



ISS-RPG

ISS-RPG-R (P/N 821-018)

Composed of:

P/N	Product	Description
821-001	ISS-PCA	Playback Console Application
821-002	ISS-ICR	ISS Capture Recorder
821-004	ISS-CSD	Configuration Server Daemon

System can expanded with following optional modules/units

821-005	ISS-CGD	Control Gateway Daemon
821-010	ISS-NTPSync	NTP Synchronization Daemon
821-011	ISS-ArchMgr	Archive Manager

System can also integrated with the following Media System units

804-001/ST	MS-ST	ATC Router (Synthetic Data)
804-001/RSC	MS-SRC	Radar Scan Converter (Raw Data)

RPG: THE RADAR ANALYSIS REVOLUTION

The RPG (Radar Performance Guard) is a unique software that allows you to easily record, reproduce and analyze all the radar data exchanged on the network. Historically these features could only be provided by extremely expensive software, however, after years of research, Cadmos has developed a cost-effective and affordable solution for large, medium and small airports. We strongly believe that security is important, so we have created RPG that, in addition to the recording, playback and analysis functions, allows users to supervise the radar activity and promptly detect any anomalies much earlier than other systems. The real-time analysis evaluates the quality of the information provided by the radar sensor, measuring the overall performance of the sensor against the benchmark values of the performance parameters specified in the EUROCONTROL surveillance standard, such as the probability of detection of the target position (PD) and / or radar accuracy in both gamma and azimuth, detecting any challenges of non-compliant radar performance or transponders or transponders that provide invalid information. Measurements and quality analyzes are performed using specific software routines to correlate targets / graphs in chains and to evaluate trajectory positions. When available, the data can be compared with those coming from other sensors (such as ADS-B receivers). The software is optimized to work in combination with the Media Switch ST units produced by Cadmos Microsystems, to record and reproduce data packets exchanged on serial communication, with synchronous and asynchronous protocol. RPG is a complete network solution designed for the ATC environment.

Radar Performance Guard



HIGHLIGHTS

- ◆ Component of ISS suite
- ◆ Data acquisition from LAN and from Serial Lines (using ST units), distinguishing data packets by format and protocol
- ◆ Playback on LAN of all recorded data traffic
- ◆ Distributed architecture: flexible, scalable and redundant
- ◆ Multi-protocol data acquisition: processing data packets based on different formats and protocols:
 - HDLC
 - LAP-B
 - AFTN (IA5)
 - CD2
 - ASTERIX Cat 1,2,8,10,11,19,20,21,21-023,21-026,21-204,34,48,62,63,65
 - AIRCAT500, edition
 - MODM
 - OLDI
 - AMHS messages
- ◆ Real-time and post-acquisition advanced data analysis, decoding data packets with several protocol decoders
- ◆ High integration of all components, using a common format (TIS) to exchange data
- ◆ Friendly Graphical User Interface

For more information about our products, please visit

www.cadmos.it

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Cadmos Quality Management System is
ISO 9001:2000
certified



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Acquisition and Sampling:

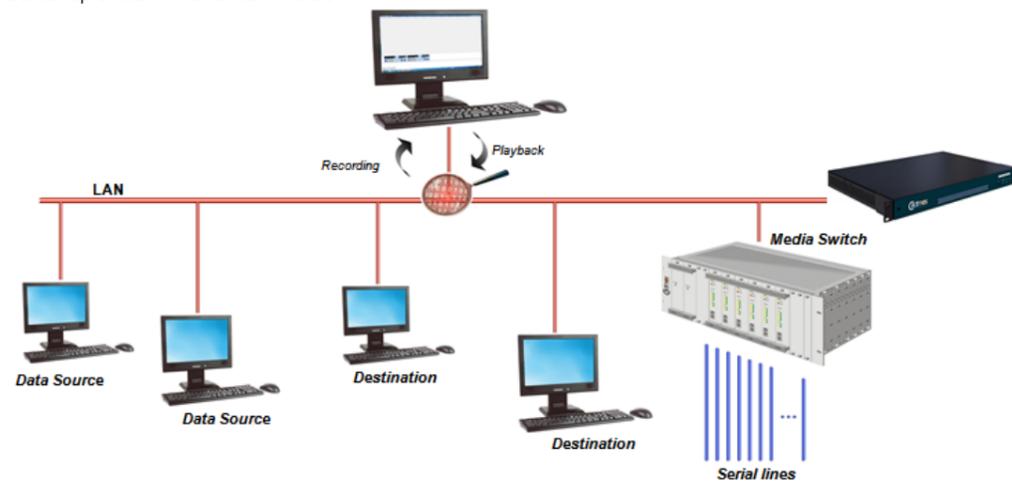
RPG (Radar Performance Guard) is designed to realize a network recording, playback and analyzing system, by acquiring data via LAN networks and reproducing data to one or more destinations. In this way, so as depicted in the figure below, RPG allows the following:

- Data acquisition from Ethernet LANs, distinguishing data packets by format and protocol (Real time decoding from Asterix and/or Aircat500 data format) and by using multiple selections;
 - Interfacing with ST units (facilities to configure them) to acquire data from up to 24 serial lines (synchronous or asynchronous communication protocols);
 - Recording on files (TIS proprietary format);
 - Playback of recorded data, by defining the protocol and the forwarding destination;
 - Real-time analysis of acquired data packets, both during recording or playing and continuously comparing data incoming from several surveillance sensors types:
 - Primary Surveillance RADAR (PSR)
 - Secondary Surveillance RADAR (SSR)
 - Mode-S Secondary Surveillance RADAR
 - Automatic Dependent Surveillance – Broadcast (ADS-B) stations
- The system is designed to be easily expandable to improve new sensors type.
- Postdate analysis by viewing data stored into files(TIS).

The configuration and control is achieved by the management system.

Recorder:

The recorder is designed to acquire and record data packets, selecting for source and destination (also identified as “node”). Each node is defined by a **caption** (node name), a **source** (IP address and UDP port). Each recording channel is then assigned to a watch point in the Presentation modules, in order to define the destination to display or to redirect radar data, based on decoder protocol type. If required, the recorder is designed to operate in no-break mode.

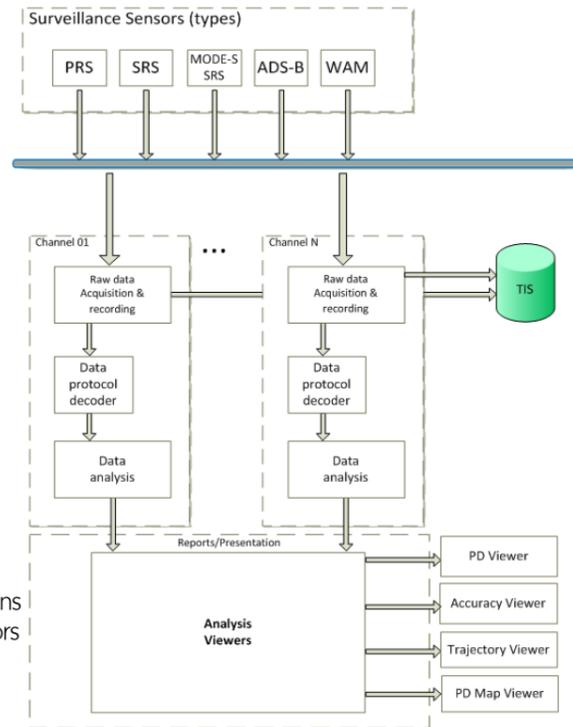
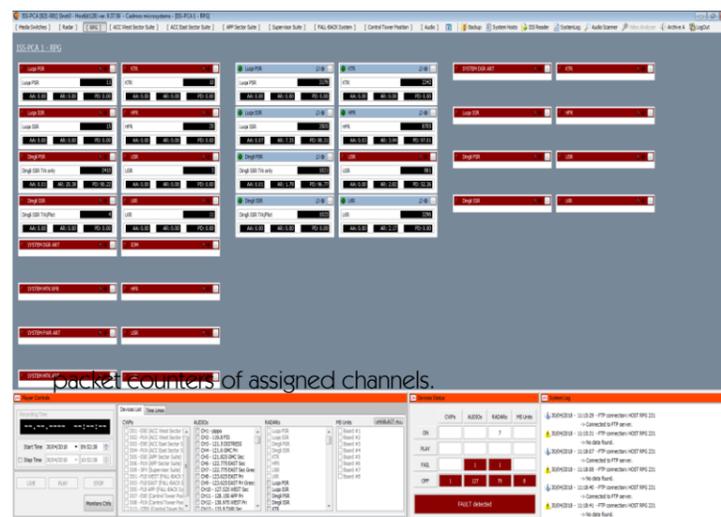


Presentation:

Presentation components are software modules devoted to synchronize presentation of different data flows in a consistent context, reproducing and showing the operator a complete and clear scenario. In the same application environment, several presentation components are available, specialized for different data flow typologies:

- 1) Synthetic Radar Data (Asterix, AIRCAT500, etc.)
- 2) Raw Radar Data (Raw Video)
- 3) Video Player (optional)
- 4) Audio Player (optional)
- 5) Kb and Mouse Player (optional)

Presentation components are used to monitor the entire radar communication system, performing data packets acquisition from Storage System by LAN. The User Interface of the Recorder is basically a set of WatchPoint panels (each one manages one or more radar channels), on which are displayed the data



Players:

The Recorder writes captured data packets inside files. The Player can reload these files, playback data packets and forwards them to one or more destination. Replaying files and forward destinations must be select before starting the player. Also the User Interface of the Player is basically a control panel on which are present:

- digital displays for data packets and reproduction time,
- player operative controls (Play and Stop),
- player setup and data viewer controls,

During playing, replayed data packets can be analyzed by Radar Viewer and by Data Viewer.

Statistics and Hystorical analysis:

Statistics and historical analysis can be performed on collected data, from the Playback station. Reports are generated to show different data trends for statistics purpose.

PD, Accuracy, Trajectory and PDMap Viewer:

The radar performance reports can be analyzed more in detail, using the trajectories **PD trend Viewer** (Presentation component), which displays the quality analysis result for each single chains or trajectory in probability of detection of the target position (PD), **Accuracy trend Viewer** displays the quality analysis result for each single chains or trajectory to evaluate radar precision both in range and in azimuth. A detailed presentation of the beats collection, displaying data in graphical and tabular mode. All invalid data are put in evidence, allowing the personnel to quickly identify every incorrect detection. The capability of the radar sensor to correctly predict the target position can be also verified. **Trajectory Viewer** shows a detailed presentation of the beats collection, displaying the data in graphical and tabular mode, all the invalid data are highlighted, allowing the staff to quickly identify any incorrect detection. It is also possible to check the radar sensor's ability to correctly predict the target position. The **PD map Viewer** shows, in graphical and tabular mode, the analysis result of collected data, splitting results for several zones, each one characterized by its own quality parameters. Graphic representation uses an horizontal polar diagram, splitting data on more flights levels. In this way, will be easy localize radar's “defiance” or malfunctioning. The system is also able to identify and manage several “no-validity” zones (noise, clutter, interference, etc) in order to prevent false reports.

