Tool Delivery Review

DarkSeaSkies
V1.0

EDG Project Lead:

IV&V Lead:

COG Point of Contact:

Agenda

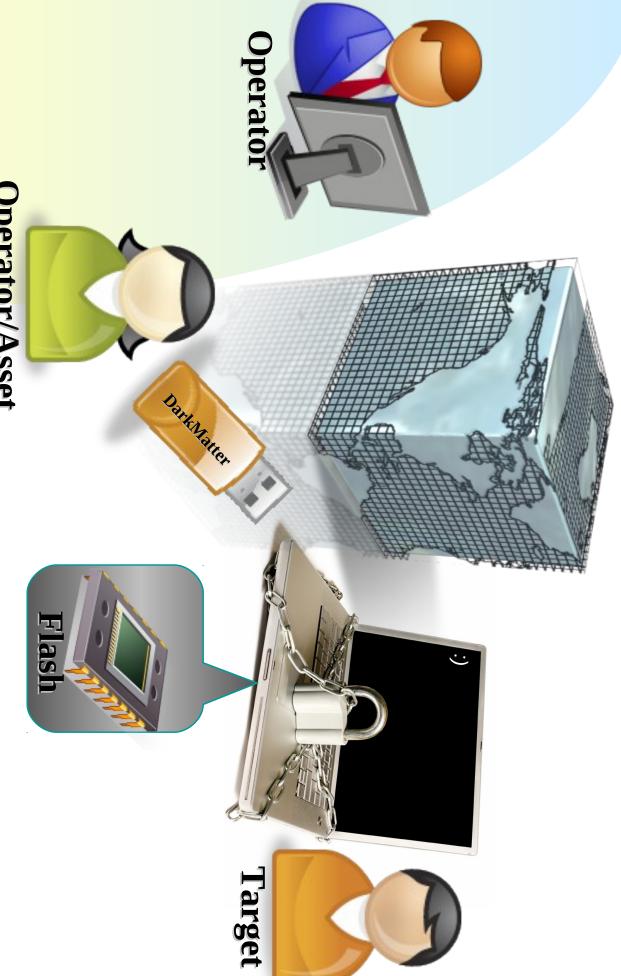| **Subject**	**Briefer**
☐ Requirements	▽ ███████ (Project Lead)
☐ Concept of Operations	
☐ Capabilities and Limitations	
☐ Issues (Operational Noteworthies)	
☐ IV&V Overview	▽ ██████ (IV&V)
☐ Product Support	▽ ███████ (Project Lead)
☐ Certification	

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Requirements

- ☐ Requirement # 2009-0247
- ☐ Provide persistence (DarkMatter), process and file hiding (SeaPea), and a beacon (NightSkies), integrated onto a MacBook Air with current Mac OSX
  - ☐ NightSkies shall support the Macbook Air using Mac OSX 10.5.x
  - ☐ NightSkies shall be compatible with DarkMatter persistence and kernel patching tool
  - ☐ DarkMatter shall have the capability to disable itself after a configurable amount of time
  - ☐ DarkMatter shall have the capability of removing its payload from the EFI of the MacBook Air
  - ☐ NightSkies shall be compatible with SeaPea rootkit
  - ☐ NightSkies shall support the following implant features:
    - ☐ Beaconing to a listening post (LP)
    - ☐ Command receipt and execution from a LP
    - ☐ File transfer to and from the LP
    - ☐ Program file execution on the MacBook Air
    - ☐ Delay after browser starts to beacon
  - ☐ The tool shall be packaged manually, according to the parameters to be provided by COG

Concept of Operations

Operator

Operator/Asset

DarkMatter

Flash

Target

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Capabilities and Limitations

Supported Target:
- MacBook Air 1,1
- Mac OSX 10.5.2-6
- MBA11.00BB.B03

- Requires physical access for installation
- Persists in EFI firmware (cannot persist over firmware update)
- Delayed operation
- Self-delete to avoid forensic examination
- Delivers *SeaPea*: Mac OSX kernel-space implant
  - Provides privileged execution
  - Hides user-space implants
- Delivers *NightSkies*: Mac OSX user-space implant
  - Beacon + Command & Control
  - Masquerades as standard HTTP protocol for communications
  - Uses XXTEA block encryption to provide secure communications
  - Hidden & encrypted configuration stored in NVRAM variable

IV&V Overview

- DarkSeaSkies was tested in accordance with the provided User Requirements (2009-0247).
- The test environment consisted of the following hardware :
  - MacBook Air with the most recent BIOS (MBA11.00BB.B03)
- The test environment consisted of the following software:
  - OSX versions 10.5.2 through 10.5.6
- Thumb drive successfully installs DarkMatter to the EFI and proceeds to launch the SeaPea rootkit with the Nightskies payload.
- DarkSeaSkies was able to survive continuous reboots, upgrades of the OS, and clean installs of the OS.

IV&V Overview (cont.)

- Nightskies beacons to the LP after the tool reaches its beacon interval and then Safari or Firefox surfs to a web page. Then it; received files, sent files, and executed files on the target based on the Listening Post (LP) instructions

- Nightskies, it's files, and it's processes are hidden from users and from root.

- DarkSeaSkies removed itself automatically when several conditions were met:
  - When the target had not been able to reach the LP for 180 days.
  - When it booted to another OS five times in a row.
  - If it had a kernel panic three times in a row.
  - If the nvram status variable was set to either a 1 or a 5.

IV&V Overview (cont.)

- DarkSeaSkies removed itself from the EFI and memory after it removal commands had been performed.

  - The only thing left on the EFI after removal are two values: status and count. Even though they are in a deleted state they are still able to be seen until they're overwritten with new data.

IV&V Findings

CONTEXT	IMPACTS	WORK AROUND OR MITIGATION	RECOMMENDATION
None			

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IV&V Observations

- **Install Time** – From the target system powered of the tool can be installed in less than 29 seconds. It takes roughly 23 seconds to get to where you can choose the thumb drive as the boot device and 6 seconds for the tool to install and power off the machine.

- **Clock Considerations** – If the target…
  - Advances the clock by 180 days then the tool will un-install.
  - Sets the clock back by (x) amount of time then the tool will not beacon again for (x) amount of time.

Product Support

- Operator Training
  - Operators will be trained at their convenience.
- Tool and Project Documentation
  - DarkSeaSkies 1.0 CONOP_Rev New_2009-01-26.doc
  - DarkSeaSkies 1.0 URD_Rev New_2009-01-26.doc
  - DarkSeaSkies 1.0 User Manual_Rev New_2009-01-26.doc
  - DarkSeaSkies v1.0_Test Plan Procedures_Rev New_2009-01-26.doc
  - DarkSeaSkies v1.0 TDR_Rev New_2009-01-26.ppt
  - UserGuide_SeaPea_2_0.pdf
  - Night Skies v1.1Test Plan and Test Procedures.doc
  - NightSkies v1.1 CONOPS.doc
  - NightSkies v1.1 User Requirements Document.doc
  - NightSkies v1.2 User Guide

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Certification

- Discussion and Decision
- Recap of Assigned Actions