

Exhibit 22

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Devices for Sales environment

Exhibit 23

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Emulator's

Tuesday, July 10, 2018 1:29 PM

Emulators environment installation

1. Most recent Orchestrator files are being uploaded to <https://cloud2cloud.org/index.php/s/VGavOl2Irl1iipg>
2. Installation from scratch



Heaven
Credentials...



Heaven WIS
Emulators...



WIS-EMULAS
TORS (CU...

Installation flow:

1. Configure new WIS-EMULATORS vlan (227) - described in Heaven WIS Emulators deployment procedure document
2. Deploy WIS-MNG server from OVF. Suggested OVF already includes Frida, DHCP, ADB and old Orchestrator files and corresponding Python environment .
<https://cloud2cloud.org/index.php/s/Wn9rGGu2fUhekVO> (Global#1)
One should adapt the machine to the customer network:
 - a. Change IP addresses on ens160 and ens192
 - b. Change DHCP networking to customer layout
3. Deploy Emulator VM's as described in Heaven Credentials document
4. Prepare DHCP configuration with new MAC addresses from previously

ADB goodies:

1. Add contacts

- adb shell

● Press "Keep Local" on the emulator UI

● input keyevent 3

2. Check whatsapp version

adb shell dumpsys package com.whatsapp | grep versionName

Create contact

You can use this workaround on "mouse-less" ESX 6.5 platforms to create initial whatsapp conversation.

Use this command on A device and vice versa on B device:

[REDACTED]

Run Frida manually:

This know-how is useful during SIM's activation on Orchestrator v.4 and above .

[REDACTED]

Run Frida:

[REDACTED]

Whatsapp apk upgrade on Emulators



wa_emu_u
pgrade

This procedure comes to address soon to be obsolete WhatsApp application on the Emulators and will install new [2.18.191](#) version.

The procedure assumes that previous Orchestrator version is already running with new config file layout (includes phone numbers).
In case of an old layout, please make sure to set the config according the attached template.

*Make sure files and whatsapp_orchestrator folder and its content is owned by wis-mng user and not root

Step 1 – Reset Emulators

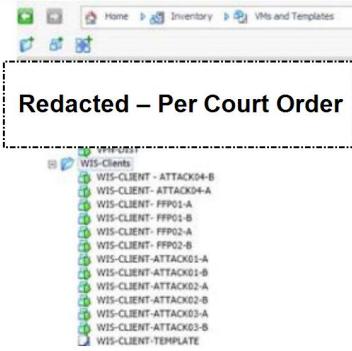
1. Connect to WIS-MNG via ssh

a. [REDACTED]

2. Connect to MNG server

3. Open Vsphere client

4. Change view to “Inventory”-> “VM’s and Templates”



5. Tap on the WIS-Clients folder and choose “Virtual Machines” tab

6. Select all Emulators except template and then Right Click->Power ->Reset

Step 2 – Upgrade WhatsApp application on the Emulators

7. Connect to WIS-MNG

8. Make new temporary folder (a working directory from now on)

9. Upload attached zip file to the newly created folder

10. Unzip wa_emu_upgrade.zip

11. Make upgrade script executable

12. Edit query_database.py

Update Password and IP inside of the file to the correct credentials of the WIS-MNG

13. Run upgrade procedure (will take considerably long time)

[REDACTED]

Step 3 – Reset Emulators

Repeat instructions from Step 1

Step 4 – Validation

14. [REDACTED]

15. [REDACTED]

Update new credentials

- a. Connect to PS DB
- b. Update new by running

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Pegasus 3

Introduction

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Objectives

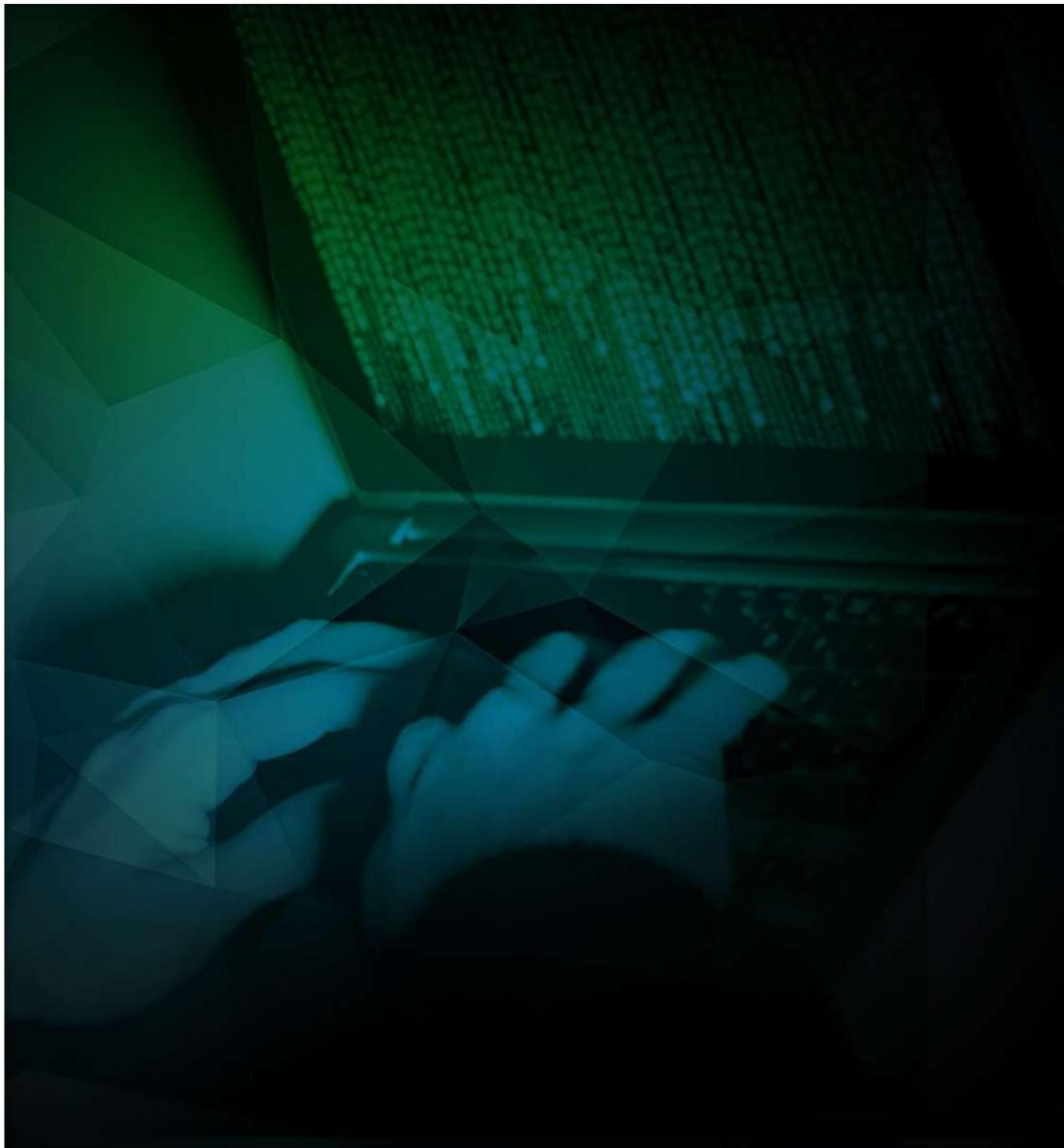


The goal of this lesson is to provide a clear understanding of:

- System functionality and value
- Pegasus operational workflow
- System modules

Smartphone interception challenges

- Abundance of encrypted IP-based applications and evolving security layers
- Target awareness
 - Masking
 - SIM replacements
- Accessing phone data—the type not sent over networks; e.g., contact lists, images
- Targets that travel frequently



Pegasus solution

Pegasus enables law enforcement and intelligence agencies to **remotely** and **covertly** collect and extract valuable intelligence from mobile devices



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Collectable data

Communication

Call log, Call recording, messages (SMS, [Redacted – Export Controlled], IM, USSD, secured IM, [Redacted – Export Controlled]), Emails (including attachments)

Personal

Calendar, contacts, browsing history, files (Directory list, images/audio/video files), Wi-Fi credentials

Commands

Camera snapshots (front and back), selfie, device screenshots, environmental recording

Location

Cell-ID and GPS locations

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Intelligence data functions

Historical data

Live data

Commands

Extraction of data saved on a device prior to installation

Automatic, real-time, collection of new data from a target's device from the moment of installation

Activation of device resources upon request in order to close information gaps

- Front & back cameras
- Microphone
- GPS
- Files



Supported Platforms

Platform	OS Version	Browser Version	Devices
Redacted – Export Controlled			
Android	4.4.2 – 8.1	Chrome v.52 – v.72 Native browser	<ul style="list-style-type: none">• Supported devices list: Samsung, LG, Huawei, Sony, HTC, OnePlus• A broad range of Android devices (64-bit and 32 bit) running OS versions 5.0 to 8.1

Agent persistency



	Description	Android	
REBOOT	The installed collection tool survives device reboot (restart / turn off / battery drain)	✓ Only for specific 32bit-based devices (Survive factory reset as well)	Redacted – Export Controlled

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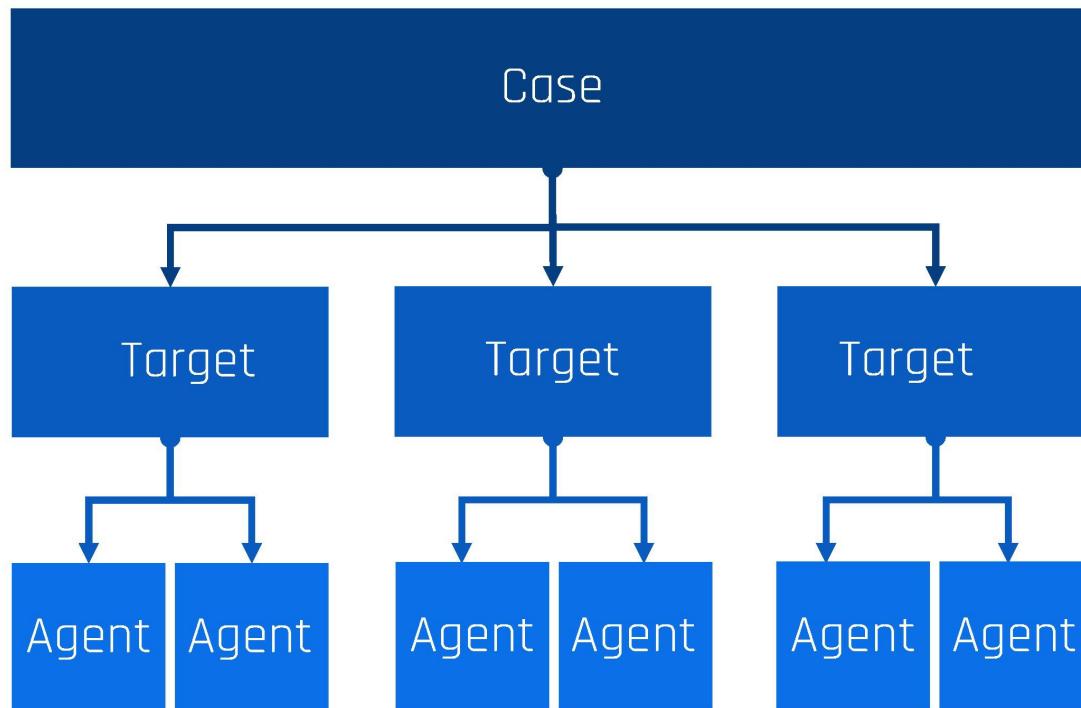
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Mission hierarchies

Users are granted permissions based on their cases



Investigation of a key intelligence topic



Entity that can provide valuable information

- Contributes towards a full data picture



Software-based component :

- Resides on an endpoint device (source)
- Collects data from the monitored source



But, what happens if

- Target does not use a smartphone
- Target frequently changes his phone
- Target's phone number is unknown
- Target is highly aware and alert



Close-circle infection



Benefits of the Pegasus solution

- **Unnoticeable by the target** - Minimal battery, memory, and data consumption
- **Encrypted and anonymized** communications between the agent and the servers
- Password, face recognition, pattern, and fingerprint-protected devices—these features don't affect installation
- **SIM replacement** is not a factor
- **Collection buffer**—goes into effect when exfiltration is not currently possible; e.g., low battery and/or no connection
- OPSEC uninstall mechanism

Introducing the Pegasus UI

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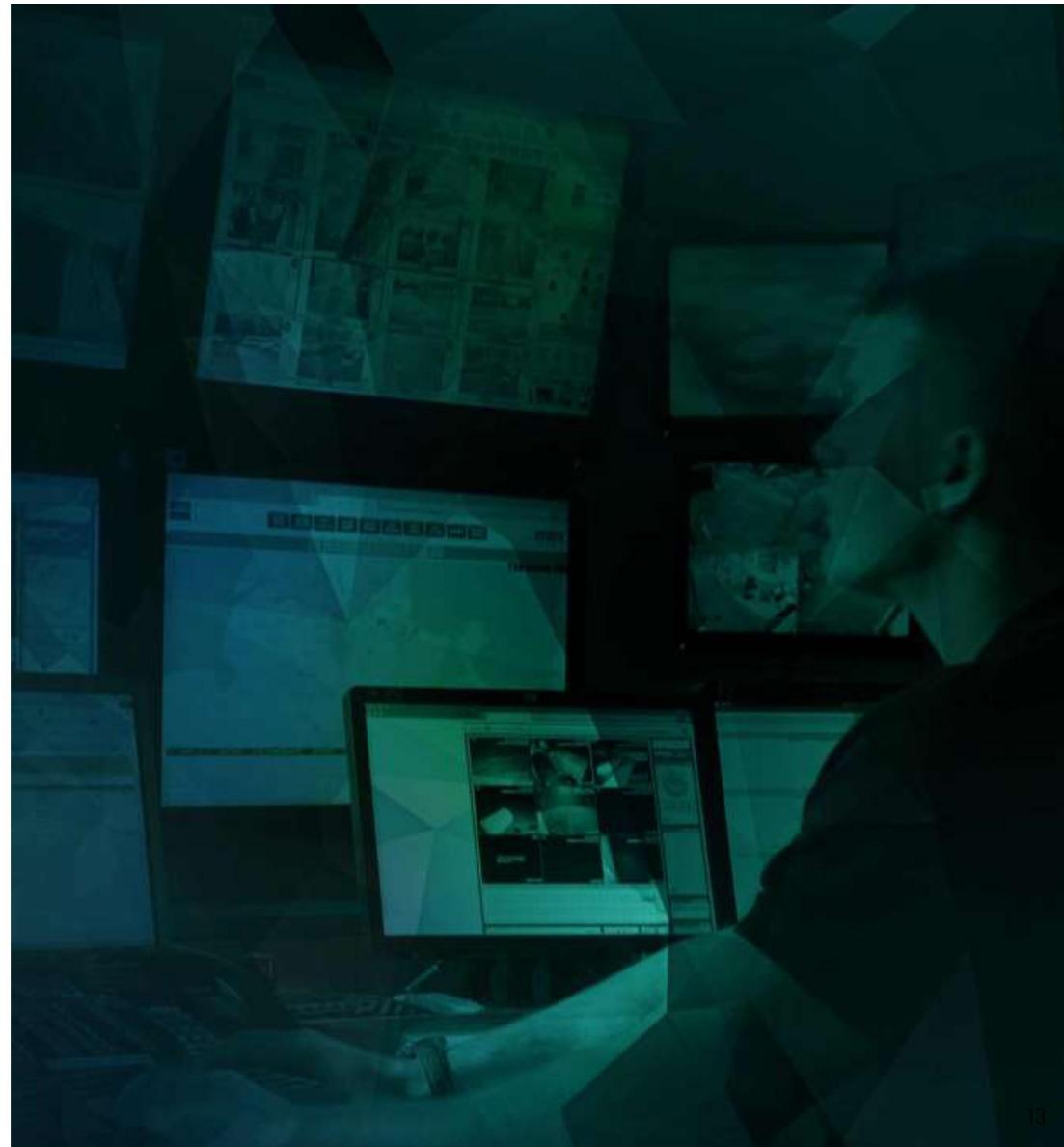


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Installation module

Installing the agent is the most critical phase in your intelligence operation

Each installation needs to be carefully planned to ensure success



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Installation module



- New installations
- Attempts
- Targets
- Agent templates

A screenshot of a software application window titled "Installations". The window has a dark theme with a grid background. At the top, there are tabs for "INSTALLATIONS", "INVESTIGATE", "CASES", and "COMMAND". Below the tabs, there is a large button labeled "NEW INSTALLATION" with a plus sign icon. Underneath the button, there are three tabs: "Attempts", "Targets" (which is underlined in blue), and "Agent templates". Below these tabs are dropdown menus for "All targets", "Last communication", and "Operating system". A large redacted area covers the main content of the screen, with the word "Redacted – PII" displayed in large black letters. The bottom right corner of the window contains the text "NSO_WHATSAPP_00008768".

Redacted – PII

NSO_WHATSAPP_00008768



Installation methods

Installation is initiated when target's device accesses the installation server, using one of the following methods:

Covert

0 Click

Triggered
Social Engineering

1 Click

Applications
Social Engineering

1 Click

Redacted – Export Controlled

Android 5.0 – 8.1

Android 4.4.2 – 8.1

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- Android
 - Line
 - IMO
 - Viber
 - Odnoklassniki
 - KakaoTalk
 - Vkontakte
 - Signal

Cases module

Organize and manage targets

Targets are set up in cases according to
your agency's key intelligence topics (KIT)



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Cases module



INSTALLATIONS INVESTIGATE 18 CASES COMMANDS



← | Hidden princess (12)

Search

EDIT CASE

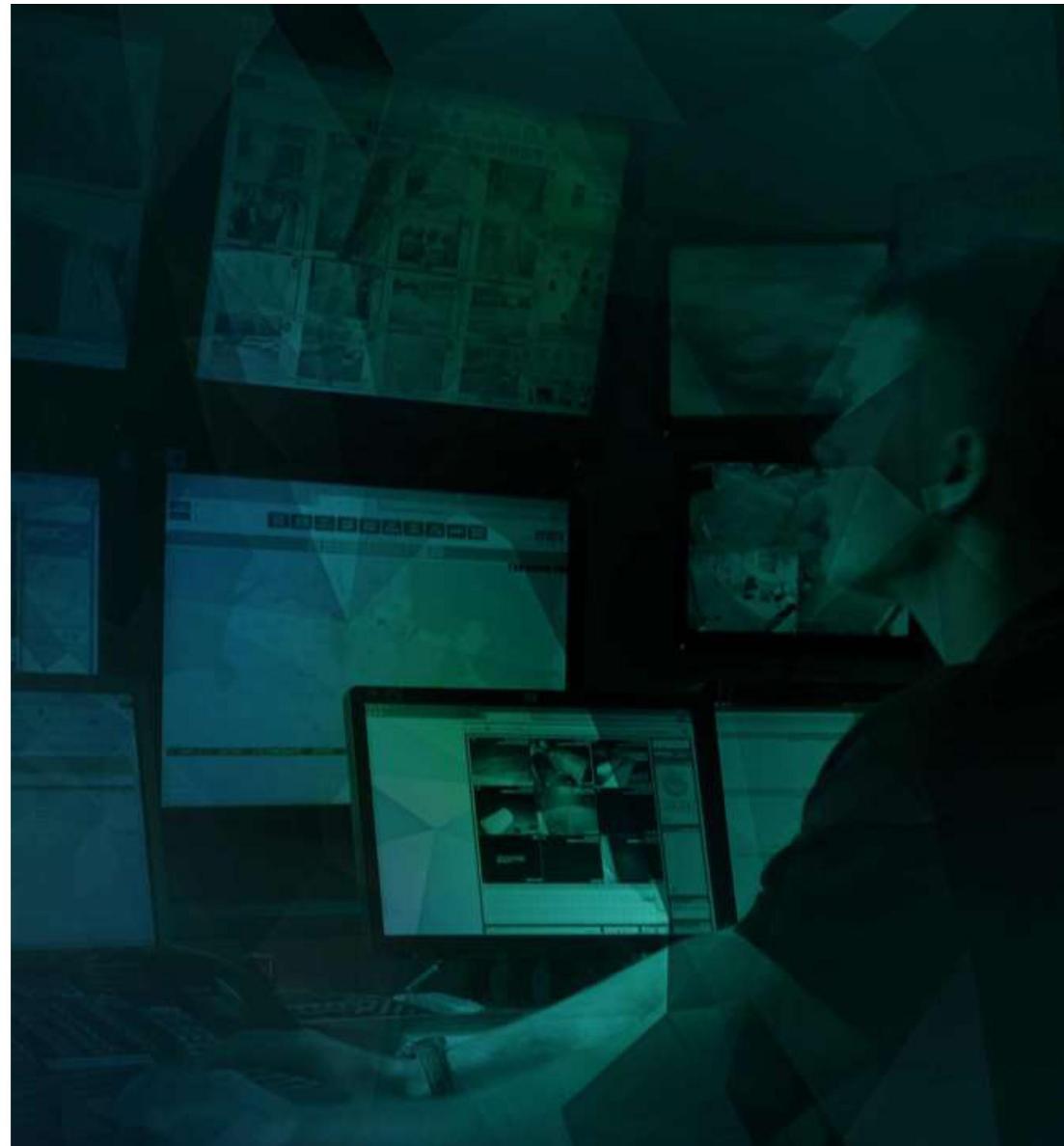
Summary

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Vivamus eget mi id lectus gfgy pellentesque iaculis. Sed auctor pulvinar bxby faucibus. Vivamus ullamcorper neque sit amet risus ultricies ultricies.

Redacted – PII

Investigate module

Turn vast amounts of data into actionable intelligence



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Investigate module

INSTALLATIONS INVESTIGATE CASES COMMANDS

Redacted – PII

7 Dec 2017, 8:00 - 7 Jan 2018, 8:00 ▾ Keywords, #tags

Calls 443 Messages 18,621 Email 531 Calendar 531 Contacts 18 Browsing 8 Files 10 Applications 135 Credentials 0 Photos 15 Tap 3 Locations 3 SELECT ALL

2,366 activities Live Activity time ▾

SELECT 15 New EXPORT TODAY

14 Apr 2018 16:35 | Corso di Porta Romana 120, 20122 Milano MI, Italy (Cell ID)

Redacted – PII

Redacted – PII Did you get the reports from Redacted – PII

Lenovo X1 Carbon 10:48

End of filtered time range

11 Apr 2018

Redacted – PII Please send me the address

11:32

Redacted – PII No problem, one sec.

Lenovo X1 Carbon 12:14

Redacted – Per Court Order

TAGS Diego Brazil ADD

Add Tag

COMMENTS

The usual place refers to restaurant Trattoria Milanese.

Adam.g | 12 Mar 2018 08:00

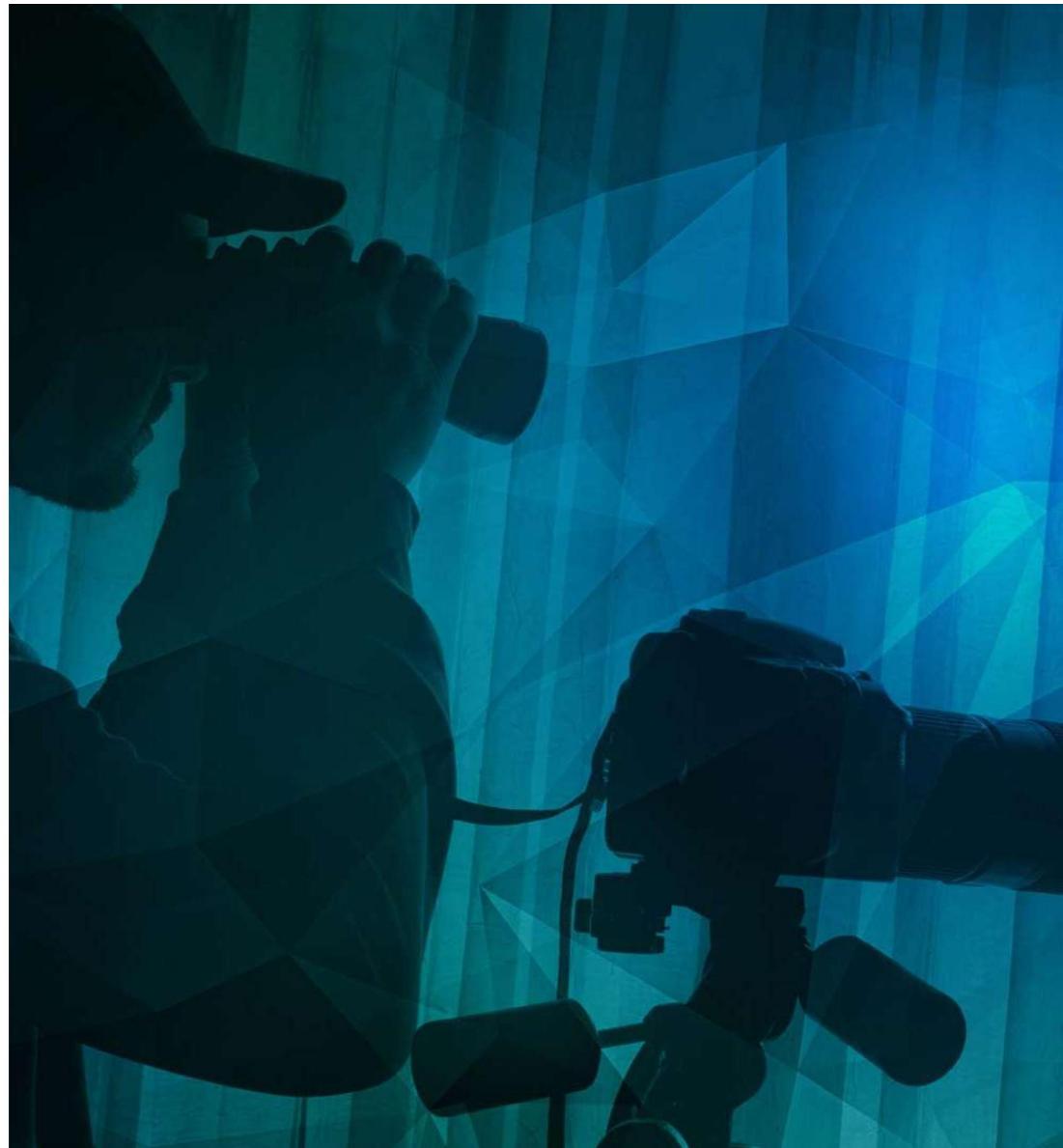
Write a comment

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Commands module

Close information gaps by initiating active, data-collection commands to a target's device





Commands: initiate a command

Activate a target's device components according to operational needs:

- Take snapshot
- Take screenshot
- Start tap
- Locate target

A screenshot of a software interface titled "NEW COMMAND". The interface is divided into three main sections: 1 CASE, 2 TARGET, and 3 COMMANDS. The CASE section shows a case titled "Hidden Princess (12)" with a brief description. The TARGET section is mostly blank, with a large redacted area. The COMMANDS section lists four options: Take Snapshot, Take Screenshot, Start tap, and Locate Target. The "Redacted – PII" text is overlaid on the TARGET section.

NEW COMMAND

1 CASE

2 TARGET

3 COMMANDS

Hidden Princess (12)

A princess, along with a general and two commoners evade pursuit of an enemy and his samurai cohorts. The princess and general are caught but are rescued and then destroy the enemy's fort. Set in the warring period of Japan.

Redacted – PII

Take Snapshot

Take Screenshot

Start tap

Locate Target

CANCEL SEND



Commands: monitor commands

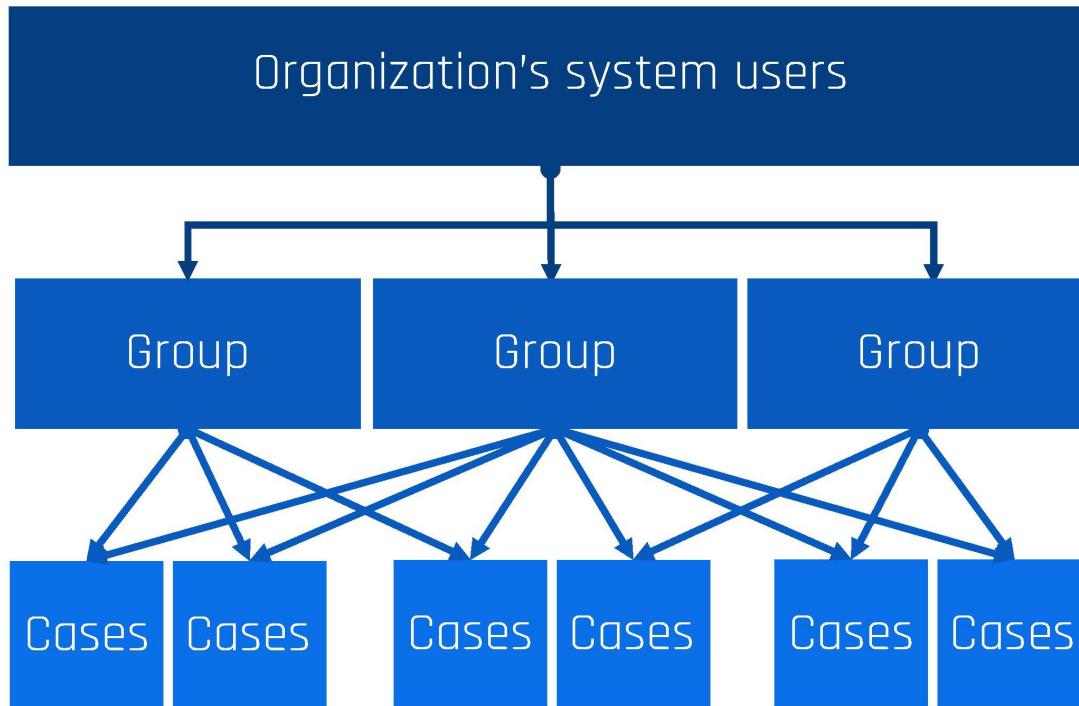
Monitor the status of all commands in one easy-to-use panel

The screenshot shows a software interface with a dark theme. At the top, there are tabs for 'ENDPOINTS', 'INVESTIGATE', 'CASES', and 'COMMANDS'. The 'COMMANDS' tab is active. Below the tabs, there's a header with 'Commands' and a 'NEW COMMAND' button. There are dropdown menus for 'Command status: In progress', 'Time: 24 hours ago', 'Type', 'Issuer', and a 'CLEAR' button. The main area is a table with columns: 'Target', 'Identifier', 'Status', 'Requested time', 'Type', 'Setting', and 'Issuer'. The first row's 'Identifier' column is heavily redacted with a large white box containing the text 'Redacted – PII'. The other five rows show actual data: 1. Jan 2018, 14:33, /private/var, Itay Levy, VIEW, UPDATE. 2. 30 Dec 2017, 15:45, Receiving location every: 10 Min, For a period time of: 60 Min, Itay Levy, ABORT, UPDATE. 3. 29 Nov 2018, 17:10, Extract historical data: Emails, Itay Levy, VIEW. 4. 28 Oct 2018, 09:32, Receiving location every: 10 Min, For a period time of: 60 Min, Itay Levy, VIEW, UPDATE. 5. 22 Sep 2018, 07:47, Duration: 20 Min, Itay Levy, VIEW, UPDATE.

Target	Identifier	Status	Requested time	Type	Setting	Issuer
	Redacted – PII		1 Jan 2018, 14:33	/private/var		Itay Levy
			30 Dec 2017, 15:45	Receiving location every: 10 Min, For a period time of: 60 Min		Itay Levy
			29 Nov 2018, 17:10	Extract historical data: Emails		Itay Levy
			28 Oct 2018, 09:32	Receiving location every: 10 Min, For a period time of: 60 Min		Itay Levy
			22 Sep 2018, 07:47	Duration: 20 Min		Itay Levy



Permissions



- Administrator creates and edits system users
- Administrator assign users to groups
 - A user can be assigned to multiple groups
- Administrator assign groups to cases
 - A case can be assigned to multiple groups

Do you have any Q's ?



Exhibit 25

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System Roles

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Objectives

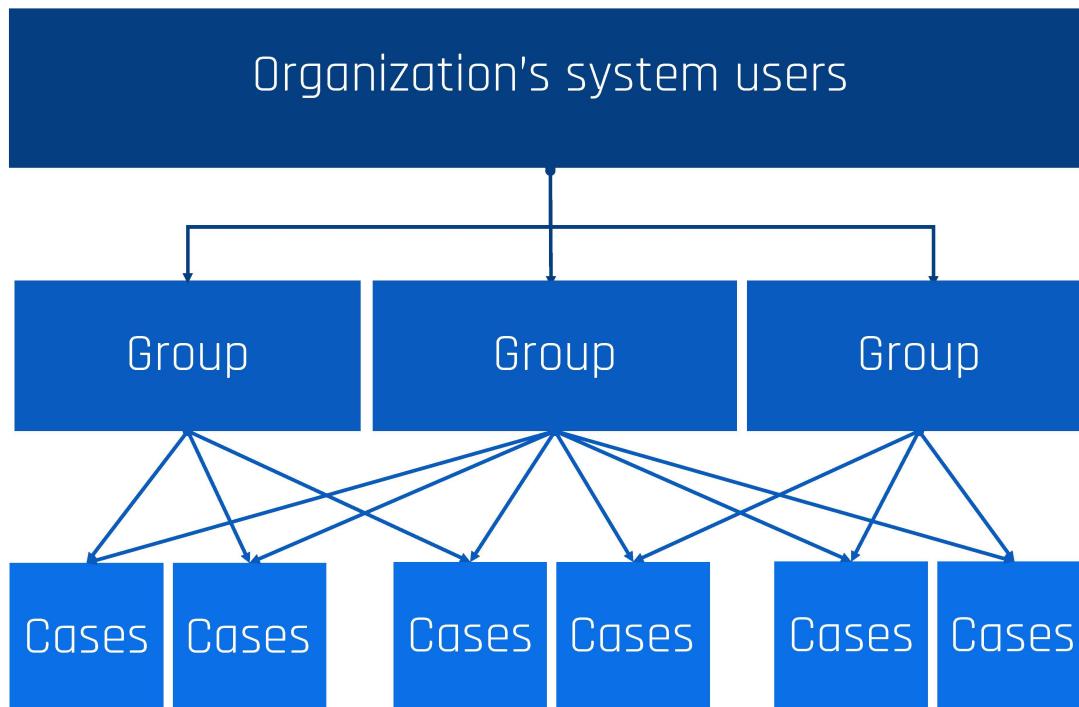
The goal of this lesson is to provide a clear understanding of...

- Different system roles and related permissions
- How to create and manage system users
- How to configure system settings

System roles

	Administrator	Supervisor	Operator	Analyst	Senior Analyst	Acquirer	Auditor
Create & edit users	✓						
Create & edit groups	✓						
Assign users to groups & cases	✓						
Export verification	✓						
Manage cases: create & edit		✓					
Manage agent templates: create, switch between AT, and set as a default		✓					
Acquire a new target/agent		✓	✓			✓	
Access to the <i>Investigate</i> module (per permission), view commands		✓	✓	✓	✓		
Send commands		✓	✓		✓		
Export report		✓	✓		✓		
User action controller							✓

Permissions



- Administrator creates and edits system users
- Administrator assign users to groups
- A user can be assigned to multiple groups
- Administrator assign groups to cases
- A case can be assigned to multiple groups

Administration panel

Administration

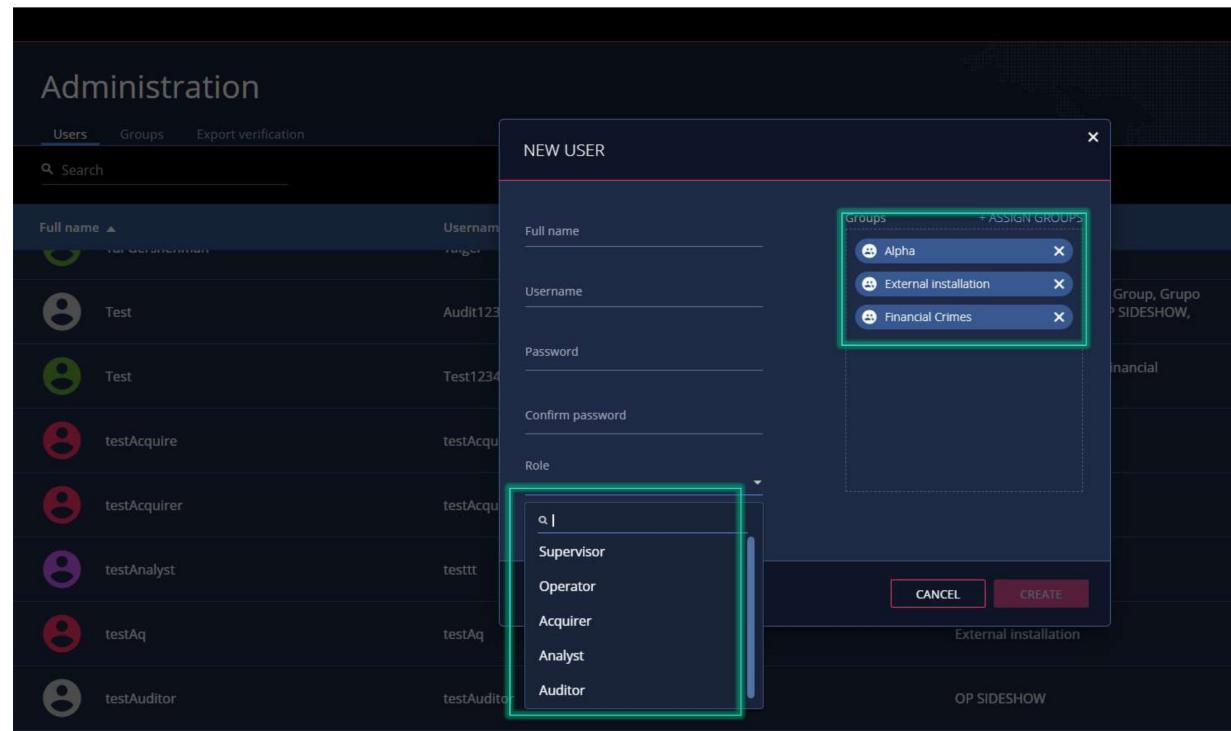
Users Groups Export verification

Search + NEW USER

Full name ▲	Username	Role	Groups
Test	Test	Supervisor	Training
Test	Audit1234	Auditor	External installation, July Group, Grupo Alfa, OP DINNER OUT, OP SIDESHOW, Pack
Test	Test12345	Supervisor	July Group, Grupo Alfa, Financial Crimes
testAcquire	testAcquire	Acquirer	External installation
testAcquirer	testAcquirer	Acquirer	External installation
testAnalyst	testtt	Analyst	External installation
testAq	testAq	Acquirer	External installation
testAuditor	testAuditor	Auditor	OP SIDESHOW

Administrator: creating users

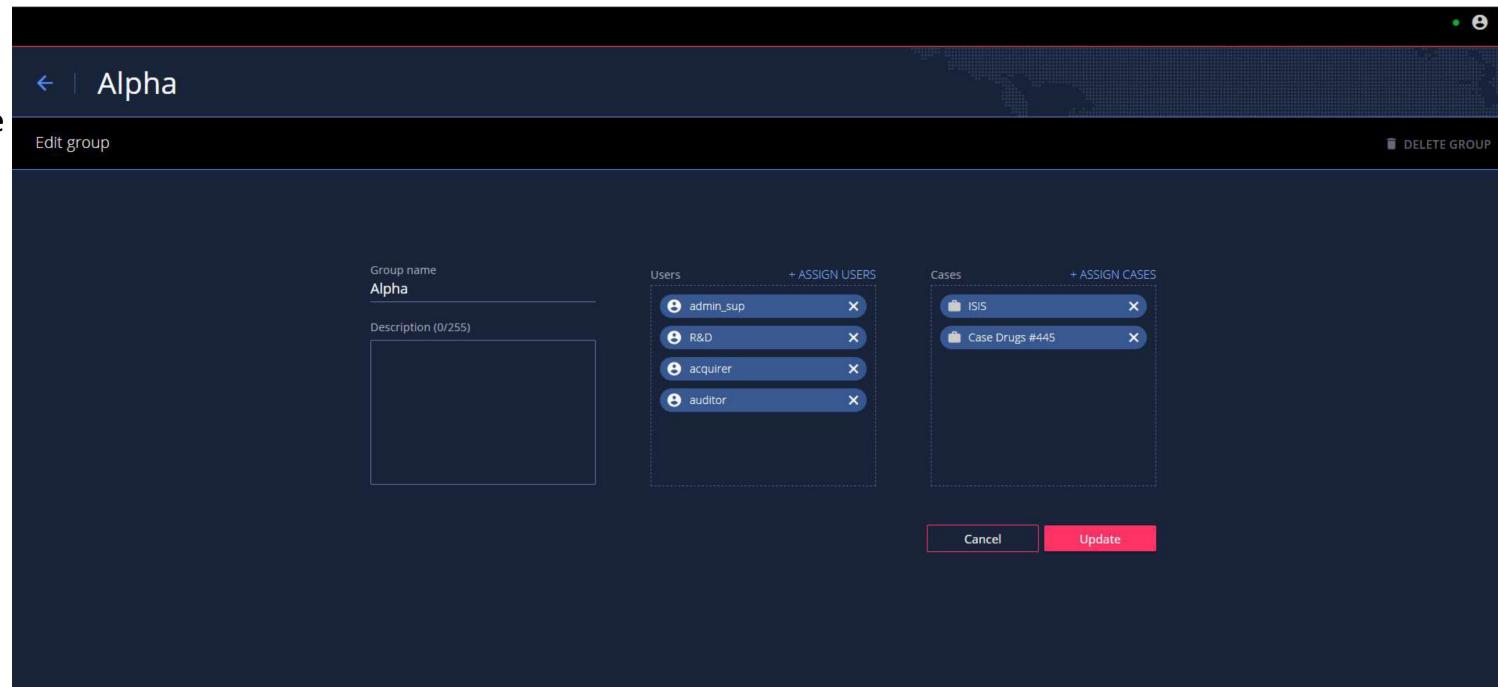
- Creates new users
 - click *New User* on the Administration panel
- Edits existing users
- Sets user roles that enable access to various system functions
- Assigns groups that define user access to system data



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Administrator: creating groups

- Creates and edits groups
- Limits user access to only those groups to which they are assigned



Administrator: creating user “signatures”

The system marks user activities with a user's name:

- Comments
- Commands

Make sure to choose an identifiable name

- Ensures the easy and practical identification of users
- Contributes to smooth collaboration

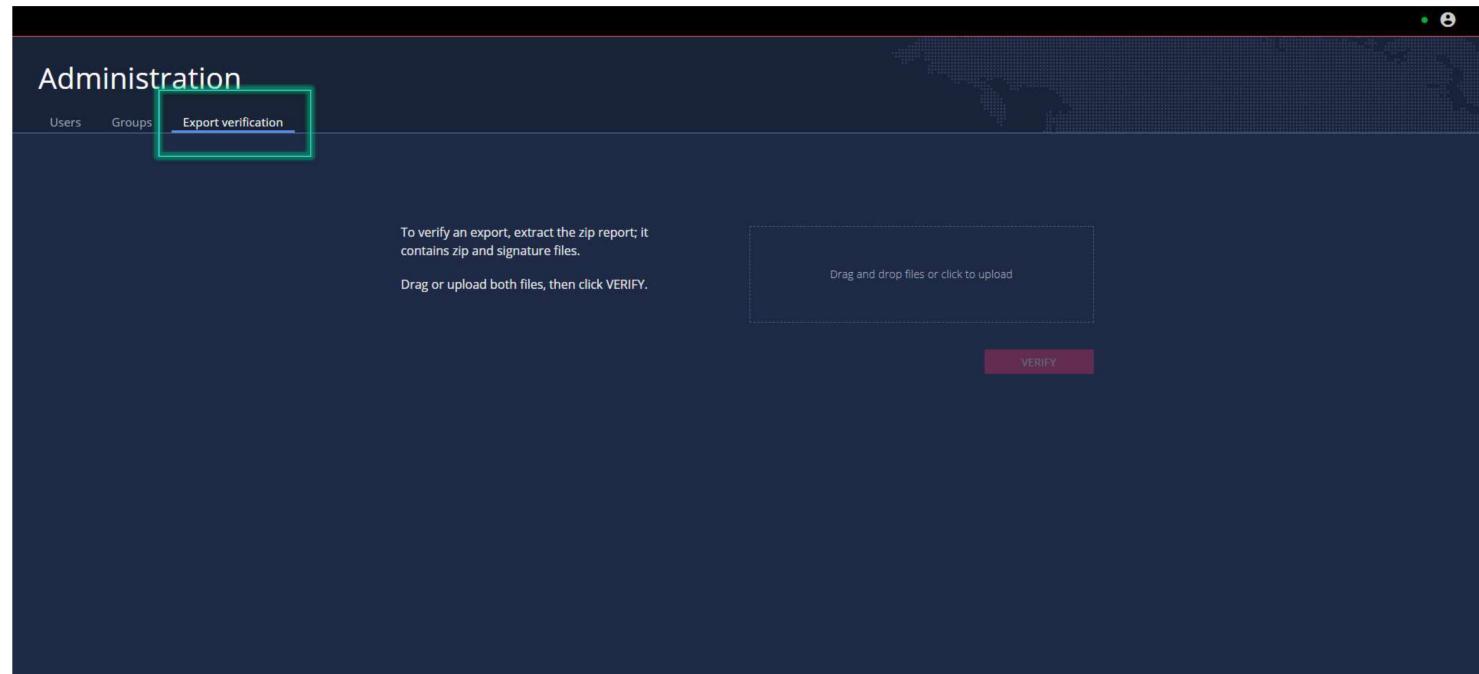
The screenshot displays a software interface for digital investigation. At the top, there are tabs for 'INSTALLATIONS', 'INVESTIGATE' (which is selected), 'CASES', and 'COMMANDS'. Below the tabs, there are search fields for 'Organisation' (set to 'Redacted - PII') and 'Keywords | #tags', along with a 'Time' dropdown and a search icon.

The main area shows a summary of '845 Activities' across various categories: Calls (623), WhatsApp (379), Email (215), Calendar (203), Contacts (177), Browsing (84), Files (7,407), Credentials (25), Photos (20), Tap (2), and Locations (271). A 'CLEAR ALL' button is located at the bottom right of this summary.

A detailed view of a specific activity is shown in the center. It is dated '25 Jan 2019, 18:53' and is associated with a 'Samsung SM-A720F' device. The activity is labeled 'Redacted - PII' and has a timestamp of '18:53'. The interface includes a play button and a timeline from '00:09' to '00:21'. To the right of the timeline, there is a map showing a location with a red pin, and below it, a 'TAGS' section with an 'Add tag' button. A green box highlights a 'COMMENTS' section containing the text: 'First 10 seconds are important' and 'training | Jan 28 2019 21:30'. At the bottom right, there is a 'Write a comment' input field and an 'ADD' button.

Administrator: Export verification

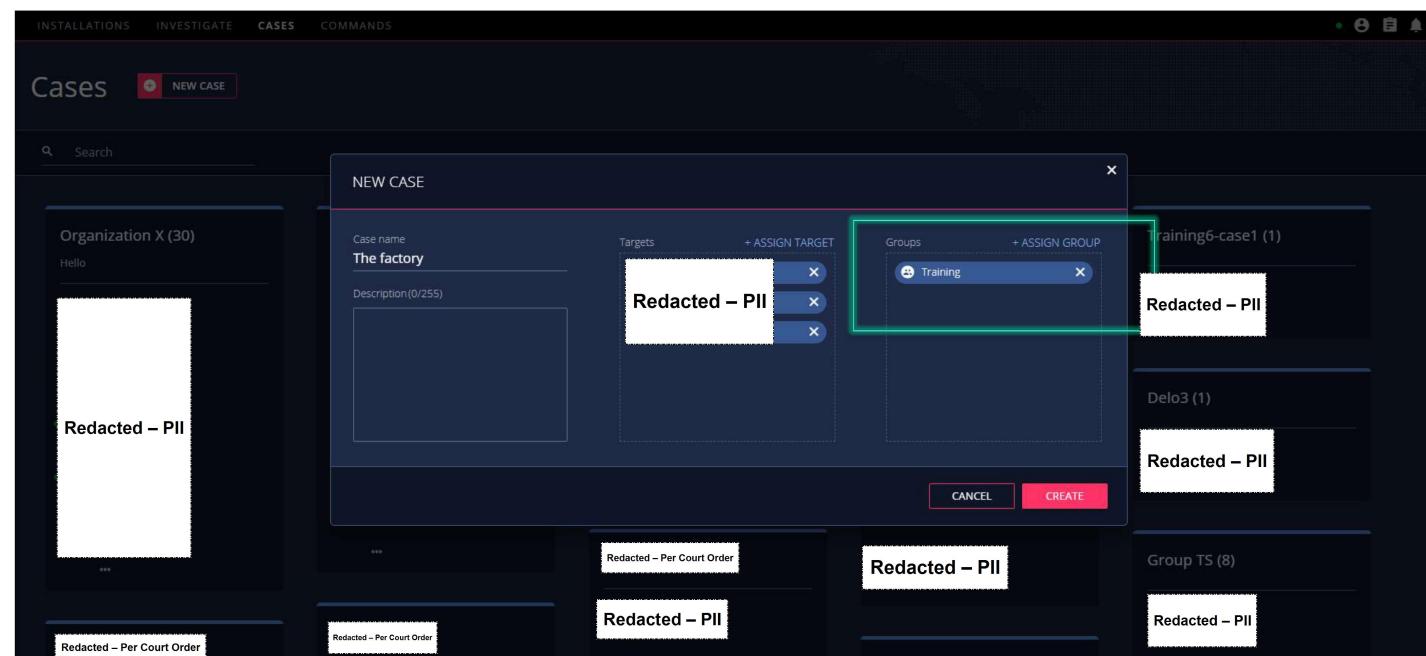
- Upload exported files For data authenticity validation



Supervisor: creating cases

Supervisor creates and modifies cases via the Cases tab

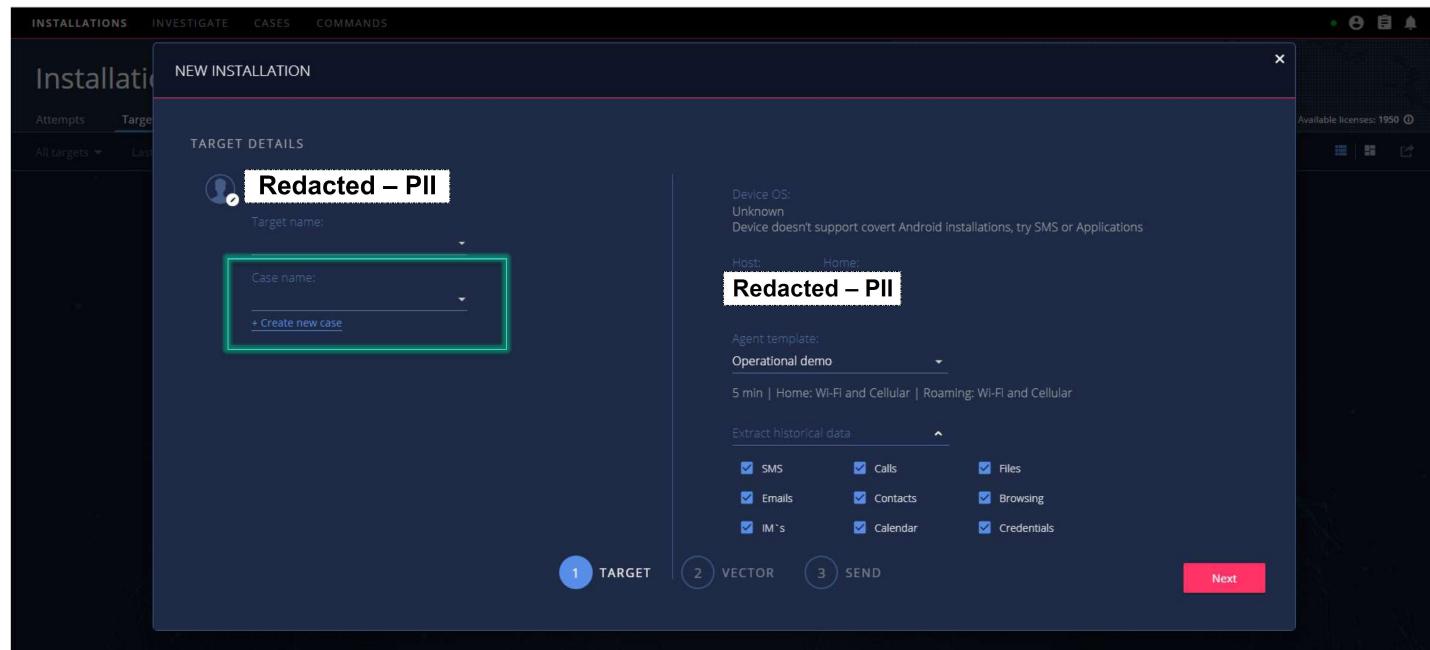
Only users from groups assigned to a given case can access related case data



Supervisor: creating cases

Another way to create new cases:

Acquire → New Installation



Supervisor: Agent templates

Supervisor users may create, set as a default and delete any agent templates

The screenshot shows the Supervisor software interface with a dark theme. At the top, there are navigation tabs: INSTALLATIONS, INVESTIGATE, CASES, and COMMANDS. On the far right, there are icons for user profile, settings, and notifications.

In the main area, the title "Installations" is displayed above a "NEW INSTALLATION" button. Below this, there are tabs for Attempts, Targets, and Agent templates, with "Agent templates" being the active tab. A message "Available licenses: 1950" is shown on the right.

The "Agent templates" section contains four cards:

- Operational mode** (Default):

Polling interval	5 minutes
Home: send data via	Wi-Fi and Cellular
Roaming: send data via	Wi-Fi
Uninstall protocol	21 days
Record calls	Yes

 Buttons: DELETE, SET AS DEFAULT
- Default settings** (Default):

Polling interval	30 minutes
Home: send data via	Wi-Fi and Cellular
Roaming: send data via	Wi-Fi
Uninstall protocol	21 days
Record calls	Yes

 Buttons: DELETE, SET AS DEFAULT
- Operational demo** (Default):

Polling interval	5 minutes
Home: send data via	Wi-Fi and Cellular
Roaming: send data via	Wi-Fi and Cellular
Uninstall protocol	5 days
Record calls	Yes

 Buttons: DELETE
- Roaming - unlimited**:

Polling interval	30 minutes
Home: send data via	Wi-Fi and Cellular
Roaming: send data via	Wi-Fi and Cellular
Uninstall protocol	21 days
Record calls	Yes

 Buttons: DELETE, SET AS DEFAULT

Below these cards, there is a section titled "Training abroad" with a single entry: Polling interval: 30 minutes.

At the bottom left, the text "HIGHLY CONFIDENTIAL - ATTORNEYS EYES ONLY" is visible. At the bottom right, the text "NSO_WHATSAPP_00008659" is visible.

Agent template parameters

- Uninstall protocol
- Polling interval
- Record calls
- Home: send data via
- Roaming: send data via
- Set as default

Default settings	
Polling interval	30 minutes
Home: send data via	Wi-Fi and Cellular
Roaming: send data via	Wi-Fi
Uninstall protocol	21 days
Record calls	Yes

[DELETE](#) [SET AS DEFAULT](#)

Auditor

- Auditor monitors all user activities
- Uses filters to refine audit searches: time range, users, actions and entity type



Audit trail

Time ▾	Username ▾	Action ▾	Entity type ▾		
Initiated ▾	Username	Action	Entity type	Details	Entity name
Jan 28, 21:44	auditor1	Login	User	Login	Auditor1
Jan 28, 21:43	admin	Logout	User	Logout	Admin
Jan 28, 21:43	admin	Login	User	Login	Admin
Jan 28, 21:43	training	Logout	User	Logout	Training
Jan 28, 21:40	training	Modify	Installation	Submit installation	Redacted – PII
Jan 28, 21:40	training	Create	Installation message	Create installation message	