

# Ironwood KAP™

## Fast, Future-Proof Key Agreement Protocol Designed for Low-Resource Devices

### Foundation for Authentication and Identification

Key agreement protocols are at the foundation of many of today's security applications. SecureRF's Ironwood KAP™ is a future-proof, Diffie-Hellman-like Key Agreement Protocol (KAP) for the low-resource devices—running on 8-, 16-, and 32-bit processors—that power the Internet of Things (IoT).

### No Key Database Required

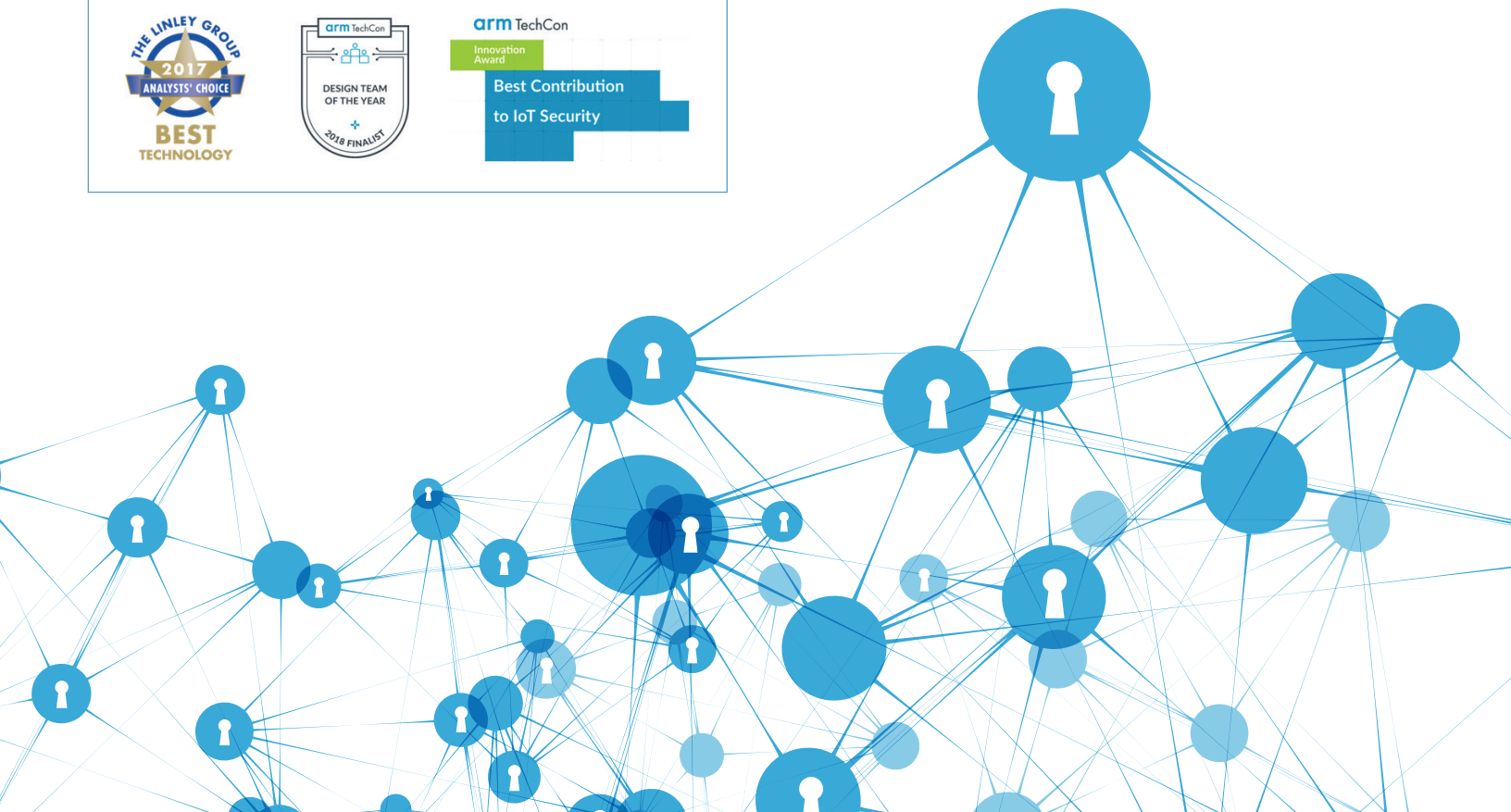
Ironwood has characteristics of a public-key solution and a shared-key solution; it does not require a secure key database in order to produce a mutual shared secret.

### Fast, Efficient, Compact, and Ultra-Low-Energy

Ironwood is computationally asymmetric; when two parties of different computational workload are interacting – like a gateway device and an 8- or 16-bit endpoint - you can put a greater computational workload on the gateway – enabling fast, compact, and ultra-low-energy, and performance that legacy solutions cannot match.

### Future-Proof

If your connected devices are expected to be in the field for ten years or more, they will likely be vulnerable to threats from quantum computing. Ironwood is quantum-resistant against all known attacks.



## Overview

Ironwood KAP™ is a future-proof, Diffie–Hellman-like Key Agreement Protocol (KAP) for the low-resource devices—running on 8-, 16-, and 32-bit processors—that power the Internet of Things (IoT).

## Features and Benefits

- Up to 60x faster than ECDH at 128-bit security levels
- Ideal for secure boot, secure firmware update, and identification
- Software-only implementations save hardware cost, shorten time-to-market
- Free SDKs available for a wide range of 8-, 16-, and 32-bit processors
- Quantum-resistant to all known attacks

## Software Implementations

- Ironwood is available for a wide range of microcontrollers and processor cores including the 8051, AVR, STM-8, MSP430, Arm Cortex-M0, M3, M4, R4, R5, A9, RISC-V, CodaSip BK, ARC EM, Andes S8, and others. SDKs are available for several development environments including Eclipse, Code Composer Studio, IAR, Keil, Infineon DAVE, Atollic TrueSTUDIO, GCC, and others.
- SDKs are available to run Ironwood on Linux, Windows, and Android. SDKs include a pre-compiled SecureRF crypto library, sample keys, certificates, signatures, and sample code.

## Hardware Implementations

- A reference FPGA hardware implementation is available in Verilog RTL. The deliverables include:
  - Synthesizable RTL— in Verilog
  - Simulation and synthesis scripts— for easy evaluation and implementation
  - Test vectors— facilitates rapid testing
  - Verification and regression suites—full test coverage for design integrity
  - Executable C models— verifies correct output from IP core
  - Cryptographic keys— to exercise both the hardware core and the C models
  - AHBLite 3.0 Interface— to interface processor to IP core for signature transfer and control
- Documentation and design support— for smooth implementation

## Markets

- Automotive
- Consumer
- Industrial Process Controls
- Smart Building/Smart Grid
- Embedded Medical Devices
- Payments

## Application

- Authentication
- Identification
- Data Protection
- Secure Boot
- Secure Firmware Update
- Command Validation

## Free Security Consultation

Our experts will provide an initial security consultation and can help accelerate time-to-market by creating a security solution design for your devices. Contact us at [info@securerf.com](mailto:info@securerf.com)

## Free SDK to Get Started

Our [IoT Embedded Security SDK](#) allows easy implementation of our solutions. The toolkit includes: WalnutDSA, Ironwood KAP, and sample source code.

## Request your SDK at:

[info.securerf.com/iot-embedded-sdk-development-kit](http://info.securerf.com/iot-embedded-sdk-development-kit)



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