Homeland Security
Science and Technology

Summary

U.S. Department of Homeland Security
SAVER
System Assessment and Validation for Emergency Responders

The U.S. Department of Homeland Security (DHS) established the System Assessment and Validation for Emergency Responders (SAVER) Program to assist emergency responders making procurement decisions.

Located within the Science and Technology Directorate (S&T) of DHS, the SAVER Program conducts objective assessments and validations on commercial equipment and systems, and provides those results along with other relevant equipment information to the emergency response community in an operationally useful form. SAVER provides information on equipment that falls within the categories listed in the DHS Authorized Equipment List (AEL).

The SAVER Program is supported by a network of technical agents who perform assessment and validation activities. Further, SAVER focuses primarily on two main questions for the emergency responder community: “What equipment is available?” and “How does it perform?”

For more information on this and other technologies, contact the SAVER Program Support Office.

RKB/SAVER Telephone: 877-336-2752
E-mail: saver@dhs.gov
Website: https://www.rkb.us/saver

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Mobile Device Data Extraction Systems

(AEL reference number 13LE-00-SURV)

Mobile device data extraction systems may be used by emergency responders to support various types of investigations and analyses. Data extraction systems extract information—contact lists, call logs, text messages, etc.—from mobile devices such as cell phones, smart phones, global positioning system-based navigation devices, and tablet computers. Data extraction systems can extract files and directories that can be accessed by the user of the mobile device as well as files and directories that have been deleted or are unseen by the user.

In order to provide emergency responders with information on currently available data extraction systems, the Space and Naval Warfare Systems Center (SPAWARSYSCEN) Atlantic conducted a comparative assessment of data extraction systems for the System Assessment and Validation for Emergency Responders (SAVER) Program in June 2011. Detailed findings are provided in the *Mobile Device Data Extraction Systems Assessment Report*, which is available by request at https://www.rkb.us/saver.

Assessment Methodology

Prior to the assessment, seven emergency responders with strong law enforcement backgrounds were chosen from various jurisdictions to participate in a focus group. Each member of the group was an experienced user of data extraction systems for law enforcement. The group identified evaluation criteria and recommended product selection criteria and possible scenarios for assessment.

After identifying evaluation criteria, the focus group assigned each criterion to one of five SAVER categories, and then assigned a weight for its level of importance. Once the criteria were weighted, the five SAVER categories were assigned a percentage value to represent the level of each category’s importance relative to the other categories.

Based on focus group recommendations and market research, the following data extraction systems—each with the ability to extract data on all three major types of cellular networks—were selected for assessment:

- UFED® Ruggedized Kit with Physical Pro Upgrade, Cellebrite;
- Secure View 3, Susteen;
- Deployable Device Seizure Mobile Kit, Paraben; and
- CellDEK®, Logicube.

SAVER Category Definitions

Affordability groups criteria related to life-cycle costs of a piece of equipment or system.

Capability groups criteria related to the power, capacity, or features available for a piece of equipment or system to perform or assist the responder in performing one or more relevant tasks.

Deployability groups criteria related to the movement, installation, or implementation of a piece of equipment or system by responders at the site of its intended use.

Maintainability groups criteria related to the maintenance and restoration of a piece of equipment or system to operational condition by responders.

Usability groups criteria related to the quality of the responders' experience with the operational employment of a piece of equipment or system. This includes the relative ease of use, efficiency, and overall satisfaction of the responders with the equipment or system.

Six responders served as evaluators for this assessment. All evaluators had at least 6 years of law enforcement experience. During the assessment, the evaluators rated the data extraction systems based on evaluation criteria established by the focus group. The assessment was separated into two phases: the specification assessment and the operational assessment. Evaluators assessed the systems based on vendor-provided information during the specification assessment. Hands-on experience extracting data including videos, photos, and text messages from various mobile devices served as the basis for the operational assessment. During the operational assessment, two smart phones (one BlackBerry® and one iPhone®), three feature phones (one Motorola® and two Samsung®), and one Garmin® mobile navigation unit were used as target devices; the five mobile phones covered the three major types of cellular networks. No personal phones, messages, or data were used in the assessment.

Assessment Results

Table 1 displays the composite assessment scores as well as the category scores for each data extraction system. Higher scores indicate a higher rating by evaluators. The advantages and disadvantages of each data extraction system, as identified by evaluators, are listed in table 2. To view how each data extraction system scored against the evaluation criteria assigned to the SAVER categories, see table 3. For system specifications, see table 4.

All four systems extracted contact lists, call logs, and text messages from mobile phones, SIM (subscriber identity module) cards, and removable memory. Some systems provided more complete extractions than others. In spite of the fact that the assessed products received a wide range of scores, the evaluators noted that extracting data typically requires more than one data extraction system to extract all of the data from any given mobile device. Additionally, evaluators found that even the systems that were easiest to use required operator experience in order to maximize their value to investigators/analysts.

Emergency responder agencies that may be considering the purchase of a data extraction system should review the detailed findings in the *Mobile Device Data Extraction Systems Assessment Report* and carefully consider each system's overall capabilities and limitations in relation to their jurisdiction's operational needs. All reports in this series, as well as reports on other technologies, are available in the SAVER section of the Responder Knowledge Base (RKB) website at https://www.rkb.us/saver.

Table 1. Mobile Device Data Extraction System Assessment Results

System	Composite Score	Affordability (12% Weighting)	Capability (35% Weighting)	Deployability (12% Weighting)	Maintainability (25% Weighting)	Usability (16% Weighting)
UFED® Ruggedized Kit with Physical Pro Upgrade	**4.3**	4.1	4.4	4.4	4.5	3.9
Secure View 3	**4.0**	4.1	3.4	4.5	4.3	4.1
Deployable Device Seizure Mobile Kit	**3.4**	4.3	2.8	3.7	3.8	2.8
CellDEK®	**2.7**	1.2	3.3	3.7	2.3	2.4

Table 2. Mobile Device Data Extraction System Advantages and Disadvantages

System		Advantages	Disadvantages
	UFED® Ruggedized Kit with Physical Pro Upgrade Composite Score: 4.3	• Produces easy-to-read reports • Many connectivity options • Easy-to-use interface • Warranty covers entire product	• Cost of Physical Pro upgrade ($4,500) • No vendor-provided training (only third party)
	Secure View 3 Composite Score: 4.0	• Easy to use, simple, and straightforward menu options • Clearly marked, color-coded cables are easy to find • Reports are well organized and categorized	• Does not extract deleted information • Does not have the ability to clone SIM (subscriber identity module) cards
	Deployable Device Seizure Mobile Kit Composite Score: 3.4	• Variety of card readers • Low recurring costs ($580/year) • Multiple export options and ability to link reports	• Has difficulty cloning SIM cards • Unable to extract deleted information from any of the mobile devices used in the assessment
	CellDEK® Composite Score: 2.7	• Built-in SIM card reader • Reports are presented in an easy-to-read and well thought out manner	• Sporadic customer service • High initial cost considering no training is provided • Did not support Android™ devices

Table 3. Mobile Device Data Extraction System Criteria Ratings[1]

KEY Least Favorable → Most Favorable ○ ◔ ◑ ◕ ●	 UFED® Ruggedized with Physical Pro Upgrade	 Secure View 3	 Deployable Device Seizure Mobile Kit	 CellDEK®
Affordability				
Recurring costs	◑	◕	●	○
Warranty	●	◕	◕	○
Initial cost	◕	◕	◕	◔
Extended warranty	●	◕	●	○
Capability				
Number of phones	●	◕	◑	◑
Data extraction thoroughness	●	◕	◑	◑
SIM (subscriber identity module) cards	◕	◑	◔	◕
Removable memory	●	◕	◕	◕
Reports	●	◕	◑	◕
Allocated space recovery	◕	○	◔	◑
Data export	●	◕	◕	◑
PIN (personal identification number) bypass	◕	◑	◔	○
Additional supported devices	◕	◑	◕	◑
Integrated device charging	●	●	●	◕
SIM cloning	◕	○	○	◕
Connectivity	●	◕	◑	◑
Operating system	◕	●	◕	◑
Deployability				
Portability	◕	●	◕	◕
Power options	●	◕	◕	◕
Product packaging	◕	●	◑	◕
Maintainability				
Updates	●	◕	◕	◔
Upgradability	●	◕	◑	◑
Usability				
Ease of use	●	●	◑	◕
Customer service	◕	◕	◑	◔
Training requirements	◕	◕	◑	◔
Training methods	◑	◕	◔	○

Note:

[1] Averaged criteria ratings for each assessed product are graphically represented by colored and shaded circles. Highest ratings are represented by full green circles.

Table 4. Mobile Device Data Extraction System Specifications[1]

Specifications	UFED® Ruggedized with Physical Pro Upgrade	Secure View 3	Deployable Device Seizure Mobile Kit	CellDEK®
Initial cost[2]	$10,998	$3,645	$3,295	$7,499
Number of supported phones	3,000	3,000	4,000	2,080
Networks covered	CDMA GSM TDMA	CDMA GSM TDMA	CDMA GSM TDMA	CDMA GSM TDMA
Read SIM (subscriber identity module) cards	✓	✓	✓	✓
Clone SIM cards	✓		✓	
Extract deleted information	✓		✓	✓

Notes:

[1] Information was provided by manufacturers and has not been independently verified by the SAVER Program.
[2] As tested.

CDMA	=	code division multiple access
GSM	=	global system for mobile communications
TDMA	=	time division multiple access