# Honeynet/pot : the data capture possibilities

## from data capture to black-hole network

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# Where is data capture in the honeynet technology ?

- Data Control
  - The way to contain/limit the attackers. This is the really important part to limit the potential abuse of the attackers.
- Data Capture
  - Capturing the activities inside and around the honeynet/pot without informing the attackers.
- Data Collection
  - Collection is used to gather all the data captured in different distributed honeynets/pots.

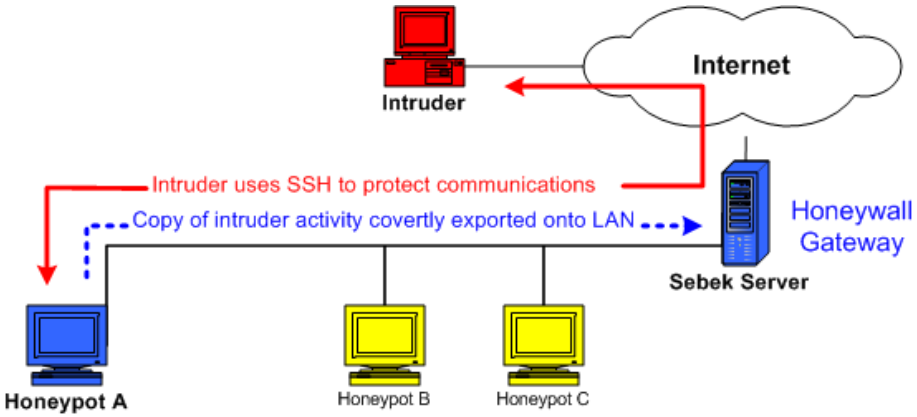
# Data capture rules

- Don't store the captured data on the honeypot
- Limit any potential parasiting information (e.g. a monitoring tool testing the honeypot)
- Archiving is a requirement and log rotation must be done regularly
- Data capture system must be protected against potential attackers
- Sync clock with NTP and use a coherent timezone for all the systems (e.g. UTC)
- Always take into consideration the potential misuse of your data capture

# Recommended method for data capture

- Full network packet data capture (inside/outside)
  - bpf/pcap capture at the bridge layer (or at span/monitored port)
- Operating System activity
  - Sebek, custom readline logger, ...
- Logs of the data control layer
  - Firewall bridge, netfilter logs or pf logs

# Data capture tool - sebek




- A data capture tool built by the Honeynet project
- Composed of two parts : Sebek kernel module (installed in the honeypot) and a Sebek server (installed on a separated system)
- Using rootkit tricks to hide himself on the honeypot (Adore is used)
- Sebek kernel module "intercept" the standard read()/write() from the syscall table
- and forwards to a kernel datalogger

# Data capture tool - sebek

- The datalogger is forwarding the information to a packet generator
- Sebek is using a custom raw socket interface (to hide himself)
- Sebek uses directly the network device driver
- Sebek is below Netfilter (not possible for the attacker to filter Sebek)
- Sebek is not accounted in the standard TCP/IP stack
- Sebek is not using ARP to obtain the MAC of the server

# rules of Data collection

When playing with multiple honeynets or a distributed honeynet infrastructure :

- A unique identifier must be used across the distributed infrastructure
- A secure mechanism must be used to collect the information
- Time is again critical (system must be in sync)

# Netflow as a data collection mechanism ?

- "NetFlow is an open but proprietary network protocol developed by Cisco Systems to run on Cisco IOS-enabled equipment for collecting IP traffic information." Wikipedia
- A flow is a unidirectional sequence of packets sharing same value like source/dest IP, source/dest port and protocol
- A Netflow record contains the information regarding a specific flow including src/dest IP, ToS, timestamp (start and stop),...
- Netflow is usually using UDP as protocol (SCTP can be used in newer version of Netflow) but not really respecting the rules of data collection
- But integration with existing Netflow collector is easy...

# Conclusion ?

- Data collection is a critical part of honeynet/pot
- Black-hole monitoring relies on data capture and distributed collection
- Monitoring the void is interesting and provides not only noise...
- Collecting uninteresting information could become interesting information in the next days

# Q and A

- Thanks for listening.