Odessa Office Wireless DSL system

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Background

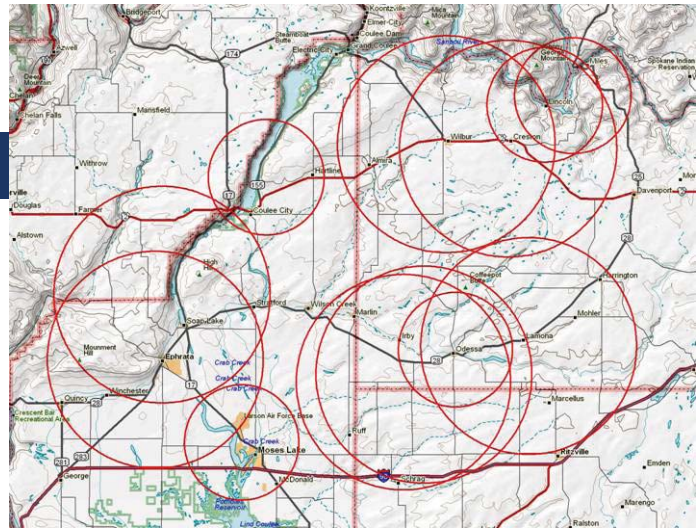
Odessa Office Equipment is a full service ISP that started ISP operations in 1997.

Our Wireless network spans more than 7500 square miles of mostly rural or ultra rural sections of eastern Washington.

An area larger than the entire state of Connecticut but with far fewer people.

Connecticut has 3,504,809 million people.

Lincoln, Grant, Adams, and Douglas counties have only 153,643 between them.

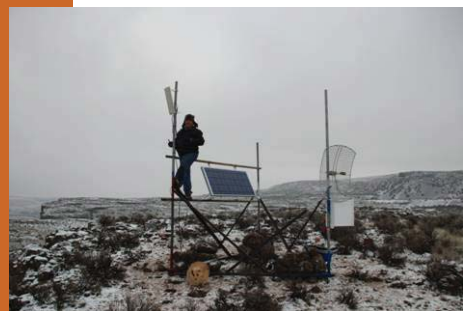


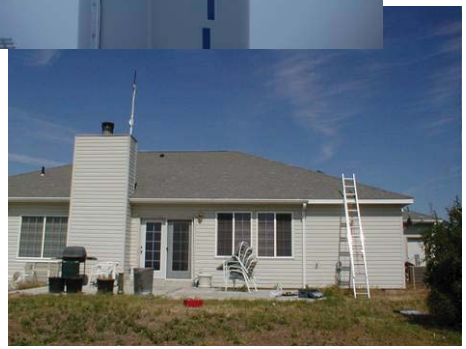
Covers parts of 4 counties.

Systems are fed by a combination of fiber, wireless backhaul and DSL.

Many APs are on homes, barns, grain elevators or water towers.

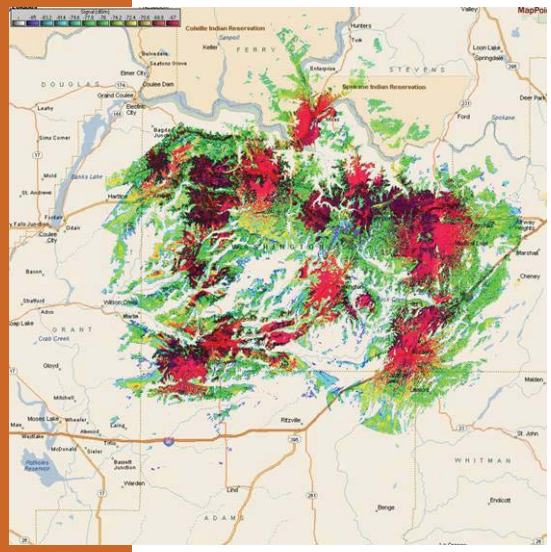
Self funded.



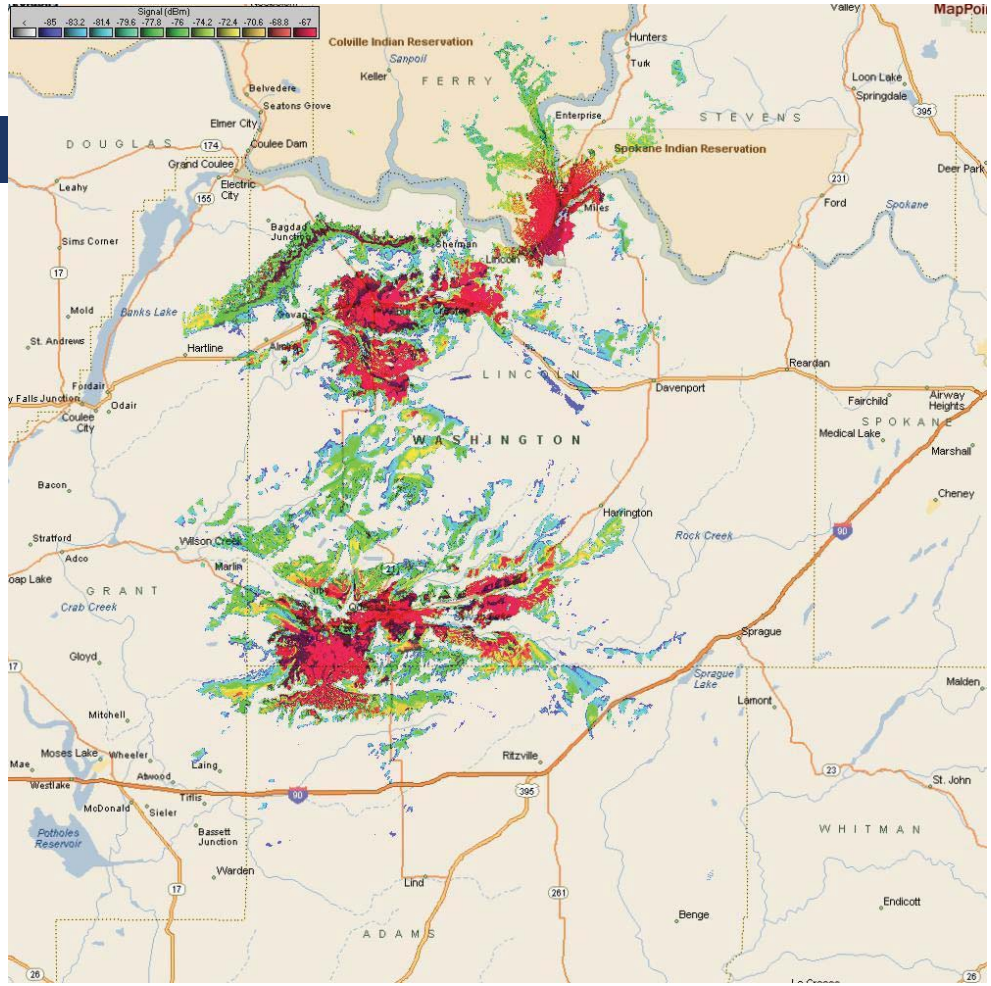


Rolling hills and trees often block our signals.

Coverage from existing tower sites in Lincoln Co.



Same county with fully funded and built network. $3 million in working capitol needed.



Mobile Internet has long been possible

Service Sheriff's cars.

Now days it's not as easy.

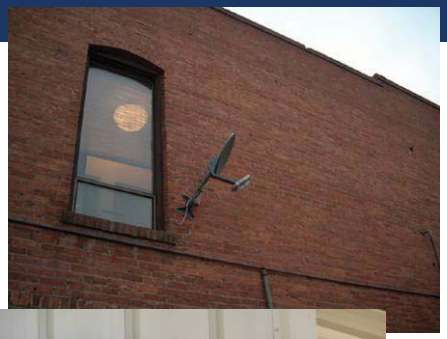
We do still provide mobile broadband to some law enforcement vehicles.

Who are the customers

We service nearly everyone.

Few government or large corporations

No e-rate.



Demographics

- Odessa:
  - 1000 people, mostly agricultural based.
- Wilbur:
  - About 900, mostly agricultural, some timber.
- Creston:
  - About 250, mostly agricultural, some timber.
- Ephrata:
  - About 10,000, mostly agricultural.
- Moses Lake:
  - About 15,000, Mostly agricultural some large industrial.
- Coulee City:
  - Less than 1000, Mostly agricultural
- Lincoln and Seven Bays combined:
  - Less than 1000, used to be timber now resort and retirement communities

Competition

- The only competition in Creston, and Wilbur is telco ADSL, which is more expensive (unless you buy a phone line too) 1/3rd the speed. Installation is cheaper though.
- Odessa now has another WISP.
- In Ephrata, Moses Lake, Coulee City and Soap Lake we compete against FTTH (fiber to the home).
- Moses Lake and Soap Lake have spotty Cable access.
- Most dial-up customers have to cross line duplicating systems (ie: slick 96) and this prevents any type of digital connection, most dial-up is lucky to run at speeds greater than 24kbps.
- Few dial-up customers remain.
- Many residents are permanently out of range of DSL.
- Roughly half of the geography of my coverage has one provider.
- 80 to 90% of the people have multiple WISPs, DSL, Cable, Satellite, FTTH or all of the above for broadband options.

Technology

- We are primarily using unlicensed 802.11b/g radio gear.
- We purchase fiber connections from PUD's or telco system and distribute that data to the previously un-served markets.
- We use fiber, ADSL, and wireless technologies to get the data to our WPOPs.
- We charge only $35 to $40 per month for the average connection to the internet.
- Average customer speeds run 2 to 4 Mbps symmetrical.
- We also now have5.8 GHz systems in place with speeds up to 30 Mbps for $75 per month.

WPOP Costs

- A typical rural wpop will cost from $800.00 to$3,000.00, down from $2,500 to $10,000.
- It will deliver speeds of up to 15 Mbps to as many as 50 to 150 users per transmission site.
- To date I've invested less than $150,000 nearly all of it of my own money.
- I've gotten no subsidies.

Customer costs

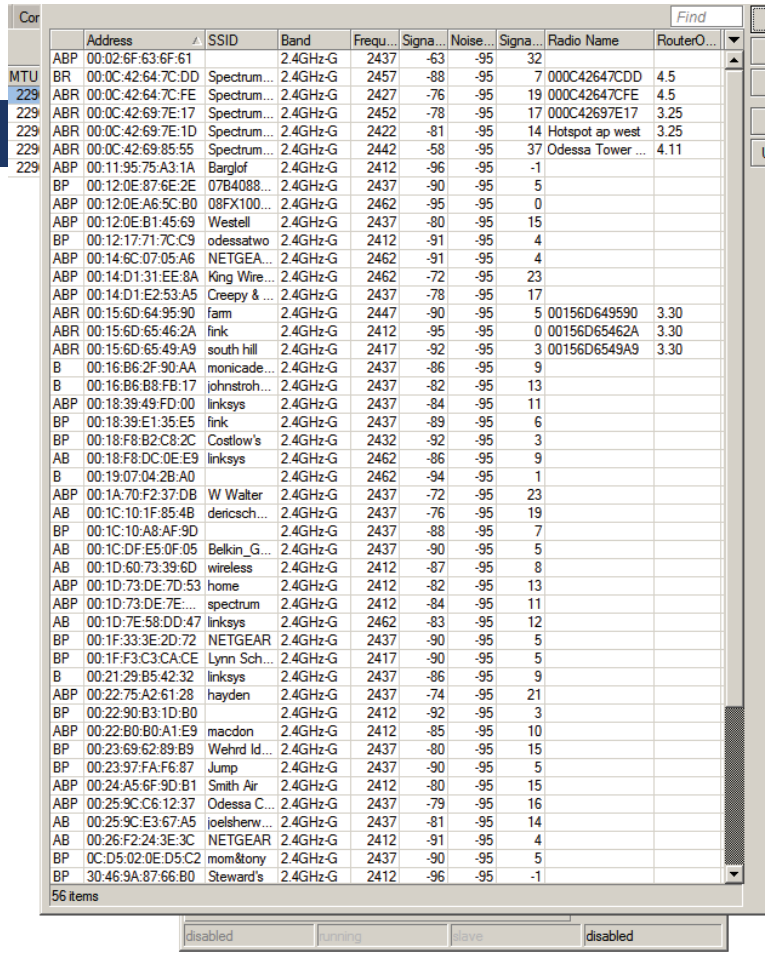
- A typical home based customer install costs me roughly $200 to 300.
- Newer 5 GHz systems run slightly more.
- I charge the user $200 - $300.
- Business customers are billed at cost (usually about $300 to $1000).

Why do it?

- The opportunities for economic/social growth in rural areas is tremendous.
- Real time communications is a key to running any business anywhere at anytime.
- Now, thanks to Odessa Office several local towns have affordable broadband internet access. Even better than many urban areas.
- Hopefully this will help attract people to rural communities.
- The Telecommuting trend is still getting starting but is now clear to see.
- We (the Wireless Internet Service Provider (WISP)) are the only affordable, reliable and financially stable broadband provider in a position to service the average consumer for the foreseeable future!
- We are the third and often only choice to cable/telco duopoly.

What helps, what doesn't

- Using un-licensed frequencies keeps our costs down.
- Interference has been a an issue though.
- I now service several areas with coverage zones as small as 45* that have dozens of AP's detectable by my broadcast antenna.
- The rules as they exist work fairly well for us.
- Having higher power levels, especially in low density markets will certainly help.
- Dropping the certified systems requirement and moving to a certified component/EIRP model would allow much more innovation within this fledgling industry.
- Transmit sync for outdoor 2.4 GHz systems would be helpful in reducing AP to AP interference.
- USF is supporting unprofitable business models, innovation (via the innovator) is squashed. Prices are held artificially low.



	Address	SSID	Band	Frequ...	Signa...	Noise...	Signa...	Radio Name	RouterO...
ABP	00:02:6F:63:6F:61		2.4GHz-G	2437	-63	-95	32		
BR	00:0C:42:64:7C:DD	Spectrum...	2.4GHz-G	2457	-88	-95	7	000C42647CDD	4.5
ABR	00:0C:42:64:7C:FE	Spectrum...	2.4GHz-G	2427	-76	-95	19	000C42647CFE	4.5
ABR	00:0C:42:69:7E:17	Spectrum...	2.4GHz-G	2452	-78	-95	17	000C42697E17	3.25
ABR	00:0C:42:69:7E:1D	Spectrum...	2.4GHz-G	2422	-81	-95	14	Hotspot ap west	3.25
ABR	00:0C:42:69:85:55	Spectrum...	2.4GHz-G	2442	-58	-95	37	Odessa Tower ...	4.11
ABP	00:11:95:75:A3:1A	Barglof	2.4GHz-G	2412	-96	-95	-1		
BP	00:12:0E:87:6E:2E	07B4088...	2.4GHz-G	2437	-90	-95	5		
ABP	00:12:0E:A6:5C:B0	08FX100...	2.4GHz-G	2462	-95	-95	0		
ABP	00:12:0E:B1:45:69	Westell	2.4GHz-G	2437	-80	-95	15		
BP	00:12:17:71:7C:C9	odessatwo	2.4GHz-G	2412	-91	-95	4		
ABP	00:14:6C:07:05:A6	NETGEA...	2.4GHz-G	2462	-91	-95	4		
ABP	00:14:D1:31:EE:8A	King Wire...	2.4GHz-G	2462	-72	-95	23		
ABP	00:14:D1:E2:53:A5	Creepy & ...	2.4GHz-G	2437	-78	-95	17		
ABR	00:15:6D:64:95:90	farm	2.4GHz-G	2447	-90	-95	5	00156D649590	3.30
ABR	00:15:6D:65:46:2A	fink	2.4GHz-G	2412	-95	-95	0	00156D65462A	3.30
ABR	00:15:6D:65:49:A9	south hill	2.4GHz-G	2417	-92	-95	3	00156D6549A9	3.30
B	00:16:B6:2F:90:AA	monicade...	2.4GHz-G	2437	-86	-95	9		
B	00:16:B6:B8:FB:17	johnstroh...	2.4GHz-G	2437	-82	-95	13		
ABP	00:18:39:49:FD:00	linksys	2.4GHz-G	2437	-84	-95	11		
BP	00:18:39:E1:35:E5	fink	2.4GHz-G	2437	-89	-95	6		
BP	00:18:F8:B2:C8:2C	Costlow's	2.4GHz-G	2432	-92	-95	3		
AB	00:18:F8:DC:0E:E9	linksys	2.4GHz-G	2462	-86	-95	9		
B	00:19:07:04:2B:A0		2.4GHz-G	2462	-94	-95	1		
ABP	00:1A:70:F2:37:DB	W Walter	2.4GHz-G	2437	-72	-95	23		
AB	00:1C:10:1F:85:4B	dericsch...	2.4GHz-G	2437	-76	-95	19		
BP	00:1C:10:A8:AF:9D		2.4GHz-G	2437	-88	-95	7		
AB	00:1C:DF:E5:0F:05	Belkin_G...	2.4GHz-G	2437	-90	-95	5		
AB	00:1D:60:73:39:6D	wireless	2.4GHz-G	2412	-87	-95	8		
ABP	00:1D:73:DE:7D:53	home	2.4GHz-G	2412	-82	-95	13		
ABP	00:1D:73:DE:7E:...	spectrum	2.4GHz-G	2412	-84	-95	11		
AB	00:1D:7E:58:DD:47	linksys	2.4GHz-G	2462	-83	-95	12		
BP	00:1F:33:3E:2D:72	NETGEAR	2.4GHz-G	2437	-90	-95	5		
BP	00:1F:F3:C3:CA:CE	Lynn Sch...	2.4GHz-G	2417	-90	-95	5		
B	00:21:29:B5:42:32	linksys	2.4GHz-G	2437	-86	-95	9		
ABP	00:22:75:A2:61:28	hayden	2.4GHz-G	2437	-74	-95	21		
BP	00:22:90:B3:1D:B0		2.4GHz-G	2412	-92	-95	3		
ABP	00:22:B0:B0:A1:E9	macdon	2.4GHz-G	2412	-85	-95	10		
BP	00:23:69:62:89:B9	Wehrd Id...	2.4GHz-G	2437	-80	-95	15		
BP	00:23:97:FA:F6:87	Jump	2.4GHz-G	2437	-90	-95	5		
ABP	00:24:A5:6F:9D:B1	Smith Air	2.4GHz-G	2412	-80	-95	15		
ABP	00:25:9C:C6:12:37	Odessa C...	2.4GHz-G	2437	-79	-95	16		
AB	00:25:9C:E3:67:A5	joelsherw...	2.4GHz-G	2437	-81	-95	14		
AB	00:26:F2:24:3E:3C	NETGEAR	2.4GHz-G	2412	-91	-95	4		
BP	0C:D5:02:0E:D5:C2	mom&tony	2.4GHz-G	2437	-90	-95	5		
BP	30:46:9A:87:66:B0	Steward's	2.4GHz-G	2412	-96	-95	-1		

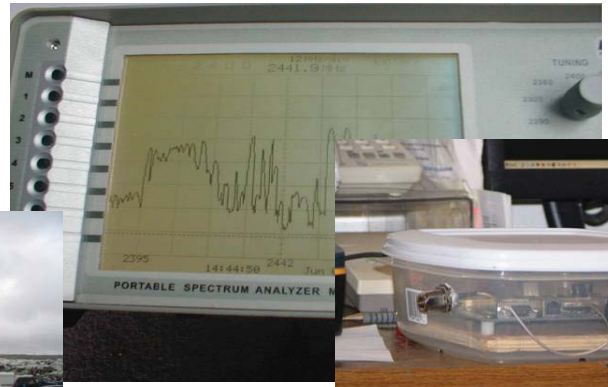
56 items

disabled | running | slave | disabled

Bio, Marlon K. Schafer

Born and raised in the farming community of Odessa, WA. After high school he entered the United States Air Force and became a Linesman. During his stint in the Air Force, Marlon worked on overhead and under ground high voltage electrical distribution systems, security lighting, and runway lighting. Upon his Honorable Discharge in 1988 he returned to Odessa to help with the family specialty foods business. In 1989 he and his wife moved to Spokane where Carr Sales, an electrical supply store, hired him. Marlon went from delivery driver to rec. clerk to warehouse manager over the next couple of years, while also taking electronics classes. In 1991 he went to work for a copier repair company where he serviced copiers, printers, faxes etc. until 1995. In
1995 he and his family moved back to Odessa and launched Odessa Office Equipment. In 1998 he bought his second largest local copier competitor. In 1997 Odessa Office Equipment formed an Internet division offering local dialup services. As a pioneer in the High-Speed Fixed Wireless Industry, Marlon designed and installed one of the first High-Speed Wireless DSL systems in the country and authored the Homebrew DSL page www.odessaoffice.com/sdsl.htm. Since that time in early 2000 he's built roughly 50 broadcast sites in over 4 counties.

8dB 900mhz omni test antenna
Main Broadcast site
Backhaul antenna


2441.9MHz
TUNING
2395
14:44:50
2442
PORTABLE SPECTRUM ANALYZER