

# Using the scheduler in LUCY

## Background info

LUCY allows you to schedule a campaign. Those mechanisms allow you to build an intelligent phishing campaign with multiple rules, testing user awareness in different scenarios and also different time periods. This might keep the security awareness at a high level if users know that the company performs sample phishing tests on a small group of random users over a long period.

## Where to find the scheduler

The scheduler can be configured within each campaign in the left navigation menu:



## Scheduler settings

LUCY > 3.0 comes with scheduler rules and new with a scheduler plan that allows you to verify the existing rules. Please use the following configuration tutorial to setup your scheduler:

**Step 1:** Preparation. The scheduler uses the local time & time zone. Therefore, you should make sure, that you have [set the correct time & time zone](#) before working with scheduler rules.

**Step 2:** [Add Recipients](#) to your campaign (lets say you have 2 scenarios and 1 recipient group, and then add the 1 group to both scenarios, the 1 group then will get a separate message for each scenario). If you want to distribute your 1 recipient group over multiple scenarios (so a recipient will only get 1 message for one of the both scenarios), you need to click on the checkbox "distribute users over the selected scenarios":

Home / Campaigns / MAIL ONLY / Recipients / Add Group

MAIL ONLY

Campaign Status: Not Started

Summary

User Settings

Statistics

Recipients

Base Settings

Custom Fields

Schedule

Awareness

Reports

Supervision Log

Message Log

Group

Test

Search

Search by recipient name, email, phone, staff type, location, d

Search

Reset

<input checked="" type="checkbox"/>	E-mail/Phone	Name	Language	Staff	Location	Division	Comment	Last Tested
<input checked="" type="checkbox"/>	info@lucysecurity.com	Test	N/A	N/A	N/A	N/A	N/A	N/A

<

Mapping

Campaign + Awareness

☐ Distribute users over selected scenarios.

Scenarios

☐ Select All

☐ DEMO (File-Based)

☐ Test (Web Based)

Save

Step 3: Define scheduling rules.

Home / Campaigns / Lucy Phishing Campaign (1) / Schedule

Lucy Phi...

Campaign Status: Not Started

Schedule Plan

+ Add Rule

Summary

User Settings

Statistics

Recipients

Base Settings

Schedule

Schedule Plan

Time	Type	Scenarios	
07.06.2016 (16:58 - 17:58) x 1	All	VPN Client	✖
08.06.2016 17:05 - 09.06.2016 18:05	All	Contest	✖

The scheduler rules have the following options:

- **Rule Type:** Repeating vs "One Shot". Repeating Rules allow LUCY to start over the attack or awareness simulation as many times as you want.

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Rule Type	Repeating	▼
Repeat Interval	Daily	▼
Repeats	1	
Emails Type	All	▼
Start Date	07.06.2016	📅
Start Hour	16:58	📅
Stop Hour	17:58	📅

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Scenarios ☐ VPN Client

Save

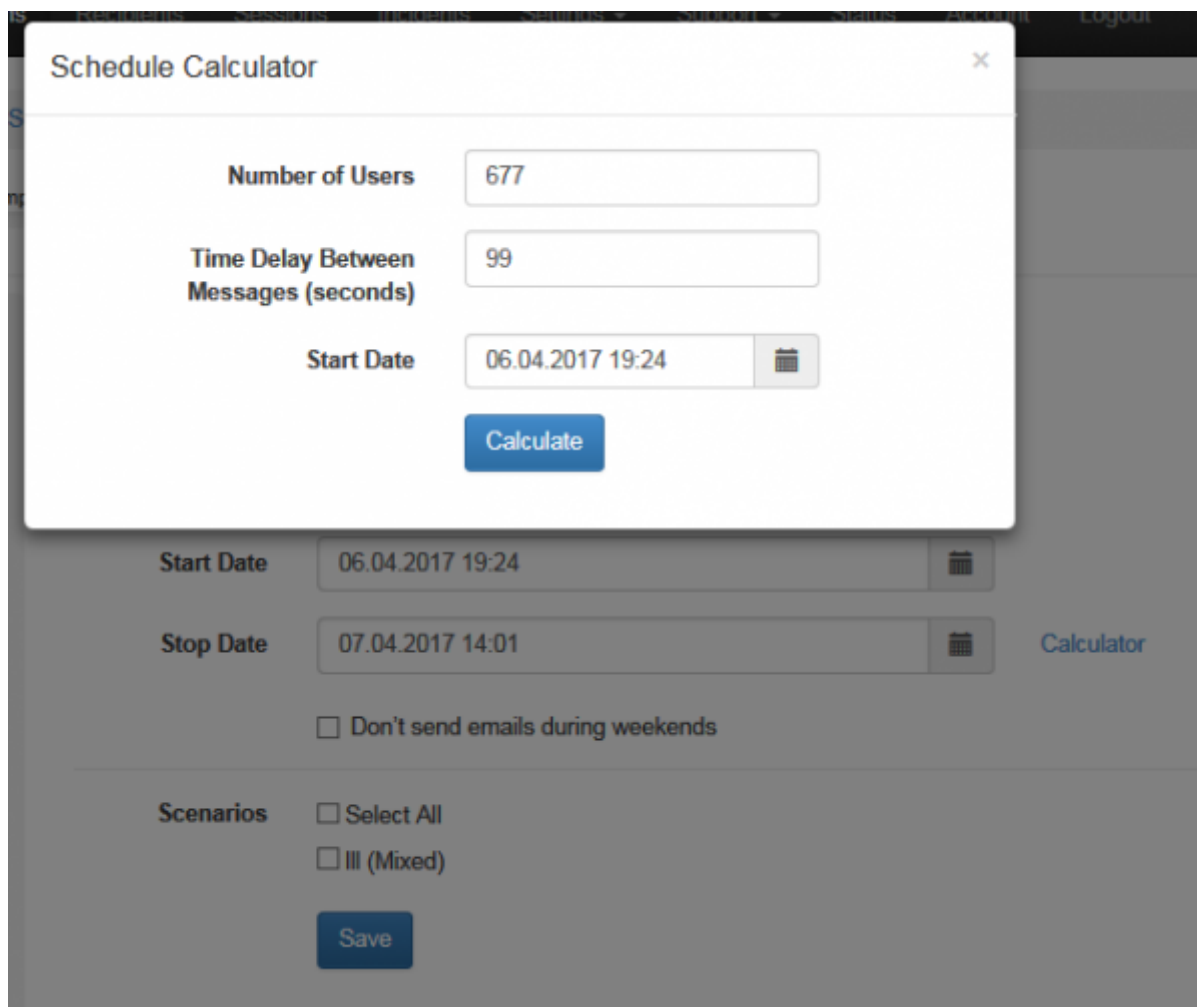
- **E-Mail Type:** You can define here if the rule only applies to the lure mail, the phishing attack, the awareness message or all three together (if nothing is selected)
- **Start time & End Time:** Defines the time ranges from beginning of email delivery until the end of email delivery. The end date will not stop the campaign. It only defines the delivery of the last message. LUCY will automatically calculate the time difference it requires to send all mails based on the number of recipients in that campaign. Example: Let's say you have 100 users and you want to create a 6 seconds interval between the delivery, you would have to set a 10 minutes time range between start & end (e.g. set start time at 10:00 AM and end time at 10:10 AM). Once you created the scheduling rule you can use the button "build schedule plan" to confirm, that the emails will be send at the desired time and with the correct interval.
- **Scenario:** You can associate one or multiple scenario's for the rule.
- **Repeats:** You are able to specify the number of repeats for the repeating rule. For example, you set "weekly" rule and 52 repeats - it will work for 1 year. It doesn't have an end date, but it will work exactly 1 year, because there is a start date and 52 weeks in a year. The same with monthly rules - you just specify 12 repeats for a monthly rule and the rule will work for a whole year.

**Step 4:** Verify your scheduler settings. Once you build the rule(s) you can click scheduling plan and LUCY will show you which recipient will get a message when and with which scenario. This allows you to verify if the scheduler is configured as planned.

**Step 5:** Start your campaign. After configuring the scheduler you still need to [click "START / REAL ATTACK"](#). Lucy will then perform all the campaign based checks and send out the mails according to your scheduler settings.

## Using the calculator to define your scheduler start and end time

If you want to specify a specific time frame between each mail you can use the scheduler calculator. Please enter the number of recipients, the desired gap between each email and the start time, then LUCY will automatically create your scheduling rule with the correct end date/time:



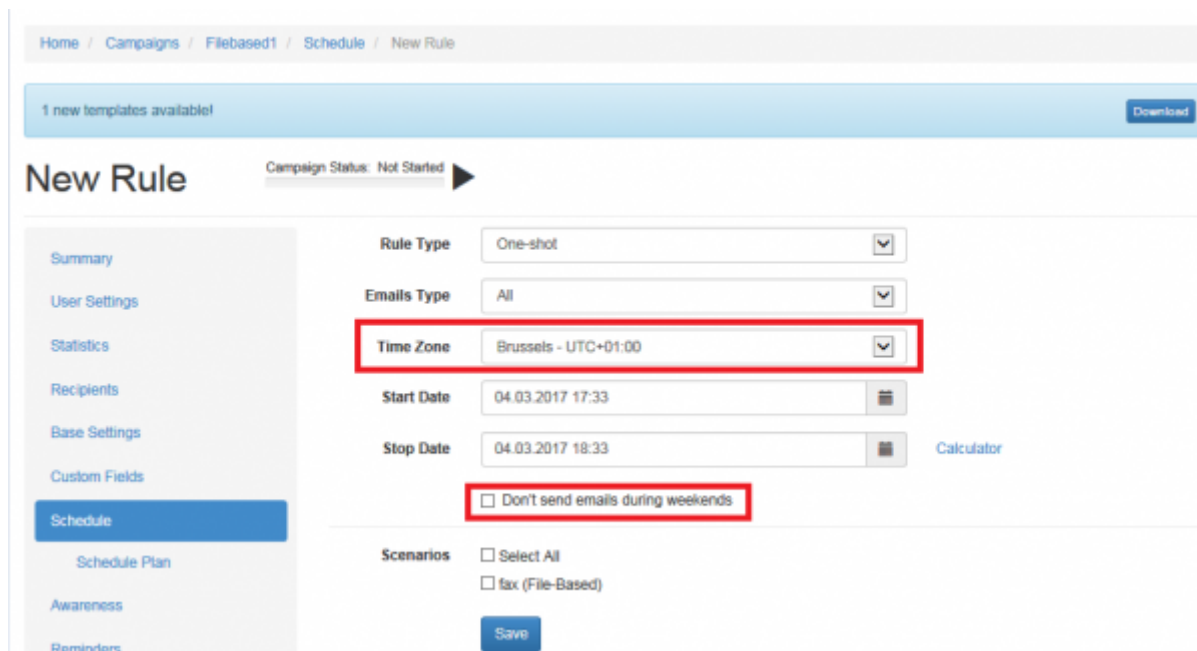
The screenshot shows a 'Schedule Calculator' dialog box with the following fields and values:

- Number of Users: 677
- Time Delay Between Messages (seconds): 99
- Start Date: 06.04.2017 19:24

A 'Calculate' button is located below the input fields. In the background, the main interface shows 'Start Date' (06.04.2017 19:24), 'Stop Date' (07.04.2017 14:01), a checkbox for 'Don't send emails during weekends', and 'Scenarios' with options 'Select All' and 'III (Mixed)'. A 'Save' button is at the bottom.

## Time Zone & Weekend Settings

In LUCY > 3.3 you have the ability to create scheduling rules based on different time zones. If you specify a longer time range you can also ensure, that mails are not sent out on weekends by selecting the checkbox:



The screenshot shows the 'New Rule' configuration page with the following settings:

- Rule Type: One-shot
- Emails Type: All
- Time Zone: Brussels - UTC+01:00 (highlighted with a red box)
- Start Date: 04.03.2017 17:33
- Stop Date: 04.03.2017 18:33
- Don't send emails during weekends: ☐ (highlighted with a red box)
- Scenarios: ☐ Select All, ☐ fax (File-Based)

A 'Save' button is at the bottom. The left sidebar shows navigation options: Summary, User Settings, Statistics, Recipients, Base Settings, Custom Fields, Schedule (selected), Schedule Plan, Awareness, and Reminders.

## Example Configurations

**Initial position:** lets assume you want to setup a phishing campaign that repeats for three month. You have 6 employees split into 3 groups and 3 attack scenarios. You want to split up the 3 attack scenarios among those 3 groups in a way, that every month, an employee just gets only 1 attack scenario. After 3 months, every employee should have received 3 unique attacks.

### Solution A - One Shot:

- Step 1: Create three groups under "[Recipients](#)" (each group contains 2 employees)

Group	Recipients	
<input type="checkbox"/> <a href="#">GROUP-3</a>	2	✕
<input type="checkbox"/> <a href="#">GROUP-2</a>	2	✕
<input type="checkbox"/> <a href="#">GROUP-1</a>	2	✕

- Step 2: Go to your campaign, then add 3 scenarios
- Step 3: Within the campaign, go to the recipient menu and add group 1 to all three scenarios. Make sure that "Distribute users over selected scenarios" checkbox is **NOT** selected.

Group

GROUP-1

Search

Search by recipient name, email, phone, staff type, location, d

Search

Reset

<input checked="" type="checkbox"/> E-mail/Phone	Name	Language	Staff	Location	Division	Comment	Last Teste
<input checked="" type="checkbox"/> user2_group1@company.com	user2_group1@company.com	N/A	N/A	N/A	N/A	N/A	N/A
<input checked="" type="checkbox"/> user1_group1@company.com	user1_group1@company.com	N/A	N/A	N/A	N/A	N/A	N/A

Mapping

Campaign + Awareness

☐ Distribute users over selected scenarios.

Scenarios

☐ Select All

☒ Scenario 3 (Web Based)

☒ Scenario 1 (Web Based)

☒ Scenario 2 (Web Based)

Save

- Step 4: Repeat the last Step for the other two groups. That will create 9 group associations (3 groups x 3 scenarios)

Name ▼	Scenario	Mapping	Recipients	
<input type="checkbox"/> GROUP-1	Scenario 3	Campaign + Awareness	2	✕
<input type="checkbox"/> GROUP-1	Scenario 1	Campaign + Awareness	2	✕
<input type="checkbox"/> GROUP-1	Scenario 2	Campaign + Awareness	2	✕
<input type="checkbox"/> GROUP-2	Scenario 1	Campaign + Awareness	2	✕
<input type="checkbox"/> GROUP-2	Scenario 2	Campaign + Awareness	2	✕
<input type="checkbox"/> GROUP-2	Scenario 3	Campaign + Awareness	2	✕
<input type="checkbox"/> GROUP-3	Scenario 3	Campaign + Awareness	2	✕
<input type="checkbox"/> GROUP-3	Scenario 1	Campaign + Awareness	2	✕
<input type="checkbox"/> GROUP-3	Scenario 2	Campaign + Awareness	2	✕

« 1 »

10 ▾

- Step 5: Go to "Schedule" and create 1 schedule rule ("one-shot"). Choose only 1 scenario per schedule rule. Each rule starts at a different month and lasts exactly 1 month (e.g. scenario 1 = month 1, scenario 2 = month 2, scenario 3 = month 3).

Rule Type

One-shot ▾

Emails Type

All ▾

Time Zone

Brussels - UTC+01:00 ▾

Start Date

10.08.2017 21:56

Stop Date

10.09.2017 22:56

Calculator

☐ Don't send emails during weekends

Scenarios

☐ Select All  
☐ Scenario 3 (Web Based)  
☒ Scenario 1 (Web Based)  
☐ Scenario 2 (Web Based)

Save

- Step 6: Repeat the previous step for the remaining 2 scenarios. You will have three rules. Each rule starts at a different month. You can verify your settings if you click on "schedule plan" and have LUCY display the details of your schedule. You will see, that every user gets a different scenario at a different date. Here is as an example the scheduled attacks for user 2 from group 1:

```

user2_group1@company.com Scenario 1 08.2017 22:22:00 (Europe/Brussels)
user2_group1@company.com Scenario 2 09.2017 22:07:00 (Europe/Brussels)
user2_group1@company.com Scenario 3 10.2017 22:07:00 (Europe/Brussels)

```

Time	Type	Scenarios	
<a href="#">10.08.2017 22:22 - 10.09.2017 22:22</a>	All	<a href="#">Scenario 1</a>	✕
<a href="#">10.09.2017 22:07 - 10.10.2017 23:07</a>	All	<a href="#">Scenario 2</a>	✕
<a href="#">10.10.2017 22:07 - 10.11.2017 23:07</a>	All	<a href="#">Scenario 3</a>	✕

« 1 »
10 ▼

## Schedule...

Campaign Status: Not Started ▶

Display Scheduler Details

Summary	Time	Email	Scenario	Processed
User Settings	10.08.2017 22:22:00 (Europe/Brussels)	user2_group1@company.com	<a href="#">Scenario 1</a>	—
Statistics	16.08.2017 02:22:00 (Europe/Brussels)	user1_group3@company.com	<a href="#">Scenario 1</a>	—
Recipients	21.08.2017 06:22:00 (Europe/Brussels)	user1_group1@company.com	<a href="#">Scenario 1</a>	—
Base Settings	26.08.2017 10:22:00 (Europe/Brussels)	user2_group2@company.com	<a href="#">Scenario 1</a>	—
Custom Fields	31.08.2017 14:22:00 (Europe/Brussels)	user1_group2@company.com	<a href="#">Scenario 1</a>	—
Schedule	05.09.2017 18:22:00 (Europe/Brussels)	user2_group3@company.com	<a href="#">Scenario 1</a>	—
Schedule Plan	10.09.2017 22:07:00 (Europe/Brussels)	user2_group1@company.com	<a href="#">Scenario 2</a>	—
Awareness	15.09.2017 22:17:00 (Europe/Brussels)	user1_group3@company.com	<a href="#">Scenario 2</a>	—
Reminders	20.09.2017 22:27:00 (Europe/Brussels)	user1_group1@company.com	<a href="#">Scenario 2</a>	—
Reports	25.09.2017 22:37:00 (Europe/Brussels)	user2_group2@company.com	<a href="#">Scenario 2</a>	—
Supervision Log	30.09.2017 22:47:00 (Europe/Brussels)	user1_group2@company.com	<a href="#">Scenario 2</a>	—
Message Log	05.10.2017 22:57:00 (Europe/Brussels)	user2_group3@company.com	<a href="#">Scenario 2</a>	—
Errors	10.10.2017 22:07:00 (Europe/Brussels)	user2_group1@company.com	<a href="#">Scenario 3</a>	—
	16.10.2017 02:27:00 (Europe/Brussels)	user1_group3@company.com	<a href="#">Scenario 3</a>	—
	21.10.2017 06:47:00 (Europe/Brussels)	user1_group1@company.com	<a href="#">Scenario 3</a>	—
	26.10.2017 11:07:00 (Europe/Brussels)	user2_group2@company.com	<a href="#">Scenario 3</a>	—
	31.10.2017 15:27:00 (Europe/Brussels)	user1_group2@company.com	<a href="#">Scenario 3</a>	—

The "problem" with this approach is, that LUCY will send all emails for scenario A in first month, all emails for scenario B in second month, etc. If you want more "randomisation", you can use overlaying dates in your scheduling rules (e.g. rule 1 starts at day 1 from month 1 and ends on last day of month 3, rule 2 starts middle of month 1 and ends at middle of month 2, rule 3 starts at the beginning of month 2 and ends at the second month).

### Solution B - 12 Repeating Rules:

- Go to "Recipients" in your campaign. Add the recipient groups one after the other. Each time you add a recipient group you need to select all scenarios. Also make sure, that "Distribute users over selected scenarios" checkbox is NOT selected. That will add every group to all scenarios in campaign.
- You can create 3 scheduling rules. Choose only 1 scenario per schedule rule. Each rule should start at the same time as the other rules and last for 3 months (please set the repeat cycle to 3). It will make Lucy handle 3 rules (and tied scenarios) in parallel, resulting in 6 emails per month. The same user won't get the same email multiple times in this case (there is an important note on how scheduler works: it won't be able to add the same recipient under the same rule twice. In other words, one schedule rule is able to send message to a given recipient only once).



Rule Type	Repeating	▼
Repeat Interval	Monthly	▼
Repeats	3	
Emails Type	All	▼
Time Zone	Brussels - UTC+01:00	▼
Start Date	04.08.2017	📅
<input type="checkbox"/> Don't send emails during weekends		
Start Hour	17:17	📅
Stop Hour	18:17	📅
Run Days	1	?

**Scenarios**  
☐ Select All  
☒ 1 (Web Based)  
☐ 2 (Web Based)

Save

### Solution Bi-weekly rule:

Let's assume that you need to create a plan to send emails during two months starting on the beginning of next month and sending letters proceeding only in working days.

- Step 1: Go to Campaign and choose campaign you want to schedule, choose Schedule and press "Add Rule" button.
- Step 2: Set "Rule Type": Repeating, "Repeat Interval": Weekly (to starts every week, "Repeats": 2 (to run it during two weeks)
- Step 3: Choose "Emails Types", "Time Zone" and "Start Date", mark checkbox "Don't send emails during weekends", choose "Sort Type", Start and Stop hours and fill "Run Days" according to the day of the week the month starts with (the first day of the week is Monday; for example: the rule starting in Sept 2018 should have "Run Days" like "3,4,5,6,7,10,11,12,13,14", select "Scenarios" and press "Save" button.

The screenshot shows a web form for configuring a scheduler. It includes several dropdown menus and checkboxes. The 'Rule Type' is set to 'Repeating', 'Repeat Interval' to 'Weekly', 'Repeats' to '2', 'Emails Type' to 'All', 'Time Zone' to 'Zurich - UTC+01:00', 'Start Date' to '01.09.2018', 'Sort Type' to 'Default', 'Start Hour' to '11:21', 'Stop Hour' to '12:21', and 'Run Days' to '3,4,5,6,7,10,11,12,13,14'. There is a checkbox for 'Don't send emails during weekends' which is checked. Under 'Scenarios', there is a 'Select All' checkbox and a checked checkbox for 'Password Check (Hyperlink Only) (Hyperlink)'. Under 'Recipient Groups', there is a checked checkbox for 'Lucy Phishing Campaign - Sample'. A blue 'Save' button is at the bottom.

Rule Type	Repeating
Repeat Interval	Weekly
Repeats	2
Emails Type	All
Time Zone	Zurich - UTC+01:00
Start Date	01.09.2018
<input checked="" type="checkbox"/> Don't send emails during weekends	
Sort Type	Default
Start Hour	11:21
Stop Hour	12:21
Run Days	3,4,5,6,7,10,11,12,13,14
<b>Scenarios</b>	
<input type="checkbox"/> Select All	
<input checked="" type="checkbox"/> Password Check (Hyperlink Only) (Hyperlink)	
<b>Recipient Groups</b>	
<input checked="" type="checkbox"/> Lucy Phishing Campaign - Sample	
<input type="button" value="Save"/>	

## Randomization

In LUCY > 4-0 we added a randomization feature, that allows you to split up your recipients over different scenario's using the scheduler.

A close-up of the 'Sort Type' dropdown menu. The dropdown is open, showing 'By Scenarios' as the selected option. The entire dropdown menu is highlighted with a red rectangular border.

<input type="checkbox"/> Don't send emails during weekends	
<b>Sort Type</b>	By Scenarios

Here is an example how this can be used: Let's assume you want to setup a campaign over a period of 3 months as an example. The campaign has 3 scenarios and you want to test 100 users in total. Each month, you would want each user to randomly receive 1 of the 3 scenarios. Each month, each user has to receive a different one of these 3 emails so that at the end, they have all seen all 3 emails but in different months. How can this be done?

Using the randomization feature in LUCY it can be done in an easy way. The way the randomization works is, that LUCY randomly only sorts out the list of recipients in between different scenarios.

Rule Type	Repeating
Repeat Interval	Monthly
Repeats	3
Emails Type	All
Time Zone	Zurich - UTC+01:00
Start Date	25.04.2018
<input type="checkbox"/> Don't send emails during weekends	
Sort Type	By Scenarios
Start Hour	00:00
Stop Hour	23:55
Run Days	1,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30
Scenarios	<input checked="" type="checkbox"/> Select All <input checked="" type="checkbox"/> Scenario 3 (Web Based) <input checked="" type="checkbox"/> Scenario 2 (Web Based) <input checked="" type="checkbox"/> Scenario 1 (Web Based)
Recipient Groups	<input checked="" type="checkbox"/> Group 2 <input checked="" type="checkbox"/> Group 1 <input checked="" type="checkbox"/> Group 3

## Scheduler and lure templates

Please note that the delay for the Lure message does not work if you create a single schedule rule for both attack and lure ⇒ it sends the lure immediately along with the attack. Use a separate scheduling rule for the lure attack.

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