

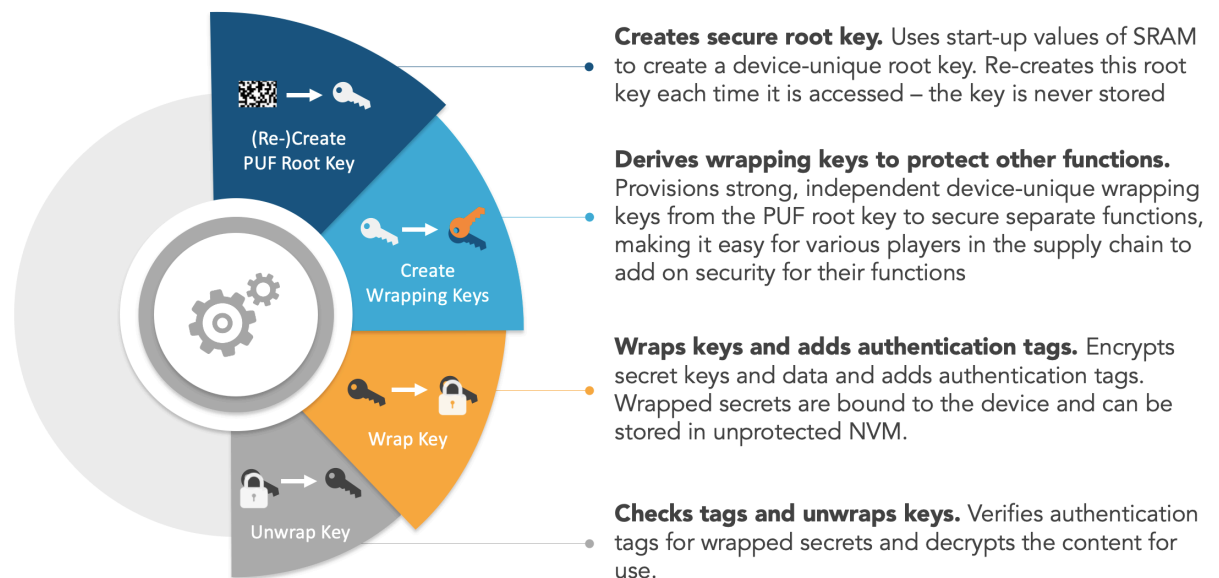


Intrinsic ID QuiddiKey enables device manufacturers and designers to secure their products with internally generated, device-unique cryptographic keys without the need for adding costly, security-dedicated silicon.

QuiddiKey

Intrinsic ID QuiddiKey® is a hardware IP solution that enables device manufacturers and designers to secure their products with internally generated, device-unique cryptographic keys without the need for adding costly, security-dedicated silicon. QuiddiKey uses the inherently random start-up values of SRAM as a physical unclonable function (PUF), which generates the entropy required for a strong hardware root of trust. QuiddiKey IP can be applied easily to almost any chip – from tiny microcontrollers (MCUs) to high-performance systems-on-chip (SoCs).

SRAM is a standard component available upon initial release of any process technology; because it uses SRAM as a PUF source, Quiddikey IP can be used with any foundry and process-node technology. QuiddiKey has been validated for NIST CAVP and has been deployed and proven in hundreds of millions of devices certified by EMVCo, Visa, CC EAL6+, PSA, ioXt, and governments across the globe.



Applications

- Secure Key Storage
- Authentication
- Flexible Key Provisioning
- Anti-Counterfeiting
- IP Binding
- Supply Chain Protection

Certifications

- NIST CAVP
- Supports FIPS 140-3
- QuiddiKey enabled products have been certified by EMVCo, Visa, CC EAL6+, PSA, and ioXt
- DoD and EU governments qualified

Benefits

- No sensitive key material present on device
- High protection against invasive attacks
- Deployed in hundreds of millions of production devices over more than a decade

Features

- Uses standard SRAM start-up values as a PUF to create a hardware root of trust
- Root key is never stored, but re-created from the PUF each time it is needed
- Offers key provisioning, wrapping, and unwrapping to enable secure key storage across the supply chain and for the lifetime of the device
- Keys are bound to the device and can only be recreated and accessed on the device they have been created on
- Configurations can be customized for your application
- Custom driver API for easy integration

QuiddiKey-Plus 4.1	
Generate device keys and random values	✓
Wrap and unwrap secrets	(✓)
Size (k gates)	45-72
AC size (bytes)	580 / 852
Security strength (bits)	256
Maximum key length (bits)	4096
Time to root key (k cycles)	44-69
SRAM required for PUF (kB)	4-6
NIST CAVP certification (DRBG, AES, KDF)	(✓)
NIST SP 800-90 compliant	(✓)
Interface	APB or TileLink-UL
Masked key output	✓
Logic BIST	(✓)
SRAM health checks	✓
SRAM anti-aging	✓
PUF monitoring	✓
Attack countermeasures	✓

(✓) Features are optional

Benefits

- Offers a higher level of security than traditional key storage in NVM such as secure flash, OTP or e-fuses
- Enables designers to create and store an unlimited number of keys securely in unprotected NVM on/off chip
- Minimizes overhead through optimized hardware design
- Eliminates the need for centralized key management and programming
- Highly reliable secure key storage solution in the most advanced technology nodes

QuiddiKey Configurations

QuiddiKey 4.1 is available in off-the-shelf configurations with size ranging between 45k and 72k gates. Configurations differ according to functionality, performance and compliance, enabling options customized to the needs of your application.

Operational Range

QuiddiKey has been deployed on MCUs/SoCs/ASICs in a diverse set of foundry/process node combinations. SRAM PUF responses across this diverse array have been qualified for use with QuiddiKey in a wide range of operational environments, over years of field operation.

- All major fabs from 0.35 μm to 5 nm
- Temperature range from -55°C to 150°C
- Voltage supply variation +/- 20%
- Lifetime > 25 years

Deliverables

- RTL netlist (VHDL, Verilog)
- Testbench (UVM, VHDL), C model
- Design compiler synthesis constraints (tcl)
- QuiddiKey driver (C sources, headers)
- QuiddiKey register description (IP-XACT)
- Datasheet, integration manual and driver documentation
- NIST documentation (SP 800-90A/B)