

ID 101617 FAQ

Multiple Vulnerabilities discovered in 4-way handshake of WPA2 protocols - (KRACK: CVE-2017-13077, CVE-2017-13078, CVE-2017-13079, CVE-2017-13080, CVE-2017-13081, CVE-2017-13082, CVE-2017-13084, CVE-2017-13086, CVE-2017-13087, CVE-2017-13088)

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What are the issues?

Ruckus has been made aware by CERT.org of certain security vulnerabilities related to the 4-way handshake of WPA and WPA2 protocols. These vulnerabilities were discovered by independent researcher Mathy Vanhoef <Mathy.Vanhoef@cs.kuleuven.be>.

Exploitation of these vulnerabilities may ultimately allow decryption of AP-client traffic, packet replay, TCP connection hijacking, and HTTP content injection. Due to these vulnerabilities, Wi-Fi Protected Access II (WPA2) handshake traffic can be manipulated to allow nonce and session key reuse, resulting in key reinstallation on a targeted wireless access point (AP) or client. For more detail about these vulnerabilities, please refer to the the [Key Reinstallation Attacks: Forcing Nonce Reuse in WPA2](#) report. A summary of the vulnerabilities as disclosed by CERT is presented below:

CVE ID	CVE Description
CVE-2017-13077	Reinstallation of the pairwise key in the Four-way handshake
CVE-2017-13078	Reinstallation of the group key in the Four-way handshake
CVE-2017-13079	Reinstallation of the integrity group key in the Four-way handshake
CVE-2017-13080	Reinstallation of the group key in the Group Key handshake
CVE-2017-13081	Reinstallation of the integrity group key in the Group Key handshake
CVE-2017-13082	Accepting a retransmitted Fast BSS Transition Reassociation Request and reinstalling the pairwise key while processing it
CVE-2017-13084	Reinstallation of the STK key in the PeerKey handshake
CVE-2017-13086	Reinstallation of the Tunneled Direct-Link Setup (TDLS) PeerKey (TPK) key in the TDLS handshake
CVE-2017-13087	Reinstallation of the group key (GTK) when processing a Wireless Network Management (WNM) Sleep Mode Response frame
CVE-2017-13088	Reinstallation of the integrity group key (IGTK) when processing a Wireless Network Management (WNM) Sleep Mode Response frame

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What is the impact on Ruckus products?

No Ruckus products are affected unless deployed in Mesh or Point-to-Point topologies, or 802.11r is enabled.

- a) **Impact of CVE-2017-13077, CVE-2017-13078, CVE-2017-13079, CVE-2017-13080, CVE-2017-13081:** Ruckus APs are not exposed to these vulnerabilities unless deployed in Mesh or Point-to-Point topologies.
- b) **Impact of CVE-2017-13082:** Ruckus APs are not exposed to this vulnerability unless 802.11r is enabled.
- c) **Impact of CVE-2017-13084, CVE-2017-13086, CVE-2017-13087, CVE-2017-13088:** Ruckus APs are not exposed to these vulnerabilities.

CVE ID	Affected Product*	Comments
CVE-2017-13077	All Ruckus APs in Mesh P300 & 7731 Point-to-point & Point-to-multipoint	Excludes Ruckus R300, R310, and H320 and Xclaim Xi-1& Xi-2, since these models do not support Mesh
CVE-2017-13078	All Ruckus APs in Mesh P300 & 7731 Point-to-point & Point-to-multipoint	Excludes Ruckus R300, R310, and H320 and Xclaim Xi-1& Xi-2, since these models do not support Mesh
CVE-2017-13079	All Ruckus APs in Mesh P300 & 7731 Point-to-point & Point-to-multipoint	Excludes Ruckus R300, R310, and H320 and Xclaim Xi-1& Xi-2, since these models do not support Mesh
CVE-2017-13080	All Ruckus APs in Mesh P300 & 7731 Point-to-point & Point-to-multipoint	Excludes Ruckus R300, R310, and H320 and Xclaim Xi-1& Xi-2, since these models do not support Mesh
CVE-2017-13081	All Ruckus APs in Mesh P300 & 7731 Point-to-point & Point-to-multipoint	Excludes Ruckus R300, R310, and H320 and Xclaim Xi-1& Xi-2, since these models do not support Mesh
CVE-2017-13082	All Ruckus APs with 802.11r enabled	Excludes APs under SmartZone 3.2.1 and prior SmartZone releases APs managed by Ruckus Cloud are not affected Xclaim APs are not affected

*Unless otherwise noted, these products are affected under all supported software releases. Standalone releases for access points are not impacted.

Workarounds

It is possible to completely mitigate CVE-2017-13082 by disabling 802.11r. Note that 802.11r is disabled by default in Ruckus products.

For P300, 7731, and mesh deployments, configuring static channels and disabling background scanning will mitigate risk of the above mentioned CVEs being exploited, but not completely eliminate it. The nature of the Ruckus mesh implementation, in combination with rogue AP detection and remediation yields what Ruckus assesses to be an extremely low risk of exploit. Absolute remediation requires a software update.

Note that Ruckus products use CCMP for Mesh and bridging connectivity, which makes exploitation of these vulnerabilities significantly difficult, as per Section 6.1 of the [Key Reinstallation Attacks: Forcing Nonce Reuse in WPA2](#) report.

Ruckus will be releasing security patches to address all above mentioned vulnerabilities. It is recommended that customers upgrade their network(s) with these patches as soon as they become available. As they are released, these patches will be posted on Ruckus' Support site (support.ruckuswireless.com) and this security bulletin will be updated. Ruckus Cloud and

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Xclaim customers will be automatically updated once the security patches are available.

Ruckus also strongly recommends that customers upgrade the client devices on their network to releases which address these issues.

What releases will be available with fixes?

The following Ruckus releases will be patched with AP firmware fixes for the above mentioned vulnerabilities:

Platform	Release*	Supported AP Zone Firmware	Target Patch Release Date
SmartZone	3.1.2	3.1.2	Released
	3.2.1	3.1.2, 3.2.1	Released
	3.4.2	3.1.2, 3.2.1, 3.4.2	Released
	3.5.1	3.2.1, 3.4.2, 3.5.1	Released
ZoneDirector	9.7.2	N/A	Released
	9.8.3	N/A	Released
	9.9.1	N/A	Released
	9.10.2	N/A	Released
	9.12.3	N/A	Released
	9.13.3	N/A	Released
	10.0.1	N/A	Released
Unleashed	200.5	N/A	Released
P300	100.1	N/A	Released
7731	9.2.0.0.181	N/A	Released
Ruckus Cloud	17.01 build 42	N/A	Released
Xclaim	2.2.0.0.39	N/A	Released

*Please see Release Notes on Ruckus' Support site for specific release build numbers.

<https://support.ruckuswireless.com/krack-ruckus-wireless-support-resource-center>

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Document Revision History

Version	ID	Change	Date
1.0	101617	Initial Publication	October 16, 2017
1.1	101617	Xclaim & H320 details added	October 17, 2017
1.2	101617	Software Delivery targets added	October 17, 2017
1.3	101617	7731 added	October 20, 2017
1.4	101617	Changed the title to include keyword KRACK and included associated CVE-IDs	October 30, 2017
1.5	101617	Released patches for following products: SZ – (3.2.1, 3.4.2, 3.5.1) ZD – (9.13.3, 10.0.1) Unleashed – (200.5)	November 1, 2017
1.6	101617	Added the KRACK resource center link. Released patches for following products: SZ – (3.1.2) ZD – (9.10.2, 9.12.3) XClaim – (2.2.0.0.39) P300 – (100.1) Ruckus Cloud (Patch availability date changed to Nov 10)	November 7, 2017
1.7	101617	Updated target releases ZD – (9.8.3) Ruckus Cloud (Released)	November 11, 2017
1.8	101617	Released patch for ZD – 9.7.2	November 17, 2017
1.9	101617	Released patch for ZD – 9.8.3	November 27, 2017
1.10	101617	Updated target releases ZD – (9.9.1)	November 27, 2017
1.11	101617	Released patch for 7731 – 9.2.0.0.181	December 5, 2017
1.12	101617	Released patch for ZD – 9.9.1	December 21, 2017

Ruckus Support can be contacted as follows:

The full contact list is at: <https://support.ruckuswireless.com/contact-us>

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