Satellite's Gone...

Works in progress

Major Malfunction

aka

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http://rfidiot.org

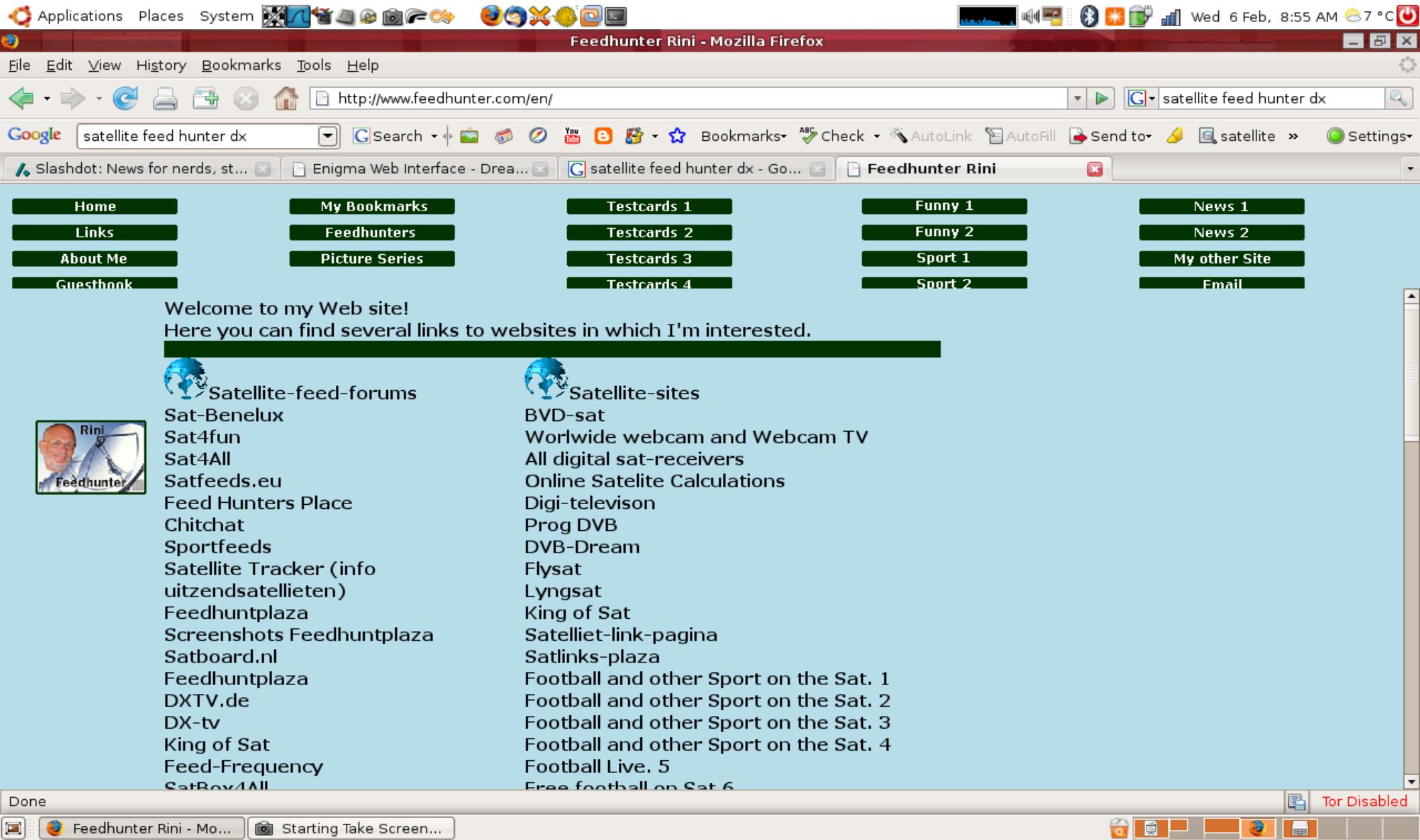
Who Am I?

- Co-Publisher APACHE-SSL
- DEFCON 'goon'
- Open Source developer / researcher
  - Bluetooth
  - RFID
  - Full Disclosure / White Hat!
- Freelance research / training / lecturing

Feed Hunting

- Look for 'interesting' satellite feeds
  - Scan all frequencies
  - Scan all satellites
  - Report on mailing lists / forums

Poking in the dark



Poking in the dark

Applications Places System Wed 6 Feb, 8:53 AM 7 °C

Feedhuntplaza Satellite Tracker - Mozilla Firefox

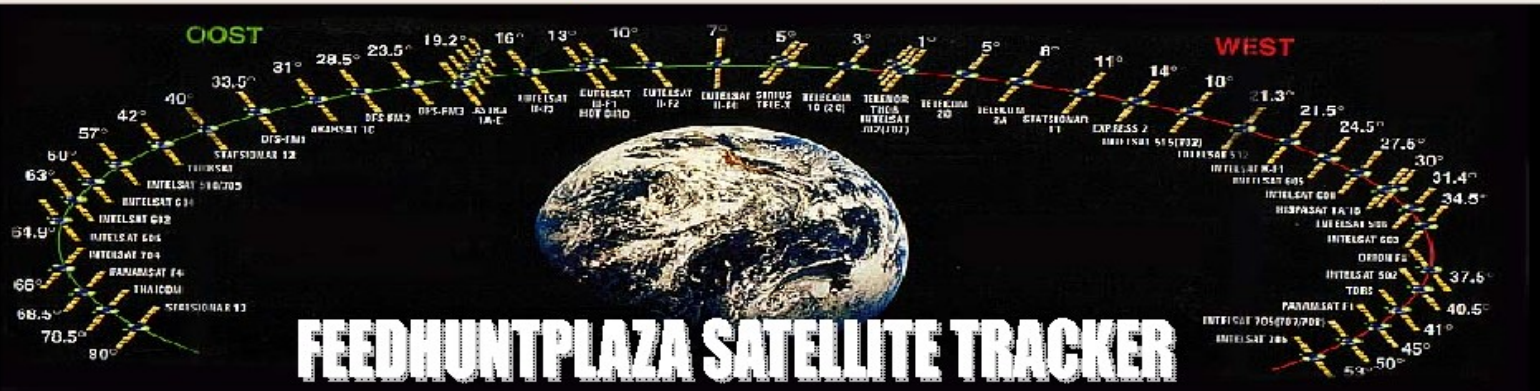
File Edit View History Bookmarks Tools Help

http://www.satplaza.com/orbit/eutelsatw2.html

satellite feed hunter dx

Google satellite feed hunter dx Search Bookmarks Check AutoLink AutoFill Send to satellite Settings

Slashdot: News for nerds, st... | Enigma Web Interface - Drea... | satellite feed hunter dx - Go... | Feedhunter Rini | Feedhuntplaza Satellite ...



ENGLISH

FEED TRANSPONDERS

10.968 h 6400 3/4
10.976 h 5632 3/4
10.978 h 6400 3/4
10.989 h 6400 3/4
10.991 h 12800 7/8
10.997 h 5632 3/4
10.997 h 6400 3/4
10.997 v 6110 3/4
11.005 h 6400 3/4
11.008 h 5632 3/4
11.014 h 6400 3/4
11.016 h 3125 3/4
11.024 v 6110 3/4
11.043 h 4340 3/4
11.044 v 6400 3/4
11.051 h 5632 3/4

16 EAST - EUTELSAT W2

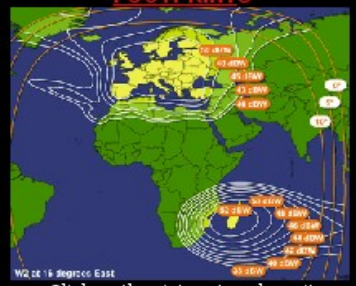
Date of Launch	05 - 10 - 1998
Launch Vehicle	Ariane 4 Flight 111
Time Of Life	approx. 12 year
Location	16 east
Inclined	no
Test Location	02 east
Graveyard Date	2010

Offering a total of twenty-four simultaneously-active transponders, the W2 satellite provides a fixed Widebeam coverage, spanning Europe, North Africa and the Middle East, and a Steerable coverage. Ten channels can be individually configured for operation via either of the two coverages. The remaining channels are connected to the Widebeam, which on the downlink is more concentrated than the Widebeam coverages of W1 and W3, offering enhanced capability for television and multimedia broadcasting. The Steerable coverage is positioned over the Indian Ocean for broadcasting digital television services to Mauritius and Reunion Island and includes a large part of south-eastern Africa.

At first the Eutelsat W2 satellite was called Eutelsat 3F2.

NEDERLANDS

FOOTPRINTS



Click on the picture to enlarge it

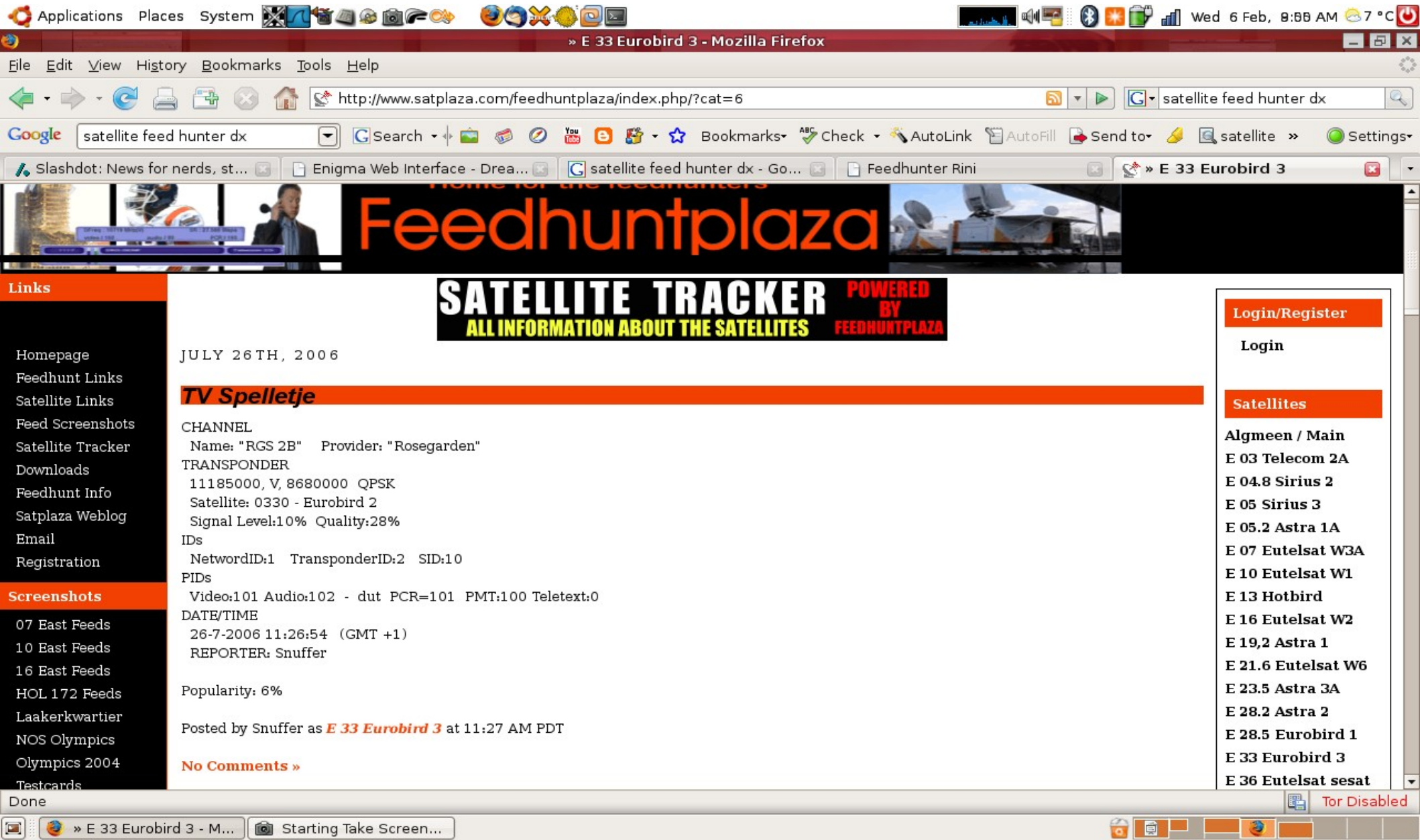


Click on the pictures to enlarge it

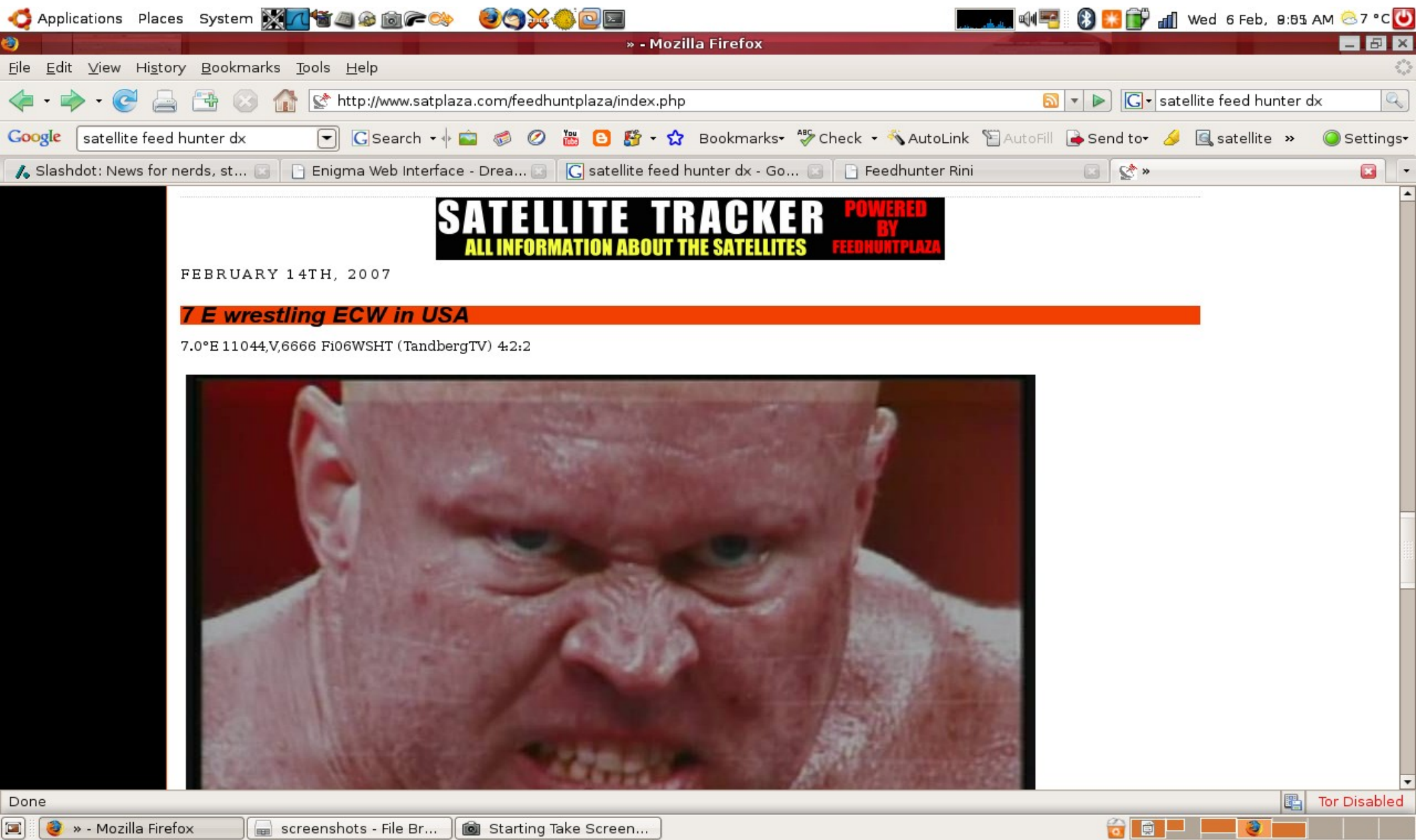
Done Tor Disabled

Feedhuntplaza Satell... screenshots - File Br... Starting Take Screen...

Poking in the dark



Poking in the dark



There must be a better way!

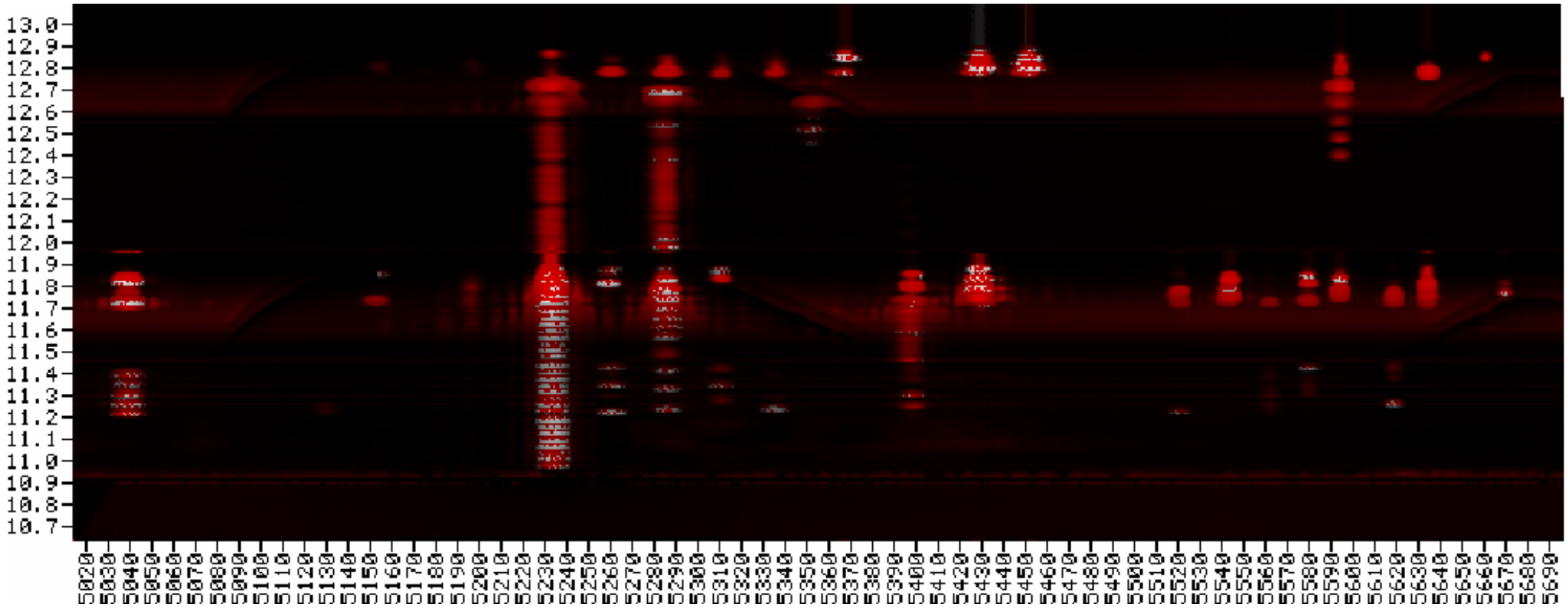
- Visualisation is your friend
  - Human Brain likes images
    - Recognise food
    - Recognise danger
    - Recognise friends

There must be a better way!

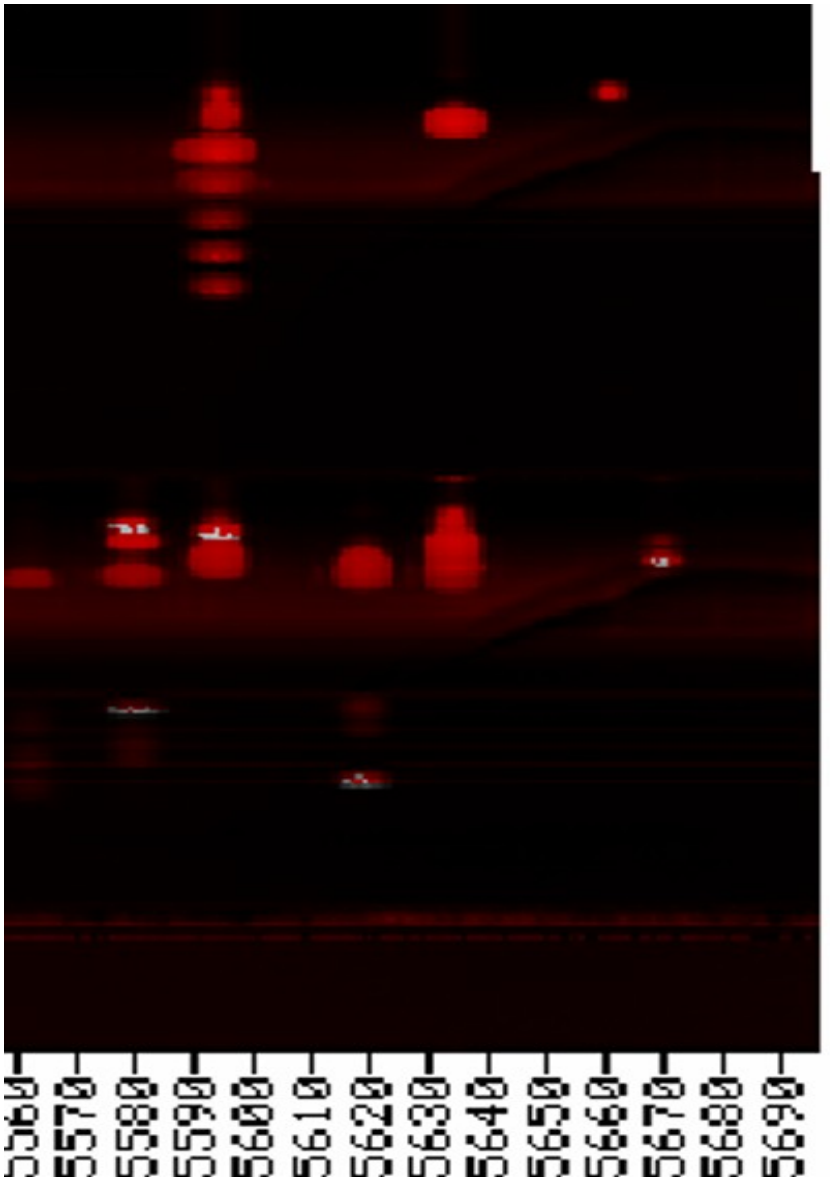
- Visualisation is your friend
  - Human Brain likes images
    - Recognise food
    - Recognise danger
    - Recognise friends
    - **Watch pr0n!!**

Visual Representations

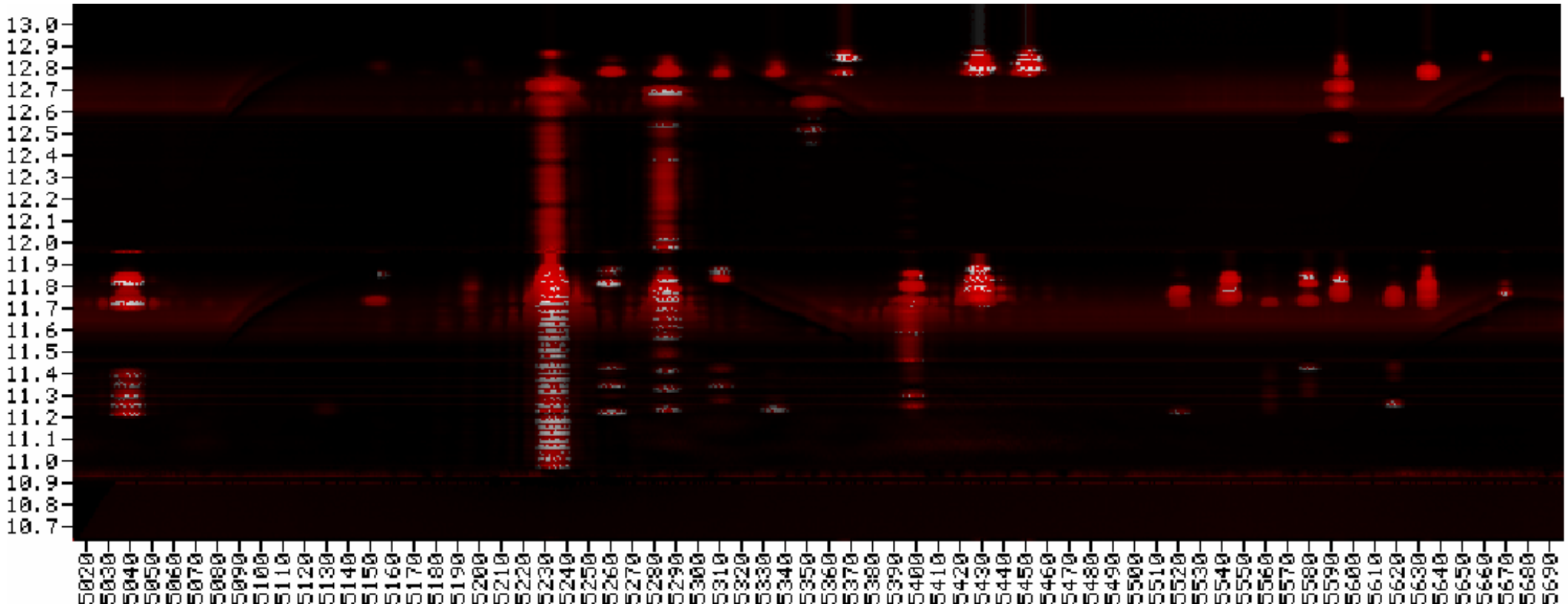
Visual Representations



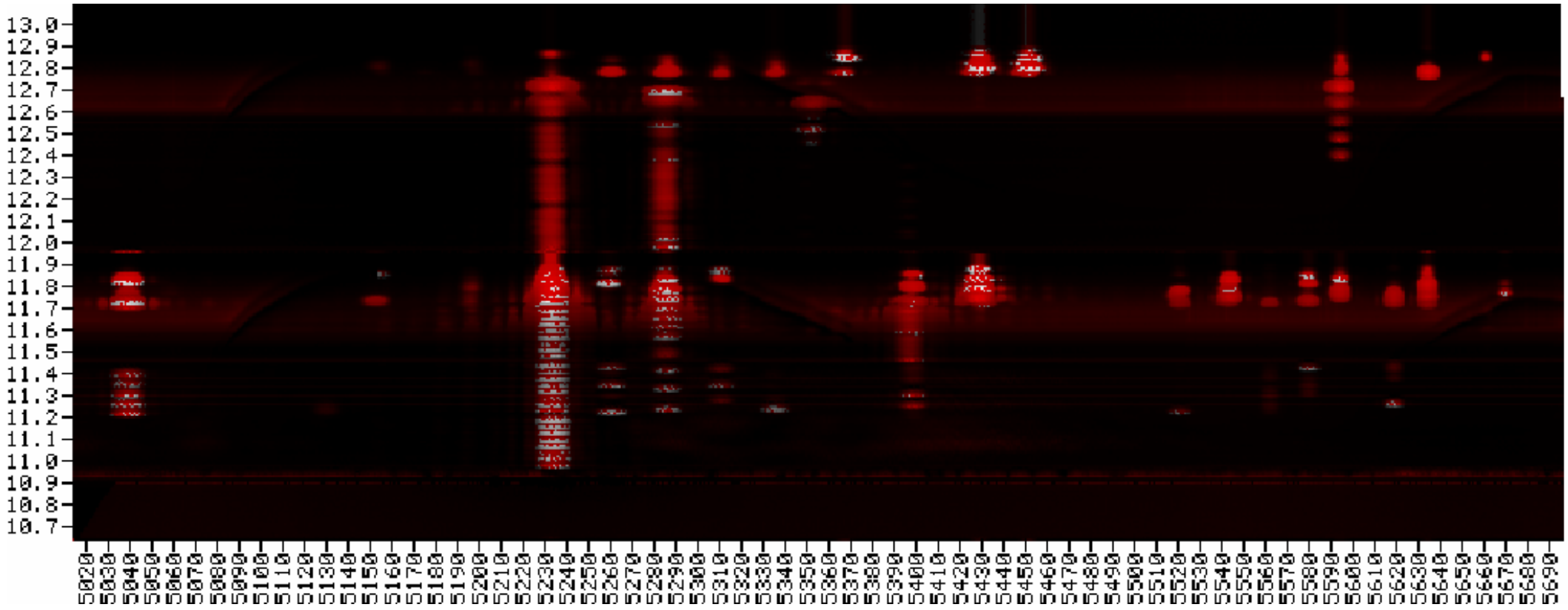
Visual Representations



Time travel – day 1



Time travel – day 2



That was then...

- Proprietary control systems
  - Undocumented
    - Reluctant manufacturers
  - Special hardware / interface converters
    - Motor Control
    - Signal Status
    - to RS232

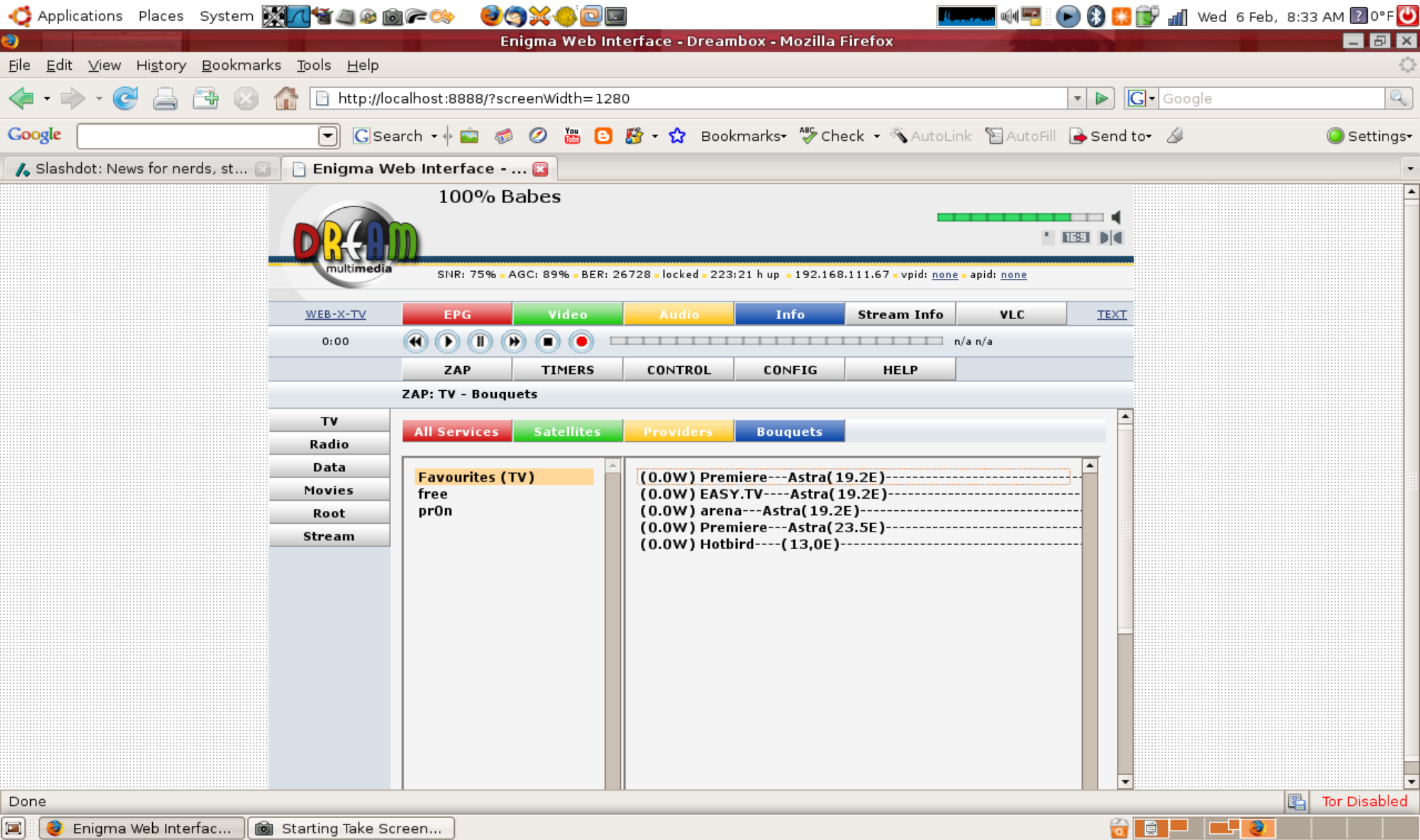
This is now...

- Open standards
  - DVB Cards
  - Embedded Linux Receivers
    - Dreambox
      - Tuxbox based
      - GPL source code
      - Cross compilers

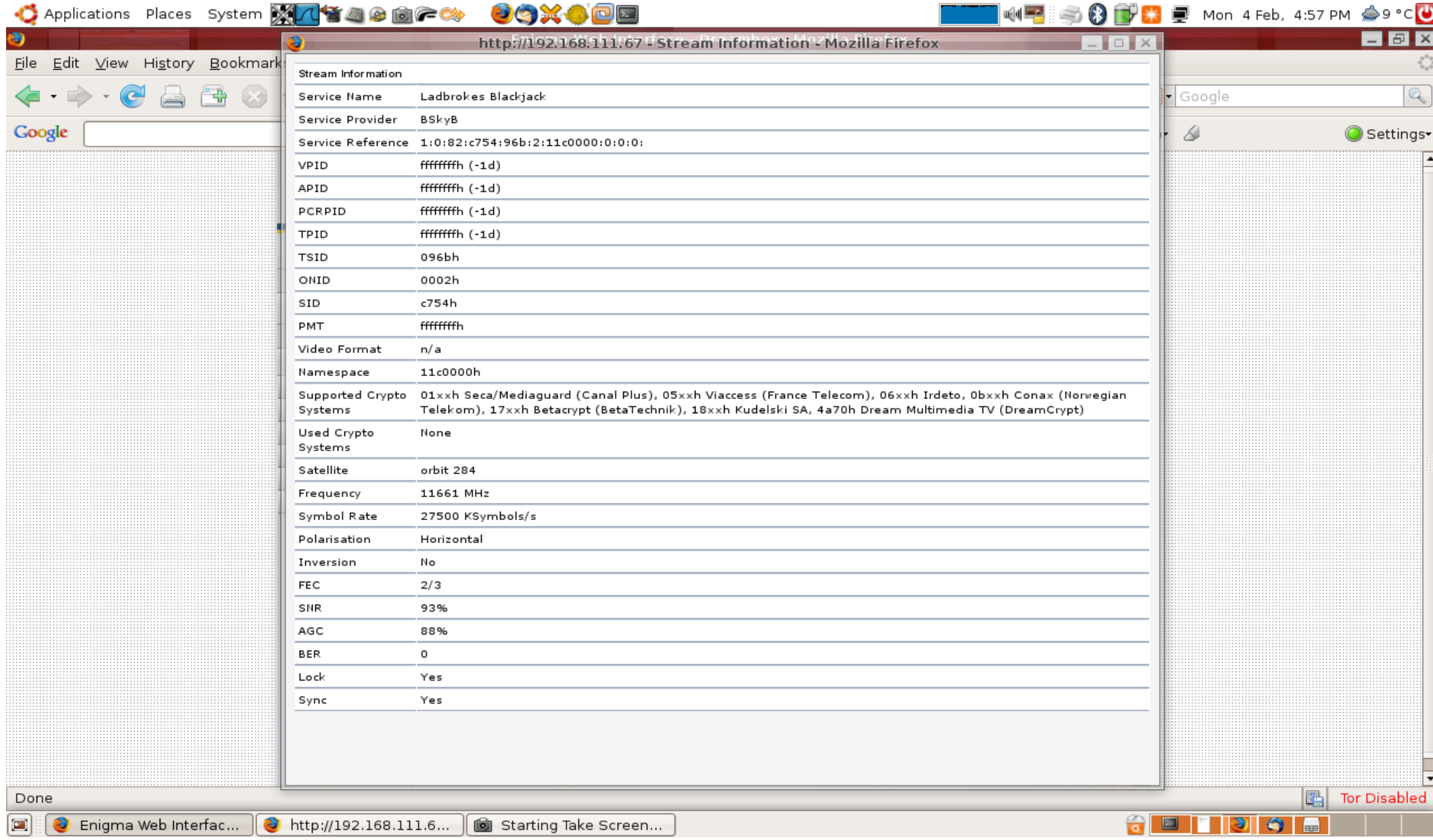
This is now...

- Web Interface
  - Select programming
  - Steer dish
  - Examine feed properties

Web Interface

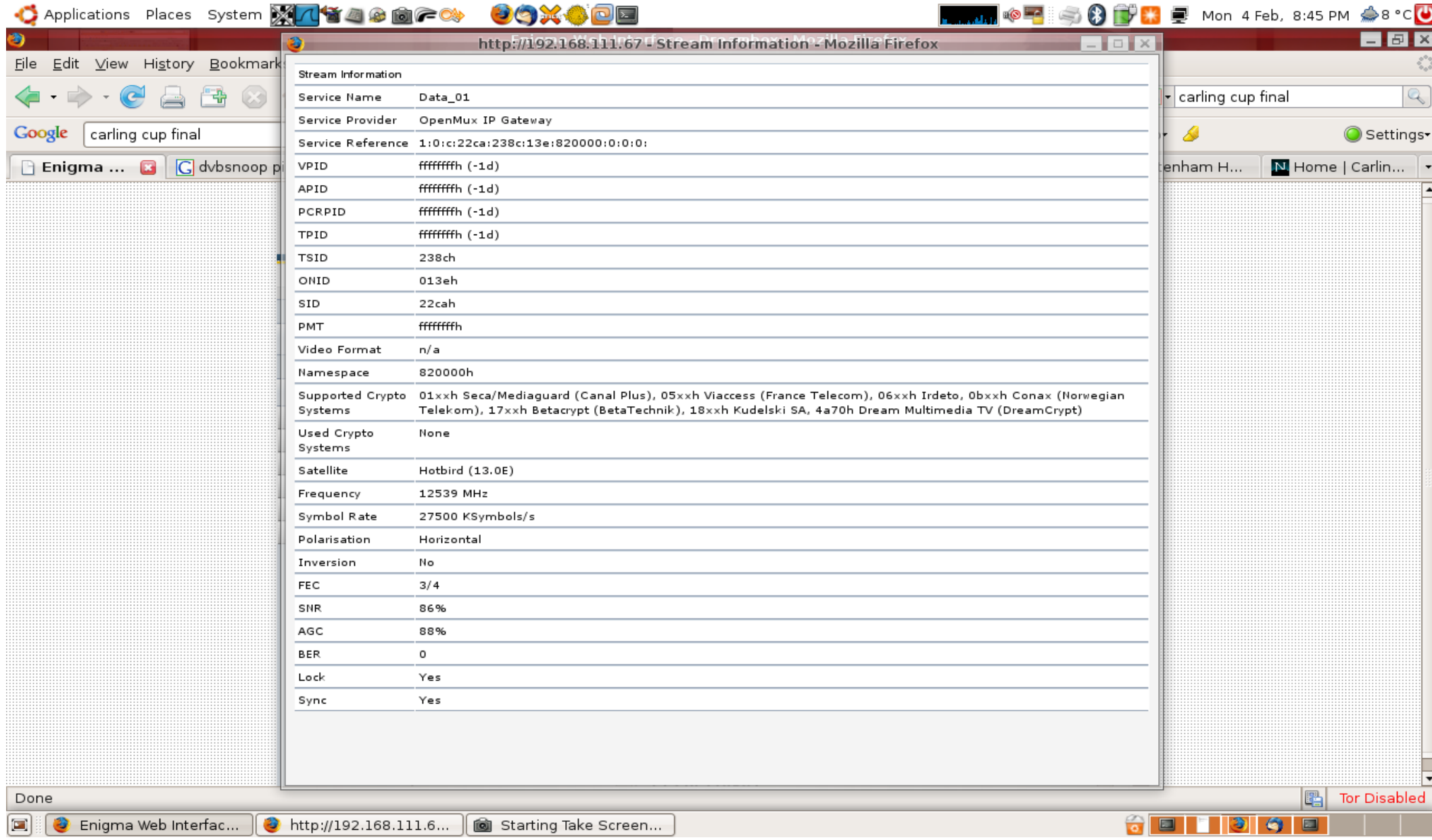


Stream Info



Stream Information	
Service Name	Ladbrokes Blackjack
Service Provider	BSkyB
Service Reference	1:0:82:c754:96b:2:11c0000:0:0:0:
VPID	ffffffffh (-1d)
APID	ffffffffh (-1d)
PCRPID	ffffffffh (-1d)
TPID	ffffffffh (-1d)
TSID	096bh
ONID	0002h
SID	c754h
PMT	ffffffffh
Video Format	n/a
Namespace	11c0000h
Supported Crypto Systems	01xxh Seca/Mediaguard (Canal Plus), 05xxh Viaccess (France Telecom), 06xxh Irdeto, 0bxxh Conax (Norwegian Telekom), 17xxh Betacrypt (BetaTechnik), 18xxh Kudelski SA, 4a70h Dream Multimedia TV (DreamCrypt)
Used Crypto Systems	None
Satellite	orbit 284
Frequency	11661 MHz
Symbol Rate	27500 KSymbols/s
Polarisation	Horizontal
Inversion	No
FEC	2/3
SNR	93%
AGC	88%
BER	0
Lock	Yes
Sync	Yes

Stream Info



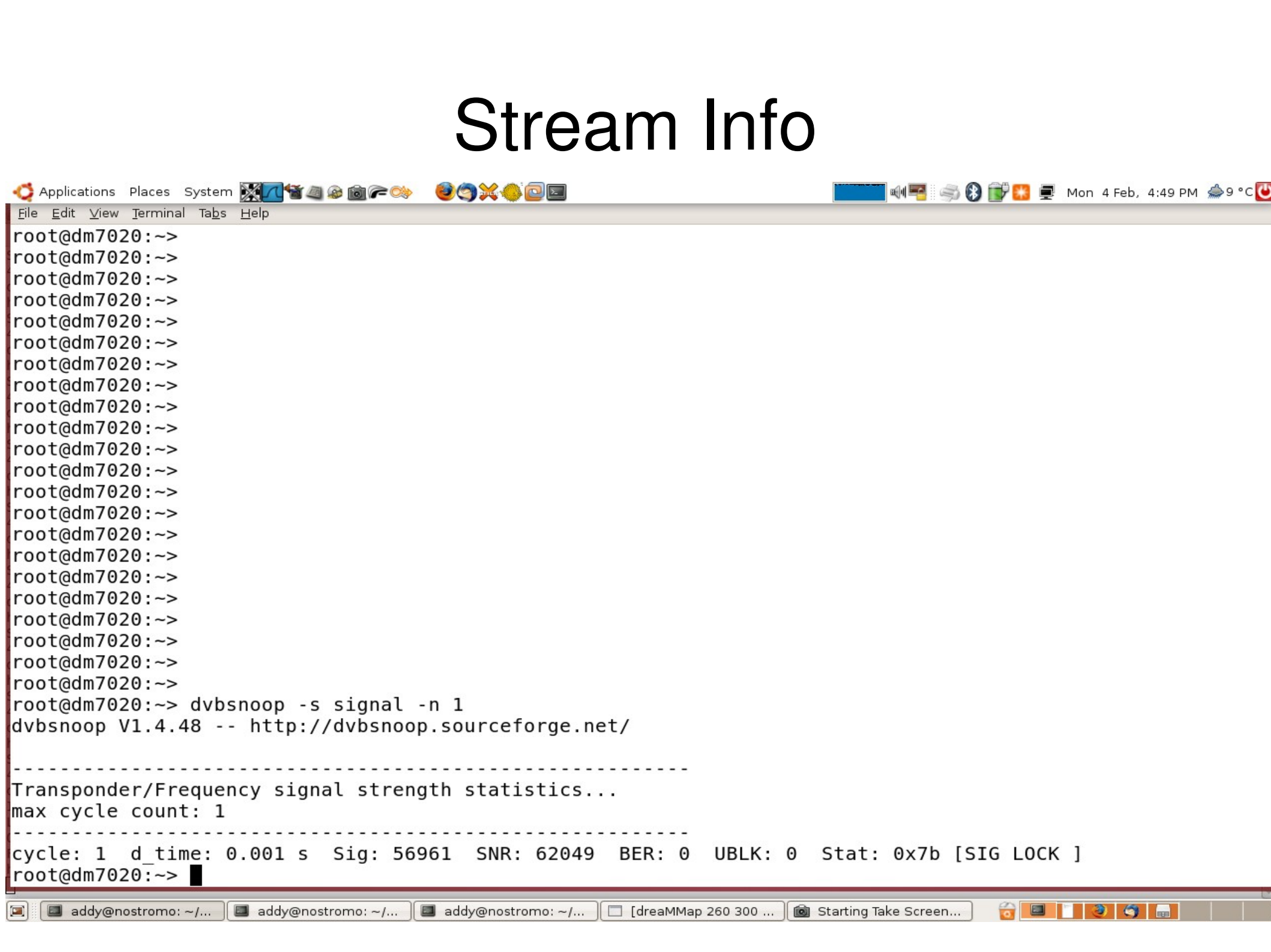
Stream Information	
Service Name	Data_01
Service Provider	OpenMux IP Gateway
Service Reference	1:0:c:22ca:238c:13e:820000:0:0:0:
VPID	ffffffffh (-1d)
APID	ffffffffh (-1d)
PCRPID	ffffffffh (-1d)
TPID	ffffffffh (-1d)
TSID	238ch
ONID	013eh
SID	22cah
PMT	ffffffffh
Video Format	n/a
Namespace	820000h
Supported Crypto Systems	01xxh Seca/Mediaguard (Canal Plus), 05xxh Viaccess (France Telecom), 06xxh Irdeto, 0bxxh Conax (Norwegian Telekom), 17xxh Betacrypt (BetaTechnik), 18xxh Kudelski SA, 4a70h Dream Multimedia TV (DreamCrypt)
Used Crypto Systems	None
Satellite	Hotbird (13.0E)
Frequency	12539 MHz
Symbol Rate	27500 KSymbols/s
Polarisation	Horizontal
Inversion	No
FEC	3/4
SNR	86%
AGC	88%
BER	0
Lock	Yes
Sync	Yes

Stream Info

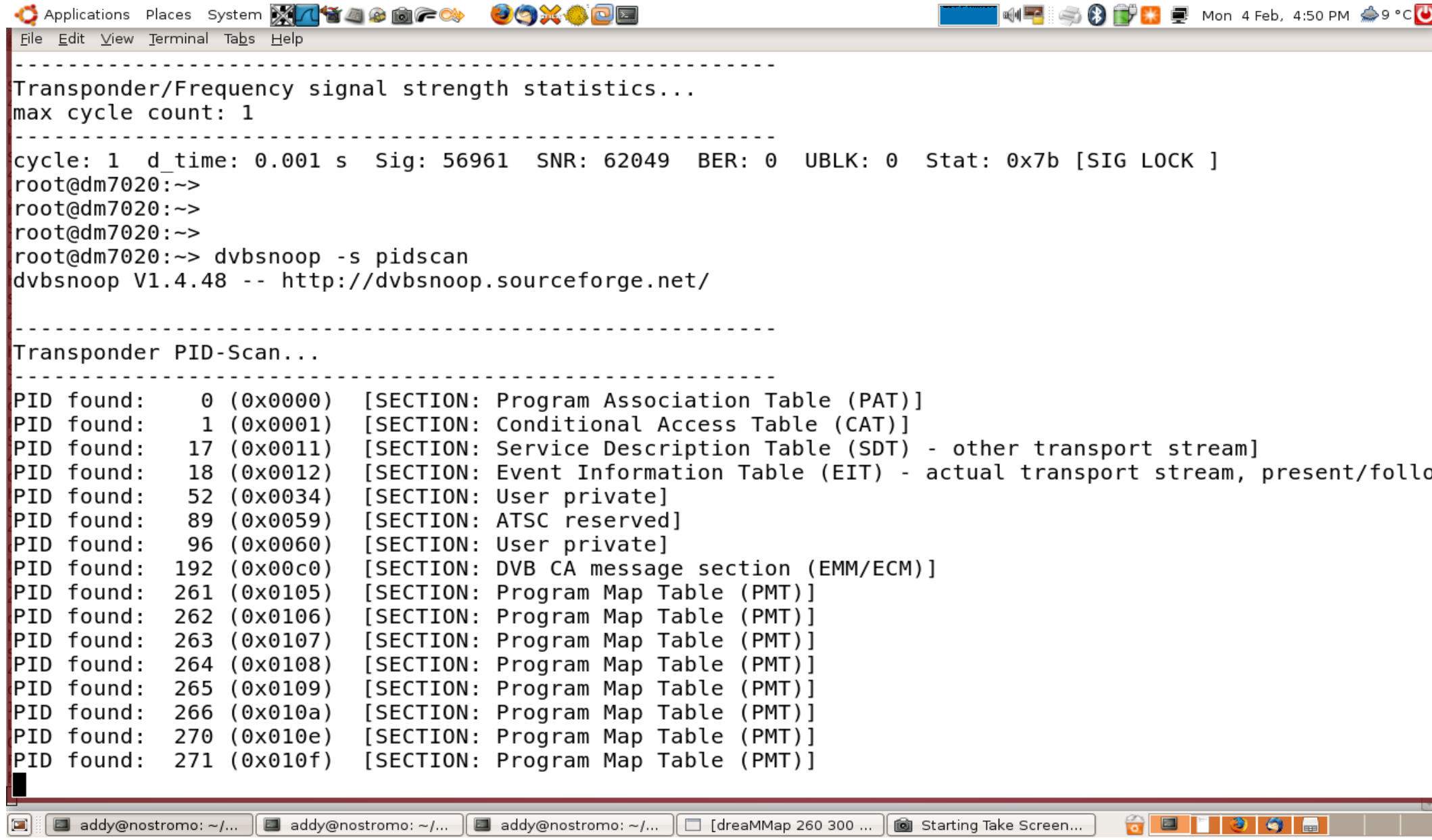
- dvbsnoop - DVB and MPEG stream analyzer
  - “WireShark for DVB”
  - Access to raw data from DVB card
  - Decode known PIDs

http://dvbsnoop.sourceforge.net

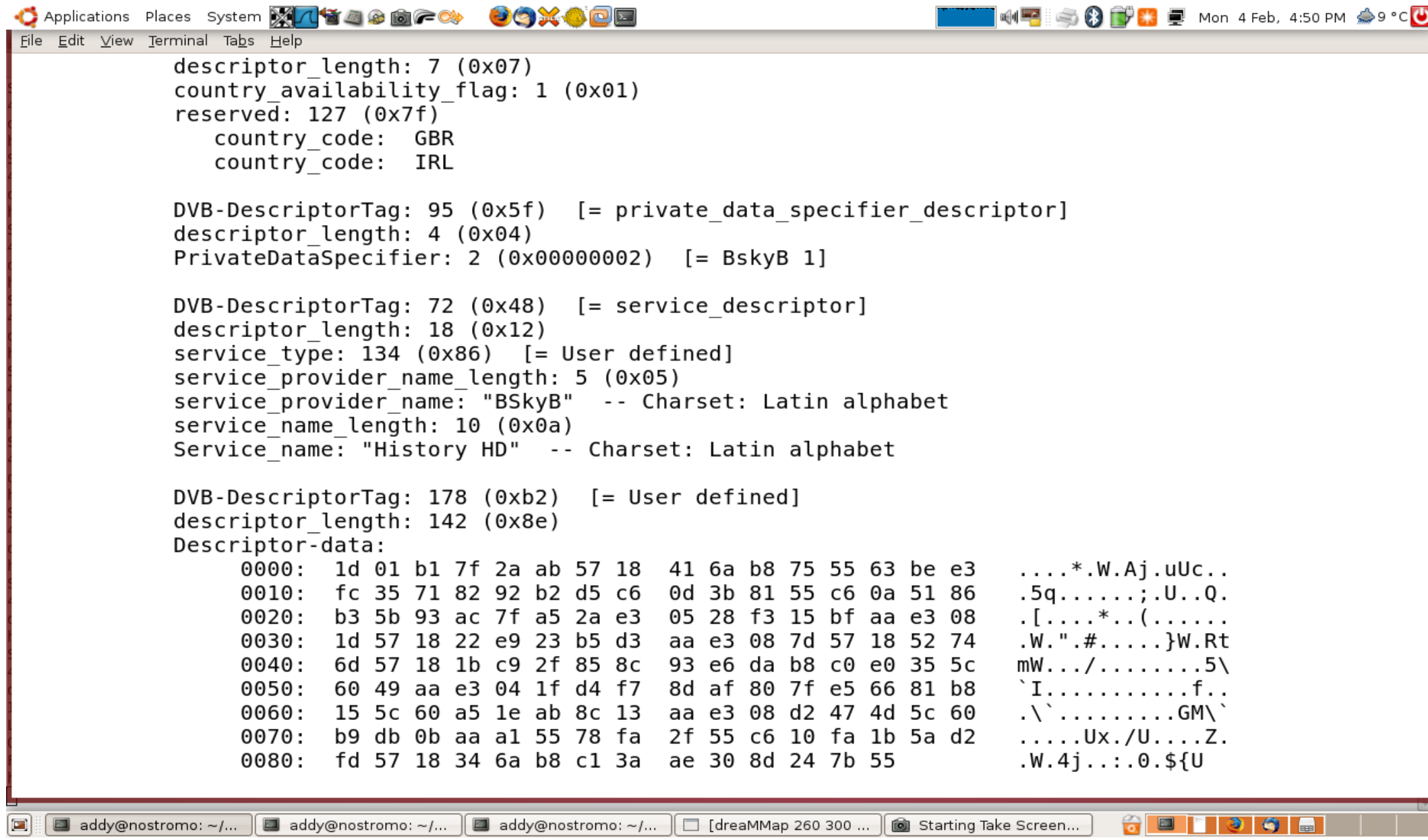
Stream Info


Applications Places System
Mon 4 Feb, 4:49 PM 9 °C
File Edit View Terminal Tabs Help
root@dm7020:~>
root@dm7020:~>
root@dm7020:~>

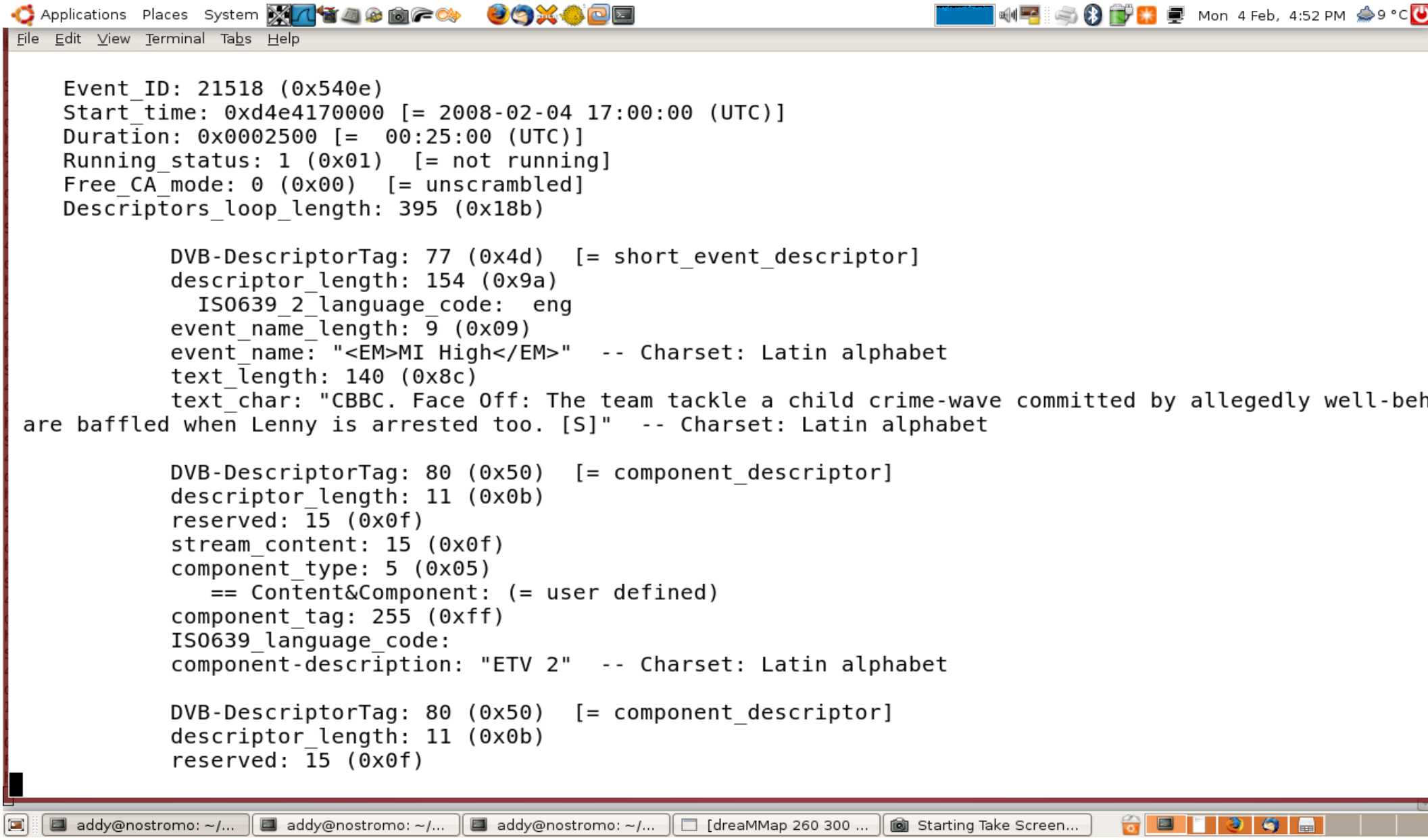
Stream Info


Applications Places System
Mon 4 Feb, 4:50 PM 9 °C
File Edit View Terminal Tabs Help
Transponder/Frequency signal strength statistics...
max cycle count: 1
cycle: 1 d_time: 0.001 s Sig: 56961 SNR: 62049 BER: 0 UBLK: 0 Stat: 0x7b [SIG LOCK]
root@dm7020:~>
root@dm7020:~>
root@dm7020:~>
root@dm7020:~> dvbsnoop -s pidscan
dvbsnoop V1.4.48 -- http://dvbsnoop.sourceforge.net/
Transponder PID-Scan...
PID found: 0 (0x0000) [SECTION: Program Association Table (PAT)]
PID found: 1 (0x0001) [SECTION: Conditional Access Table (CAT)]
PID found: 17 (0x0011) [SECTION: Service Description Table (SDT) - other transport stream]
PID found: 18 (0x0012) [SECTION: Event Information Table (EIT) - actual transport stream, present/follo
PID found: 52 (0x0034) [SECTION: User private]
PID found: 89 (0x0059) [SECTION: ATSC reserved]
PID found: 96 (0x0060) [SECTION: User private]
PID found: 192 (0x00c0) [SECTION: DVB CA message section (EMM/ECM)]
PID found: 261 (0x0105) [SECTION: Program Map Table (PMT)]
PID found: 262 (0x0106) [SECTION: Program Map Table (PMT)]
PID found: 263 (0x0107) [SECTION: Program Map Table (PMT)]
PID found: 264 (0x0108) [SECTION: Program Map Table (PMT)]
PID found: 265 (0x0109) [SECTION: Program Map Table (PMT)]
PID found: 266 (0x010a) [SECTION: Program Map Table (PMT)]
PID found: 270 (0x010e) [SECTION: Program Map Table (PMT)]
PID found: 271 (0x010f) [SECTION: Program Map Table (PMT)]
addy@nostromo: ~/...
addy@nostromo: ~/...
addy@nostromo: ~/...
[dreaMMap 260 300 ...
Starting Take Screen...

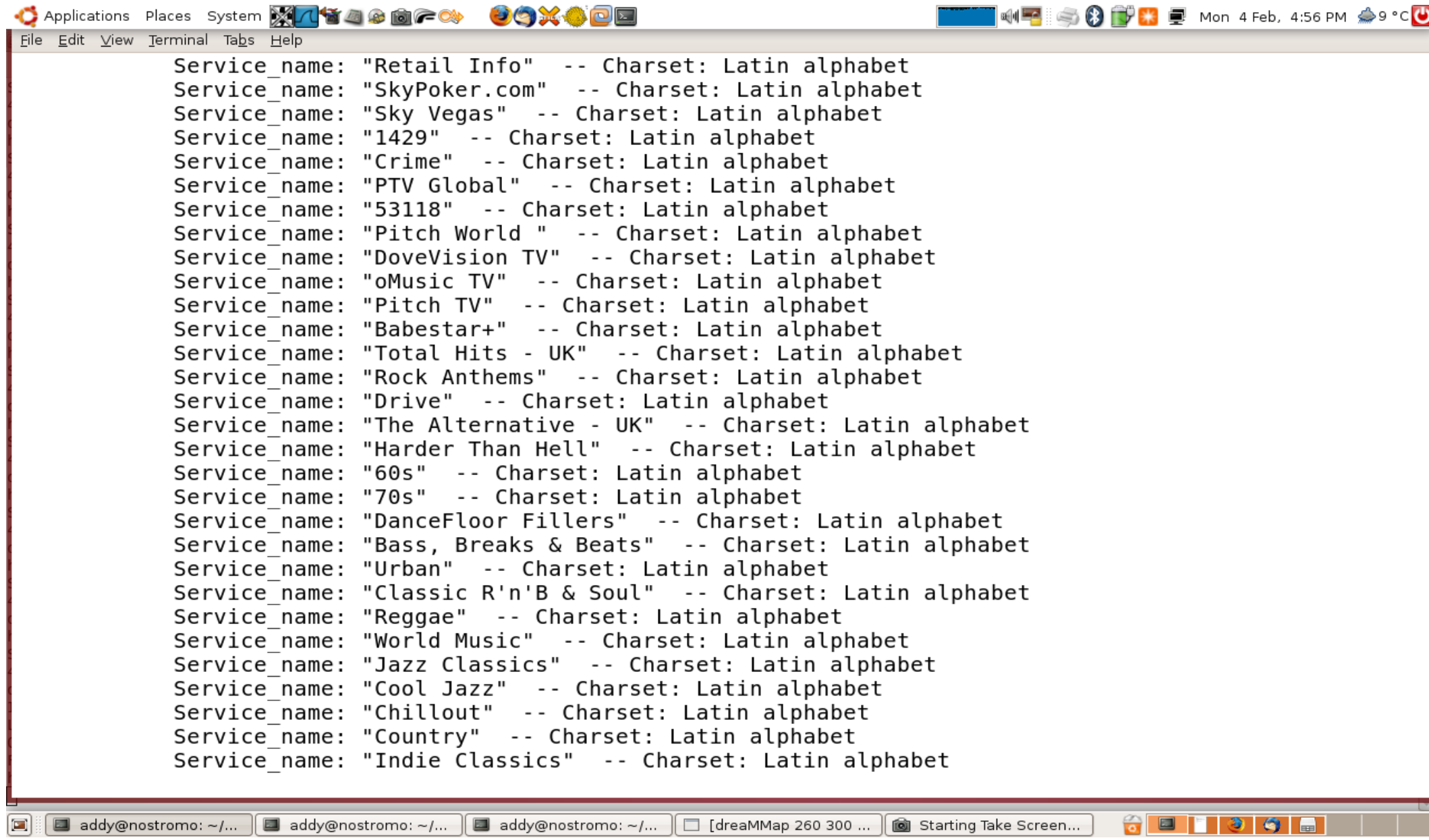
Stream Info


Applications Places System
Mon 4 Feb, 4:50 PM 9 °C
File Edit View Terminal Tabs Help
descriptor_length: 7 (0x07)
country_availability_flag: 1 (0x01)
reserved: 127 (0x7f)
country_code: GBR
country_code: IRL
DVB-DescriptorTag: 95 (0x5f) [= private_data_specifier_descriptor]
descriptor_length: 4 (0x04)
PrivateDataSpecifier: 2 (0x00000002) [= BskyB 1]
DVB-DescriptorTag: 72 (0x48) [= service_descriptor]
descriptor_length: 18 (0x12)
service_type: 134 (0x86) [= User defined]
service_provider_name_length: 5 (0x05)
service_provider_name: "BSkyB" -- Charset: Latin alphabet
service_name_length: 10 (0x0a)
Service_name: "History HD" -- Charset: Latin alphabet
DVB-DescriptorTag: 178 (0xb2) [= User defined]
descriptor_length: 142 (0x8e)
Descriptor-data:
0000: 1d 01 b1 7f 2a ab 57 18 41 6a b8 75 55 63 be e3 ....*.W.Aj.uUc..
0010: fc 35 71 82 92 b2 d5 c6 0d 3b 81 55 c6 0a 51 86 .5q.....;.U..Q.
0020: b3 5b 93 ac 7f a5 2a e3 05 28 f3 15 bf aa e3 08 .[....*..(......
0030: 1d 57 18 22 e9 23 b5 d3 aa e3 08 7d 57 18 52 74 .W."#.....}W.Rt
0040: 6d 57 18 1b c9 2f 85 8c 93 e6 da b8 c0 e0 35 5c mW.../.....5\
0050: 60 49 aa e3 04 1f d4 f7 8d af 80 7f e5 66 81 b8 `I.....f..
0060: 15 5c 60 a5 1e ab 8c 13 aa e3 08 d2 47 4d 5c 60 .\`.....GM\`
0070: b9 db 0b aa a1 55 78 fa 2f 55 c6 10 fa 1b 5a d2 .....Ux./U....Z.
0080: fd 57 18 34 6a b8 c1 3a ae 30 8d 24 7b 55 .W.4j..:.0.${U
addy@nostromo: ~/...
addy@nostromo: ~/...
addy@nostromo: ~/...
[dreaMMap 260 300 ...
Starting Take Screen...

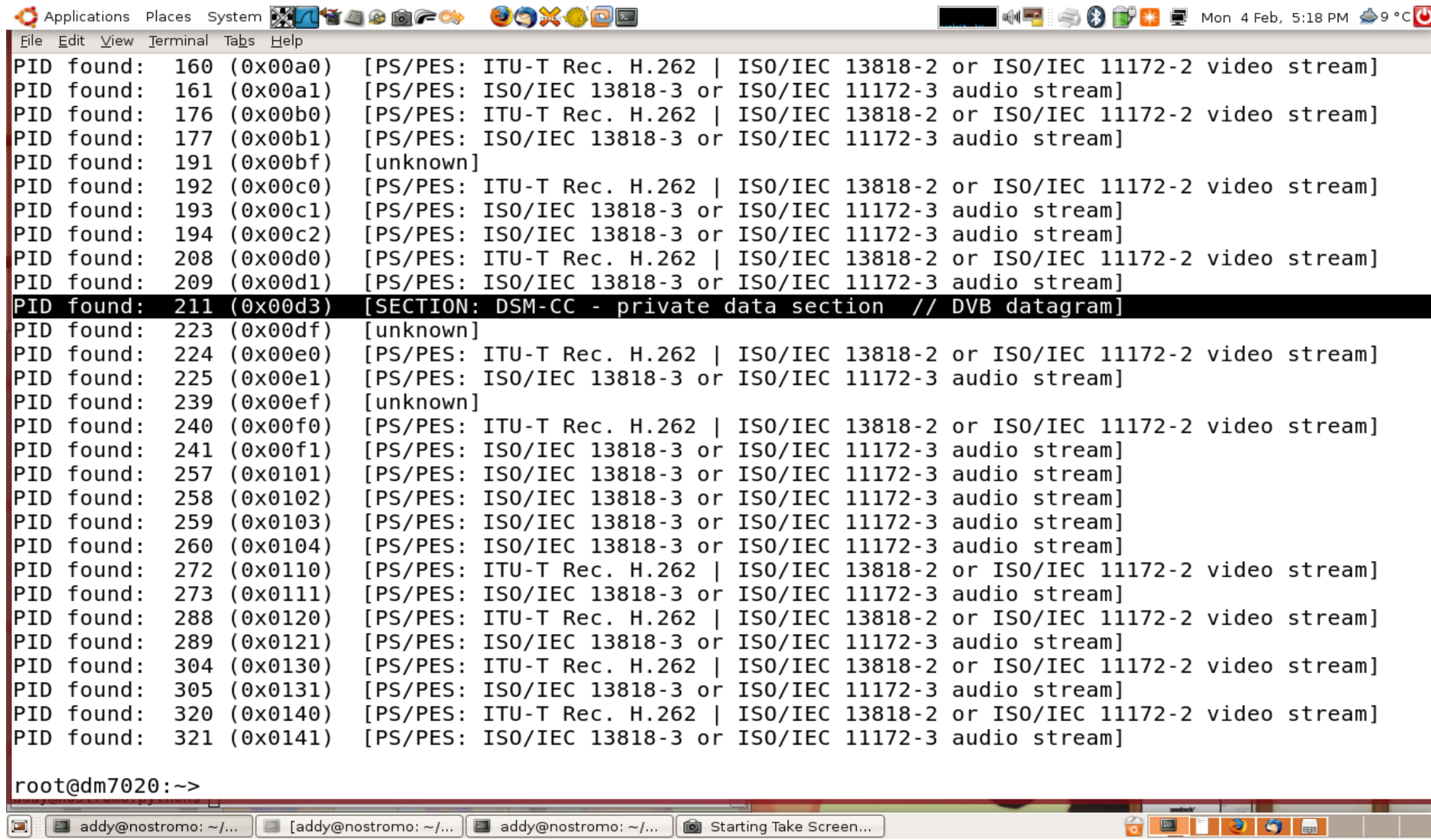
Stream Info


Applications Places System
Mon 4 Feb, 4:52 PM 9 °C
File Edit View Terminal Tabs Help
Event_ID: 21518 (0x540e)
Start_time: 0xd4e4170000 [= 2008-02-04 17:00:00 (UTC)]
Duration: 0x0002500 [= 00:25:00 (UTC)]
Running_status: 1 (0x01) [= not running]
Free_CA_mode: 0 (0x00) [= unscrambled]
Descriptors_loop_length: 395 (0x18b)
DVB-DescriptorTag: 77 (0x4d) [= short_event_descriptor]
descriptor_length: 154 (0x9a)
ISO639_2_language_code: eng
event_name_length: 9 (0x09)
event_name: "<EM>MI High</EM>" -- Charset: Latin alphabet
text_length: 140 (0x8c)
text_char: "CBBC. Face Off: The team tackle a child crime-wave committed by allegedly well-beh
are baffled when Lenny is arrested too. [S]" -- Charset: Latin alphabet
DVB-DescriptorTag: 80 (0x50) [= component_descriptor]
descriptor_length: 11 (0x0b)
reserved: 15 (0x0f)
stream_content: 15 (0x0f)
component_type: 5 (0x05)
== Content&Component: (= user defined)
component_tag: 255 (0xff)
ISO639_language_code:
component-description: "ETV 2" -- Charset: Latin alphabet
DVB-DescriptorTag: 80 (0x50) [= component_descriptor]
descriptor_length: 11 (0x0b)
reserved: 15 (0x0f)
addy@nostromo: ~/...
addy@nostromo: ~/...
addy@nostromo: ~/...
[dreaMMap 260 300 ...
Starting Take Screen...

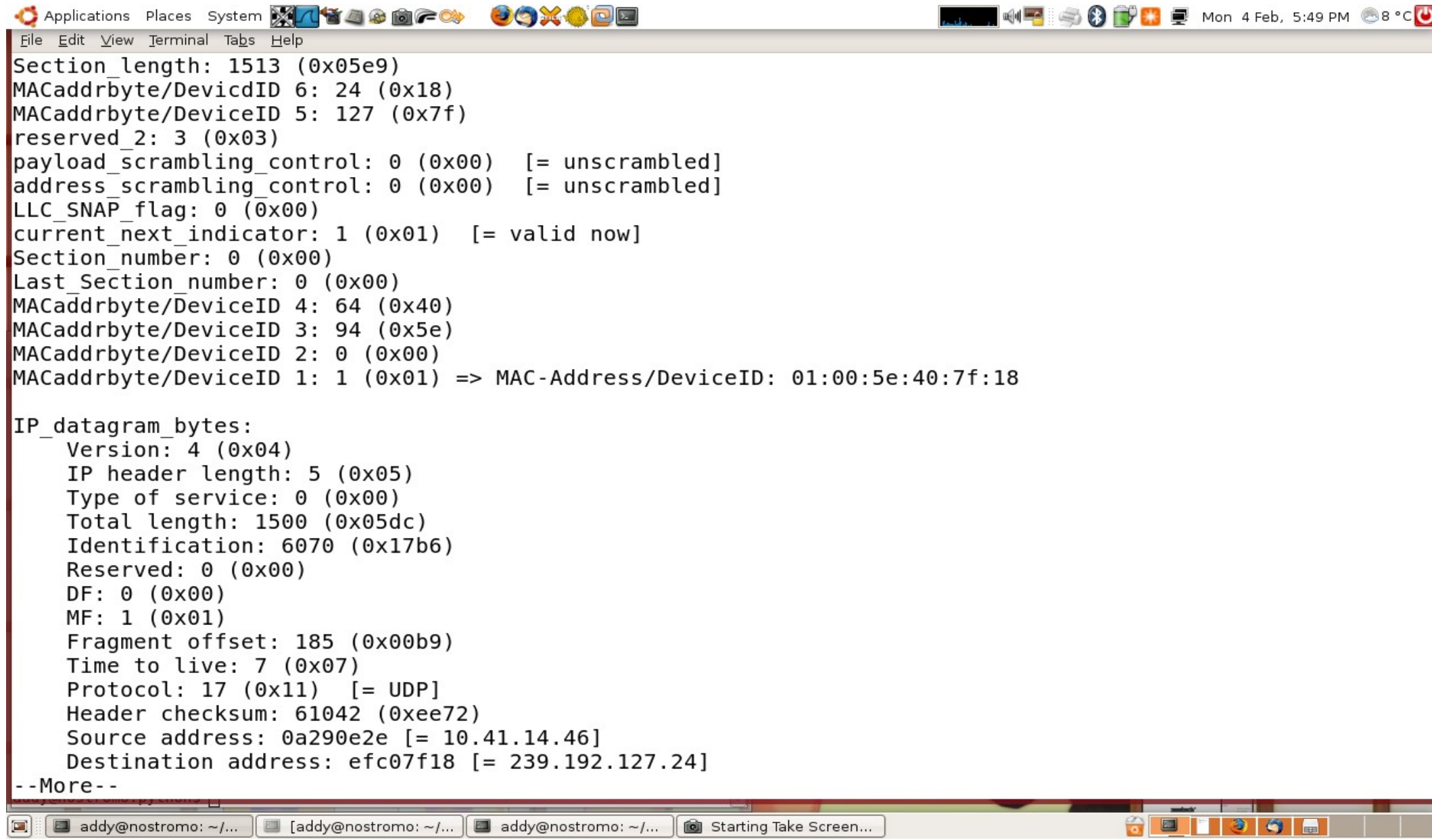
Stream Info


Applications Places System
Mon 4 Feb, 4:56 PM
9 °C
File Edit View Terminal Tabs Help
Service_name: "Retail Info" -- Charset: Latin alphabet
Service_name: "SkyPoker.com" -- Charset: Latin alphabet
Service_name: "Sky Vegas" -- Charset: Latin alphabet
Service_name: "1429" -- Charset: Latin alphabet
Service_name: "Crime" -- Charset: Latin alphabet
Service_name: "PTV Global" -- Charset: Latin alphabet
Service_name: "53118" -- Charset: Latin alphabet
Service_name: "Pitch World " -- Charset: Latin alphabet
Service_name: "DoveVision TV" -- Charset: Latin alphabet
Service_name: "oMusic TV" -- Charset: Latin alphabet
Service_name: "Pitch TV" -- Charset: Latin alphabet
Service_name: "Babestar+" -- Charset: Latin alphabet
Service_name: "Total Hits - UK" -- Charset: Latin alphabet
Service_name: "Rock Anthems" -- Charset: Latin alphabet
Service_name: "Drive" -- Charset: Latin alphabet
Service_name: "The Alternative - UK" -- Charset: Latin alphabet
Service_name: "Harder Than Hell" -- Charset: Latin alphabet
Service_name: "60s" -- Charset: Latin alphabet
Service_name: "70s" -- Charset: Latin alphabet
Service_name: "DanceFloor Fillers" -- Charset: Latin alphabet
Service_name: "Bass, Breaks & Beats" -- Charset: Latin alphabet
Service_name: "Urban" -- Charset: Latin alphabet
Service_name: "Classic R'n'B & Soul" -- Charset: Latin alphabet
Service_name: "Reggae" -- Charset: Latin alphabet
Service_name: "World Music" -- Charset: Latin alphabet
Service_name: "Jazz Classics" -- Charset: Latin alphabet
Service_name: "Cool Jazz" -- Charset: Latin alphabet
Service_name: "Chillout" -- Charset: Latin alphabet
Service_name: "Country" -- Charset: Latin alphabet
Service_name: "Indie Classics" -- Charset: Latin alphabet
addy@nostromo: ~/...
addy@nostromo: ~/...
addy@nostromo: ~/...
[dreaMMap 260 300 ...
Starting Take Screen...

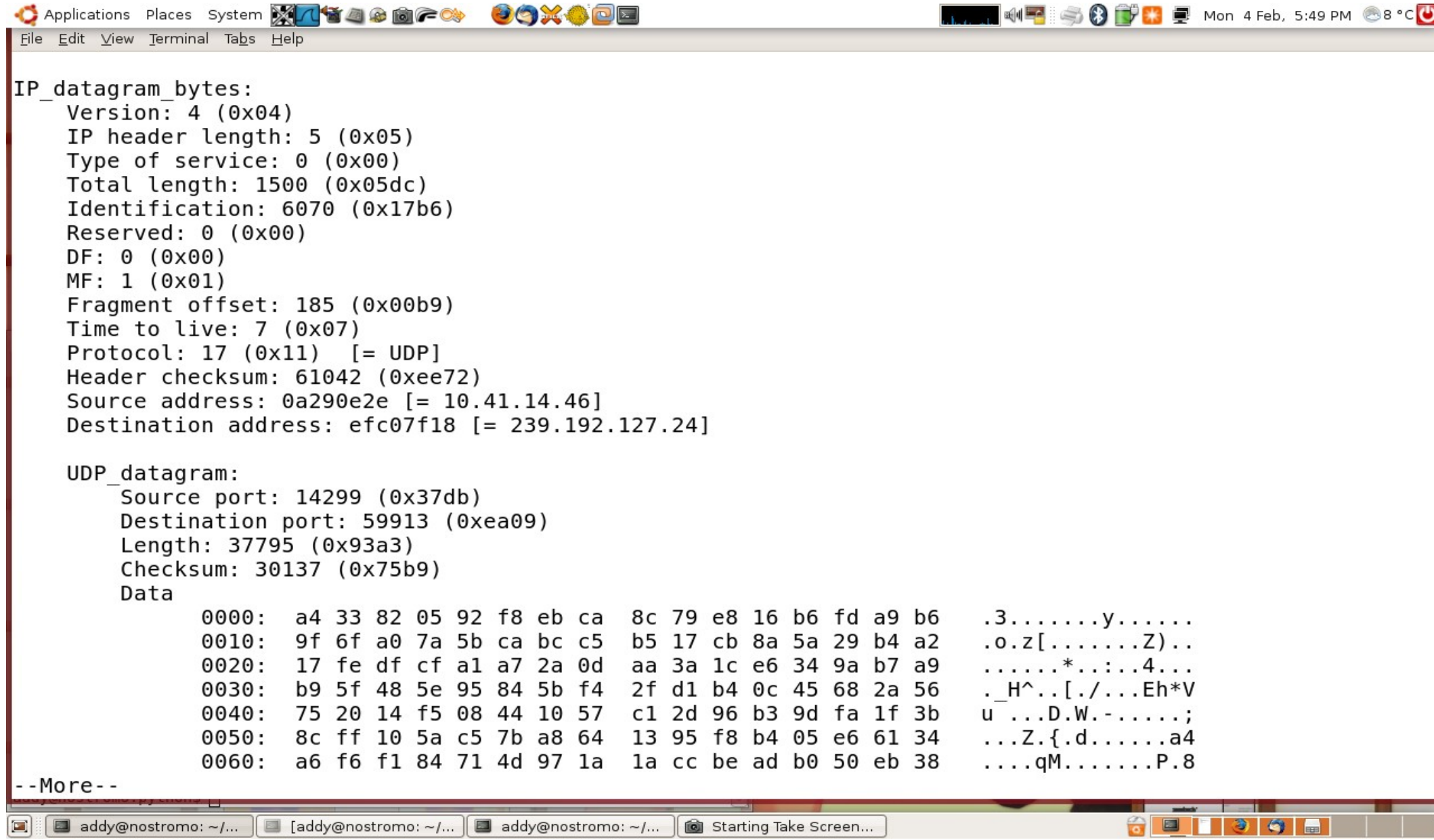
Stream Info


Applications Places System
Mon 4 Feb, 5:18 PM 9 °C
File Edit View Terminal Tabs Help
PID found: 160 (0x00a0) [PS/PES: ITU-T Rec. H.262 | ISO/IEC 13818-2 or ISO/IEC 11172-2 video stream]
PID found: 161 (0x00a1) [PS/PES: ISO/IEC 13818-3 or ISO/IEC 11172-3 audio stream]
PID found: 176 (0x00b0) [PS/PES: ITU-T Rec. H.262 | ISO/IEC 13818-2 or ISO/IEC 11172-2 video stream]
PID found: 177 (0x00b1) [PS/PES: ISO/IEC 13818-3 or ISO/IEC 11172-3 audio stream]
PID found: 191 (0x00bf) [unknown]
PID found: 192 (0x00c0) [PS/PES: ITU-T Rec. H.262 | ISO/IEC 13818-2 or ISO/IEC 11172-2 video stream]
PID found: 193 (0x00c1) [PS/PES: ISO/IEC 13818-3 or ISO/IEC 11172-3 audio stream]
PID found: 194 (0x00c2) [PS/PES: ISO/IEC 13818-3 or ISO/IEC 11172-3 audio stream]
PID found: 208 (0x00d0) [PS/PES: ITU-T Rec. H.262 | ISO/IEC 13818-2 or ISO/IEC 11172-2 video stream]
PID found: 209 (0x00d1) [PS/PES: ISO/IEC 13818-3 or ISO/IEC 11172-3 audio stream]
PID found: 211 (0x00d3) [SECTION: DSM-CC - private data section // DVB datagram]
PID found: 223 (0x00df) [unknown]
PID found: 224 (0x00e0) [PS/PES: ITU-T Rec. H.262 | ISO/IEC 13818-2 or ISO/IEC 11172-2 video stream]
PID found: 225 (0x00e1) [PS/PES: ISO/IEC 13818-3 or ISO/IEC 11172-3 audio stream]
PID found: 239 (0x00ef) [unknown]
PID found: 240 (0x00f0) [PS/PES: ITU-T Rec. H.262 | ISO/IEC 13818-2 or ISO/IEC 11172-2 video stream]
PID found: 241 (0x00f1) [PS/PES: ISO/IEC 13818-3 or ISO/IEC 11172-3 audio stream]
PID found: 257 (0x0101) [PS/PES: ISO/IEC 13818-3 or ISO/IEC 11172-3 audio stream]
PID found: 258 (0x0102) [PS/PES: ISO/IEC 13818-3 or ISO/IEC 11172-3 audio stream]
PID found: 259 (0x0103) [PS/PES: ISO/IEC 13818-3 or ISO/IEC 11172-3 audio stream]
PID found: 260 (0x0104) [PS/PES: ISO/IEC 13818-3 or ISO/IEC 11172-3 audio stream]
PID found: 272 (0x0110) [PS/PES: ITU-T Rec. H.262 | ISO/IEC 13818-2 or ISO/IEC 11172-2 video stream]
PID found: 273 (0x0111) [PS/PES: ISO/IEC 13818-3 or ISO/IEC 11172-3 audio stream]
PID found: 288 (0x0120) [PS/PES: ITU-T Rec. H.262 | ISO/IEC 13818-2 or ISO/IEC 11172-2 video stream]
PID found: 289 (0x0121) [PS/PES: ISO/IEC 13818-3 or ISO/IEC 11172-3 audio stream]
PID found: 304 (0x0130) [PS/PES: ITU-T Rec. H.262 | ISO/IEC 13818-2 or ISO/IEC 11172-2 video stream]
PID found: 305 (0x0131) [PS/PES: ISO/IEC 13818-3 or ISO/IEC 11172-3 audio stream]
PID found: 320 (0x0140) [PS/PES: ITU-T Rec. H.262 | ISO/IEC 13818-2 or ISO/IEC 11172-2 video stream]
PID found: 321 (0x0141) [PS/PES: ISO/IEC 13818-3 or ISO/IEC 11172-3 audio stream]
root@dm7020:~>
addy@nostromo: ~/...
[addy@nostromo: ~/...
addy@nostromo: ~/...
Starting Take Screen...

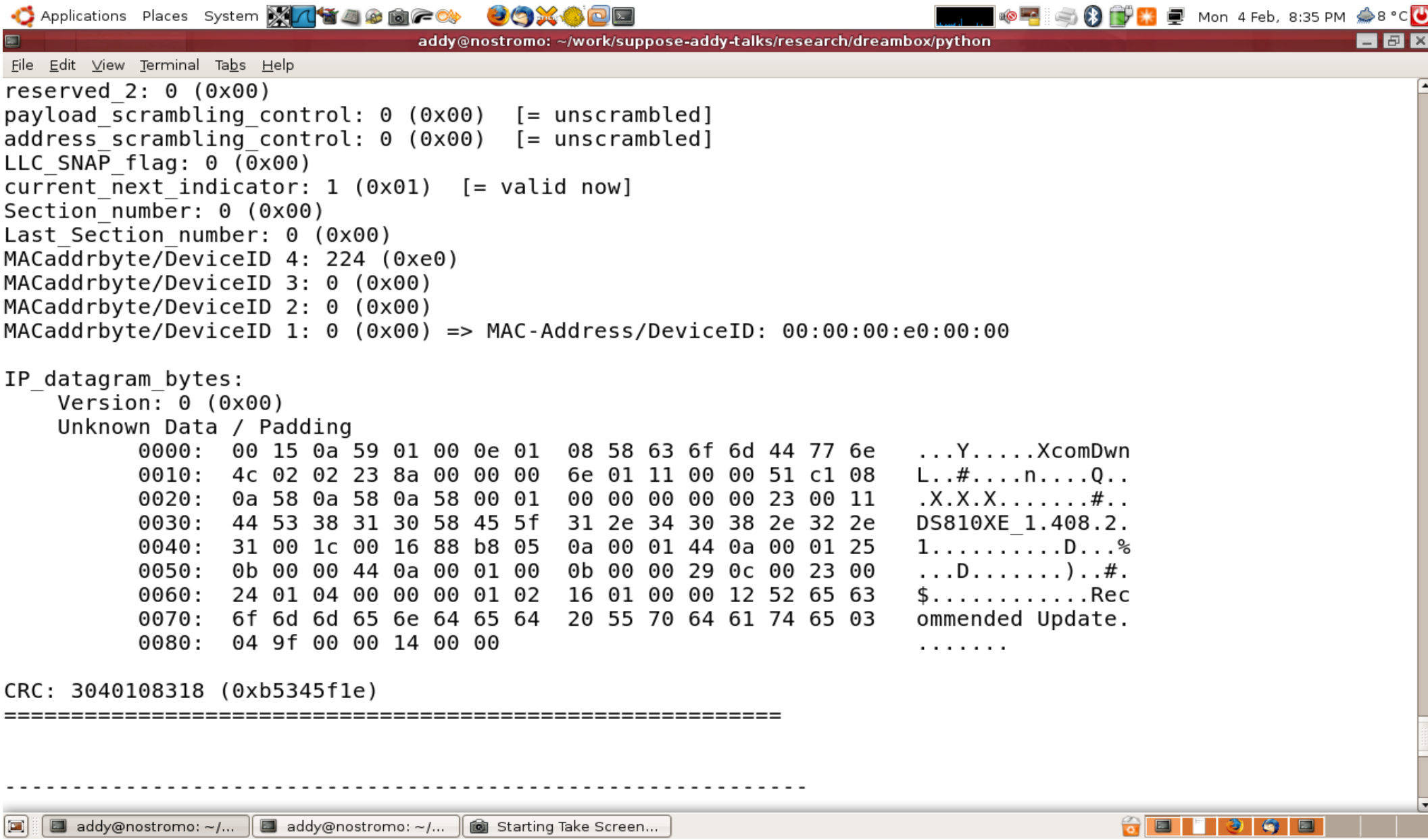
Stream Info


Applications Places System
Mon 4 Feb, 5:49 PM
8 °C
File Edit View Terminal Tabs Help
Section_length: 1513 (0x05e9)
MACaddrbyte/DevicdID 6: 24 (0x18)
MACaddrbyte/DeviceID 5: 127 (0x7f)
reserved_2: 3 (0x03)
payload_scrambling_control: 0 (0x00) [= unscrambled]
address_scrambling_control: 0 (0x00) [= unscrambled]
LLC_SNAP_flag: 0 (0x00)
current_next_indicator: 1 (0x01) [= valid now]
Section_number: 0 (0x00)
Last_Section_number: 0 (0x00)
MACaddrbyte/DeviceID 4: 64 (0x40)
MACaddrbyte/DeviceID 3: 94 (0x5e)
MACaddrbyte/DeviceID 2: 0 (0x00)
MACaddrbyte/DeviceID 1: 1 (0x01) => MAC-Address/DeviceID: 01:00:5e:40:7f:18
IP_datagram_bytes:
Version: 4 (0x04)
IP header length: 5 (0x05)
Type of service: 0 (0x00)
Total length: 1500 (0x05dc)
Identification: 6070 (0x17b6)
Reserved: 0 (0x00)
DF: 0 (0x00)
MF: 1 (0x01)
Fragment offset: 185 (0x00b9)
Time to live: 7 (0x07)
Protocol: 17 (0x11) [= UDP]
Header checksum: 61042 (0xee72)
Source address: 0a290e2e [= 10.41.14.46]
Destination address: efc07f18 [= 239.192.127.24]
--More--
addy@nostromo: ~/...
[addy@nostromo: ~/...
addy@nostromo: ~/...
Starting Take Screen...

Stream Info


Applications Places System
Mon 4 Feb, 5:49 PM
8 °C
File Edit View Terminal Tabs Help
IP_datagram_bytes:
Version: 4 (0x04)
IP header length: 5 (0x05)
Type of service: 0 (0x00)
Total length: 1500 (0x05dc)
Identification: 6070 (0x17b6)
Reserved: 0 (0x00)
DF: 0 (0x00)
MF: 1 (0x01)
Fragment offset: 185 (0x00b9)
Time to live: 7 (0x07)
Protocol: 17 (0x11) [= UDP]
Header checksum: 61042 (0xee72)
Source address: 0a290e2e [= 10.41.14.46]
Destination address: efc07f18 [= 239.192.127.24]
UDP_datagram:
Source port: 14299 (0x37db)
Destination port: 59913 (0xea09)
Length: 37795 (0x93a3)
Checksum: 30137 (0x75b9)
Data
0000: a4 33 82 05 92 f8 eb ca 8c 79 e8 16 b6 fd a9 b6 .3.....y.....
0010: 9f 6f a0 7a 5b ca bc c5 b5 17 cb 8a 5a 29 b4 a2 .o.z[.....Z)..
0020: 17 fe df cf a1 a7 2a 0d aa 3a 1c e6 34 9a b7 a9 ......*..:..4...
0030: b9 5f 48 5e 95 84 5b f4 2f d1 b4 0c 45 68 2a 56 ._H^..[./...Eh*V
0040: 75 20 14 f5 08 44 10 57 c1 2d 96 b3 9d fa 1f 3b u ...D.W.-.....;
0050: 8c ff 10 5a c5 7b a8 64 13 95 f8 b4 05 e6 61 34 ...Z.{.d......a4
0060: a6 f6 f1 84 71 4d 97 1a 1a cc be ad b0 50 eb 38 ....qM.....P.8
--More--
addy@nostromo: ~/...
[addy@nostromo: ~/...
addy@nostromo: ~/...
Starting Take Screen...

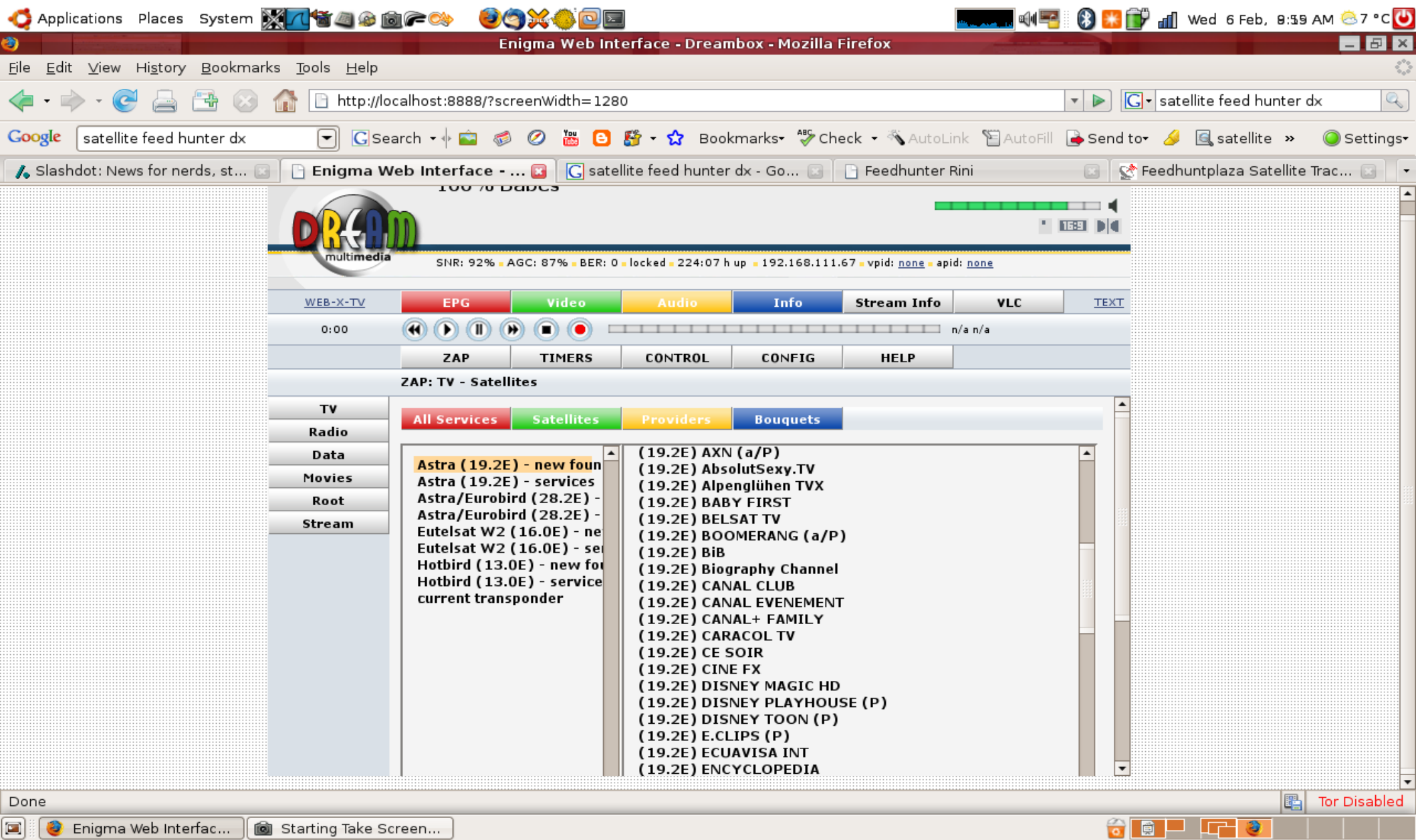
Stream Info


Applications Places System
Mon 4 Feb, 8:35 PM 8 °C
addy@nostromo: ~/work/suppose-addy-talks/research/dreambox/python
File Edit View Terminal Tabs Help
reserved_2: 0 (0x00)
payload_scrambling_control: 0 (0x00) [= unscrambled]
address_scrambling_control: 0 (0x00) [= unscrambled]
LLC_SNAP_flag: 0 (0x00)
current_next_indicator: 1 (0x01) [= valid now]
Section_number: 0 (0x00)
Last_Section_number: 0 (0x00)
MACaddrbyte/DeviceID 4: 224 (0xe0)
MACaddrbyte/DeviceID 3: 0 (0x00)
MACaddrbyte/DeviceID 2: 0 (0x00)
MACaddrbyte/DeviceID 1: 0 (0x00) => MAC-Address/DeviceID: 00:00:00:e0:00:00
IP_datagram_bytes:
Version: 0 (0x00)
Unknown Data / Padding
0000: 00 15 0a 59 01 00 0e 01 08 58 63 6f 6d 44 77 6e ...Y.....XcomDwn
0010: 4c 02 02 23 8a 00 00 00 6e 01 11 00 00 51 c1 08 L..#....n....Q..
0020: 0a 58 0a 58 0a 58 00 01 00 00 00 00 00 23 00 11 .X.X.X.......#..
0030: 44 53 38 31 30 58 45 5f 31 2e 34 30 38 2e 32 2e DS810XE_1.408.2.
0040: 31 00 1c 00 16 88 b8 05 0a 00 01 44 0a 00 01 25 1..........D...%
0050: 0b 00 00 44 0a 00 01 00 0b 00 00 29 0c 00 23 00 ...D.......)..#.
0060: 24 01 04 00 00 00 01 02 16 01 00 00 12 52 65 63 $.............Rec
0070: 6f 6d 6d 65 6e 64 65 64 20 55 70 64 61 74 65 03 ommended Update.
0080: 04 9f 00 00 14 00 00 ....
CRC: 3040108318 (0xb5345f1e)
addy@nostromo: ~/...
addy@nostromo: ~/...
Starting Take Screen...

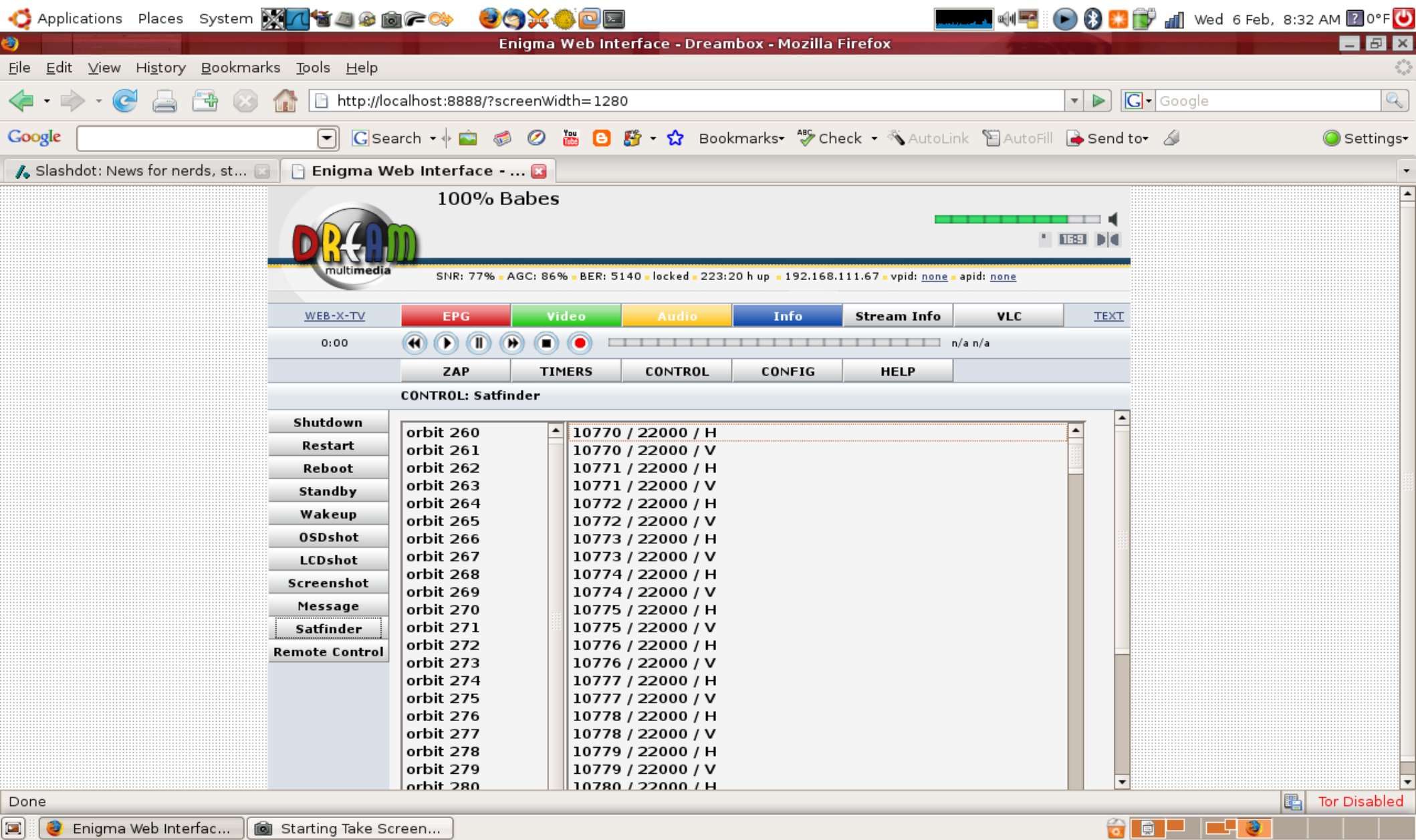
Taking over the Dreambox

- Avoid programming
  - Analyse config files
  - Tools to tweak and update
  - Use existing Web Interface URLS
  - Use remote tools via IP
    - ssh / scp
    - dvbsnoop
    - tun/tap

Taking over the Dreambox



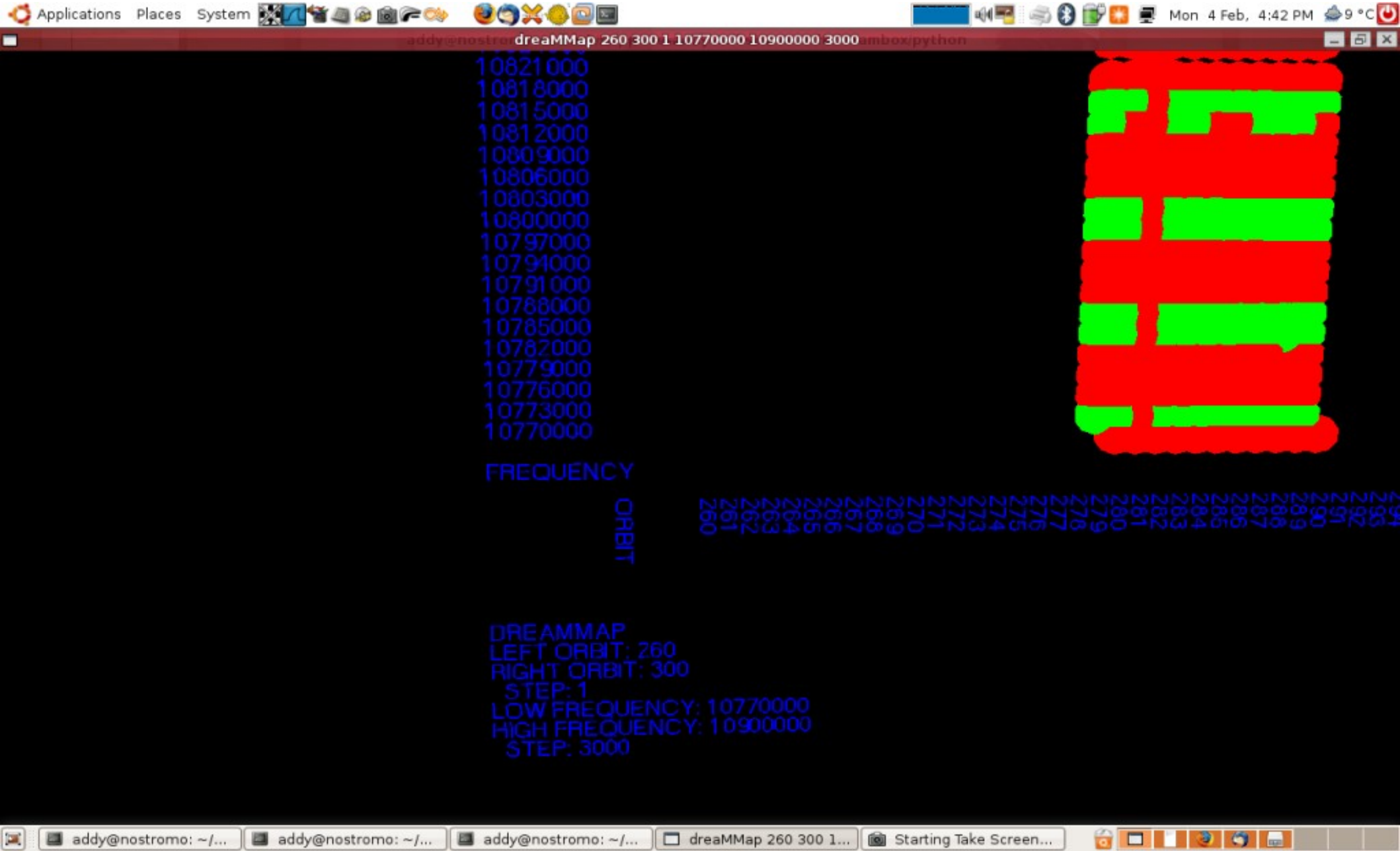
Taking over the Dreambox



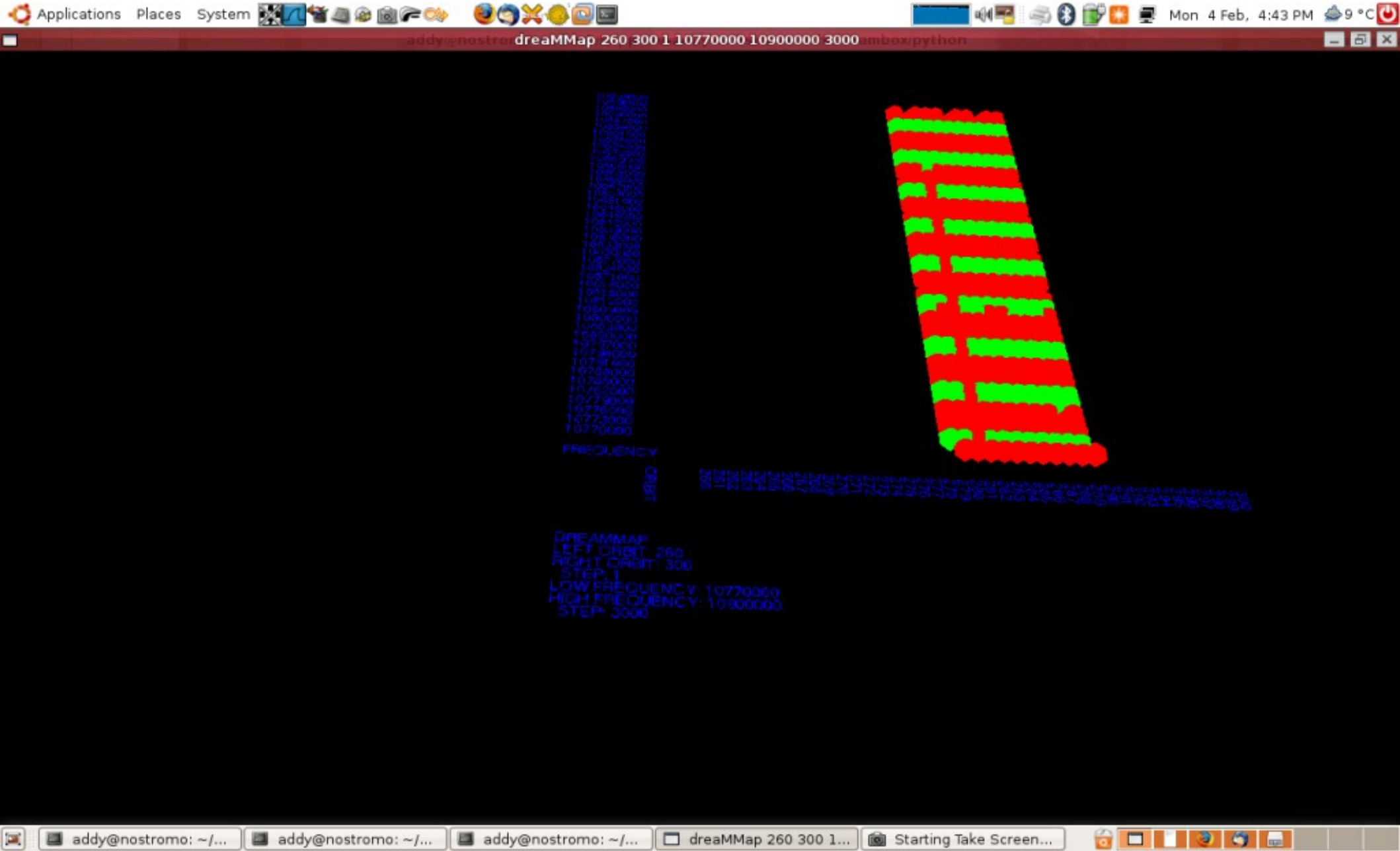
dreaMMap

- python (yay!) script
  - Grab URL
  - Read status from returned webpage
  - Create 3D model

This is now...


Applications Places System
Mon 4 Feb, 4:42 PM 9 °C
dreaMMap 260 300 1 10770000 10900000 3000
10821000
10818000
10815000
10812000
10809000
10806000
10803000
10800000
10797000
10794000
10791000
10788000
10785000
10782000
10779000
10776000
10773000
10770000
FREQUENCY
ORBIT
DREAMMAP
LEFT ORBIT: 260
RIGHT ORBIT: 300
STEP: 1
LOW FREQUENCY: 10770000
HIGH FREQUENCY: 10900000
STEP: 3000
addy@nostromo: ~/...
addy@nostromo: ~/...
addy@nostromo: ~/...
dreaMMap 260 300 1...
Starting Take Screen...

This is now...


Applications
Places
System
Mon 4 Feb, 4:43 PM
9 °C
dreaMMap 260 300 1 10770000 10900000 3000
FREQUENCY
DREAMMAP
LEFT ORBIT: 260
RIGHT ORBIT: 300
STEP: 1
LOW FREQUENCY: 10770000
HIGH FREQUENCY: 10900000
STEP: 3000
addy@nostromo: ~/...
addy@nostromo: ~/...
addy@nostromo: ~/...
dreaMMap 260 300 1...
Starting Take Screen...

3D model capabilities

- Point & Click
  - Steer to sat/freq
  - Decode DVB/Audio within model
  - Read Text / EPG
  - Pipe datagrams to Wireshark

Demonstration

Questions?

http://rfidiot.org

adam@algroup.co.uk