Reading 4: ASLR

Alexandre Bartel

The report should consist of a single pdf file. Send the report to

alexandre.bartel@uni.lu

with the following subject:

`MICS2019SVEM Reading 4 FIRSTNAME_LASTNAME`

The deadline is the 31^{st} of March 2019 at 23:59.

1 Reading 4 : ASLR (42 P.)

First, go through the list of questions. Then, read the paper `bittau-brop.pdf` "Hacking Blind" from Bittau et al. and answer to the following questions. Please, copy/paste the question in your document before answering to the question.

Question 1.1 What is BROP? What is the difference between ROP? (2-3 sentences) — 2 P.

Question 1.2 Does a BROP attack also work for binaries for which the attacker does not have access to (no source, no binary)? Explain. (3-4 sentences) — 3 P.

Question 1.3 Look at Figure 4. Is there a situation where the BROP approach does not work? Why? (3-4 sentences) — 3 P.

Question 1.4 Does a BROP attack also work for binaries for which the attacker does not have access to (no source, no binary)? Explain. (3-4 sentences) — 2 P.

Question 1.5 What are the requirements to perform a BROP attack? Explain. (3-4 sentences) — 2 P.

Question 1.6 Instead of randomly brute-forcing the 2^{64} address space, an attacker can leak the return address. How does an attacker leak the return address? Explain. (3-4 sentences) 3 P.

Question 1.7 Why are stop gadgets? What are they useful for? Explain. (3-5 sentences) 4 P.

Question 1.8 To classify gadgets, different stack layouts (the data the attacker puts on the stack) are used? What are the different stack layouts and how can they be used to identify categories of gadgets? Explain. (5-10 sentences + figure) 5 P.

Question 1.9 To execute a function, the attacker has to find the PLT. What is the PLT? How can an attacker find this table? Explain. (5-10 sentences + figure) 5 P.

Question 1.10 How long, did it take to exploit a vulnerability with a BROP attack in yaSSL + MySQL? in nginx? 3 P.

Question 1.11 The return address might not be recovered if a load balancer is used (we assume here attack on a remote host through the network). Explain why. (5-10 sentences + figure) 5 P.

Question 1.12 The attack might not work if all workers are stuck in a loop. Explain why. (5-10 sentences + figure) 5 P.

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