

PKI based Digital Certificate Solutions as an enabler for reducing the Total Cost of Ownership for Aircraft

Do you require PKI (Public Key Infrastructure) for Aircraft Programs?

Airline documentation and the processes and regulations surrounding it are quickly evolving. Accountability, consistency and integrity are of utmost importance for flight safety, work efficiency, regulatory compliance, and to maintain sustainable profit margins in order to survive competition. Carillon's objective is to simplify and help better secure these processes for Airlines and the staff responsible for the well-being of the Aircraft. PKI has been deemed by leading aircraft manufacturers as the best suited security solution for various aircraft-related applications. It is the most secure and flexible authentication method used today within the aerospace community, commercial aviation, government, critical national infrastructure and the commercial sector, as it can ensure a much stronger identity assurance to minimize or prevent operator error, and greatly reduce security risks.

Over the last 12 years, Carillon Information Security has been working very closely with the Aerospace and Commercial Aviation sectors to create solutions to make PKI easier to manage and integrate, in an effort to reduce the total cost of ownership for aircraft and improve information security. We have worked extensively with Boeing and Airbus on the adoption of digital security for aircraft. We have participated as subject matter experts on AEEC committees ranging from Gatelink and Secure ACARS, to the various standards for Field Loadable Software, as well as Software Parts signing and validation. Carillon is also the lead author of the standard for digital signature and Identity management for the Civil Air Transport community (ATA Spec42), a standard which has been adopted as the reference by ICAO, the FAA, Transport Canada, and EASA.

Digital Signatures for aircraft will provide cost reductions and improve security:

Digital Signatures provide the secure mechanism for rapidly verifying aircraft software part content and source integrity, regardless of the distribution method. They are increasingly being used for Regulatory Document Signing (FAA e8130-3, EASA form one and more) to eliminate the use of paper documents, which typically require much handling, storage space and weight on an aircraft. Modernizing these time-consuming processes by adopting Digital Signatures will reduce workloads, inconsistencies in processes, handling costs, and will significantly improve the aircraft turn-around time and regulatory compliances. Digital signatures can be verified during and after storage, distribution or data loading of software parts. In addition, implementing this technology for Airline Design Document Signoff enables your company to say that it recognizes these signatures from Airlines, as well as to champion this to the regulators.

Future scalability

PKI-based Digital Certificates and credentials can provide flexibility in operations outside of aircraft use, allowing your organization to consider PKI-enabled solutions for uses such as: Job Card Management, Maintenance Management, Physical Access, Email Communication, and more. Our team is actively working on solutions to enable Secure Digital Signatures on tablets, Electronic Flight Bags and other flight deck and maintenance facility devices that take advantage of new secure contactless smartcard technology.

Carillon has tools to make PKI easy to use & integrate for cost efficient & safer aircraft operation:

Managed PKI Service – Cross-Certified PKI Operations... Simplified solutions, including a private branded CertiPath cross-certified CA (Certificate Authority) Services for organizations that need to integrate a higher level of secure information sharing, without the complexity and high-cost of an in-house PKI system. The CertiPath cross-certified Digital Certificates issued from the private branded CA provide a robust foundation for secure document exchange, collaborative engineering, secure e-mail, digital signatures and transaction security between systems. Carillon's Managed PKI Service can allow you to save up to 80% of the costs compared to an in-house solution.

Carillon's Managed PKI Service - Use the CertiPath cross-certified Digital Certificates for:

- Signing Software Crates
- Secure Email and Communication with manufacturers
- Digital Identification
- Managing Workloads around Certificates

Signing Software Crates

Securing the connected aircraft is of vital importance as more mechanical and analog operations and components are being replaced or updated by computerized systems. Software parts (programs & operating systems) can now be loaded while the aircraft is still in operation or sitting at the gate via a secure Gatelink Wi-Fi connection. These modernizations, although highly efficient, timely and accurate, can also be easier targets for wrongdoing by "spoofing" or intercepting communication paths.

Since electronic transmission of software parts is now permitted, there must be a method where the operator can verify the integrity of the information being transmitted and the signing validity of the source, in order to maintain aircraft and passenger safety. PKI-based Digital Signatures address these risks and guarantee a much more robust and secure foundation for these sensitive data exchanges. They provide Identity Assurance and Message Integrity, and have been made a part of the standard distribution method and process for software parts via several AEEC specifications.

Device Identification

To validate communication sources made between infrastructure devices and the aircraft, onboard or maintenance equipment and the aircraft, or Gatelink, a variety of authentication mechanism can be used. The simplest and most secure mechanism for device authentication that is supported by all such devices is through the use of X.509 Public Key Infrastructure (PKI) certificates. Carillon has worked with several OEMs and has been very active in the standards bodies at the ATA, AEEC, IATA, and other forums to ensure that a single PKI implementation can be used, regardless of fleet composition, device manufacturer, or use of that device.

Secure Email and Communication with Manufacturers

Email and communication with manufacturers for information concerning data, devices and parts, both going to and coming from the aircraft, must be done in a manner that can protect the integrity of the content and also validate the origin of the message sender and recipient by minimizing the risk of interception or manipulation of the content. PKI-based Digital Certificates can provide a very strong safeguard for preventing commercially sensitive information from falling into the wrong hands when sending information to manufacturers or communicating with the OEM's support team.

Managing Workloads around Certificates

Digital Certificates can be relied on for accessing, managing and providing better traceability of highly important workload for engineering, quality assurance, maintenance and release, including;

- Pre-Flight Information: For navigation charts, weather data, load sheets, dangerous goods, flight plans, etc...
- Crew management: For scheduling and assignment.
- Administrative Functions: Passenger information, wheelchair requirements, aircrew support and aircraft logistics.
- Maintenance: LSAP delivery, technical log book, aircraft maintenance documents & parts catalogues, technical status of the aircraft.
- Electronic Flight Bag: Weight and balance calculations, performance charts, flight manuals, electronic documentation.

about Carillon

INFORMATION SECURITY

Carillon Information Security Inc. is a full service Public Key Infrastructure (PKI) and Federated Identity service firm. From consulting, to Managed Service, to tools to make PKI easier to use, we offer a dedicated and knowledgeable team. Our main customers are major entities in the aerospace and civil air transport industries, service providers to large government agencies, and public utilities.

As the only company in the CertiPath cross-certification family whose main activity is managing PKI solutions, consulting on PKI implementations, Carillon is the leader in the field of cross-certified PKI implementation. With solutions ranging from PIV-I to ATA Spec42 compliant PKI, to simple and quick-to-deploy PIV-C / CIV, Carillon's highly experienced and proficient PKI team can help customers explore the benefits of PKI in its many flavors, and guide them through a completely successful and rapid PKI project deployment.

Contact Us Today for more details!

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