



**Airspace Visualization Display (AViD)**

**Operation and Maintenance Manual**

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Revision 4

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# 1. AViD Overview

The Airspace Visualization Display (AViD) is a tool for viewing and analyzing surveillance data and also displays various types of adaptation such as Host, ERAM, Common Arts and STARS. AViD contains applications that can record, view, plot, and dissect multiple formats of surveillance data including ADS-B, CD2, MLAT, DASR and networked surveillance data using ECGP. AViD also has the ability to display various map formats and satellite images.

## 2. Getting Started

Your new AViD tool is configured to boot up to a log in wizard which has all the users listed on the left side of the window. Simply select a user by left clicking on it and type in the password. Then click the log in button at the bottom or just hit enter on the keyboard. After a short loading period the KDE desktop will appear.

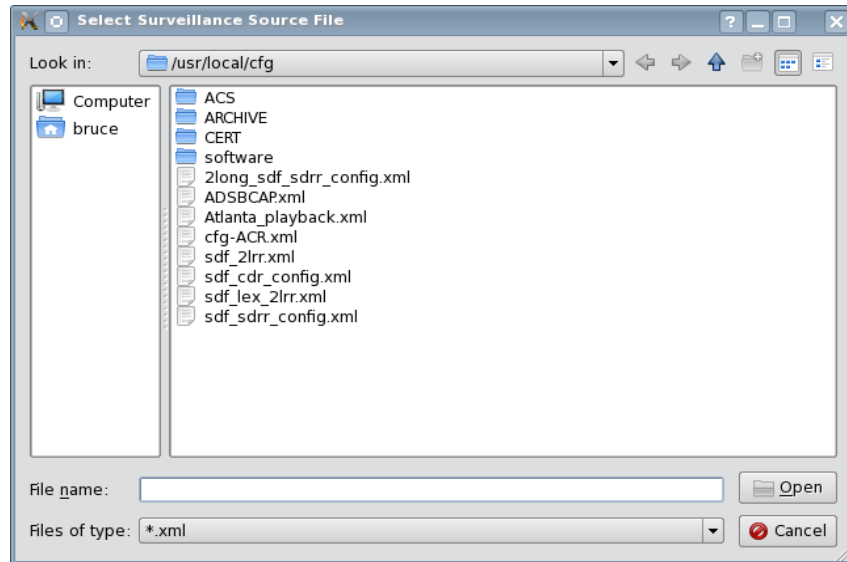


Typical KDE desktop

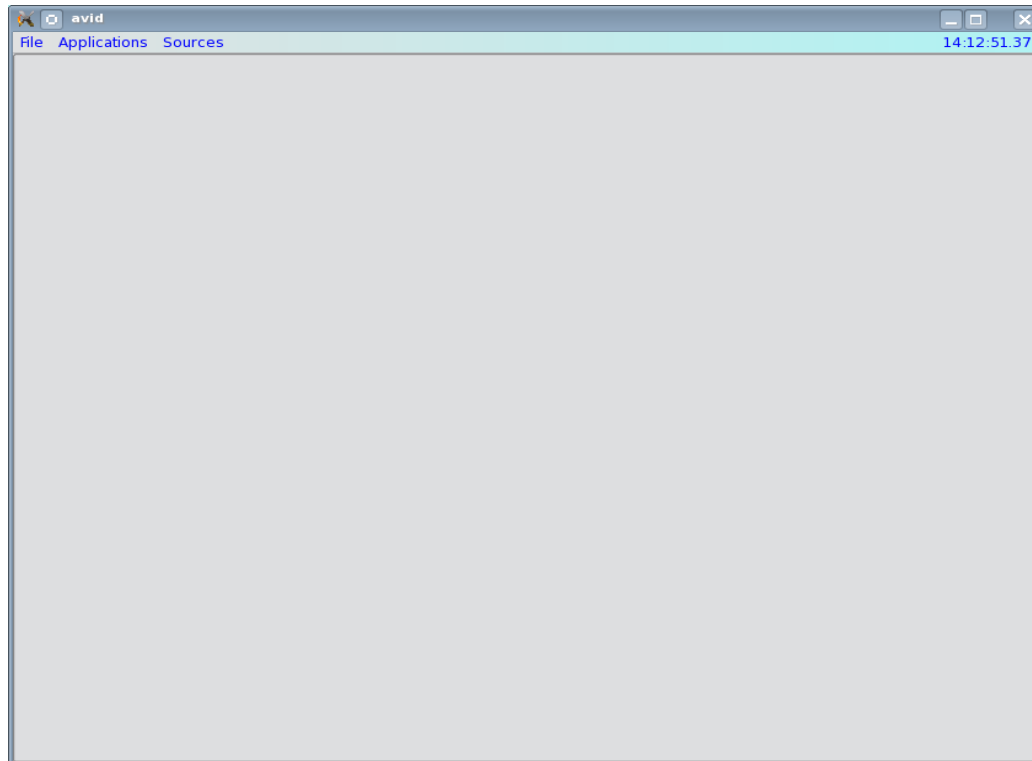
Once logged in, the AViD can be started either by left click on the AViD icon on the lower right side of the display (see illustration bellow) or by typing **avid** at the command line from a terminal window.



Once AViD is launched the Surveillance source selection window appears. It lists the available surveillance source files located in the directory specified by the environment variable [SDRR\\_CFG\\_FILE](#). Select a file to open.

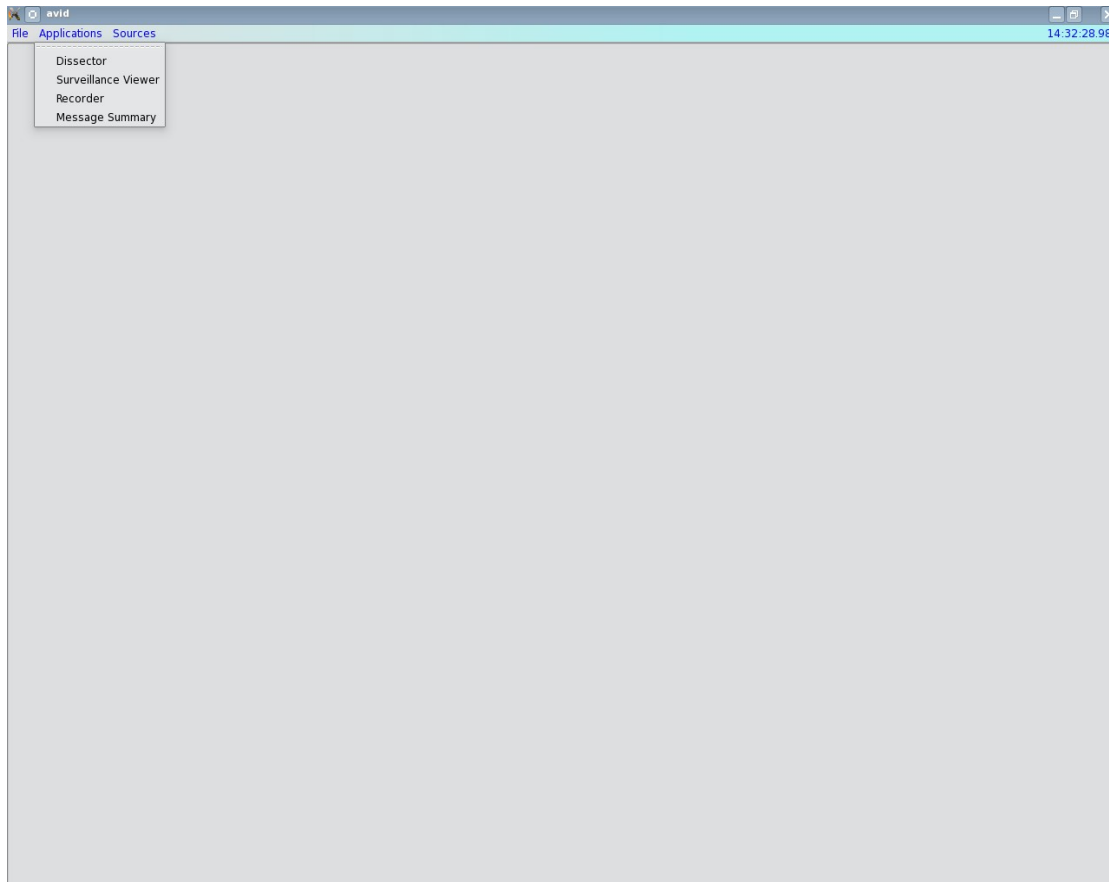


After the [surveillance source](#) file has been opened the AViD application main window will appear. If the source file did not contain any user specified applications then the main window will be empty.



### 3. Applications

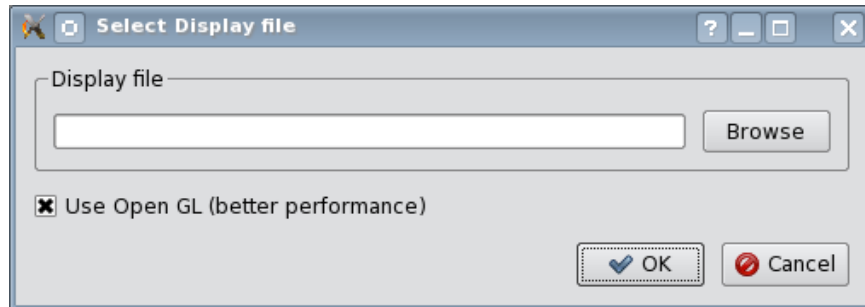
AViD applications are launched from the main window menu bar. Left click “Applications” and then select the application to run from the drop down menu. A user can have multiple applications running simultaneously in the AViD main window. Once the desired applications have been loaded the [application settings](#) can be saved to a sources file by selecting “File → Save Config”.



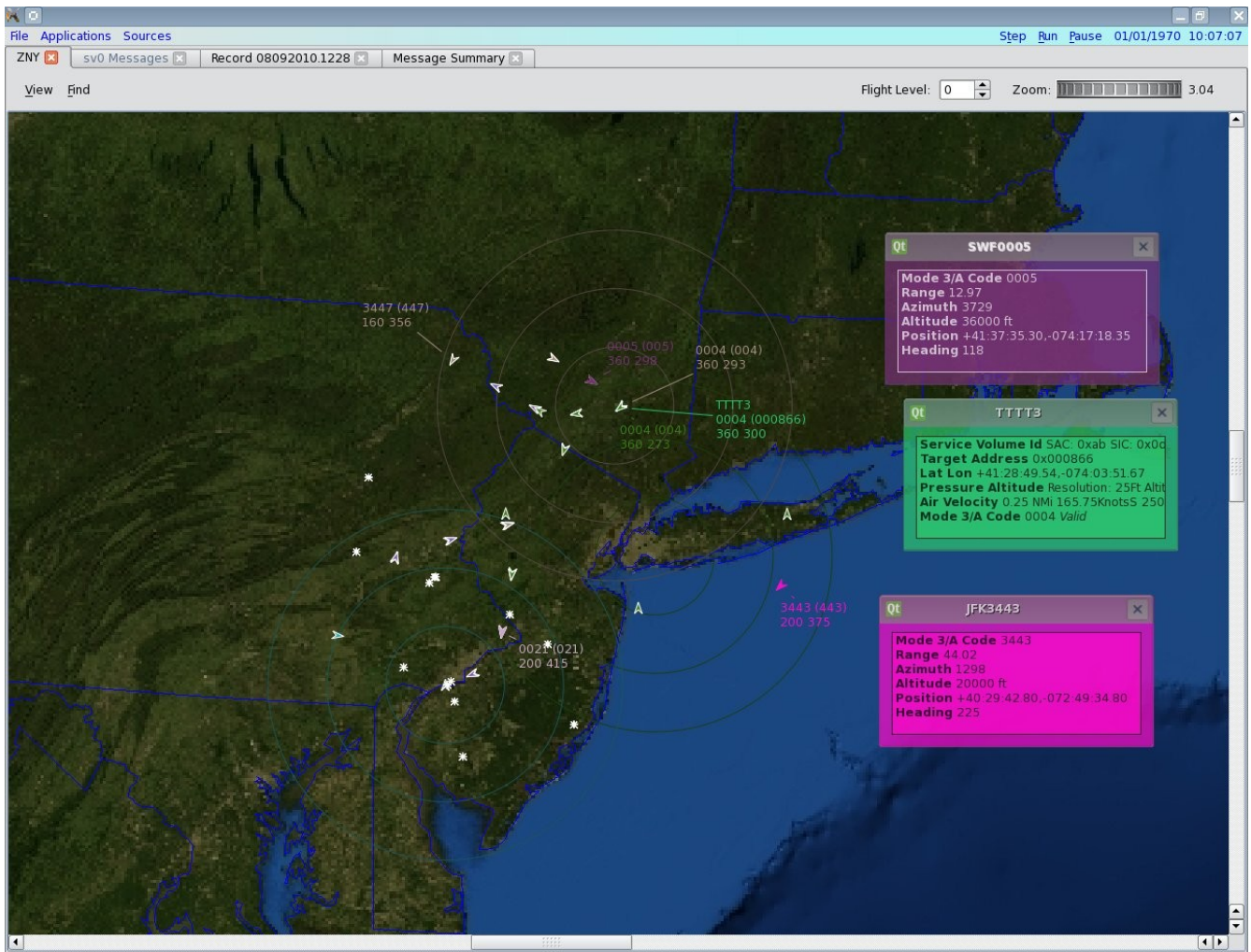
## 3.1 Surveillance Viewer

The Surveillance Viewer application in AViD supports plotting multiple formats of surveillance data. The viewer also displays PDF files and images.

Once the Surveillance Viewer has been selected from the applications menu the user will be prompted for input options. The “[Display File](#)” is used to specify the images, adaptation, and maps. The display is optional.



After the input options have been specified and the user selects the 'Ok' button the Surveillance Viewer application will start.



The user selects surveillance sources, images, maps, and adaptation values to be displayed from the View menu. A left mouse click on the target will display a data block of information associated with the target. Right click on the target to display a detailed information window.

The view can be zoomed in or out by using the zoom wheel located on the top right of the main window.

To search for a specific target by BCN or ICAO address select the Find menu and when prompted enter the 3 letter radar name followed by the BCN or ICAO address. To find BCN 3443 in JFK then from the prompt enter JFK3443. If the BCN exists in JFK the target will be highlighted.



## 3.2 Record

Recordings are created with the record daemon application, recordd. The application is included with the AViD build and records surveillance and interfacility data for analysis or playback with SDRR.

To display the usage information for recordd execute recordd with `-help` option.

*Sample usage output:*

AViD record service.

Usage : recordd inputCf [ -p recordpath ] [ -dt ] [ -T hh:mm:ss, hh:mm:ss, hh:mm:ss ]

- d Turn debug messages on.
- t Don't fork into background.
- p Specify record path, defaults to system record path
- T List of times seperated by comma to record. defaults to midnight (00:00:00)

AViD recordd can be started at system start by using the system file `/etc/rc.d/rc.record` that is included with the installation package. To start recordd by default append an entry to `/etc/rc.d/rc.local`. Users can also execute `rc.record` to stop, start, restart, or status the currently running recordd.

*Sample rc.local entry:*

```
# Start the local record procedure.  
if [ -x /etc/rc.d/rc.record ]; then  
    . /etc/rc.d/rc.record start  
fi
```

AViD also includes a graphical interface to the recordd service and associated scripts. The user has the ability to stop, start, restart, status, or select a configuration other than the default from the application recordcontroller. This application is started by default at the graphical log in and will be docked into the taskbar of the panel. The controls can be accessed by right clicking on the icon in the task bar. Double clicking on the icon will start AViD with the needed applications to display the data.

*recordcontroller icon status:*

*recordd stopped*



*recordd running*



*taskbar entry*



## Surveillance counter application to display message counts

The screenshot displays the 'Surveillance Statistics' window in the AVID application. It shows four sub-windows, each representing a different channel: 'iah', 'lch', 'qna', and 'qys'. Each sub-window contains a table with the following columns: TOT, BCN, SRC, BRTQC, SRTQC, STAT, WX, MARK, SCIP, INV, MALF, and SYNC. The data is organized by channel (Chan 0, Chan 1, Chan 2, Chan 3).

Channel	TOT	BCN	SRC	BRTQC	SRTQC	STAT	WX	MARK	SCIP	INV	MALF	SYNC
iah Chan 0	763	378	248	5	7	11	0	114	0	0	0	0
iah Chan 1	763	388	222	3	9	5	0	136	0	0	0	0
iah Chan 2	763	387	224	4	6	8	0	134	0	0	0	0
iah Chan 3	0	0	0	0	0	0	0	0	0	0	0	0
lch Chan 0	0	0	0	0	0	0	0	0	0	0	0	0
lch Chan 1	0	0	0	0	0	0	0	0	0	0	0	0
lch Chan 2	288	273	13	0	1	1	0	0	0	0	0	0
qna Chan 0	288	273	8	4	1	2	0	0	0	0	0	0
qna Chan 1	0	0	0	0	0	0	0	0	0	0	0	0
qna Chan 2	0	0	0	0	0	0	0	0	0	0	0	0
qys Chan 0	640	350	287	2	0	1	0	0	0	0	0	0
qys Chan 1	641	342	292	3	4	0	0	0	0	0	0	0
qys Chan 2	641	337	298	1	1	4	0	0	0	0	0	0

## Interfacility monitor application for displaying messages

The screenshot displays the 'Interfacility Monitor' window in the AVID application. It shows a list of messages with the following format: [Timestamp] [Channel] [Message ID] [Type] [Destination] [Priority] [Message Content].

```

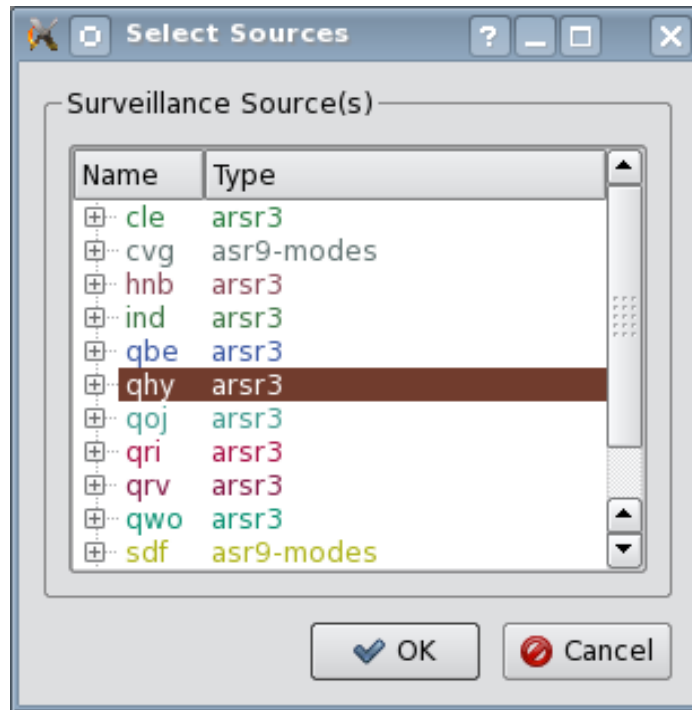
16:41:24:57 ZCH1641303 :TI AIA 797 (-45.625,-52.250) (108,396) ZCH87 :*
16:41:24:63 AIA1641822 :DA 797 ZCH1641303 AIA1X :*
16:41:28:15 AIA1641823 :TU 317 ( 6.750,13.375) (157,251) :436 (-3.500,-7.000) (-175,-154) :*
16:41:29:04 AIA1641824 :TZ JTL553/635 289 107 (-32.500,27.875) :ASQ4527/198 304 098 ( 23.000,-0.375) :*
16:41:29:33 AIA1641825 :TZ N62AU/335 074 007 (-14.000,-22.250) :ABLE1/FFF 112 016 ( 15.000,-26.375) :*
16:41:29:53 ZCH1641304 :TU AIA 783 ( 49.875,46.125) (-195,-234) :834 ( 26.625,53.875) (17,-101) :784 (71.500,-33.750) (-305,218) :797 (-45.375,-50.875) (104,394) :*
16:41:31:63 AIA1641828 :TR ZCH ITEST :*
16:41:31:93 ZCH1641305 :DT AIA1641828 ITEST :*
16:41:33:14 AIA1641829 :TU 317 ( 6.875,13.625) (164,242) :436 (-3.750,-7.250) (-175,-153) :*
16:41:35:14 AIA1641830 :TZ UAL1423/550 365 148 ( 60.750,-25.875) :N33E/FFF 106 012 (-9.625,3.375) :*
16:41:35:43 AIA1641831 :TZ ASO4278/436 234 064 (-3.750,-7.250) :N96HE/FFF 217 050 (-57.375,-14.500) :*
16:41:35:53 ZCH1641306 :TU AIA 783 ( 49.375,45.500) (-195,-233) :834 ( 26.625,53.875) (17,-101) :784 (71.500,-33.750) (-305,218) :797 (-45.375,-50.875) (104,394) :*
16:41:36:43 AIA1641834 :TB 558 :*
16:41:36:63 ZCH1641307 :DA 558 AIA1641834 :*
16:41:38:14 AIA1641835 :TU 317 ( 7.250,14.125) (164,244) :436 (-4.000,-7.375) (-177,-156) :*
16:41:38:24 ZCH1641308 :FP 388N161RC 1/BE20 2367 COW A1712 170 SGR :*
16:41:38:53 AIA1641836 :DA 861 ZCH1641308 :*
16:41:41:33 AIA1641837 :TZ SKW5234/408 283 100 (-26.750,22.250) :LN5/FFF 105 009 (-1.875,-17.500) :*
16:41:41:53 ZCH1641309 :TU AIA 783 ( 49.250,45.375) (-195,-233) :834 ( 26.750,53.625) (16,-101) :784 (70.500,-33.000) (-304,222) :797 (-45.000,-49.625) (102,392) :*
16:41:41:63 AIA1641838 :TZ UAL1087/582 273 099 (-30.875,-25.000) :SKW5176/44 352 122 (-38.625,29.375) :*
16:41:43:15 AIA1641841 :TU 317 ( 7.375,14.375) (162,245) :436 (-4.125,-7.625) (-178,-157) :*
16:41:43:74 AIA1641842 :TI H00 198 (24.125,-0.125) (295,69) AIA1L :*
16:41:44:05 AIA1641843 :DM 200 1641 :*
16:41:44:05 ZCH1641310 :DA 198 AIA1641842 ZCH43 :*
16:41:44:43 ZCH1641311 :DA 200 AIA1641843 :*
16:41:44:53 AIA1641844 :TA 877 01X :*
16:41:44:73 ZCH1641312 :DA 877 AIA1641844 :*
16:41:45:93 ZCH1641313 :AM 804 06 BZT 07 A1655 08 040 10 EFD :*
16:41:46:23 AIA1641845 :DA 804 ZCH1641313 :*

```

### 3.3 Message Summary

The Message Summary application in AViD displays surveillance messages in a readable format

Once the Message Summary has been selected from the applications menu the user will be prompted to select the surveillance sources to summarize. To select multiple sources press and hold the CTRL key while selecting. To select a range of sources press and hold the SHIFT key.



After the input options have been specified and the user selects the 'Ok' button the Message Summary application will start.

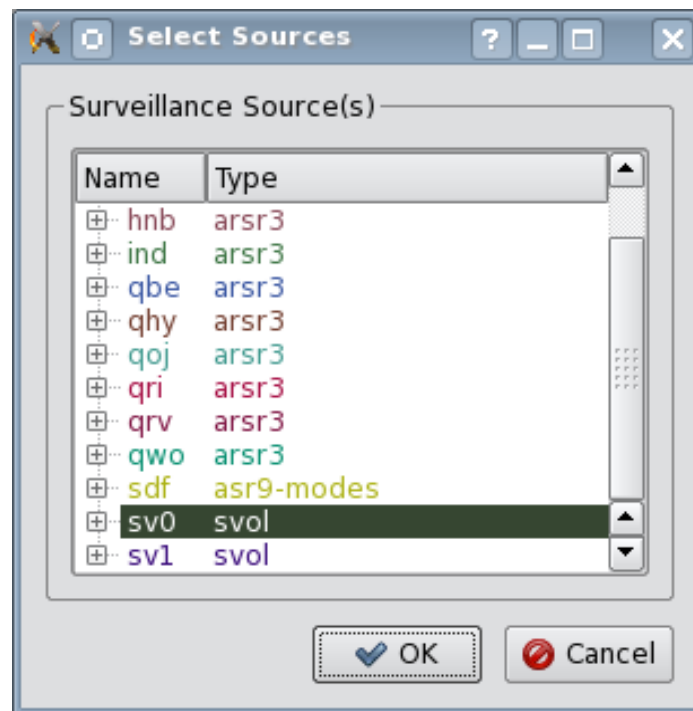
Time	Source	Type	MsgType	Mode 3A	Range	Azimuth	Mode C	Position	Data
10:07:06.01	JFK	ASR9-MODES	MARK						0921 0000 0dbe 0000
10:07:05.14	PHL	ASR9-MODES	MARK						0921 0000 0abe 0000
10:07:05.29	PHL	ASR9-MODES	MARK						0921 0000 0b3e 0000
10:07:05.43	PHL	ASR9-MODES	MARK						0921 0000 0bbe 0000
10:07:05.57	PHL	ASR9-MODES	MARK						0921 0000 0c3e 0000
10:07:05.72	PHL	ASR9-MODES	MARK						0921 0000 0cbe 0000
10:07:05.86	PHL	ASR9-MODES	MARK						0921 0000 0d3e 0000
10:07:06.01	PHL	ASR9-MODES	MARK						0921 0000 0dbe 0000
10:07:05.12	SWF	ASR9-IBI	BCN R	0023	54.39	2644	200	+40:47:20.41,-074:51:39.19	06d0 0d99 0a54 0753 0013 0000 00c8
10:07:05.14	SWF	ASR9-IBI	MARK						0921 0000 0abe 0000
10:07:05.21	SWF	ASR9-IBI	BCN R	3502	23.70	2723	400	+41:13:40.99,-074:28:09.62	06d0 05ed 0aa3 0753 0742 0000 0190
10:07:05.29	SWF	ASR9-IBI	MARK						0921 0000 0b3e 0000
10:07:05.43	SWF	ASR9-IBI	MARK						0921 0000 0bbe 0000
10:07:05.57	SWF	ASR9-IBI	MARK						0921 0000 0c3e 0000
10:07:05.59	SWF	ASR9-IBI	BCN R	0003	14.45	3057	360	+41:26:09.18,-074:23:21.80	06d0 039d 0bf1 0753 0003 0000 0168
10:07:05.72	SWF	ASR9-IBI	BCN R	0002	27.73	3177	360	+41:27:34.10,-074:42:16.33	06d0 06ef 0c69 0753 0002 0000 0168
10:07:05.72	SWF	ASR9-IBI	MARK						0921 0000 0cbe 0000
10:07:05.86	SWF	ASR9-IBI	BCN R	0001	41.14	3302	360	+41:34:20.63,-075:00:05.03	06d0 0449 0ce6 0753 0001 0000 0168
10:07:05.86	SWF	ASR9-IBI	MARK						0921 0000 0d3e 0000
10:07:05.95	SWF	ASR9-IBI	BCN R	3447	56.92	3375	160	+41:42:26.62,-075:20:04.06	06d0 0e3b 0d2f 0753 0727 0000 00a0
10:07:06.01	SWF	ASR9-IBI	MARK						0921 0000 0dbe 0000
10:07:06.15	JFK	ASR9-MODES	MARK						0921 0000 0e3e 0000
10:07:06.21	JFK	ASR9-MODES	BCN R	0023	50.81	3340	200	+40:47:21.18,-074:51:32.98	06d0 0cb4 0d0c 0f53 0013 0000 00c8
10:07:06.26	JFK	ASR9-MODES	BCN	1274	52.50	3383	000	+40:51:03.31,-074:53:00.75	06c0 0d20 0d37 0802 02bc 0000 0000
10:07:06.30	JFK	ASR9-MODES	MARK						0921 0000 0e3e 0000
10:07:06.44	JFK	ASR9-MODES	MARK						0921 0000 0f3e 0000
10:07:06.59	JFK	ASR9-MODES	MARK						0921 0000 0f3e 0000
10:07:06.69	JFK	ASR9-MODES	BCN R	3502	48.05	3765	400	+41:13:31.60,-074:28:11.11	06d0 0c03 0eb5 0f53 0742 0000 0190
10:07:06.73	JFK	ASR9-MODES	MARK						0921 0000 0b3e 0000
10:07:06.84	JFK	ASR9-MODES	BCN R	0003	55.89	3897	360	+41:26:06.95,-074:23:24.61	06d0 0d9f 0f39 0f53 0003 0000 0168
10:07:06.87	JFK	ASR9-MODES	MARK						0921 0000 0d3e 0000
10:07:06.95	JFK	ASR9-MODES	BCN R	0005	63.75	4000	360	+41:37:19.48,-074:16:51.71	06d0 0ff0 0fa0 0f53 0005 0000 0168
10:07:07.02	JFK	ASR9-MODES	MARK						0921 0000 013e 0000
10:07:07.04	JFK	ASR9-MODES	BCN R	0004	52.58	4074	360	+41:28:46.74,-074:03:51.98	06d0 0d25 0fea 0f53 0004 0000 0168
10:07:07.06	JFK	ASR9-MODES	SRTQC						0920 0000 0000 0e3e 0000
10:07:06.15	PHL	ASR9-MODES	MARK						0921 0000 0e3e 0000
10:07:06.30	PHL	ASR9-MODES	MARK						0921 0000 0e3e 0000
10:07:06.33	PHL	ASR9-MODES	BCN R	5735	40.17	3449	230	+40:06:27.15,-076:04:14.05	06d0 0a0b 0d79 0f53 0b3d 0000 00e6
10:07:06.44	PHL	ASR9-MODES	MARK						0921 0000 0f3e 0000
10:07:06.59	PHL	ASR9-MODES	MARK						0921 0000 0f3e 0000
10:07:06.73	PHL	ASR9-MODES	MARK						0921 0000 003e 0000
10:07:06.87	PHL	ASR9-MODES	MARK						0921 0000 00be 0000
10:07:06.90	PHL	ASR9-MODES	BCN R	0025	46.80	3950	200	+40:34:12.07,-075:40:43.86	06d0 0bb3 0f6e 0f53 0015 0000 00c8
10:07:07.02	PHL	ASR9-MODES	MARK						0921 0000 013e 0000
10:07:07.06	PHL	ASR9-MODES	BCN	0200	0.34	0000	003	+39:51:53.19,-075:16:05.38	06c0 0016 0000 0802 0080 0000 0003
10:07:07.07	PHL	ASR9-MODES	BCN	0062	0.03	0006	-2048	+39:51:32.47,-075:16:00.74	06c0 0002 0006 0802 0032 0000 0800
10:07:06.15	SWF	ASR9-IBI	MARK						0921 0000 0e3e 0000
10:07:06.23	SWF	ASR9-IBI	BCN R	0006	26.61	3625	360	+41:44:29.17,-074:34:29.87	06d0 06a7 0e29 0753 0006 0000 0168
10:07:06.30	SWF	ASR9-IBI	MARK						0921 0000 0e3e 0000
10:07:06.35	SWF	ASR9-IBI	BCN R	0005	12.64	3735	360	+41:37:24.19,-074:16:51.60	06d0 0329 0e97 0753 0005 0000 0168
10:07:06.44	SWF	ASR9-IBI	MARK						0921 0000 0f3e 0000
10:07:06.59	SWF	ASR9-IBI	MARK						0921 0000 0f3e 0000
10:07:06.73	SWF	ASR9-IBI	MARK						0921 0000 003e 0000
10:07:06.76	SWF	ASR9-IBI	BRTQC	7770	0.00	0000	-1000		0ec0 0000 0000 0f1f 0ff8 0000 0c18
10:07:06.87	SWF	ASR9-IBI	MARK						0921 0000 00be 0000
10:07:07.02	SWF	ASR9-IBI	MARK						0921 0000 013e 0000

The Message Summary application displays messages from all selected surveillance sources by the color specified in the sources xml file. By default the summary is sorted by time. When the "Online" option is checked the application is processing incoming messages and cannot process any user input. If the "Online" option is unchecked the user can sort the summary by selecting a column header. Sorting toggles between ascending and descending when selecting the same column. The application also provides the ability to export the messages to a comma separated value file from the "File" menu option.

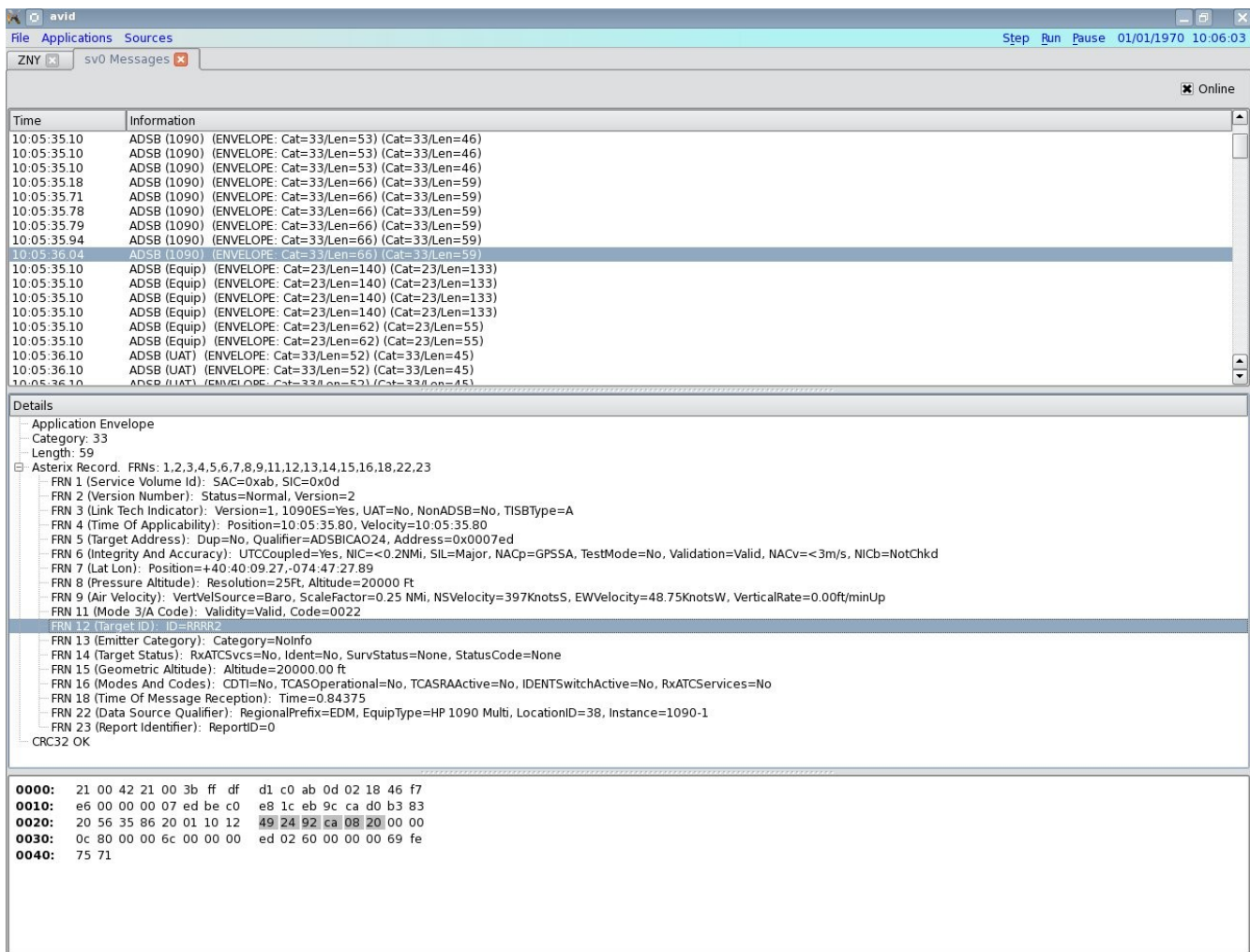
## 3.4 Dissector

The Dissector application in AViD gives a detailed display of surveillance data in asterix format.

Once the Dissector option has been selected from the applications menu the user will be prompted to select the surveillance source to dissect.



After the input options have been specified and the user selects the 'Ok' button the Message Summary application will start.

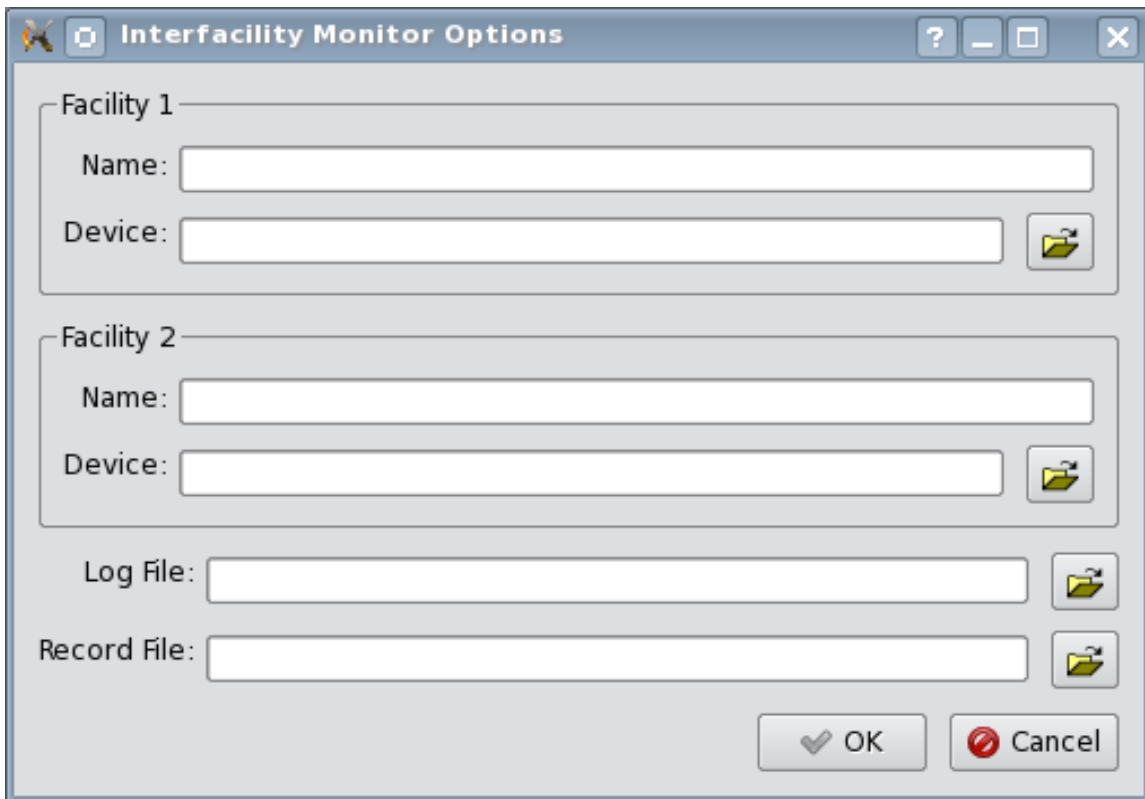


The Dissector application displays an asterix formatted message in 3 separate panes. The top pane displays the time the message was received and general information such as the type, category, and length. The middle pane displays the selected message details. The details of the message are displayed for each FRN value. The selected FRN's hex value will be highlighted in the bottom window pane. To stop processing messages deselect the "Online" check box.

## 3.5 Interfacility Monitor

The Interfacility Monitor application in AViD displays the message communication between 2 specified facilities.

Once the Interfacility Monitor option has been selected from the applications menu the user will be prompted to input optional and required values.



The screenshot shows a dialog box titled "Interfacility Monitor Options". It contains the following fields and controls:

- Facility 1:** A group box containing a "Name:" text box and a "Device:" text box with a folder icon to its right.
- Facility 2:** A group box containing a "Name:" text box and a "Device:" text box with a folder icon to its right.
- Log File:** A text box with a folder icon to its right.
- Record File:** A text box with a folder icon to its right.
- Buttons:** "OK" and "Cancel" buttons at the bottom right.

After the input options have been completed the application will start. The facility name and device inputs are required. The Log File and Record File inputs are optional.

The screenshot shows a window titled "avid <@dfwsdrr1>" with a menu bar containing "File Applications Help Sources" and a system clock showing "15:31:15.40". Below the menu bar is a tab labeled "Monitor: ZCF-DFA". The main content area displays a list of messages in a monospaced font, with facility names and device identifiers in blue and message details in yellow. The messages are as follows:

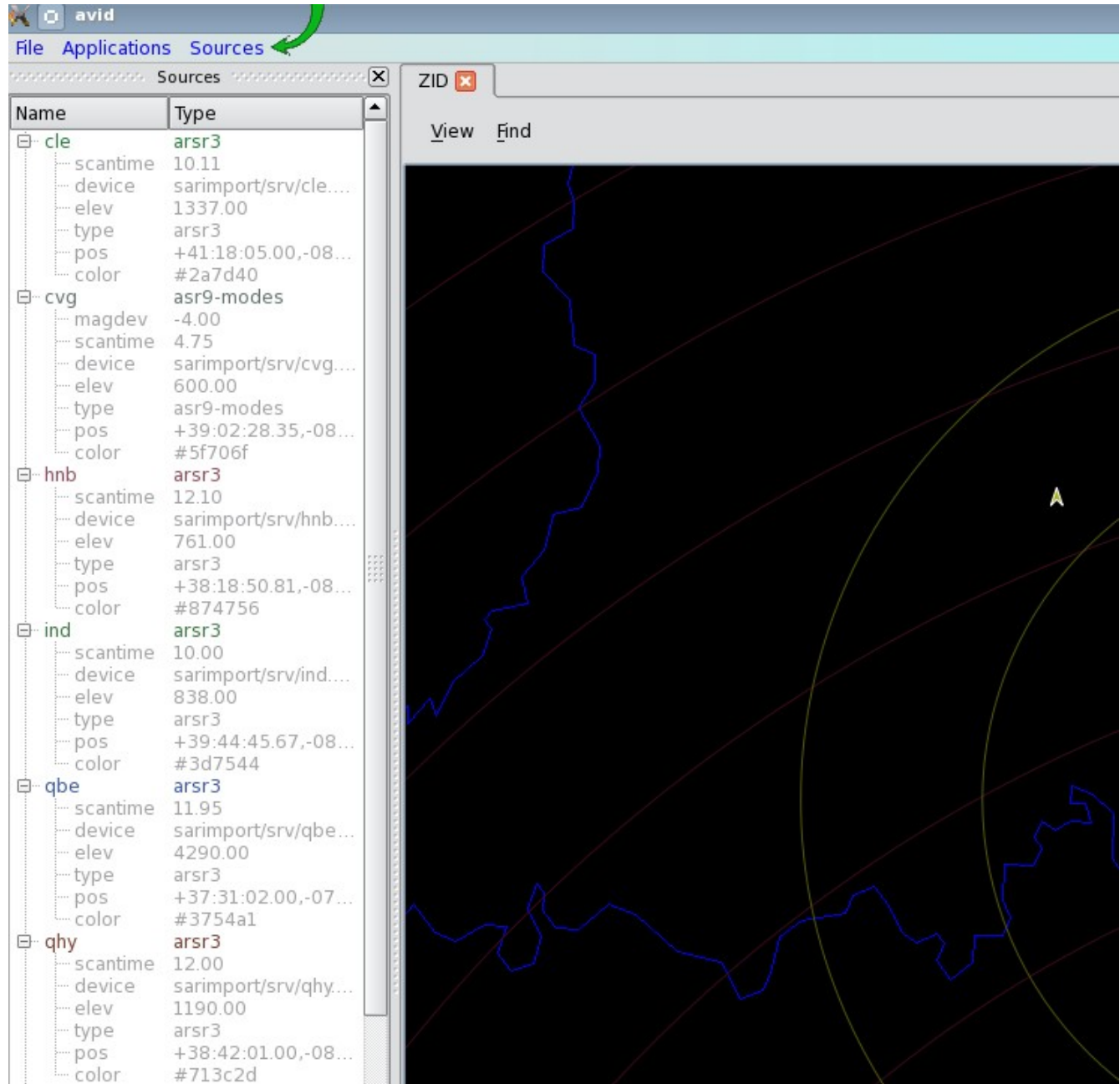
```
15:30:39.84 DFA1535240ACA :TU ACA 036 ( 7.88,55.50 )(-12,-123) :038 (12.50,54.62)(16,-219) :+*
15:30:40.73 DFA1535241 :TA 006 O1W :+*
15:30:40.84 ZCF1535888 :DA 006 DFA1535241 :+*
15:30:41.06 ZCF1535000 :TU DFA 672 ( 47.00,-32.75 )(-391,132) :673 ( 32.62,43.38 )(-153,-64) :+*
15:30:42.85 DFA1535242ACA :TU ACA 036 ( 7.75,55.25 )(-14,-124) :038 (12.50,54.25)(14,-220) :+*
15:30:46.59 ZCF1535889 :TI DFA 658 (-36.125,-46.375 )(164,389) :+*
15:30:46.67 DFA1535243ACA :TU ACA 036 ( 7.75,55.12 )(-17,-124) :038 (12.62,54.00)(25,-220) :+*
15:30:46.89 DFA1535244 :DA 658 ZCF1535889 DFA1W :+*
15:30:47.23 ZCF1535000 :TU DFA 672 ( 46.38,-32.50 )(-391,132) :673 ( 32.38,43.12 )(-153,-64) :+*
15:30:51.77 DFA1535245ACA :TU ACA 036 ( 7.75,55.00 )(-9,-126) :038 (12.62,53.75)(21,-221) :+*
15:30:52.63 DFA1535246 :TA 744 O1W :+*
15:30:52.74 ZCF1535890 :DA 744 DFA1535246 :+*
15:30:53.17 ZCF1535000 :TU DFA 672 ( 45.62,-32.38 )(-388,133) :673 ( 32.12,43.00 )(-153,-65) :+*
15:30:56.66 DFA1535247ACA :TU ACA 036 ( 7.75,54.88 )(-11,-125) :038 (12.62,53.38)(17,-222) :+*
15:30:59.12 ZCF1535000 :TU DFA 672 ( 45.00,-32.00 )(-388,133) :673 ( 31.88,42.88 )(-153,-65) :+*
15:31:00.70 DFA1535248ACA :TU ACA 036 ( 7.75,54.62 )(-5,-125) :038 (12.62,53.12)(12,-223) :+*
15:31:01.88 ACA1535457DFA :TA DFA 434 O1H :+*
15:31:02.41 DFA1535249ACA :DA 537 ACA1535457DFA :+*
15:31:05.08 ZCF1535000 :TU DFA 672 ( 44.50,-31.88 )(-385,135) :673 ( 31.62,42.88 )(-153,-65) :+*
15:31:05.59 DFA1535250ACA :TU ACA 036 ( 7.75,54.50 )(-8,-126) :+*
15:31:07.58 DFA1535251 :DM 207 1535 :+*
15:31:07.98 ZCF1535892 :DA 207 DFA1535251 :+*
15:31:10.48 DFA1536252ACA :TU ACA 036 ( 7.75,54.38 )(-4,-127) :+*
15:31:11.02 ZCF1535000 :TU DFA 672 ( 44.00,-31.50 )(-378,139) :673 ( 31.38,42.75 )(-153,-65) :+*
15:31:13.45 ACA1536462DFA :TA DFA 719 O1H :+*
15:31:14.20 DFA1536253ACA :DA 538 ACA1536462DFA :+*
```

The Interfacility Monitor application displays the interfacility messages between 2 specified facilities. Facility one's messages are displayed in blue and facility two's in yellow. The title bar above the messages pane displays the facility names and the devices they are configured to use. The tab displays the name of the monitor specified in the configuration file.



## 4. Sources Information Display

The Sources Information Display can be toggled from the “Sources” menu bar option. This display shows information about the available surveillance sources in AViD.



# Appendix A. Environment Variables

AViD uses a number of environment variables to specify various input and output locations. They are listed below with typical values shown in parenthesis.

**ADAPTATION\_PATH:** Location of adaptation (/opt/adaptation)

**AVID:** Location of AViD build (/usr/local/avid.1.0.1)

**SDRR\_CONFIG\_PATH:** Location of AViD configuration files (/usr/local/cfg)

**RECORD\_PATH:** Location of recordings (/usr/local/recordings)

# Appendix B. Sources File Format

## General

The sources file is an xml file which defines the surveillance sources. The following xml attributes are common to all types: (*radar, mlat, svol*)

**name:** Used as the title of the display window for this facility, and is matched with the “src” field in the scenario file format for messages (see Scenario File Format)

**device:** Device or file name.

**color:** Color of the surveillance source in all applications

**pos:** position of the radar in latitude / longitude

## Radar

Defines a radar sensor.

*Optional Parameters:*

**type:** radar type (defaults to LRR)

**chans:** number of channels (default is 0, which means auto-determine based on type)

**scantime:** scan time of the radar

**elevation:** elevation of the radar

**format:** Used to specify the input stream format. (default is CD2)

## Multi-Lateration

Defines a mlat device.

*Optional Parameters:*

**ttl:** time to live

# Appendix C. Sample Sources File

## Sources example:

```
<sources>

  <radar name="qwo" device="/dev/lrr0" type="arsr3" scantime="10.10" elev="1085.00" pos="+39:50:45.00,-083:28:54.00" color="#058f70"/>

  <radar name="sdf" device="/dev/srr1" type="asr9-modes" magdev="-3.00" scantime="4.75" elev="502.00" pos="+38:11:10.05,-085:43:36.64" color="#acb213"/>

  <mlat device="multi:224.100.250.8/8250" name="mlt" ttl="8" color="#7b2821"/>

  <radar magdev="140.80" scantime="4.80" format="ast" ttl="10" elev="0.00" device="multi:224.100.250.8/8250" type="asr11" name="bdl" pos="+41:56:18.80,-072:40:57.00" color="#3754a1"/>

  <svol name="sv0" color="#364631" pos="+38:15:01.08,-086:03:02.16">
    <stream device="multi:224.1.1.1/59950" name="UAT"/>
    <stream device="multi:224.1.1.1/59951" name="1090"/>
    <stream device="multi:224.1.1.1/59952" name="Equip"/>
    <stream device="multi:224.1.1.1/59953" name="SVol"/>
    <stream device="multi:224.1.1.1/59954" name="SDP"/>
  </svol>
</sources>
```

## Optional Applications example:

```
<applications>
  <AdbViewer useOpenGL="1" display="/usr/local/gsgt/bruce/zid_adsb/gsgt.cfg"/>
  <Dissector>
    <src name="sv0"/>
  </Dissector>
  <MsgList>
    <src name="hnb"/>
  </MsgList>
  <IFMonitor name="zfw-dfw" device1="/dev/if0" facility1="dfw" device2="/dev/if1" recordFile="/rec/file" facility2="zfw" logfile="/log/ifLog.xml" />
</applications>
```

# Appendix D. Display File Format

## General

The display file is an xml file which defines the Surveillance Viewer.

Display tag attributes:

- width:** width of the canvas
- radius:** conformal radius
- scale:** zoom factor
- projection:** type of projection used
- height:** height of the canvas
- name:** name of the display
- tangent:** point of tangency

Map tag attributes:

- visible:** display at start of application. 0 = false, 1 = true
- type:** type of map
- name:** name of map
- file:** the map file to load
- color:** display color of map

# Appendix E. Sample Display File

```
<config>  
  <display width="3000." radius="3438.41" scale="1.00" projection="stereographic" height="3000."  
name="ZBW" tangent="+43:48:33.98,-072:26:24.00">  
  <map visible="1" type="noaamap" name="US Map" file="maps/us.dat" color="0,0,255"/>  
  <map type="vectorMap" name="ARTCC Map" file="maps/ARTCC_Centers.db" color="200,100,0"/>  
</display>  
</config>
```

# Appendix F. Revision History

## **August 24, 2010 (Version 1.0.1 Rev. 1)**

- Initial Publication

## **February 15, 2011 (Version 1.0.1 Rev. 2)**

- Added Interfacility Monitor application

## **April 14, 2011 (Version 1.0.9 Rev. 3)**

- Added Auto Record setup

## **December 14, 2012 (Version 3.1.2 Rev. 4)**

- Updated for change of record functionality