

FAA Migration from TDM (Serial) to IP Interfaces Overview, Part 1



Introduction

Sunhillo has been working with the FAA and their partners for 34 years to help solve problems and install solutions into the NAS by working on programs such as STARS, ECG, ATOP, RMLS, TDM to IP, ATCBI (ASR11), SWIM, OCG, and CTD. Sunhillo and the FAA have a long-standing and positive relationship leading to a round table discussion 9 years ago with other industry experts to discuss “The Sun Setting on TDM”.

Sunhillo products have always supported serial and IP connections (networks) for surveillance data, which bridges between the two (2) network topologies, but there is also a need to connect over IP for system-to-system communications as well as to end devices for monitoring. Many FAA programs/systems provide critical NAS monitoring for the FAA Remote Monitoring and Logging System within the FAA, Sunhillo is equipped to assist with this as well.

The information that follows is the first in a series of white papers that Sunhillo Corporation will be releasing. These papers illustrate how Sunhillo developed surveillance data acquisition & distribution equipment currently supports multiple programs within the FAA and how it helps solve current communication infrastructure



444 Kelley Drive, West Berlin, NJ 08091-9210, USA



+1 (856) 767-7676



www.Sunhillo.com

issues. This initial TDM to IP white paper is intended to provide a high-level overview with each subsequent paper diving deeper into individual technical topics.



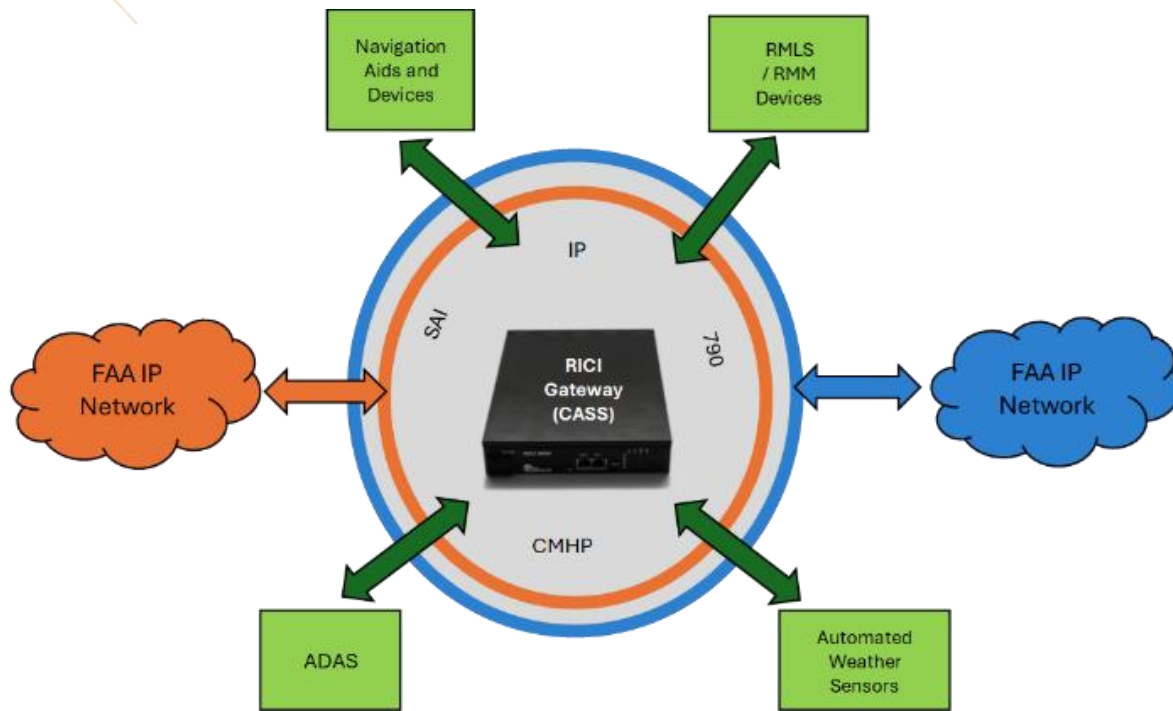
Radar Migration – Moving External Telephone Connections to IP

Sunhillo has a long history of interfacing radar systems within the FAA and DoD, but it is Sunhillo’s portfolio of serial-to-IP products (RICI, Ventnor, and Longport) that provide the bridge between dissimilar systems such as radars and Air Traffic Management (ATM) Automation systems. These products allow a large variety of data formats to be converted, processed, and displayed for a common air picture.

Historically, radars have used multi-channel serial connections to ingest this data and distribute it to required consumers. The multi-channel aspect has its foundation in the use of modems to transport data using the well-trusted telephone line and fractional T1 infrastructure. The obsolescence of the POTS telephone infrastructure has been in progress for the past 5+ years and Sunhillo is actively creating solutions to solve the problem of what to do with radar communication across these soon obsolete transmission lines.

A key aspect of the Sunhillo product line focuses on this transition by not only converting between data formats, but also translating between media types (i.e. serial, UDP, TCP) for the distribution of this data. The transition away from serial lines has also been joined with the initiative to convert to a common data format defined by Eurocontrol ASTERIX (i.e., CAT034/048). This transition is named within the FAA as the System Infrastructure Modernization Project or simply “SIM”. Sunhillo’s footprint in SIM has provided multiple solutions for FAA surveillance groups tasked with updating infrastructure in support of this modernization. Future white papers will provide more


details on modernization efforts such as ASR11, ATCBI-6, and others making this transition with Sunhillo's assistance and product solutions.



RIC Gateway (CASS) Monitoring Story

With a core competency in IP and serial networks, data protocols, and a strong understanding of the FAA network Sunhillo embarked on developing its first RIC Gateway (known throughout the FAA as the Conversion Appliance System Service, CASS) product in the 2015/16 timeframe. The approach taken by Sunhillo was not to think of a single program when developing this solution but instead to factor in a variety of FAA programs and provide the means to translate the legacy protocols being used by them to an IP-centric environment for transport over IP. This approach enables the FAA to eliminate the dependence on legacy leased TDM lines and modems allowing a move to an IP network for transporting data.

The TDM to IP Gateway functionality the CASS provides is currently being leveraged by several programs within the FAA and can be utilized by many other FAA programs. Also, if required, the CASS provides the ability to interact with the FAA Remote Monitoring Logging System (RMLS) for systems requiring monitoring through the RMLS program. The flexibility in the approach taken by the CASS has proven to be cost-effective for several FAA programs that are already using it as both a TDM to IP Gateway and as an IP-enabling Monitoring Device for RMLS. With its ability to support a broad range of needs/programs Sunhillo's CASS can be leveraged by the FAA to allow multiple programs to use the same solution platform as it supports multiple connections at the same time, thus reducing cost by eliminating the need to develop single-use solutions for each program.



2nd Level Support for all systems using the CASS within the FAA is provided by the AJW-1531 organization, Telecommunications Engineering Team. The approach Sunhillo has taken with the CASS also assists the AJW-1531 Organization by offering a common platform to install, maintain, and support which reduces cost. In cooperation with the FAA, Sunhillo released its first RIC Gateway in 2018 and began testing with several programs at the direction of the FAA.

Currently, the RIC Gateway (CASS) solution supports the following connections and programs: CMHP, SAI (Async), 790 (HDLC), ASWONGWY, ASYNC BRIDGE, and HNR Bridge to name a few. Additionally, the following 790 to SAI decoders and proxy servers are supported: TDWR, VORDME, RVR NEXTGEN, ITWS, ALS, MKRMSC, MKLOC, MKGS, MKIM, ALSF-2/SSALR, NON-FED AWOS, DME (Selex), BD40 (Modbus ASCII), UXTM (Modbus TCP), UXTM (Modbus RS485), NS710 (Modbus TCP), VOR (Gen 2).

A future paper will detail several of these programs and their specific implementation as a TDM to IP Gateway.

Conclusion

Monthly costs of traditional TDM leased lines are rapidly escalating due to telco providers seeing decreased need. Now is the time for the FAA to rapidly eliminate the use of these traditional TDM leased lines and migrate to an IP-centric backbone (example types of IP network connections supported: traditional wired, LTE or satellite-based networks). Sunhillo is taking this initiative very seriously and will detail available solutions in this white paper series.

For more information, please email Sunhillo at Sales@Sunhillo.com or visit www.Sunhillo.com