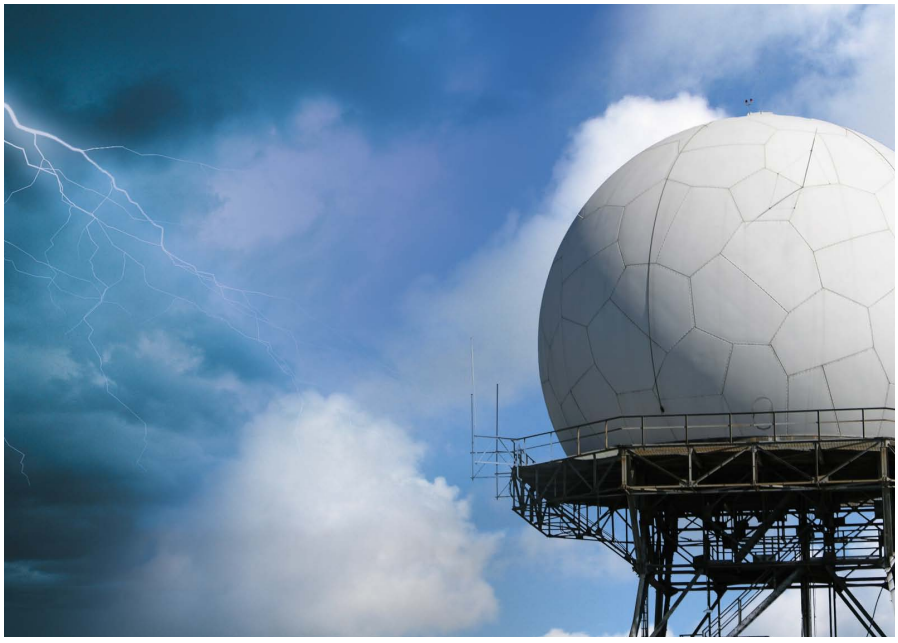
VAISALA www.vaisala.com

Vaisala Sigmet Interactive Radar Information System IRIS™



In today's business world, companies and their high-tech products come and go in the blink of an eye. That's why we are proud that IRIS™ is the longest-selling software system for weather radar – ever.

IRIS™ has been shipped as a product for over 20 years.

IRIS™ makes any weather radar better. Vaisala is totally focused on providing the highest quality signal and data processing solutions, and the system support to make it all work.

At each step, operators have concise interactive menus to monitor and manage the process. These menus make it easy to trace data all the way from the radar receiver to the end user. An entire radar operational plan from scanning to product distribution can be designed in an hour and implemented in seconds.

IRIS™ is the network... IRISnet makes it work!

From software installation to remote control and monitoring, IRIS™ provides logical, easy-to-use tools for secure "single-seat" radar network management. The IRISnet tool is the top-level management tool. Color coded icons display radar and analysis sites and show status at a glance. Operators can point and click to access the IRIS™ tools for any site for configuration and management. Open the utilities menu to perform radar test and calibration. The IRIS™ menus can be "connected" to any IRIS™ server node to control radar scanning, product generation and output.

Benefits

- Single-seat network administration, testing, upgrade and maintenance- no need to go to the radar.
- Local and remote control with automatic fault alerts and message logging.
- Networked real-time display.
- Graphical utilities such as IRISnet for easy radar and network monitoring and maintenance.
- Built-in simulators for testing and training.
- Automatic operational mode switching in response to changing weather conditions.
- Comprehensive suite of output products based on volume scanning and single sweep.
- Composite for networked radars into selectable projections and "virtual" radar sites.
- Efficient client-server network communications and scalable data communications with data compression.
- Standard TCP/IP networking approach- no custom communication protocols.
- Support for a wide variety of standards-based peripherals such as PostScript printers, DAT tape drives and DVDs.
- Optional 3D display shows the "big picture".
- Optional Real-time dual-Doppler.
- Seamlessly reads all older IRIS™ data files.

Radar

Troubleshooting... No Problem with IRIS™

The automated monitoring in IRIS™ functions as a “watchdog” that constantly monitors the health of the system. This frees maintenance personnel from having to make constant checks of the system. Should a problem occur, IRIS™ may alert users and maintenance technicians. The comprehensive system maintenance tools in IRIS™ make it easy for maintenance personnel to isolate and solve the problem.

The Radar Status Menu collects all of the hardware and software status, as well as key controls, into a single place – no need to page through several menus to determine the overall health of the system. Since it is an IRIS™ client/server menu, you can connect the Radar Status Menu to view any system on the network.

Should a problem occur, the IRIS™ Watchdog process sends an alert pop-up message with an audio “beep” or even a voice synthesis message. The BITEX utility is used to configure what parameters are monitored and the severity of the messages. To assist with troubleshooting, faults are logged on disk in the IRIS™ Message log so that there is a record even if the system were to lose power.

ANTENNA provides completely independent radar and antenna control or sun tracking.

The ASCOPE utility is Vaisala’s acclaimed signal processor support utility that provides complete control and plotting for all signal processor parameters. Advanced features include FFT, random phase and data recording and playback of any data- even I and Q. Signal simulator provides the ability to test signal processor configurations and algorithms on “real-world” signals.

Analysis

Radar Process

The radar process provides flexibility for configuring and optimizing complex automatic scanning and signal processing strategies.

A mix of TASKS are defined for an active scan. Networked real time display provides instant feedback on the progress of a scan. You can create and save an unlimited number of schedules for different automatic operational modes. The scanning schedule can even be switched automatically in response to changing weather. This is particularly useful for air terminal wind shear detection.

Product Generation

The ingest files generated by the radar process are the starting point for the product generator. IRIS™ has the most comprehensive suite of products available in the industry today (see product summary page). The product configuration and product scheduler menus give operators full control over the details of the product generation and the mix of products for each operational mode. All products are made in the original polar coordinates of the radar data with correction for earth curvature and full interpolation. Resolution and map projection are selectable.

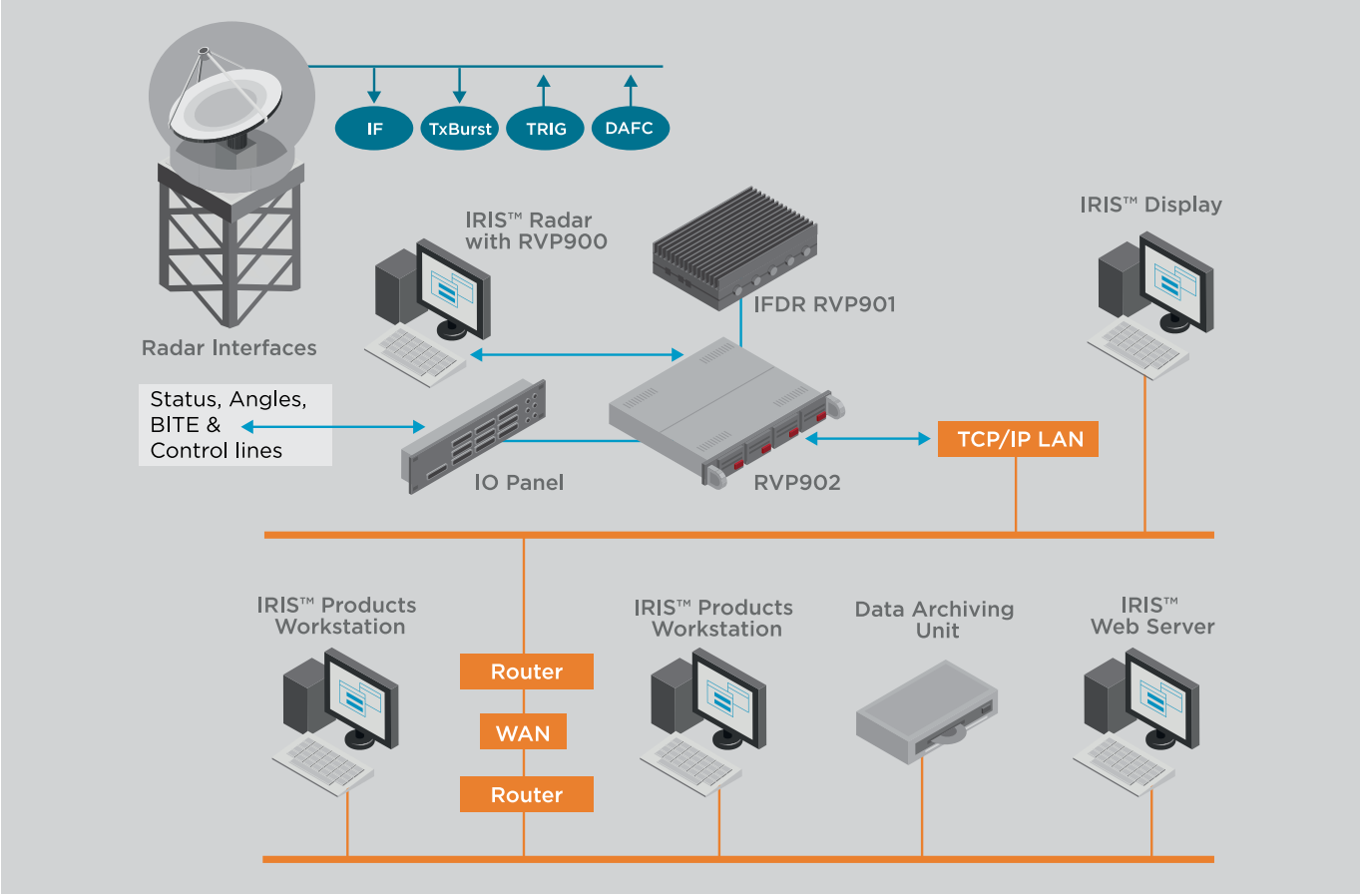
Display

IRIS™ supports automatic or interactive output to a variety of devices. The Quick Look Window, which is a 4th generation graphical user inter-face design, is forecaster-tested and proven to be easy-to-use with minimal training. Features such as geographic cursor, home points, interactive cross-section, forecast projection and track/annotation make the Quick Look Window a powerful tool for forecasters and analysts. What’s more, the Quick Look Window can be exported over the network to any workstation that is running X-even PC’s running Windows or NT.

IRIS™ supports archive/playback on DAT, DVD, as well as multi-GB hard disk archive. System managers can take advantage of output to other networked systems in a variety of formats including IRIS™ Native, JPEG, GIF, TIF, BMP and PostScript. Color postScript printers are supported. These formats make it easy to have automatic updates for web pages or other external applications.

The IRISnet Network management tool lets you see at a glance the status of all radar & display systems. Operators can travel the network with a few clicks of their mouse.

IRIS Configuration



Technical Data

IRIS™ Products (Ø FULL SET / Δ BASIC SET)

BEAM ØΔ
Display of dBZ, V or W in AZ/EL space. Useful for beam pattern measurement.

FCAST ØΔ
Array of displacement and intensity change vectors used for projecting echoes forward in time in the Quick Look Window.

PPI ØΔ
Classical radar display at single elevation for dBZ, V, W.

IMAGE ØΔ
Based on the GIF format. Used for importing data. In particular it is used for renderings from the optional IRIS/3D package.

RAW ØΔ
Compressed polar data with "housekeeping". Used for data transmission (sweep-by-sweep) and archiving (full volume).

RHI ØΔ
Range-height indicator for "nodding" antenna scanning.

RTI ØΔ
Range-time indicator.

USER ØΔ
An arbitrary format product that is created outside of IRIS™. Used for input of satellite underlays.

WARN ØΔ
Centroid detection with warning message for "hit" protected areas. Generates "pop-up" message with selectable beep/voice synthesis. Can be displayed as colored "centroid" ellipses or overlaid on other products. Used for making alerts for microburst, hail, flood, lightning hazard, severe storm, etc.

Technical Data

TRACK ØΔ
Automatic tracking of centroids with forecasting. Alerts similar to WARN with the addition of forecast alerts for protected areas.
XSECT ØΔ
Cross-section through arbitrary line for dBZ, V, W.
BASE Ø
Echo base height for a selectable dBZ contour.
CAPPI Ø
Constant altitude PPI of dBZ, V, W. Selectable as single-level or 3D multi-level in true or pseudo CAPPI.
DWELL Ø
Time dwell of input product, e.g., a dwell of dBZ PPI's shows tracks as streaks. The effect is similar to opening the shutter of a camera observing a moving object.
HMAX Ø
The height of the maximum dBZ.
LAYER Ø
Computes the average value of any data type between any two user defined altitudes.
MAX Ø
The maximum detected reflectivity over each pixel. Includes E-W and N-S profiles of the maximum in side panel displays.
RAIN1 Ø
Hourly rainfall accumulation based on low-level pseudo CAPPI or SRI input with selectable Z-R relationship. 15- and 30-minute periods also.
RAINN Ø
Arbitrary N-hour rainfall accumulation derived from summing the RAIN1 hourly products.
SRI Ø
Surface rainfall intensity with bright band and profile correction. Output is for a selected reference height or follows digital terrain map.
THICK Ø
Displays the difference between the lowest and highest altitude of any user defined reflectivity level.
TOPS Ø
Height of a selectable dBZ contour.
VAD Ø
Velocity Azimuth Display
VIL Ø
Vertically integrated liquid (or layer average reflectivity) for a selectable top and bottom layer and Z-W relationship.
VVP Ø
Velocity volume processing wind profile including, wind speed, direction, divergence, deformation, axis of dilatation, particle vertical velocities and reflectivity versus height. Display is either time-height cross-section or graphs.
WIND Ø
Based on the uniform wind assumption and the VVP, this product shows estimated winds for a selected layer of the atmosphere. Display is wind barbs that can be overlaid on other products.

Optional Products

CATCH
N-Hour Precipitation totals in subcatchment areas based on RAIN1 product. Histogram pop-up display.
GAGE
Raingage data display with histogram pop-up.
COMP
Compositing of products from multiple radars in a selectable projection. This is usually done at a central site with distribution back out to forecast sites. Products available for composite include BASE, CAPPI, HMAX, PPI, RAIN1, SHEAR, SRI, TOPS, USER, VIL. and WARN.
NDOP
Dual-Doppler wind fields based on radial wind inputs from two Doppler radars.
SHEAR
Radial, azimuthal or elevational shear (separately or any combination). Used for microburst and mesocyclone detection.
SLINE
For detection and forecasting of wind shear lines. Includes automatic warning for hits or forecast hits on protected areas.
IRIS 3DView
Manual and/or automatic 3D rendering of multi-level CAPPI cube data with image zoom, tilt and rotate. 3D rendering done in separate 3D engine workstation and 2D IMAGE versions sent back to IRIS™.
HYDROCLASS
Hydrometeor particle identification and non-meteorological data classification using the measurands of a dual-polarized radar.
IRIS/LIGHTING
Real-time ingesting and display of UALF flash lightning data with polarity, cloud-to-cloud, cloud-to-ground, and peak current information. The lighting information can be overlaid with other IRIS products within the IRIS™ Quick Look Window.

VAISALA
For more information, visit www.vaisala.com or contact us at sales@vaisala.com

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