Root DNSSEC KSK

Administrative Ceremony
Laptop Acceptance Testing

Wednesday November 14, 2018

Root Zone KSK Operator Key Management Facility
18155 Technology Drive, Culpeper, VA 22701

This ceremony is executed in accordance to the DNSSEC Practice Statement for the Root Zone KSK Operator Version 4th Edition (2016-10-01)
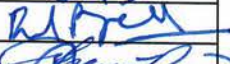
Abbreviations

AUD	= Third Party Auditor	**CA**	= Ceremony Administrator	**CO**	= Crypto Officer
EW	= External Witness	**FD**	= Flash Drive	**HSM**	= Hardware Security Module
IW	= Internal Witness	**KMF**	= Key Management Facility	**KSR**	= Key Signing Request
OP	= Operator	**PTI**	= Public Technical Identifiers	**RKSH**	= Recovery Key Share Holder
RKOS	= RZ KSK Operations Security	**RZM**	= Root Zone Maintainer	**SA**	= System Administrator
SKR	= Signed Key Response	**SMK**	= Storage Master Key	**SO**	= Security Officer
SSC	= Safe Security Controller	**SW**	= Staff Witness	**TCR**	= Trusted Community Representative
TEB	= Tamper Evident Bag (AMPAC: #GCS1013, #GCS0912, #GCS1216 or MMF Industries: #2362010N20, #2362011N20)				

Participants

Key Ceremony roles are described on https://www.iana.org/help/key-ceremony-roles
Instructions: At the end of the ceremony, participants sign IW's script. IW records the time of completion.

Title / Roles	Printed Name	Signature	Date	Time
CA	Andres Pavez / PTI	✓		
IW	David Prangnell / PTI			
IW_Backup	Shauna Royston / ICANN		2018 Nov 14	20:30
SSC1	James Cole / ICANN			
SA	Reed Quinn / ICANN			
SA	PATRICK TUDOR			

Note: By signing this script, you are declaring that this document is a true and accurate record of the Root DNSSEC KSK ceremony to the best of your knowledge.

Instructions for Root DNSSEC KSK Administrative Ceremony

The Root DNSSEC Key Signing Key (KSK) Administrative Ceremony is a scripted meeting where individuals with specific roles perform tasks related to support the operation of the Root Zone KSK. Administrative Ceremonies include all ceremonies that does not require use the private key component of the Root Zone DNSSEC KSK, such as: Enrolment or replacement of a trusted role, media deposit or extraction, equipment acceptance testing or maintenance. The process is audited by a third party firm for compliance with SOC 3 framework. The script and recordings are published online for the wider Internet community to review.

Ceremony Guidelines:

- The CA leads the ceremony
- Only CAs, IWs or SAs can enter and escort other participants into the Ceremony room
- Dual Occupancy is enforced. IW with CA or SA must remain inside the Ceremony room if participants are present in the room
- CAs, IWs or SAs may escort participants out of the Ceremony room at the CA's discretion only if the Safe room is not occupied during ceremony
- All participants are required to sign in and out of the Ceremony room using the visitor log
- The SA starts filming before the participants enter the Ceremony room
- Ceremony participants follow the script step by step
- CA reads each step aloud prior to its performance
- Upon completion of each step, IW announces the time of completion and records the completion time and initials their copy of the script
- Ceremony participants who notices a problem or an error during the ceremony should interrupt the ceremony. Ceremony participants agree on a resolution before proceeding
- Questions and suggestions for improvement are welcome and can be discussed at any time or after the ceremony during the ceremony debrief

Unplanned events (**exceptions**) during the ceremony are evaluated, documented, and acted upon. It is the CA's sole responsibility to decide on proper actions after consulting with the IW. In either case, an exception is regarded as an incident, and incident handling procedures are enacted.

Key Management Facility Tiers:

- Tiers 1-3: Consist of the facility areas between the outside environment and the Key Ceremony Room
- Tier 4: Consists of the Key Ceremony Room and is subject to dual occupancy
- Tier 5: Consists of the Safe Room (a cage inside the Key Ceremony Room) and is subject to dual occupancy
- Tier 6: Consists of Safe 1 (Equipment Safe) and Safe 2 (Credentials Safe)
- Tier 7: Consists of the HSM stored in Safe 1 (Equipment Safe) and the safe deposit boxes mounted in Safe 2 (Credentials Safe)

Some steps during the ceremony may require the participants to tell and/or confirm identifiers composed of numbers and letters. When spelling identifiers, the phonetic alphabet shown below must be used:

Character	Code Word	Pronunciation
A	Alfa	AL-FAH
B	Bravo	BRAH-VOH
C	Charlie	CHAR-LEE
D	Delta	DELL-TAH
E	Echo	ECK-OH
F	Foxtrot	FOKS-TROT
G	Golf	GOLF
H	Hotel	HOH-TEL
I	India	IN-DEE-AH
J	Juliet	JEW-LEE-ETT
K	Kilo	KEY-LOH
L	Lima	LEE-MAH
M	Mike	MIKE
N	November	NO-VEM-BER
O	Oscar	OSS-CAH
P	Papa	PAH-PAH
Q	Quebec	KEH-BECK
R	Romeo	ROW-ME-OH
S	Sierra	SEE-AIR-RAH
T	Tango	TANG-GO
U	Uniform	YOU-NEE-FORM
V	Victor	VIK-TAH
W	Whiskey	WISS-KEY
X	Xray	ECKS-RAY
Y	Yankee	YANG-KEY
Z	Zulu	ZOO-LOO
1	One	WUN
2	Two	TOO
3	Three	TREE
4	Four	FOW-ER
5	Five	FIFE
6	Six	SIX
7	Seven	SEV-EN
8	Eight	AIT
9	Nine	NIN-ER
0	Zero	ZEE-RO

Act 1. Initiate Ceremony

The CA initiates the ceremony by performing the steps below:

- Verify that the audit cameras are recording and the online video streaming is enabled
- Confirm that all the ceremony attendees have signed in on the Ceremony Room log
- Review emergency evacuation procedures
- Explain the use of personal devices and the purpose of this ceremony
- Verify the time and date so that all entries into the script follow a common timesource

Sign into the Key Ceremony Room

Step	Activity	Initials	Time
1	CA confirms with SA that all audit cameras are recording.	PPP	19:33
2	CA confirms that all participants are signed into the Ceremony Room log, then performs a roll call using the participants list on page 2.	PPP	19:34
3	CA asks that any new participants introduce themselves.	PPP	19:34

Emergency Evacuation Procedures and Electronics Policy

Step	Activity	Initials	Time
4	CA reviews the emergency evacuation procedure with onsite participants.	PPP	19:35
5	CA explains the use of personal electronic devices during ceremony.	PPP	19:35
6	CA briefly explains the purpose of the ceremony.	PPP	19:36

Verify the Time and Date

Step	Activity	Initials	Time
7	IW enters UTC date (year/month/day) and time using a reasonably accurate clock visible to all in the Ceremony Room: Date and time: 2018/11/14 19:36 :44 UTC All entries into this script or any logs should follow this common source of time.	PPP	19:36

Act 2. Laptop Acceptance Testing

The CA will perform the Laptop Acceptance Testing by executing the following steps:
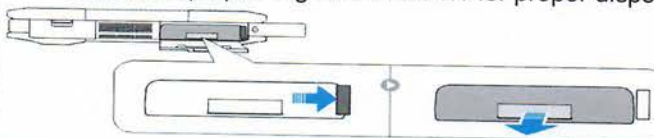
- Inspection of the laptop's boxes for package tampering
- Removal of the laptop's battery
- Execute a diagnostic tool to test and check the laptops hardware
- Configuration of the BIOS to be able to boot the laptop using a DVD
- Test the external display capability
- Store the laptops inside of Tamper Evident Bags

When the tests are finished the laptops will be stored in a Tamper Evident Bags. Then the CA and IW will escorts the SSC1 into Tier 5 (safe room) to place the laptops into the Safe 1.

Verify Chain of Custody

Step	Activity	Initials	Time
1	CA performs the following steps to unbox the new laptops. a) Read out and match the box number and Service Tag (S/N) on each boxes with the information below. b) Inspect the boxes for tamper evidence while each laptop is unpacked c) Match the Service Tag (S/N) on each laptop with the information below. d) Place the laptops and the power supplies on the ceremony table. **Box # 00009999996051510149 / Service Tag (S/N) J8SVSG2** **Box # 00009999996051510156 / Service Tag (S/N) 58SVSG2** Note: The Service Tag # and Service Tag (S/N) are the same as the Serial Number.	PPP	19:43
2	CA affixes labels on each laptop based on the information below. **Laptop3: Service Tag # J8SVSG2** **Laptop4: Service Tag # 58SVSG2** Note: The Service Tag # and Service Tag (S/N) are the same as the Serial Number.	PPP	19:44

Remove Laptop3 Components

Step	Activity	Initials	Time
3	CA performs the following steps to remove the battery from the Laptop: a) Open the latch on the left side of the laptop to reveal the battery. b) Push and hold the battery release button, then remove the battery from the laptop and give it to the IW for proper disposal.	PPP	19:45
4	CA opens the latch on the right side of the laptop to confirm that the hard drive slot is empty.	PPP	19:46

Test Laptop3 and Configure BIOS

Step	Activity	Initials	Time
5	CA performs the following steps to test the laptop hardware: a) Connect the power supply, then turn ON the laptop. b) Press **F12** when the Dell logo is displayed. c) Select **Diagnostics** on the boot menu screen. **Note: The diagnostics tool will perform tests for approximately 10 minutes. The CA must intervene on the pop-up messages to continue with the testing.** d) Click OK on the alert message box when testing is complete. e) Click the arrow on the bottom right of the screen to display the summary page. f) Click the **Results** tab to display the results. g) Click **Exit** on the top right of the screen to exit and reboot the laptop. **Note: The next step must be performed immediately once the Dell Logo is displayed.**	*VPP*	19:51
6	CA configures the BIOS by pressing **F2** when the Dell logo is displayed.	*VPP*	19:51
7	CA performs the following steps to update BIOS settings: a) Expand the **Secure Boot** settings. b) Click the **Secure Boot Enable**. c) Select **Disabled**, then accept the warning message box displayed. d) Select **Advanced Boot Options** under **General** settings. e) Place a check mark on the **Enable Legacy Option ROMs**. f) Click the **Apply** button, then click **OK** on the message box. g) Select **Boot Sequence** under **General** settings. h) Select **Legacy** under **Boot List Option**. i) Click the **Apply** button, then click **OK** on the message box. j) Click the **Exit** button to exit and reboot the laptop. k) Press **F2** when the Dell logo is displayed. l) Select **Boot Sequence** under **General** settings. m) Remove the check mark from *Diskette Drive and Internal HDD.* n) Click **CD/DVD/CD-RW Drive**, then click the up arrow. o) Click the **Apply** button, then click **OK** on the message box. p) Select **Date/Time** under **General** settings. q) Change the date and time and use the ceremony clock as reference r) Click the **Exit** button to exit and reboot the laptop. s) Disconnect the power supply from the laptop.	*VPP*	19:55

Root DNSSEC Script Exception

Exception Details

Step	Activity	Initials	Time
1.	IW writes the details of the ceremony exception: Act: _2_ Step(s): _8_ Page(s): _8 oF 14_ Date and Time: _2018/11/14_ 19:56	DW	19:59
2.	IW describes the exception(s) and action(s) below.	DPP	20:01

Step 8 was run 2 times because the external display did not work the first time. The second time it worked fine. The cable was not seated well the first time.

Boot Laptop3 and Test External Display Capability

Step	Activity	Initials	Time
8	CA performs the following steps to boot the laptop: a) Connect the external display. b) Connect the power supply. c) Immediately insert the **OS DVD COEN version 0.4.0** after the laptop power is switched ON.	*PPP*	19:56
9	CA confirms that the laptop is booted properly if the command prompt is displayed and the external display works. **Note: The boot process may take up to 2 minutes.**	*PPP*	20:01 ✱ Exception 1
10	CA performs the following steps to switch OFF the laptop and remove the OS DVD: a) Remove the **OS DVD COEN version 0.4.0** from the laptop ✓ b) Turn OFF the laptop by pressing and holding the power switch button. ✓ c) Disconnect all connections from the laptop including power and display. ✓	*PPP*	20:02

Place Laptop3 in the TEB

Step	Activity	Initials	Time
11	CA places the laptop into a prepared TEB, then seals it.	*PPP*	20:03
12	CA performs the following steps to verify the TEB: a) Read out the TEB number and laptop service tag, then show it to the audit camera above for participants to see. b) Confirm with IW that the TEB number and laptop service tag matches with the information below. c) Initial the TEB with IW using a ballpoint pen. d) Give IW the sealing strips for later inventory. e) Place the Laptop TEB on the cart. **Laptop3: TEB # BB81420092 / Service Tag # J8SVSG2**	*PPP*	20:04

Remove Laptop4 Components

Step	Activity	Initials	Time
13	CA performs the following steps to remove the battery from the Laptop: a) Open the latch on the left side of the laptop to reveal the battery. b) Push and hold the battery release button, then remove the battery from the laptop and give it to the IW for proper disposal.	*PPP*	20:06
14	CA opens the latch on the right side of the laptop to confirm that the hard drive slot is empty.	*PPP*	20:06

Test Laptop4 and Configure BIOS

Step	Activity	Initials	Time
15	CA performs the following steps to test the laptop hardware: a) Connect the power supply, then turn ON the laptop. b) Press **F12** when the Dell logo is displayed. c) Select **Diagnostics** on the boot menu screen. **Note: The diagnostics tool will perform tests for approximately 10 minutes.** **The CA must intervene on the pop-up messages to continue with the testing.** d) Click OK on the alert message box when testing is complete. e) Click the arrow on the bottom right of the screen to display the summary page. f) Click the **Results** tab to display the results. g) Click **Exit** on the top right of the screen to exit and reboot the laptop. **Note: The next step must be performed immediately once the Dell Logo is displayed.**	*DPP*	20:11
16	CA configures the BIOS by pressing **F2** when the Dell logo is displayed.	*DPP*	20:11
17	CA performs the following steps to update BIOS settings: a) Expand the **Secure Boot** settings. b) Click the **Secure Boot Enable**. c) Select **Disabled**, then accept the warning message box displayed. d) Select **Advanced Boot Options** under **General** settings. e) Place a check mark on the **Enable Legacy Option ROMs**. f) Click the **Apply** button, then click **OK** on the message box. g) Select **Boot Sequence** under **General** settings. h) Select **Legacy** under **Boot List Option**. i) Click the **Apply** button, then click **OK** on the message box. j) Click the **Exit** button to exit and reboot the laptop. k) Press **F2** when the Dell logo is displayed. l) Select **Boot Sequence** under **General** settings. m) Remove the check mark from *Diskette Drive and Internal HDD.* n) Click **CD/DVD/CD-RW Drive**, then click the up arrow. o) Click the **Apply** button, then click **OK** on the message box. p) Select **Date/Time** under **General** settings. q) Change the date and time and use the ceremony clock as reference r) Click the **Exit** button to exit and reboot the laptop. s) Disconnect the power supply from the laptop.	*DPP*	20:13

Boot Laptop4 and Test External Display Capability

Step	Activity	Initials	Time
18	CA performs the following steps to boot the laptop: a) Connect the external display. b) Connect the power supply. c) Immediately insert the **OS DVD COEN version 0.4.0** after the laptop power is switched ON.	PPP	20:14
19	CA confirms that the laptop is booted properly if the command prompt is displayed and the external display works. **Note: The boot process may take up to 2 minues.**	PPl	20:14
20	CA performs the following steps to switch OFF the laptop and remove the OS DVD: a) Remove the **OS DVD COEN version 0.4.0** from the laptop b) Turn OFF the laptop by pressing and holding the power switch button. c) Disconnect all connections from the laptop including power and display.	PPP	20:16

Place Laptop4 in the TEB

Step	Activity	Initials	Time
21	CA places the laptop into a prepared TEB, then seals it.	PPP	20:18
22	CA performs the following steps to verify the TEB: a) Read out the TEB number and laptop service tag, then show it to the audit camera above for participants to see. b) Confirm with IW that the TEB number and laptop service tag matches with the information below. c) Initial the TEB with IW using a ballpoint pen. d) Give IW the sealing strips for later inventory. e) Place the Laptop TEB on the cart. **Laptop4: TEB # BB81420093 / Service Tag # 58SVSG2**	PPP	20:19

Open Equipment Safe #1

Step	Activity	Initials	Time
23	CA and IW brings a cart and escorts SSC1 into the Safe Room.	DPP	20:20
24	SSC1 opens Safe #1 while shielding the combination from the camera.	PPP	20:21
25	Perform the following steps to complete the safe log: a) SSC1 takes out the existing safe log, then shows the most recent page to the audit camera. b) IW provides the pre-printed safe log to SSC1. c) SSC1 writes the date, time and signature on the safe log where "Open Safe" is indicated. d) IW verifies this entry then initials it.	PPP	20:25
26	CA performs the following steps to place each Laptop into the Safe: a) CAREFULLY remove the equipment TEB from the cart. b) Read out the TEB number while showing it to the audit camera above, then place it inside Safe #1 c) Write the date, time and signature on the safe log where **"Place"** is indicated. d) IW verifies the safe log entry, then initials it. **Laptop3: TEB # BB81420092 / Service Tag # J8SVSG2**✓ **Laptop4: TEB # BB81420093 / Service Tag # 58SVSG2**✓	DPP	20:25

Close Equipment Safe #1

Step	Activity	Initials	Time
27	SSC1 writes the date, time and signature on the safe log where Close Safe is indicated. IW verifies the entry, then initials it.	DPP	20:26
28	SSC1 returns the safe log back in the Safe #1 and locks it (spin dial at least two full revolutions each way, counter clock wise then clock wise). CA and IW verifies that the safe is locked and the "WAIT" light indicator is off.	IW	20:26
29	CA, IW and SSC1 leaves the safe room with the cart, closing the door behind them.	DPP	20:27

Act 3. Close the Administrative Ceremony

The CA will finish the ceremony by:

- Reading any exceptions that may have occurred during the ceremony
- Calling the ceremony participants to sign the IW's script
- Stopping the video recording
- Ensuring that all participants are signed out of the ceremony room log and escorted out of the ceremony room
- Preparing the audit bundle materials

Participants Signing of IW's Script

Step	Activity	Initials	Time
1	CA reads the exceptions that may have occurred during the ceremony.	DPP	20:28
2	CA calls each attendee on the participants list to proceed to the ceremony table and **sign the participants list on IW's script. All signatures declare that this script is a true and accurate record of the ceremony.** IW records the completion time once all participants have signed the list.	DPP	20:30
3	CA reviews the IW's script, signs the participants list, then closes the administrative ceremony.	DPP	20:30

Stop Video Recording and Sign Out of Ceremony Room

Step	Activity	Initials	Time
4	CA and IW stops the video recording.	DPP	20:31
5	CA and IW ensures that all participants are signed out of the Ceremony Room log and escorted out of the Ceremony Room.	DPP	20:31

Bundle Audit Materials

Step	Activity	Initials	Time
6	IW makes 1 copy of his/her script for off-site audit bundle. Each Audit bundle contains: a) Copy of IW's administrative ceremony script. b) Audio-visual recording. c) IW's attestation (Appendix B). All TEBs are labeled **Root DNSSEC Administrative Ceremony Laptop Acceptance Testing**, dated and signed by IW and CA. An off-site audit bundle is delivered to an off-site storage.	JPP	21:12

Appendix A. Audit Bundle Checklist

A.1. Administrative Ceremony Script (by IW)

Hard copies of the IW's administrative ceremony script, including notes and attestation. See Appendix B.

A.2. Audio-Visual Recordings from the Administrative Ceremony (by SA)

One set for the audit bundle.

A.3. Other items

If applicable.

Appendix B. Administrative Ceremony Script (by IW)

I hereby attest that the Administrative Ceremony was conducted in accordance to this script. Any exceptions that may have occurred, were accurately and properly documented.

IW: _____ DAVID PRANGNELL

Signature: _____

Date: 2018 Nov 14