

June 12, 2016

To Whom It May Concern:

Acumen Security verified that the following product faithfully embeds a FIPS 140-2 validated cryptographic module,

- IOS-XR version 6.0.1.

The software is known to operate on the following platforms:

- ASR 9922 Router with Tomahawk 100GE MACsec Module
- ASR 9912 Router with Tomahawk 100GE MACsec Module
- ASR 9904 Router with Tomahawk 100GE MACsec Module
- ASR 9010 Router with Tomahawk 100GE MACsec Module
- ASR 9006 Router with Tomahawk 100GE MACsec Module
- ASR 9001 Router
- CRS-1 Router (4 slot/8 slot/16 slot)
- NCS 5000 Series Routers
- NCS 5500 Series Routers
- NCS 1000 Series Routers
- NCS 4000 Series Routers
- NCS 6000 Series Routers

During the course of the review, Acumen Security confirmed that the following FIPS 140-2 cryptographic module is incorporated into the product,

- FIPS Object Module, Version: 6.0, cert #2505

Acumen Security confirmed that the following features leverage the **FIPS Object Module** to provide cryptographic services for, **Transport Layer Security (TLS 1.0/SSL 3.1)**, **Secure Shell (SSH v2)**, **RSA Key Generation**, and **Simple Network Management Protocol (SNMPv3)**.

The above referenced modules provide all of the cryptographic functionality for each of the services listed above, including:

- Session establishment supporting each service (TLS, SSH, SNMP),
- All underlying cryptographic algorithms supporting key derivation functions (TLS, SSH, SNMP),
- Hashing for each service (TLS, SSH, SNMP),
- Symmetric encryption (TLS, SSH, SNMP),
- Asymmetric cryptography (TLS, SSH, RSA Key Generation).

Additionally, Acumen Security confirmed that the above referenced cryptographic module is initialized in a manner consistent with the instructions provided in the non-proprietary Security Policy.

Details of the verification may be obtained from Cisco Systems, Inc. at the request of interested parties. This letter represents the independent opinions of Acumen Security and does not imply endorsement of the product by the CMVP or any other parties.

Sincerely,



Ashit Vora
Laboratory Director