BINARY CONFIDENCE

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FIRST Regional Symposium Europe

Enhancing OS vulnerability scanners:

from a single box to hardened multi-node scan clusters

Protect your information assets with real-time threat detection.

Introduction

- Developer, consultant, SaaS architect, DevOps lead @ SAP

Introduction

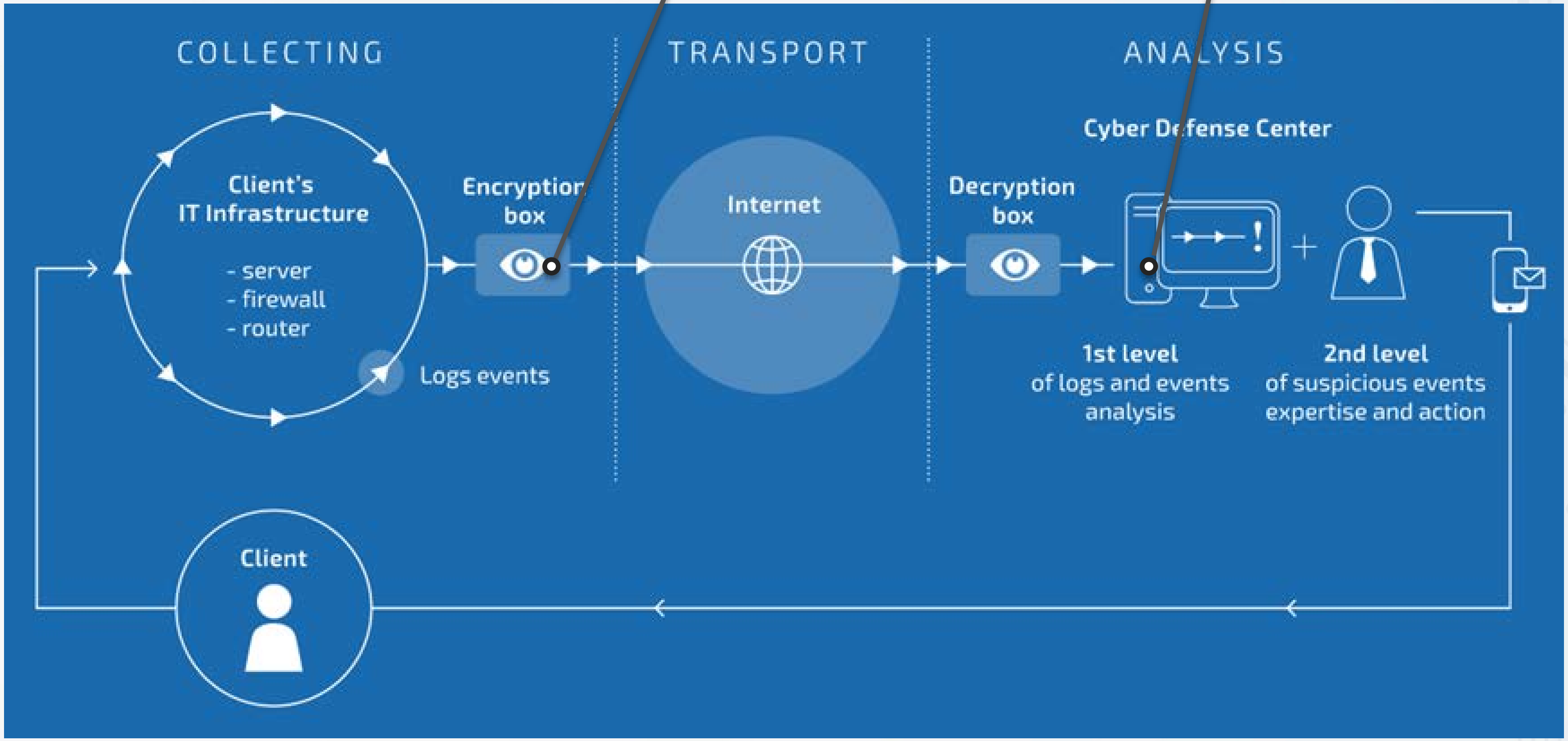
- Co-founder of Binary Confidence

Introduction

- Developer, consultant, SaaS architect, DevOps lead @ SAP
- Co-founder of Binary Confidence:
  - Expert Consultancy
  - Trainings and live simulations
  - MSSP
  - Security Operations Centre (SOC)
  - Emergency Response Team

MSSP Encryption box

- Log & data collection
- Infra. and self monitoring
- Patch management
- Vulnerability scanning



OpenVAS slave runs here

OpenVAS master and repos

The Challenge

Guys, we need to automate our network scanning! Are you in?

- Critical infrastructure
- Several datacenters
- Hundred(s) VLANs
- Thousands devices
- Air-gapped
- ..yet cost effective

The Options

- **Greenbone / OpenVAS**

Greenbone
Sustainable Resilience

OpenVAS
Open Vulnerability Assessment System

- **Nessus**

Nessus NP™
Professional

tenable™
COMMUNITY

- **Rapid7**

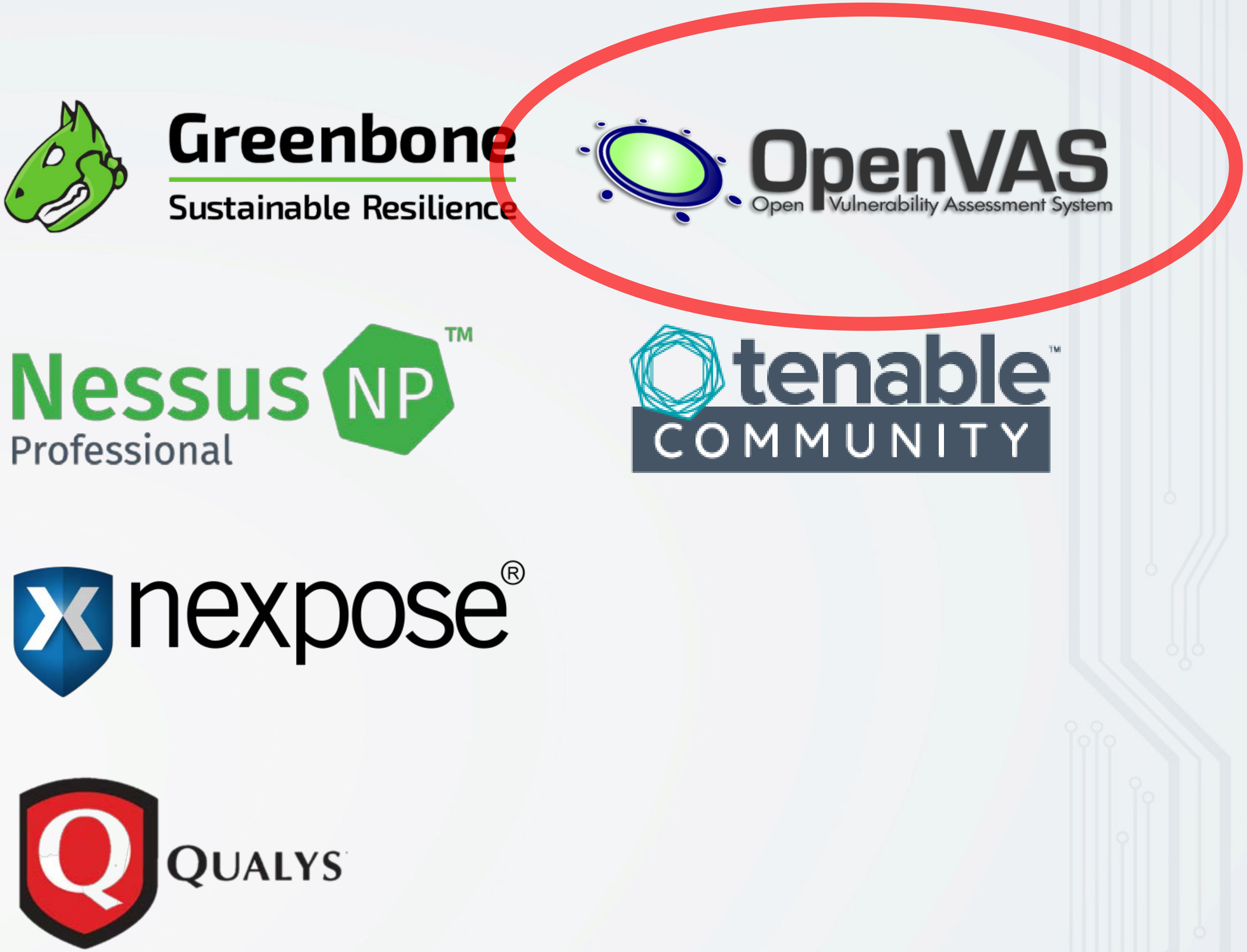
nexpose®

- **Qualys**

QUALYS

The Options

- Greenbone / OpenVAS
- Nessus
- Rapid7
- Qualys



What we got?

- Open Source w. community updates

- Web UI - GSA
- API and CLI – OpenVAS Manager
- Scalability ↔ ↕
- Master supports 15+ slaves and 150+ tasks

- Configurability
- Multiple output formats (PDF, HTML, CSV, XML)
- Reporting incl. Σ and Δ

Reported data

High (CVSS: 7.5) **80/tcp**

NVT: phpinfo() output accessible (OID: 1.3.6.1.4.1.25623.1.0.11229)

Summary

Many PHP installation tutorials instruct the user to create a file called phpinfo.php or similar containing the phpinfo() statement. Such a file is often times left in webserver directory after completion.

Vulnerability Detection Result

The following files are calling the function phpinfo() which disclose potentially sensitive information to the remote attacker: http://metasploitable/phpinfo.php

Impact

Some of the information that can be gathered from this file includes: The username of the user who installed php, if they are a SUDO user, the IP address of the host, the web server version, the system version(unix / linux), and the root directory of the web server.

Solution type: Workaround

Delete them or restrict access to the listened files.

Vulnerability Detection Method

Details: phpinfo() output accessible (OID: 1.3.6.1.4.1.25623.1.0.11229)

What else do we need?

OK, we‘ve got the foundation, what else do we need?

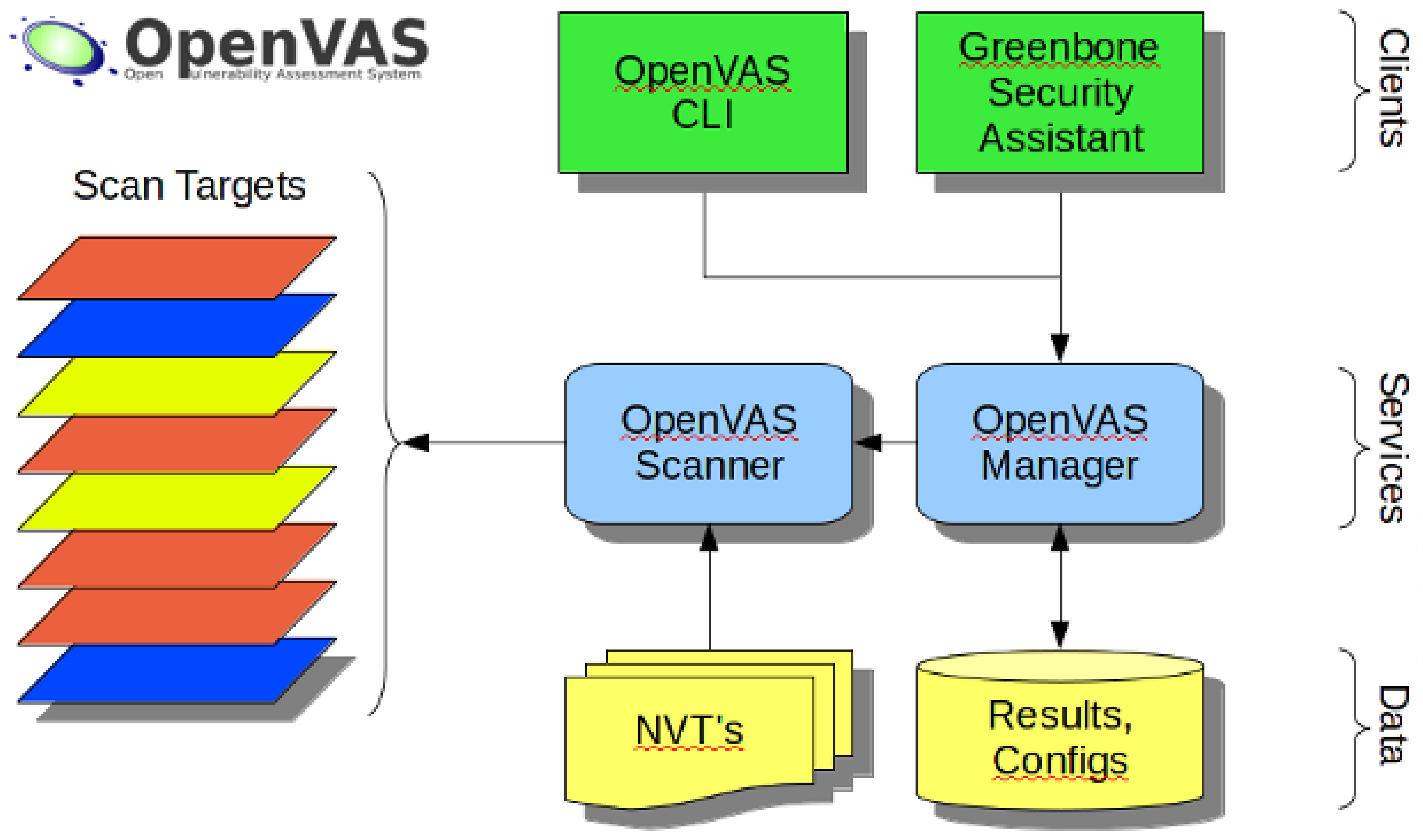
1. Fast installation

What else do we need?

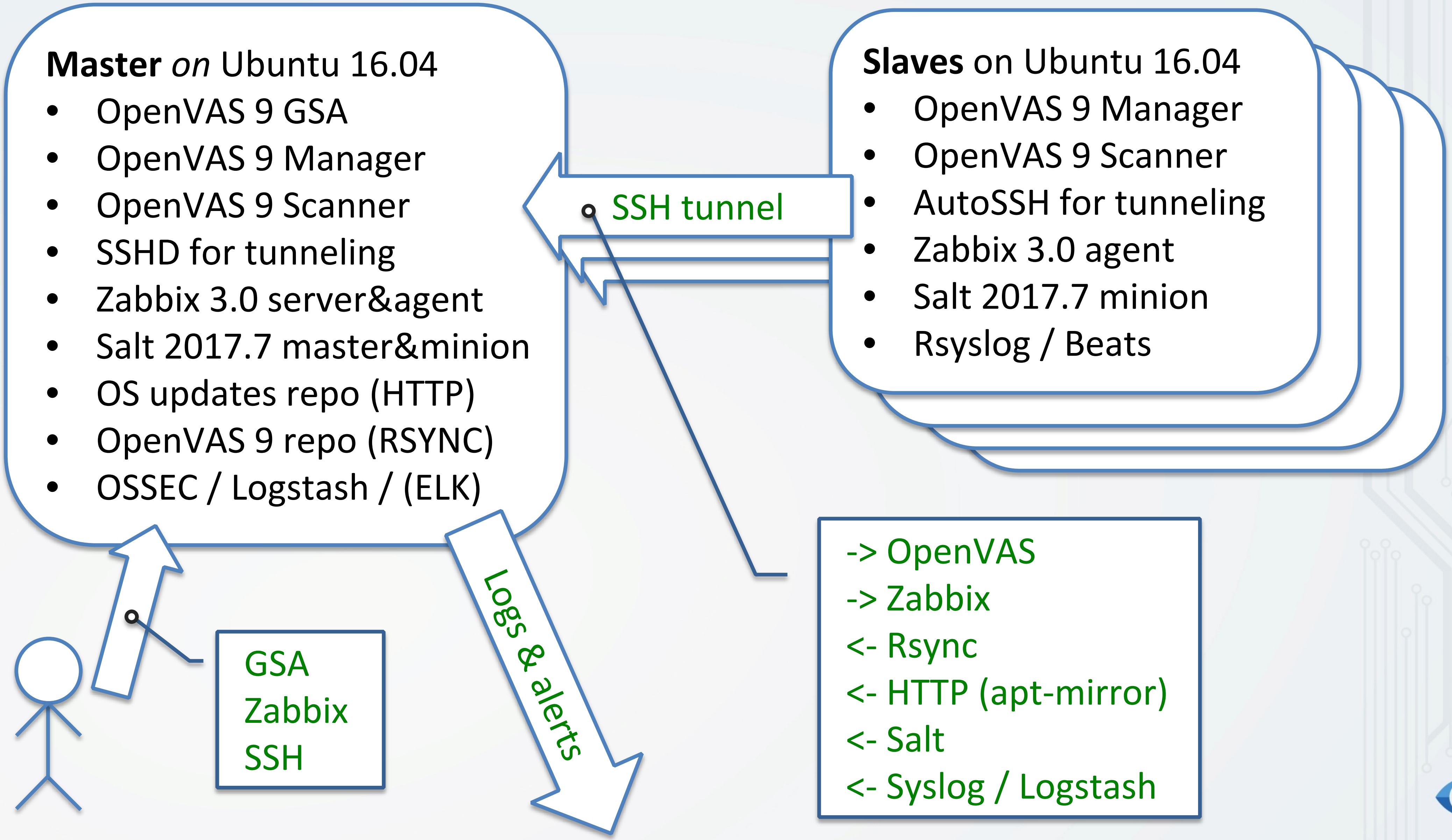
OK, we‘ve got the foundation, what else do we need?

1. Fast installation and final deployment
2. Running
   a. Reconfigurations
   b. Security Monitoring
   c. Operation Monitoring
3. Air-gap support - updates
4. Simple and safe HL communication
5. Backups and High-availability
6. Hardening

OpenVAS


OpenVAS
Open Vulnerability Assessment System
OpenVAS CLI
Greenbone Security Assistant
Clients
Scan Targets
OpenVAS Scanner
OpenVAS Manager
Services
NVT's
Results, Configs
Data

The Ingredients



Master *on* Ubuntu 16.04

- OpenVAS 9 GSA
- OpenVAS 9 Manager
- OpenVAS 9 Scanner
- SSHD for tunneling
- Zabbix 3.0 server&agent
- Salt 2017.7 master&minion
- OS updates repo (HTTP)
- OpenVAS 9 repo (RSYNC)
- OSSEC / Logstash / (ELK)

Slaves on Ubuntu 16.04

- OpenVAS 9 Manager
- OpenVAS 9 Scanner
- AutoSSH for tunneling
- Zabbix 3.0 agent
- Salt 2017.7 minion
- Rsyslog / Beats

SSH tunnel

-> OpenVAS
-> Zabbix
<- Rsync
<- HTTP (apt-mirror)
<- Salt
<- Syslog / Logstash

GSA
Zabbix
SSH

Logs & alerts

HW Requirements

- Mini PCs: 1..2 LAN ports
- 1U servers: 6..10 LAN ports

Master

- Single master / HA
- For 15 slaves: 2 cores, 4GB RAM, 128GB disk, no scanning

Slave

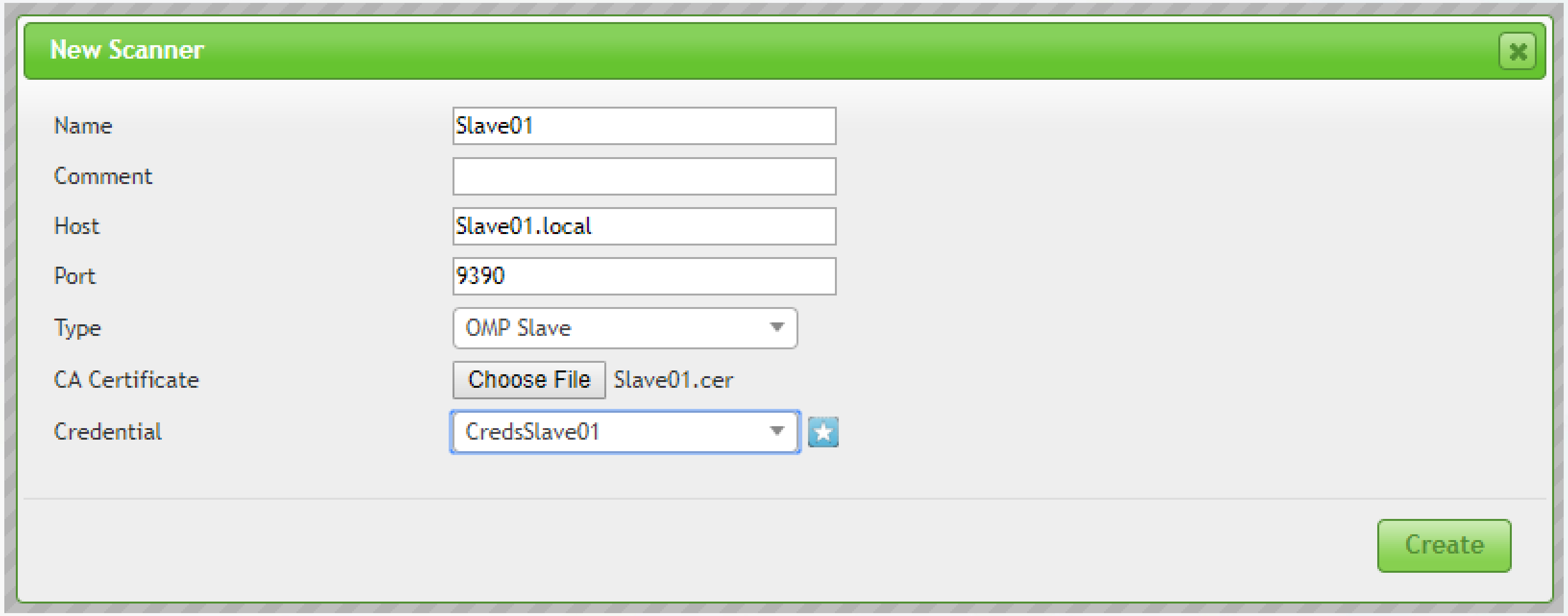
- Value: 1 core, 2GB RAM, 32GB disk
- Optimal: 2-4 cores, 4GB RAM, 64GB disk

Communications

- External O->M communication does support 2FA
  - OpenVAS GSA&Zabbix: TCP 443 O->M and SSH: TCP 22 O->M
- All M<->S communication tunneled - autoSSH
  - OpenVAS scanner: TCP 9390 M->S
  - Zabbix monitoring: TCP 10050 M->S
  - Salt remote execution: TCP 4505, 4506 S->M
  - OpenVAS RSYNC: TCP 873 S->M
  - OS & services updates: TCP 80 S->M
- Approx. data transfer:
  - Idle: M->S: 60 kbps, S->M: 80kbps
  - Scan: M->S: 100 kbps, S->M: 100kbps
  - Update: M->S: megabytes for a weekly update

Deployment & add scanner

- From Sources vs. Packages vs. Upgrades
- SVN -> GitHub: https://github.com/greenbone
- https://svn.wald.intevation.org/svn/openvas/trunk/tools/openvas-check-setup --v9



New Scanner

Name	Slave01
Comment	
Host	Slave01.local
Port	9390
Type	OMP Slave
CA Certificate	Choose File Slave01.cer
Credential	CredsSlave01

- CA Certificate of slave: `/var/lib/openvas/CA/`
- Create a user on slave: `openvasmd --user=creds01`

OpenVAS tools: CLI/Python/Dialog

- GitHub: https://github.com/greenbone/gvm-tools
  - gvn-cli – XML
  - gvm-pyshell – Python3
  - Even on Windows: gvm-cli.exe & gvm-pyshell.exe

- Other interesting projects:
  - https://github.com/mikesplain/openvas-docker
  - https://www.seccubus.com/

Automation

- New slave deployment:
  - USB key w preseeded Ubuntu Server
  - MAC 2 hostname&IP
  - Run Salt-minion
- Update packages
- Update deployment
- Routine maintenance

Monitoring

- OS, basic/added services, ports and updates
- Utilization – don‘t overutilize existing infrastructure
- Master-Slave connectivity

- OpenVAS services and ports
- Service status
- Tasks and results
- Update status and timestamps

- Negative checks
- Reporting to operators

ZABBIX

Under development

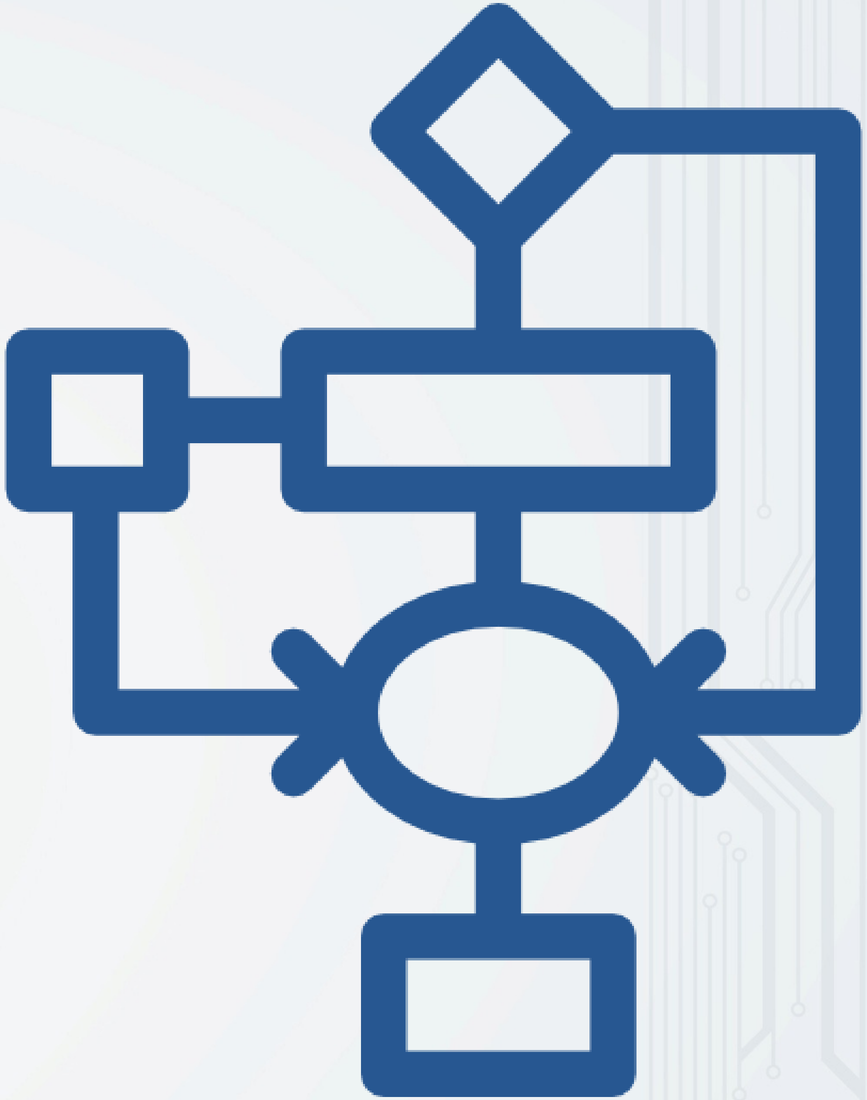
- Automated delta reports
- Auto ticket creation for critical/high vulnerabilities
- Findings to Elastic (https://github.com/austin-taylor/VulnWhisperer)
- Master HA
- Cluster basic auto healing

Don‘t forget about these

- Make sure everyone knows
- Adjust your monitoring
- Brute force / Default creds?

- Hardening
- Work instructions
- False sense of security

- Scheduling / utilization:
  - Lines M<->S, S<->T
  - Master, Scanner or Targets



Takeaways

1. OpenVAS – stable and amendable foundation to start with

2. Automate everything: Preseed USB, Zabbix, Saltstack

3. Communicate to SOC, educate operators (false sense of security)

BINARY CONFIDENCE

Your Private Guardians

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Protect your information assets with real-time threat detection.