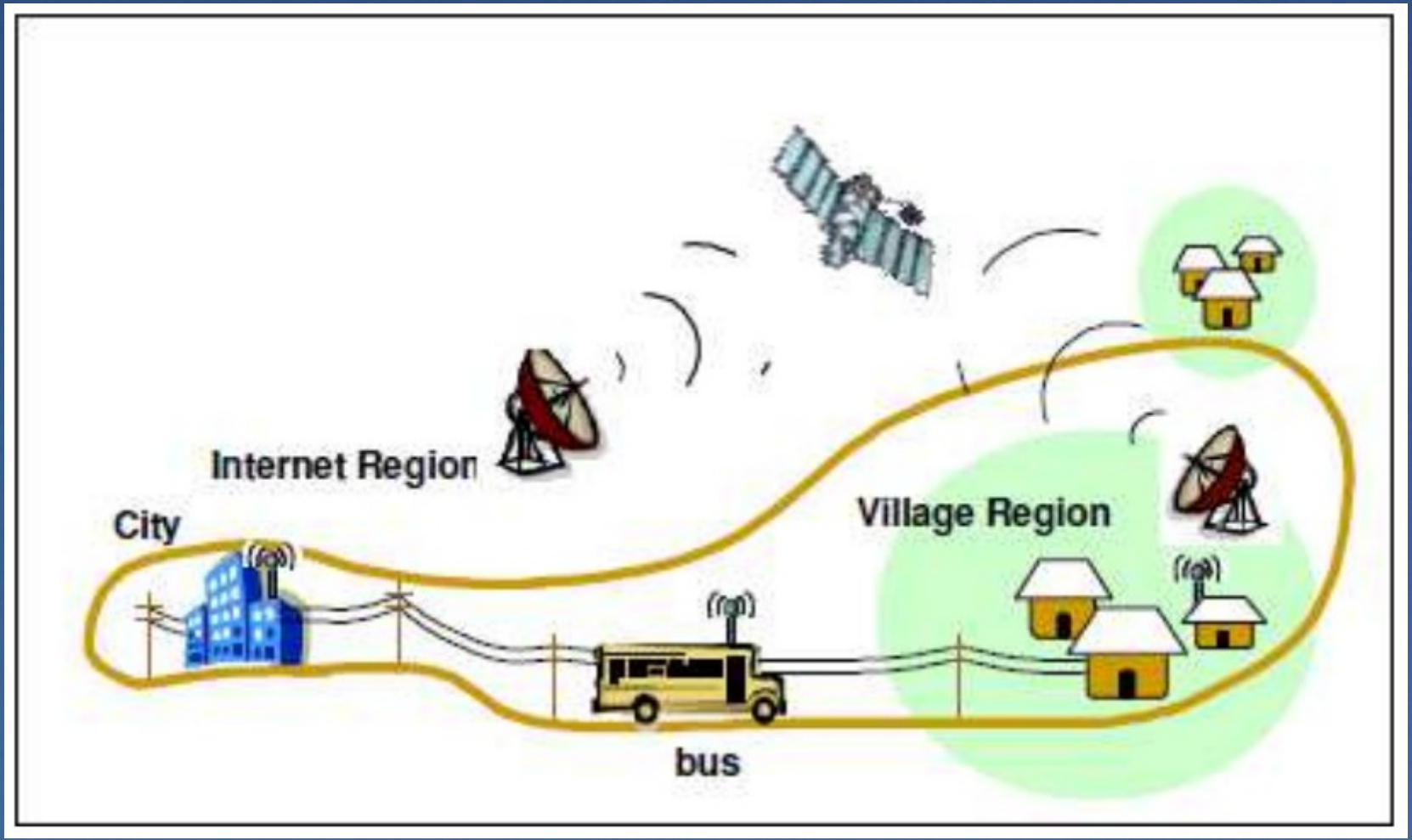
Checking with hams at license exams

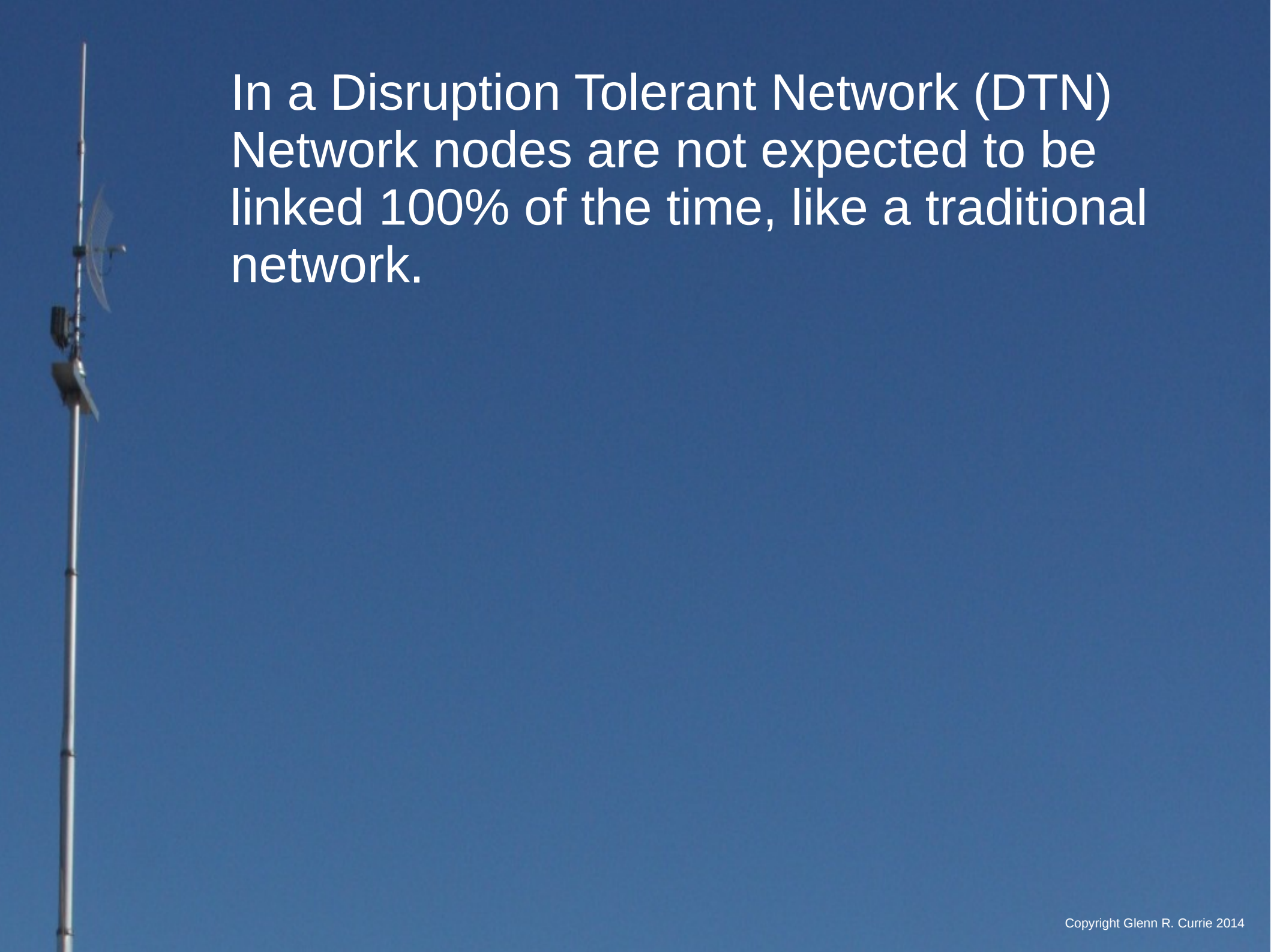
Checking with local “Maker Fare” shows

Potential Mesh Node Sites
Austin – San Antonio

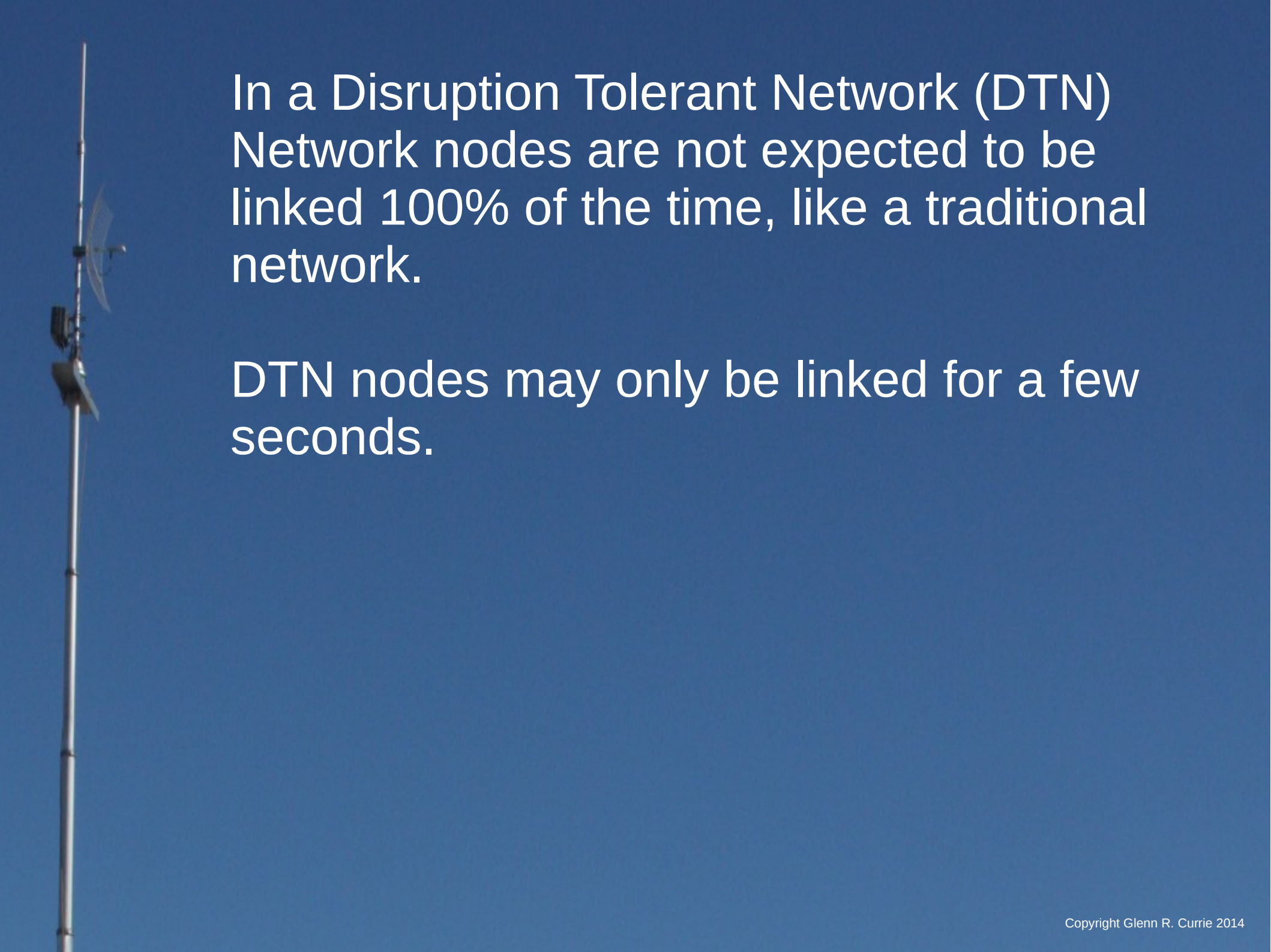


“Data Mule” Concept using Disruption Tolerant Networking





In a Disruption Tolerant Network (DTN) Network nodes are not expected to be linked 100% of the time, like a traditional network.



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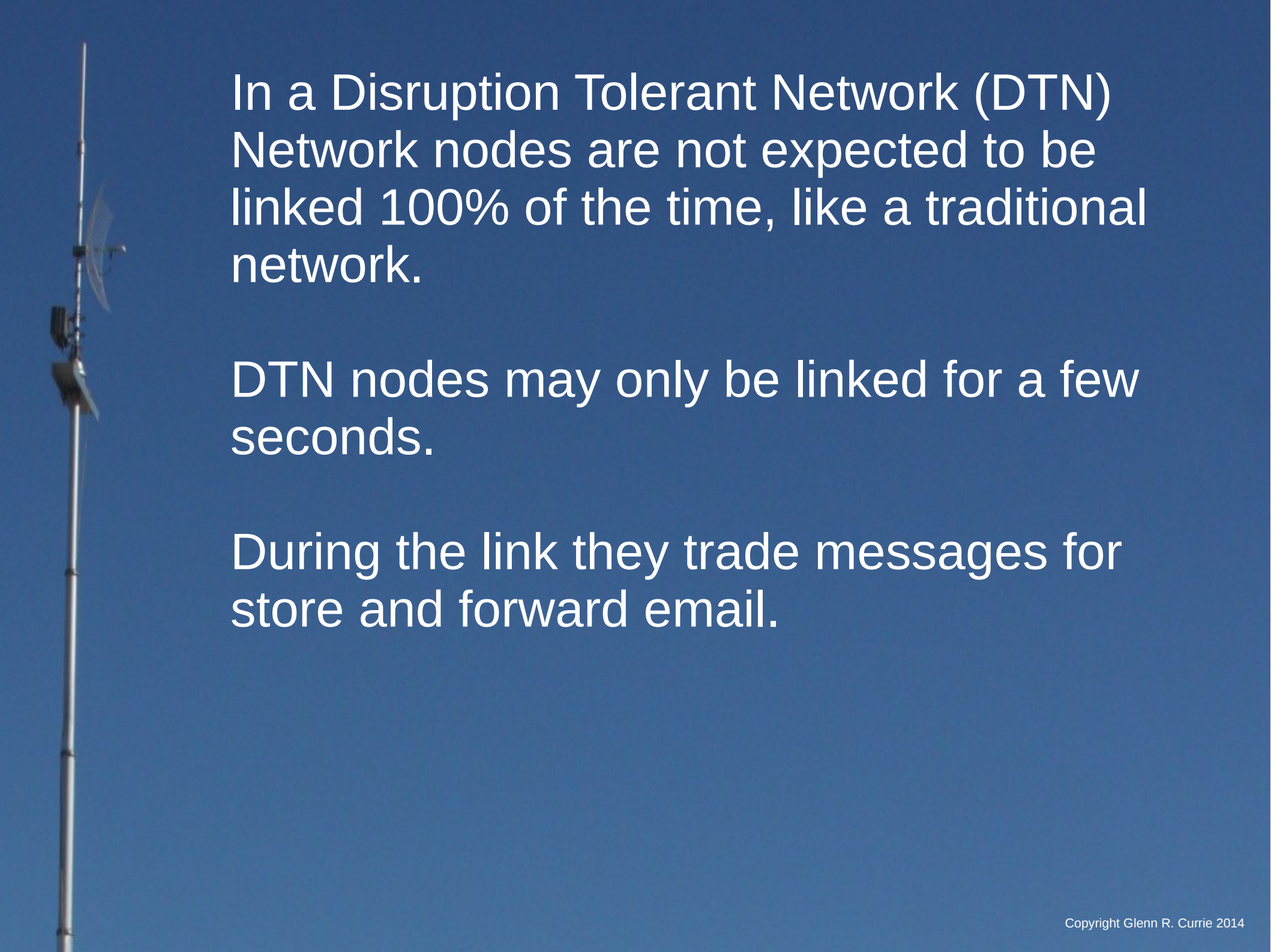

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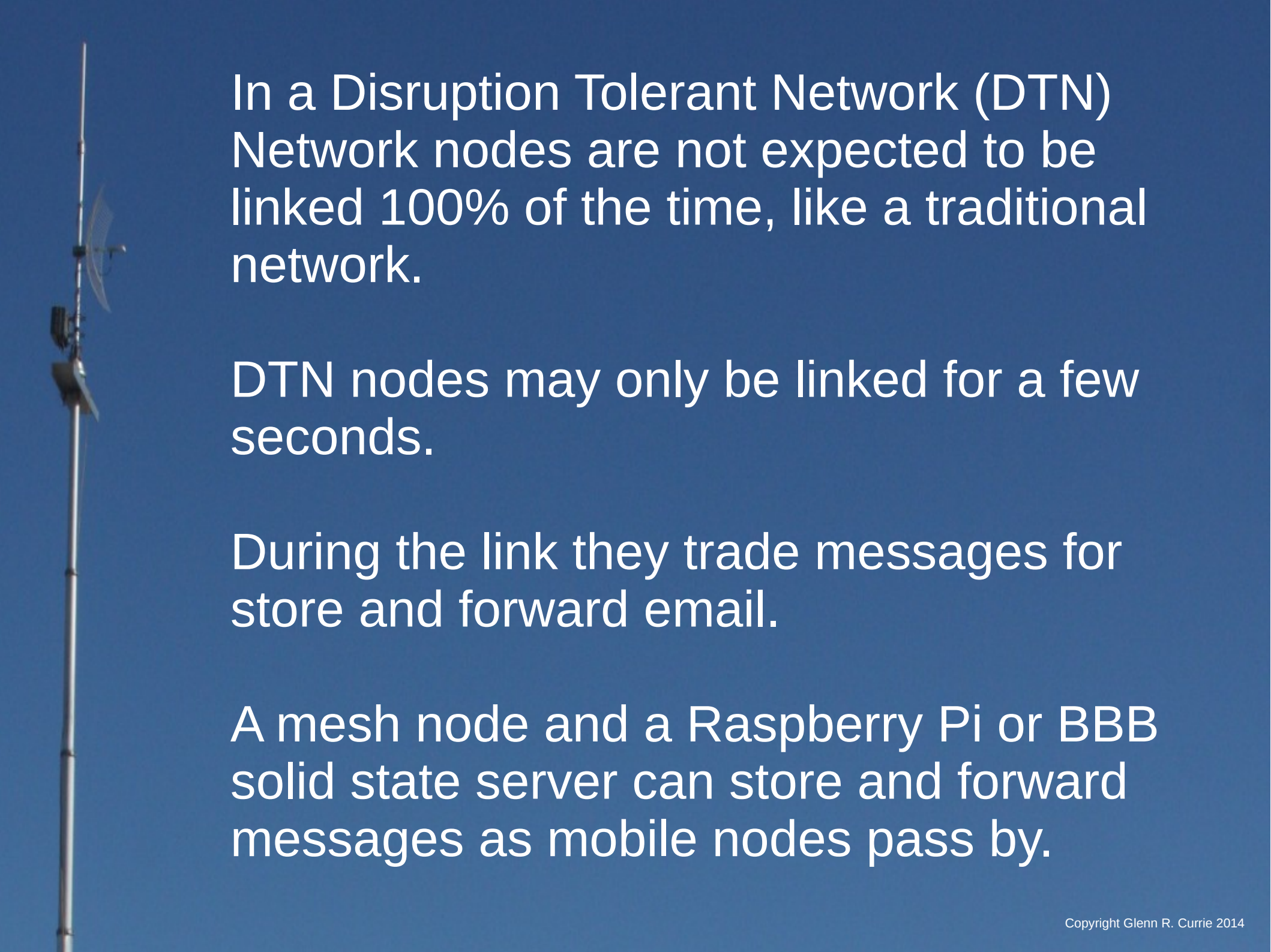

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During the link they trade messages for store and forward email.

A mesh node and a Raspberry Pi or BBB solid state server can store and forward messages as mobile nodes pass by.

Free Book on Mesh Networking

wndw.net