



NW Digital Radio

It's the *Information* Rate
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Methods of Human Communication

- 2 of 5 senses
- Sound
- Sight
 - Reading Pictures Video
- Touch as output (typing CW)
- Taste or Smell anyone?

Required Data Rate

WPM	Average	Speeder	bps	bps
Typing	30	130	24	104
Reading	200	500	160	400
Speaking	160	250	128	200
CW	15	60	13	50

Transfer Rate

		Xmit	Time		
File	Size	300	1200	9600	56000
txt	116	3.1	0.8	0.1	0.0
rtf	533	14.2	3.6	0.4	0.1
eml	550	14.7	3.7	0.5	0.1
epub	2000	53.3	13.3	1.7	0.3
pdf	12000	320.0	80.0	10.0	1.7
doc	15000	400.0	100.0	12.5	2.1

So What's the Problem

- We package information as data that is
 - Bloated
 - Redundant
 - Superfluous

We're upside down

- Historically Data Rate and CPU rose together
- Sparc 1: 20Mips and 10Mbps
- UDR56K: 1000Mips and 56kbps

Data Reduction

- Eliminate Redundancy
 - HTML,XML an end tag, really?
 - Signatures: /Basil
 - Pre-Share or Cache
- Prioritize
 - Look ahead

Pictures, are they Worth a kWord?

- Logos and Headers
- Stationary?
- Backgrounds, really?
- Maps
 - Preshare
- Return of Interlacing, The Zoom Problem

Forms

- Forms are great for organizing information
- FEMA ICS Forms 2010
 - Text 218kB PDF 6MB
- Form is just a list of containers
 - location, size, format

JSON

JSON (JavaScript Object Notation) is a lightweight data-interchange format.

It is easy for humans to read and write.

It is easy for machines to parse and generate.

JSON is a text format that is completely language independent but uses conventions that are familiar to programmers.

JSON Forms

- HAM 213
- D-RATS
- Dropbox for forms and maps?

Email

- Bulletins vs Messages
 - Send Once!
- Please trim your reply
 - Don't Trim it, Track it!
 - Google Wave Anyone?
- Authentication

Browsing the Web at 9600

- You need a proxy to eliminate
 - Ads
 - Superfluous graphics
 - HTML Formatting
- It's on my iPad - Safari Reader
 - Open Source Readability Bookmarklet

Spy Tracker

```
31.12.69 16:31:48 File 66 - VE7LAD-8->APT310 v UBC39* WIDE2-1 <UI> Text:14914.79N/12253.74W[193/000/A=000144
31.12.69 16:31:48 File 70 - VA7KKN-9->APT311 v UBC39* WIDE2-1 <UI> Text:14908.19N/12310.16W>000/000/Tiny Track 3
31.12.69 16:31:49 File 104 - VE7SLC-7->APN382 v UBC39* WIDE2-1 <UI> Text:14830.01NS12322.31W#PHG4534/W2 BCn, Saanich Emergency
Program Victoria BC
31.12.69 16:31:50 File 80 - WA7EBH-15->APTW01 v UBC39* WIDE2-1 <UI> Text:_03182204c283s003g002t039r000p000P002h92b10225tU2k
31.12.69 16:31:51 File 47 - ETIGER->BEACON <UI> Text:>147080t103.5 ETIGER Mnt W7GLB
31.12.69 16:31:51 File 80 - VA7DXH-1->APTW01 v UBC39* WIDE2-1 <UI> Text:_03182115c044s000g000t040r000p000P001h81b10072tU2k
31.12.69 16:31:51 File 54 - VA7RCA-5->APOTC1 v UBC39* WIDE2-1 <UI> Text:1/5UAV/BwY st 13.5V 08C
31.12.69 16:31:56 File 61 - VE7BSA->TXSYR v UBC39* WIDE2-1 <UI> Text:0000 `34v1 -\`4"}TinyTrak3+, IC02AT
31.12.69 16:31:56 File 81 - WB7AYU->APU25N v WIDE1-1 WIDE2-1 <UI R> Text:=4734.54N/12224.42W-Alki Pt. , Seattle, WA {UIV32}
31.12.69 16:31:56 File 81 - VE7MKF-3->APL002 v UBC39* WIDE2-1 <UI> Text:14906.45N/12244.71W_000/001g002t038P004h76b10240PIC
31.12.69 16:31:56 File 69 - ETIGER->APN391 <UI> Text:14729.30NS12156.84W#PHG6730/W2,WAN E TIGER Mnt W7GLB
31.12.69 16:31:57 File 87 - VE7LSE-1->APW10 v UBC39* WIDE2-1 <UI> Text:>190507zDX: VE7DID-1 67.4km 79 05:07 4907.29N 12254.76W
31.12.69 16:31:59 File 76 - VE7GMI-3->APOT21 v UBC39* WIDE2-1 <UI> Text:/050727h/5igc/:I2<AAG/A=-00001 13.4V T2-301 P1
31.12.69 16:32:00 File 80 - VA7DXH-1->APTW01 v UBC39* WIDE2-1 <UI> Text:_03182117c044s000g000t040r000p000P001h81b10072tU2k
31.12.69 16:32:02 File 83 - VE7ZIO-10->APJI40 v UBC39* WIDE2-1 <UI> Text:14914.54NS12234.81W#Igt/Dgi .390 ve7zic@liquidsan.net
31.12.69 16:32:03 File 46 - VA7LWC-12->T9QQWU v UBC39* WIDE2-1 <UI> Text:0000 `3VR17[/>`4f}=
31.12.69 16:32:04 File 94 - LDYSMH->APTT4 v UBC39* WIDE2-1 <UI> Text:@000000h4901.12N/12349.40W#VE7LSE 12.9V Ladysmith Digi/A=000591
31.12.69 16:32:06 File 66 - VE7LAD-8->APT310 v UBC39* WIDE2-1 <UI> Text:14914.79N/12253.74W[193/000/A=000137
31.12.69 16:32:09 File 80 - VA7DXH-1->APTW01 v UBC39* WIDE2-1 <UI> Text:_03182119c044s000g000t040r000p000P001h81b10072tU2k
31.12.69 16:32:09 File 47 - ETIGER->BEACON <UI> Text:>147080t103.5 ETIGER Mnt W7GLB
31.12.69 16:32:09 File 80 - VA7DXH-1->APTW01 v UBC39* WIDE2-1 <UI> Text:_03182121c044s000g000t040r000p000P001h81b10072tU2k
31.12.69 16:32:13 File 83 - VE7ZIO-10->APJI40 v UBC39* WIDE2-1 <UI> Text:14914.54NS12234.81W#Igt/Dgi .390 ve7zic@liquidsan.net
31.12.69 16:32:15 File 80 - VA7DXH-1->APTW01 v UBC39* WIDE2-1 <UI> Text:_03182122c044s000g000t040r000p000P001h81b10072tU2k
31.12.69 16:32:15 File 76 - VE7GMI-3->APOT21 v UBC39* WIDE2-1 <UI> Text:/051204h/5ia7/:K4< st/A=000644 11.7V T2-301 P1
31.12.69 16:32:19 File 80 - VA7DXH-1->APTW01 v UBC39* WIDE2-1 <UI> Text:_03182123c044s000g000t040r000p000P001h81b10072tU2k
31.12.69 16:32:19 File 82 - DEPBAV->APTT4 v UBC39* WIDE2-1 <UI> Text:@000000h4911.76N/12358.56W#13.3V VA7LWC NANAIMO DIGI
31.12.69 16:32:20 File 50 - VA7DXH-1->APTW01 v UBC39* WIDE2-1 <UI> Text:14902.35N/12349.98W_
31.12.69 16:32:20 File 80 - WA7EBH-15->APTW01 v UBC39* WIDE2-1 <UI> Text:_03182213c260s000g000t039r000p000P002h91b10224tU2k
31.12.69 16:32:21 File 47 - ETIGER->BEACON <UI> Text:>147080t103.5 ETIGER Mnt W7GLB
31.12.69 16:32:23 File 50 - VA7DXH-1->APTW01 v UBC39* WIDE2-1 <UI> Text:14902.35N/12349.98W_
31.12.69 16:32:23 File 66 - VE7LAD-8->APT310 v UBC39* WIDE2-1 <UI> Text:14914.79N/12253.73W[193/000/A=000137
31.12.69 16:32:23 File 69 - VA7BUG-9->4YORPT v UBC39* WIDE2-1 <UI> Text:'2JU1+Nk/j`4a}Rolling Down The Highway
31.12.69 16:32:23 File 87 - VE7LSE-1->APW10 v UBC39* WIDE2-1 <UI> Text:>190517zDX: VE7DID-1 67.4km 79 05:07 4907.29N 12254.76W
```


Connection status:

Packet Counter: 1080

Debug
Using hostname: 10.0.39.11 with sock: 1350





UDR Tracker

DOGMTN 

Dog Mtn Digi VE7FGC-10

1:VE7RAW 223mi NE	5:ETIGER 62mi SE
2:VE7ZIO-10 66mi NE	6:N7NDX-12 22mi N
3:VE7BCJ-9 62mi NE	7:VE7BSA 47mi N
4:BALDI 81mi SE	8:VA7IQ-1 56mi N

win3: 

VA7IQ-1 56.0mi N (8 sec ago)
44F 73%
wDAV @22:44APRS/Wx, Delta, BC {UIV32} 

Messages

ACK message From callsign: To callsign:

Enter message:

Web Sockets

- IE10 (Windows 7 or 8)
- Chrome (XP, Linux, OSX)
- Firefox (XP, Linux, OSX)
- www.CanIUse.com/websockets
- www.WebSocketsTest.com

Paclink UNIX

- Provides Interface to Winlink Mail
- Uses any Mail Client
 - IMAP
 - POP3

Open Source

- Spy Tracker/UDR Tracker
 - github
- Paclink UNIX
 - sourceforge
- Preinstalled on UDR56K

Hardware Update

- Proto System is up at 9600
 - Spectrally correct MSK modulator
- Beta Radio boards in assembly
- Once we have functional radios
 - First units go to D-STAR team
- Still a lot of work to do