

Radar Operating System (Linux) Filesystem Hierarchy

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The Radar Operating System (ROS) is comprised of many files that make up the libraries, binaries, shell scripts, data tables and source code of the software. The Filesystem Hierarchy describes the directory structure and placement of these files.

Top Level Directory

The ROS is installed in the `rst` directory pointed to by the environment variable `HOME_PATH`. Within this directory are a number of sub-directories

Directory	Description
bin	Essential binaries
build	Directory tree for packaging, compilation and documentation software
codebase	Source code and documentation sources
dln	IDL Dynamically Linked Modules (en empty directory for ROS)
doc	Documentation
include	C Header files
lib	Libraries
log	Compilation and installation logs
script	Shell scripts
tables	Data Tables
usr	Secondary hierarchy

/bin : Essential Binaries

`/bin` contains the device drivers, data logging, shell, display and other essential binaries of the Operating System.

Binary	Description
addtext	Adds text to a source code file using RCS style tags

Binary	Description
errlog	Error logger
fitacfwrite	Write fitacf files
iqwrite	Write I&Q samples to a file
makeall	Search a directory tree for makefiles and compile software.
maketree	Make a list of directory paths by searching a directory tree
radar	Radar simulator
radarshell	Interactive radar shell
rawacfwrite	Write rawacf files
rtserver	Real-time fittacf data server
scdoc	Process template files with search and replace
schedule	Scheduler
shellserver	Interactive radar shell server
xmldoc	Generate documentation from XML source

/build : Directory tree for packaging, compilation and documentation software

/build contains the software and configuration scripts for packaging distributions, compiling the source code and for building HTML documentation from the source XML.

Directory	Description
base	Build software used by all RST distributions
superdarn	SuperDARN and ROS packaging information

/build/base: Build software used by all RST distributions

`/build/base` contains the build software used by all RST distributions. It contains the base compilation software, the packaging software and the documentation software used by all other RST distributions.

Directory	Description
bin	Binaries used by the build software
doc	Configuration files and templates for building documentation
help	Configuration files and templates for building help headers
include	C headers used by the build software
lib	Libraries used by the build software
make	Makefiles for compiling code
script	Shell scripts for the build software

`/build/base/bin`: Binaries used by the build software

`/build/base/bin` contains the standard binaries that are needed to compile source code, package distributions and create documentation.

Binary	Description
addtext	Adds text to a source code file using RCS style tags
makeall	Search a directory tree for makefiles and compile software.
maketree	Make a list of directory paths by searching a directory tree
scdoc	Process template files with search and replace
xml doc	Generate documentation from XML source

`/build/base/doc` : Configuration files and templates for building documentation

`/build/base/doc` contains the configuration files and templates used to make the documentation from the XML documentation source. The scripts take the XML documentation and generate HTML pages using the templates.

Directory	Description
<code>cfg</code>	Configuration files for the documentation system
<code>css</code>	Cascading Style Sheets (CSS) for the HTML pages
<code>img</code>	Images and clipart
<code>sk</code>	Templates for generating documentation
<code>tagdb</code>	Tag databases for generating documentation

`/build/base/doc/cfg` : Configuration files for the documentation system

`/build/base/doc/cfg` contains the XML configuration files for the documentation system. Each configuration file describes how to create a set of documentation pages from a template.

`/build/base/doc/css` : Cascading Style Sheets (CSS) for the HTML pages

`/build/base/doc/css` stores any Cascading Style Sheets (CSS) used by the HTML. These files are copied to the documentation destination directory.

`/build/base/doc/img` : Images and clipart

`/build/base/doc/img` stores images and clipart used by the HTML templates. These files are copied to the documentation destination directory.

`/build/base/doc/sk` : Templates for generating documentation

`/build/base/doc/sk` contains the templates used to generate the HTML files. The XML documentation is converted to HTML by using these templates.

`/build/base/doc/tagdb` : Tag databases for generating documentation

`/build/base/doc/tagdb` this directory contains the tag databases. These are used to convert the XML markup tags to their HTML equivalents.

/build/base/help : Configuration files and templates for building help headers

`/build/base/help` contains the configuration files and templates used to make the help headers from the XML documentation source. The scripts take the XML documentation and generate C headers that are used by binaries to display command line help.

Directory	Description
cfg	Configuration files for the help headers
include	Default headers to use if no documentation source is available
sk	Templates for generating help headers
tagdb	Tag databases for generating help headers

/build/base/help/cfg : Configuration files for the help headers

`/build/base/doc/cfg` contains the XML configuration files for the documentation system. Each configuration file describes how to create a set of documentation pages from a template.

/build/base/doc/css : Default headers to use if no documentation source is available

`/build/base/doc/css` stores any Cascading Style Sheets (CSS) used by the HTML. These files are copied to the documentation destination directory.

/build/base/doc/sk : Templates for generating help headers

`/build/base/doc/sk` contains the templates used to generate the HTML files. The XML documentation is converted to HTML by using these templates.

/build/base/doc/tagdb : Tag databases for generating help headers

`/build/base/doc/tagdb` this directory contains the tag databases. These are used to convert the XML markup tags to their HTML equivalents.

/build/base/include: C headers used by the build software

`/build/base/include` contains the C header files used by the build software. It has one subdirectory called `base`.

`/build/base/lib`: Libraries used by the build software

`/build/base/lib` contains the libraries used by the build software.

Library	Description
libopt	Decodes command line options
librscrip	HTML scripting library
libxml	XML parser library
libxmldb	XML database library
libxmldoc	XML documentation library
libtagdb	Tag database library that converts XML markup tags

`/build/base/make` : Makefiles for compiling software

`/build/base/make` contains the makefiles used to compile the software

File	Description
makebin.linux	Makefile template for compiling binaries
makecfg.linux	Makefile configuration file
makedlm.linux	Makefile template for compiling IDL Dynamic Linked Modules
makelib.linux	Makefile template for compiling libraries

`/build/base/script` : Shell scripts for the build software

`/build/base/script` contains the shell scripts used by the build software

Script	Description
get.version	Get the version number of an element

Script	Description
make.build	Builds the compilation and documentation software for the build scripts
make.code	Build software for a given package
make.doc	Build documentation for a given package
make.doc.bin	Build documentation for binary command line programs
make.doc.frame	Build documentation navigation pages
make.doc.lib	Build documentation for libraries
make.doc.rfc	Build documentation for Request for Comments (RFC).
make.doc.tutorial	Build documentation for tutorial pages
make.dst	Build compiled distribution package
make.hdr	Install links for header files
make.help	Make help and error headers
make.id	Construct the package identifier list for a given package
make.pkg	Build a distribution tree for a given package
make.rst	Build a copy of the RST repository tree for a given package
make.version	Make a version header file
pkg.git	Perform <code>git</code> operations on a package
pkg.id	List the element identifiers for a given package
pkg.version	List the element version numbers for a given package
rpkg.se	Self extracting archive script added to the front of software distribution packages
setup.pkg	Initialize a package by creating the <code>git</code> repository and initial element identifier list
status.pkg	Report the status of elements in a package using the <code>status</code> command of <code>git</code>

Script	Description
tag.version	Apply a version tag to an element.
update.pkg	Update and commit the element identifier list for a package

/build/superdarn : SuperDARN and ROS packaging information

`/build/superdarn` contains the packaging information for SuperDARN and ROS software packages. It has one sub-directory called `package` that contains a package manifest for the ROS.

/codebase : Source code and documentations sources

`/codebase` contains the source code for the binaries and libraries together with the documentation source files.

Directory	Description
base	Source code for base software included with all RST distributions
general	Source code for general purpose software
superdarn	Source code for SuperDARN and ROS software

/codebase/base : Source code for base software included with all RST distributions

`/codebase/base` contains the source code for the base software included with all RST distributions. It is further subdivided into sub-directories according to software type.

Directory	Description
src.bin	Binary source code
src.lib	Library source code

/codebase/base/src.bin : Binary source code

`/codebase/base/src.bin` contains source code for binaries included with all RST distributions

Directory	Description
build	Source code for build software binaries
xmldoc	Source code for XML documentation system

`/codebase/base/src.bin/build` : Source code for build software binaries

`/codebase/base/src.bin/build` contains the source code for the binaries used by the compilation and packaging scripts.

Directory	Description
addtext	Adds text to a source code file using RCS style tags
makeall	Search a directory tree for makefiles and compile software.
maketree	Make a list of directory paths by searching a directory tree

`/codebase/base/src.bin/xmldoc` : Source code for XML documentation system

`/codebase/base/src.bin/xmldoc` contains the source code for the XML documentation system.

Directory	Description
scdoc	Process template files with search and replace
xmldoc	Generate documentation from XML source

`/codebase/base/src.lib` : Library source code

`/codebase/base/src.lib` contains source code for libraries included with all RST distributions.

Directory	Description
httpd	HTTP and web libraries
math	Math libraries

Directory	Description
memory	Shared memory management libraries
task	General libraries for implementing command line driven binaries
tcpip	TCP/IP interface libraries
xml	XML parsers and processing libraries

/codebase/base/src.lib/httpd : HTTP and web libraries

`/codebase/base/src.lib/httpd` contains libraries for working with HTML and for generating web pages. The only library included in ROS is `rscript`.

/codebase/base/src.lib/math : Math Libraries

`/code/src.lib/base/math` contains the basic math library `rmath`.

/codebase/base/src.lib/memory : Shared memory management libraries

`/codebase/base/src.lib/memory` contains the shared memory management library `shmem`.

/codebase/base/src.lib/task : General libraries for implementing command line driven binaries

`/code/src.lib/base/task` contains general purpose libraries commonly used by all binaries. It also includes libraries for implementing command line driven binaries.

Library	Description
convert	Basic data type conversion functions for resolving endian logic
option	Decodes command line options
rtypes	Platform independent data types

/codebase/base/src.lib/tcpip : TCP/IP interface libraries

`code/src.lib/base/tcpip` contains the TCP/IP interface library `cnx`.

/codebase/base/src.lib/xml : XML parsers and processing libraries

/code/src.lib/base/xml contains the libraries used for working with XML files.

Library	Description
tagdb	Tag database library that converts XML markup tags
xml	XML parser library
xmlldb	XML database library
xml doc	XML documentation library

/codebase/general : Source code for general purpose software

/codebase/general contains the source code for general purpose software. ROS only includes general purpose libraries under the sub-directory `src.lib`.

/codebase/general/src.lib : Library source code

/codebase/general/src.lib contains the source code for the general purpose libraries used by many RST programs.

Directory	Description
dmap	dataMap file format library
time	Time conversion library

/codebase/superdarn : Source code for SuperDARN and ROS software

/codebase/superdarn contains the SuperDARN and ROS source code.

Directory	Description
src.bin	Binary source code
src.lib	Library source code

/codebase/superdarn/src.bin

`/codebase/superdarn/src.bin` contains the SuperDARN and ROS specific binaries. For the ROS, it contains the sub-directory `os`.

`/codebase/superdarn/src.bin/os`

`/codebase/superdarn/src.bin/os` contains the source code for the ROS software.

<code>errlog</code>	Error logger
<code>fitacfwrite</code>	Write fitacf files
<code>iqwrite</code>	Write I&Q samples to a file
<code>radar</code>	Radar emulator
<code>radarshell</code>	Interactive radar shell
<code>rawacfwrite</code>	Write rawacf files
<code>rtserver</code>	Real-time fitacf data server
<code>schedule</code>	Scheduler
<code>shellserver</code>	Shell server to interface the radar shell process with the control program

`/codebase/superdarn/src.lib`

`/codebase/superdarn/src.lib` contains the source code for the SuperDARN and ROS libraries.

Directory	Description
<code>os</code>	ROS library source code
<code>tk</code>	SuperDARN toolkit library source code

`/codebase/superdarn/src.lib/os`

`/codebase/superdarn/src.lib/os` contains the source code for the ROS libraries.

Directory	Description
errlog	Interface to the error log process
fio	File I/O library
freq	Forbidden frequency library
rmsgrcv	Low-level inter-process message decoding library
rmsgsnd	Low-level inter-process message encoding library
rosmg	Interface library to QNX6 radar hardware software
rshell	Interface library to the radar shell
tcpipmsg	TCP/IP messaging library

/codebase/superdarn/src.lib/tk

/codebase/superdarn/src.lib/tk contains the source code for the SuperDARN libraries.

Directory	Description
acf	Auto-Corellation Function calculation library
cfit	cFit file interface library
fit	fitwrite file interface library
fitacf	FITACF algorithm library
iq	IQ sample file library
radar	Radar identification and hardware table library
raw	rawacf file interface library
scan	Scan level fitted data processing library
tsg	Timing sequence generation library

/codebase/superdarn/src.script

`/codebase/superdarn/src.script` contains the shell scripts used by the SuperDARN and ROS software. For the ROS it contains the sub-directory `os`.

`/codebase/superdarn/src.script/os`

`/codebase/superdarn/src.script/os` contains the shell scripts used by the ROS.

Directory	Description
<code>start.radar</code>	Starts radar operations
<code>start.scd</code>	Start scheduler and run control programs
<code>stop.radar</code>	Stop radar operations

`/dlm` : IDL Dynamically Linked Modules (DLMs)

`/dlm` is an empty directory. It is included in the ROS distribution for consistency with the Radar Software Toolkit filesystem hierarchy.

`/doc` : Documentation

`/doc` is used to store the compiled HTML documentation. The directory contains a file called `index.html` that can be used as the start point when using a web browser to view the documentation.

`/include` : Header files included by C programs

`/include` stores symbolic links to the C header files. The symbolic links point to the actual header file located under the `code/src.lib` directory tree. The link should point to the headers of the most recent (highest version number) of a library.

Directory	Description
<code>base</code>	Base library headers
<code>general</code>	General library headers
<code>superdarn</code>	SuperDARN and ROS library headers

/lib : Libraries

/lib contains the compiled static and dynamic libraries used by the software.

Library	Description
libacf	Auto-Corellation Function calculation library
libcfif	cFit file interface library
libcnx	TCP/IP connection library
libdmap	dataMap file format library
liberrlog	Interface to the error log process
libfio	File I/O library
libfit	fitwrite file interface library
libfitacf	FITACF algorithm library
libfreq	Forbidden frequency library
libiqdata	I/Q sample processing library
libopt	Decodes command line options
libradar	Radar identification and hardware table library
libradarshell	rawacf file interface library
libraw	Relays raw I&Q samples to a process
librcnv	Data type conversion library
librfile	Frame buffer library for rendering bitmap images
librmath	Standard math function library
librmsgrcv	Low-level inter-process message decoding library
librmsgsnd	Low-level inter-process message encoding library
librscan	Scan level fitted data processing library
librscript	HTML scripting library

Library	Description
librttime	Time conversion library
librxml	XML parser library
librxmldb	XML database library
librxmldoc	XML documentation library
libshmem	Shared memory library
libtagdb	Tag database library that converts XML markup tags
libtcpipmsg	Process identification library
libtsg	Timing sequence generation library

/log : Compilation and installation logs

`/log` contains log files from the installation and compilation of the software.

/script : Shell scripts

`/script` contains standard scripts for compiling the software and for operating the radar.

Script	Description
start.radar	Start ROS in operations mode
stop.scd	Stop ROS in debug mode
stop.radar	Stop ROS in operational mode

/tables : Data Tables

`/tables` contains the data tables and hardware configuration files

`/tables/superdarn`: SuperDARN data tables

File/Directory	Description
hdw	Directory containing the radar hardware files
idl	IDL data tables
model	Directory containing coefficients of SuperDARN data models
radar.dat	Data file defining SuperDARN radar names and station identifiers
site	Site specific data tables such as the forbidden frequency table

/usr : Secondary hierarchy

`/usr` is the secondary filesystem hierarchy and contains software that is either optional or specific to a radar site. This includes the control programs and site libraries.

Directory	Description
bin	Control programs and optional binaries
codebase	Source code for control programs, operations, site and secondary libraries
include	Header files for operations, site, and secondary C libraries
lib	Site, operations and secondary libraries

/usr/bin : Control programs and secondary binaries

`/usr/bin` contains the control programs and any optional binaries that have been installed. For the ROS it contains the control programs.

/usr/codebase : Source code for control programs, secondary libraries and site libraries

`/usr/codebase` contains the source code for the secondary libraries and binaries including the operations, and site libraries, and the control programs. It contains the sub-directory `superdarn`.

/usr/codebase/superdarn : Source code for SuperDARN and ROS secondary libraries and binaries

/usr/codebase/superdarn contains contains the source code for the secondary libraries and binaries including the operations, and site libraries; and the control programs.

src.bin	Source code for secondary binaries
src.lib	Source code for secondary libraries

/usr/codebase/superdarn/src.bin : Source code for SuperDARN and ROS secondary binaries

/usr/codebase/superdarn/src.bin contains the source code for SuperDARN and ROS secondary binaries. It contains the sub-directory `os` that contains the source code for control programs.

/usr/codebase/superdarn/src.lib : Source code for SuperDARN and ROS secondary libraries

/usr/include : Header files for secondary C libraries

/usr/include contains the subdirectory /usr/include/radarqnx4. This contains the headers for the operations library and the site library.

/usr/lib : Site and secondary libraries

/usr/lib contains the site library, operations library and any optional libraries that have been installed.