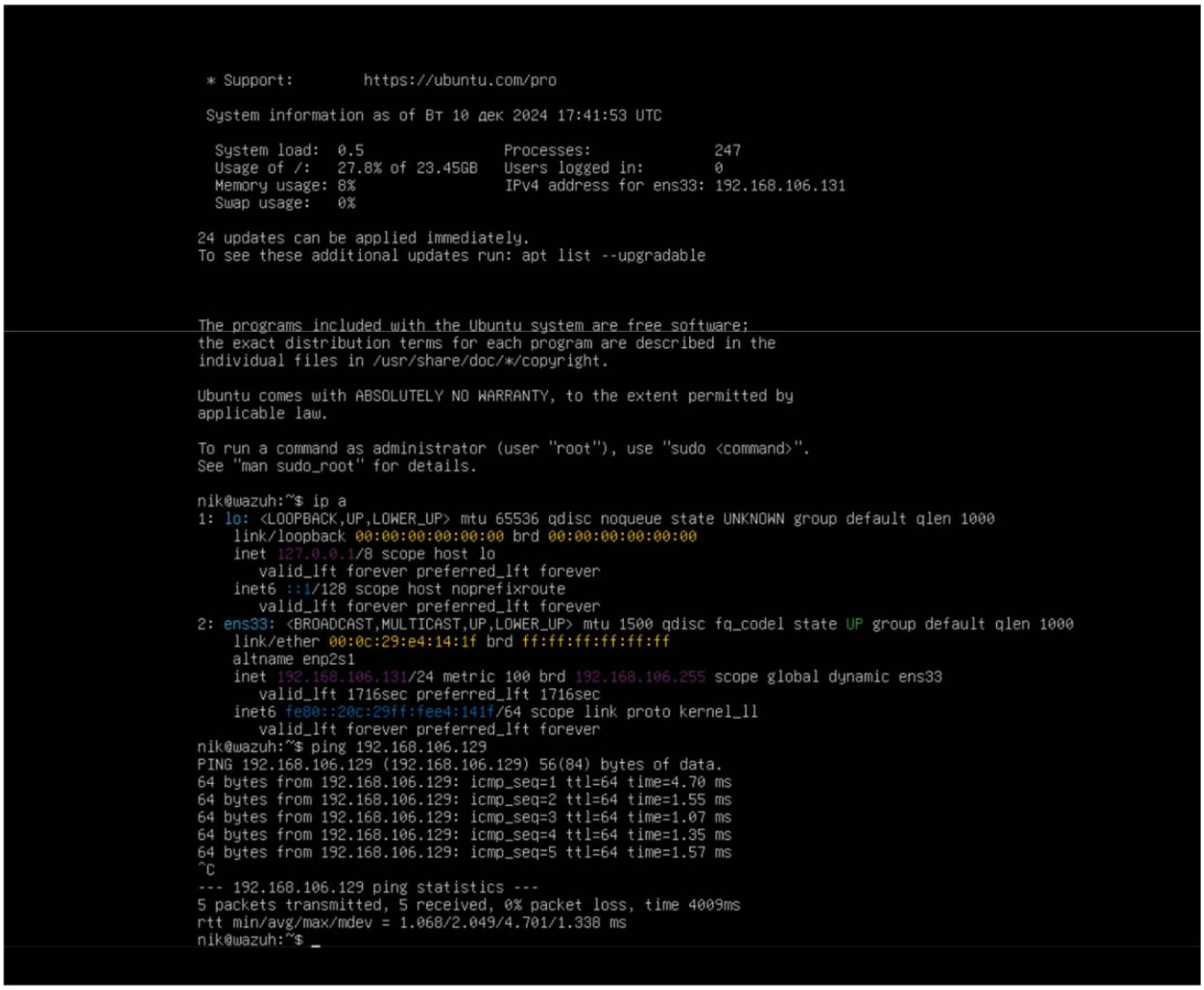
Практическая работа №3 Wazuh
Работу выполнил – Сапов Александр Дмитриевич ББМО-02-23

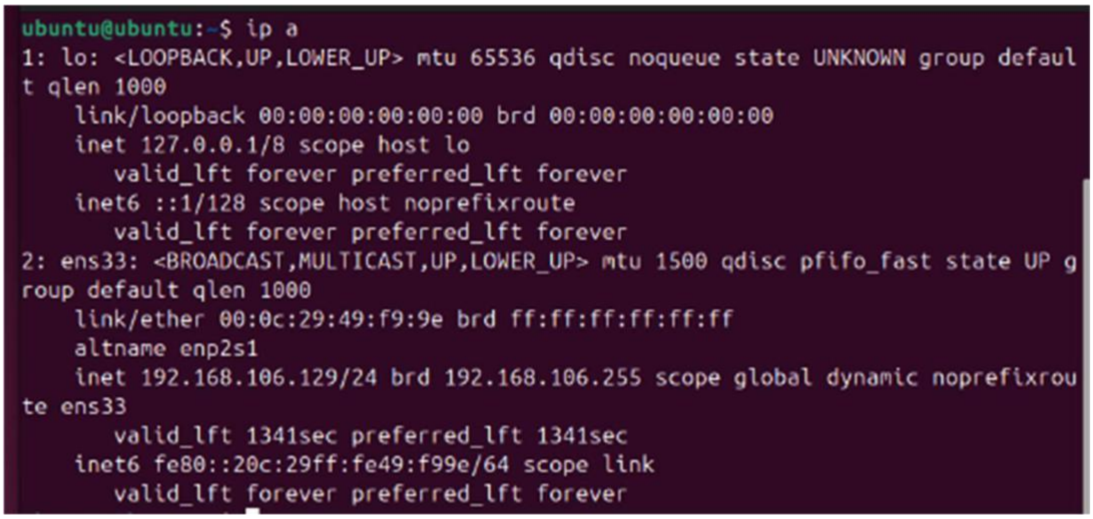
Развертывание ВМ:

Серверная ВМ:



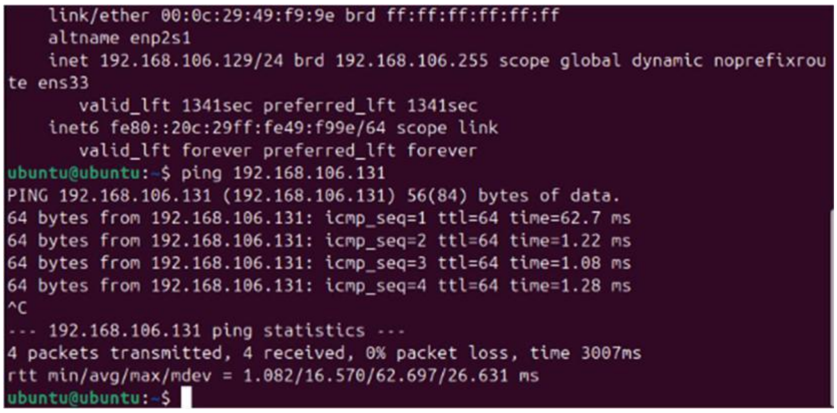
```
 * Support:        https://ubuntu.com/pro

 System information as of Вт 10 дек 2024 17:41:53 UTC

  System load:  0.5               Processes:             247
  Usage of /:   27.8% of 23.45GB  Users logged in:       0
  Memory usage: 8%                IPv4 address for ens33: 192.168.106.131
  Swap usage:   0%

24 updates can be applied immediately.
To see these additional updates run: apt list --upgradable


The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

nik@wazuh:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
       valid_lft forever preferred_lft forever
2: ens33: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 00:0c:29:e4:14:1f brd ff:ff:ff:ff:ff:ff
    altname enp2s1
    inet 192.168.106.131/24 metric 100 brd 192.168.106.255 scope global dynamic ens33
       valid_lft 1716sec preferred_lft 1716sec
    inet6 fe80::20c:29ff:fee4:141f/64 scope link proto kernel_ll
       valid_lft forever preferred_lft forever
nik@wazuh:~$ ping 192.168.106.129
PING 192.168.106.129 (192.168.106.129) 56(84) bytes of data.
64 bytes from 192.168.106.129: icmp_seq=1 ttl=64 time=4.70 ms
64 bytes from 192.168.106.129: icmp_seq=2 ttl=64 time=1.55 ms
64 bytes from 192.168.106.129: icmp_seq=3 ttl=64 time=1.07 ms
64 bytes from 192.168.106.129: icmp_seq=4 ttl=64 time=1.35 ms
64 bytes from 192.168.106.129: icmp_seq=5 ttl=64 time=1.57 ms
^C
--- 192.168.106.129 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4009ms
rtt min/avg/max/mdev = 1.068/2.049/4.701/1.338 ms
nik@wazuh:~$ _
```

Клиентская ВМ:



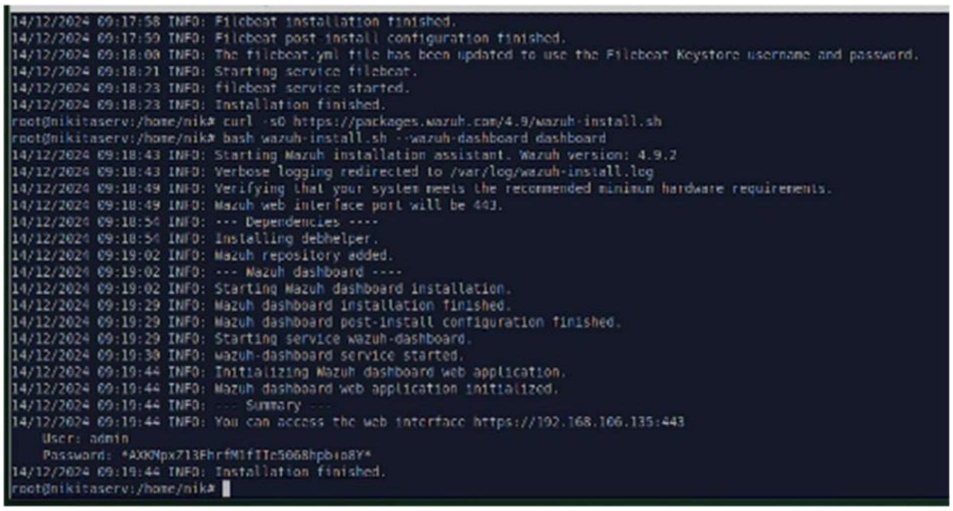
```
ubuntu@ubuntu:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group defaul
t qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
       valid_lft forever preferred_lft forever
2: ens33: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP g
roup default qlen 1000
    link/ether 00:0c:29:49:f9:9e brd ff:ff:ff:ff:ff:ff
    altname enp2s1
    inet 192.168.106.129/24 brd 192.168.106.255 scope global dynamic noprefixrou
te ens33
       valid_lft 1341sec preferred_lft 1341sec
    inet6 fe80::20c:29ff:fe49:f99e/64 scope link
       valid_lft forever preferred_lft forever
```

Обеспечение сетевого обмена между 2 ВМ:



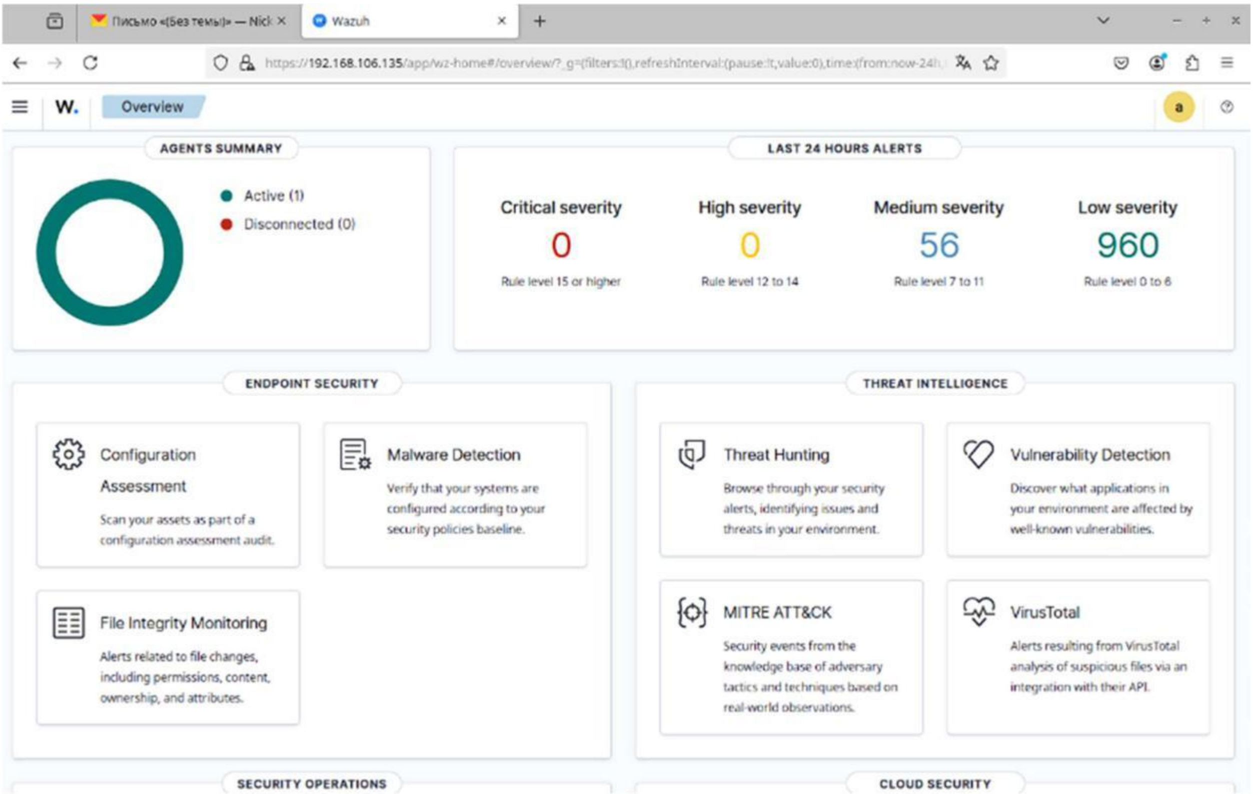
```
    link/ether 00:0c:29:49:f9:9e brd ff:ff:ff:ff:ff:ff
    altname enp2s1
    inet 192.168.106.129/24 brd 192.168.106.255 scope global dynamic noprefixrou
te ens33
       valid_lft 1341sec preferred_lft 1341sec
    inet6 fe80::20c:29ff:fe49:f99e/64 scope link
       valid_lft forever preferred_lft forever
ubuntu@ubuntu:~$ ping 192.168.106.131
PING 192.168.106.131 (192.168.106.131) 56(84) bytes of data.
64 bytes from 192.168.106.131: icmp_seq=1 ttl=64 time=62.7 ms
64 bytes from 192.168.106.131: icmp_seq=2 ttl=64 time=1.22 ms
64 bytes from 192.168.106.131: icmp_seq=3 ttl=64 time=1.08 ms
64 bytes from 192.168.106.131: icmp_seq=4 ttl=64 time=1.28 ms
^C
--- 192.168.106.131 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3007ms
rtt min/avg/max/mdev = 1.082/16.570/62.697/26.631 ms
ubuntu@ubuntu:~$
```

Развертывание на серверной ВМ Wazuh-сервера:



```
14/12/2024 09:17:58 INFO: Filebeat installation finished.
14/12/2024 09:17:59 INFO: Filebeat post-install configuration finished.
14/12/2024 09:18:00 INFO: The filebeat.yml file has been updated to use the Filebeat Keystore username and password.
14/12/2024 09:18:21 INFO: Starting service filebeat.
14/12/2024 09:18:23 INFO: filebeat service started.
14/12/2024 09:18:23 INFO: Installation finished.
root@nikitaserv:/home/nik# curl -sO https://packages.wazuh.com/4.9/wazuh-install.sh
root@nikitaserv:/home/nik# bash wazuh-install.sh --wazuh-dashboard dashboard
14/12/2024 09:18:43 INFO: Starting Wazuh installation assistant. Wazuh version: 4.9.2
14/12/2024 09:18:43 INFO: Verbose logging redirected to /var/log/wazuh-install.log
14/12/2024 09:18:49 INFO: Verifying that your system meets the recommended minimum hardware requirements.
14/12/2024 09:18:49 INFO: Wazuh web interface port will be 443.
14/12/2024 09:18:54 INFO: --- Dependencies ----
14/12/2024 09:18:54 INFO: Installing debhelper.
14/12/2024 09:19:02 INFO: Wazuh repository added.
14/12/2024 09:19:02 INFO: --- Wazuh dashboard ----
14/12/2024 09:19:02 INFO: Starting Wazuh dashboard installation.
14/12/2024 09:19:29 INFO: Wazuh dashboard installation finished.
14/12/2024 09:19:29 INFO: Wazuh dashboard post-install configuration finished.
14/12/2024 09:19:29 INFO: Starting service wazuh-dashboard.
14/12/2024 09:19:30 INFO: wazuh-dashboard service started.
14/12/2024 09:19:44 INFO: Initializing Wazuh dashboard web application.
14/12/2024 09:19:44 INFO: Wazuh dashboard web application initialized.
14/12/2024 09:19:44 INFO: --- Summary ---
14/12/2024 09:19:44 INFO: You can access the web interface https://192.168.106.135:443
    User: admin
    Password: *AXXMpx713FhrfM1fITc5068hpb+n8Y*
14/12/2024 09:19:44 INFO: Installation finished.
root@nikitaserv:/home/nik#
```

Проверка правильности установки агента (отображение в Wazuh):



Письмо «(Без темы)» — Nick
Wazuh
https://192.168.106.135/app/wz-home#/overview/?_g=(filters:!(),refreshInterval:(pause:!t,value:0),time:(from:now-24h
W.
Overview
a

AGENTS SUMMARY

● Active (1)

● Disconnected (0)

LAST 24 HOURS ALERTS

Critical severity	High severity	Medium severity	Low severity
0	0	56	960
Rule level 15 or higher	Rule level 12 to 14	Rule level 7 to 11	Rule level 0 to 6

ENDPOINT SECURITY

Configuration Assessment

Scan your assets as part of a configuration assessment audit.

Malware Detection

Verify that your systems are configured according to your security policies baseline.

File Integrity Monitoring

Alerts related to file changes, including permissions, content, ownership, and attributes.

THREAT INTELLIGENCE

Threat Hunting

Browse through your security alerts, identifying issues and threats in your environment.

Vulnerability Detection

Discover what applications in your environment are affected by well-known vulnerabilities.

MITRE ATT&CK

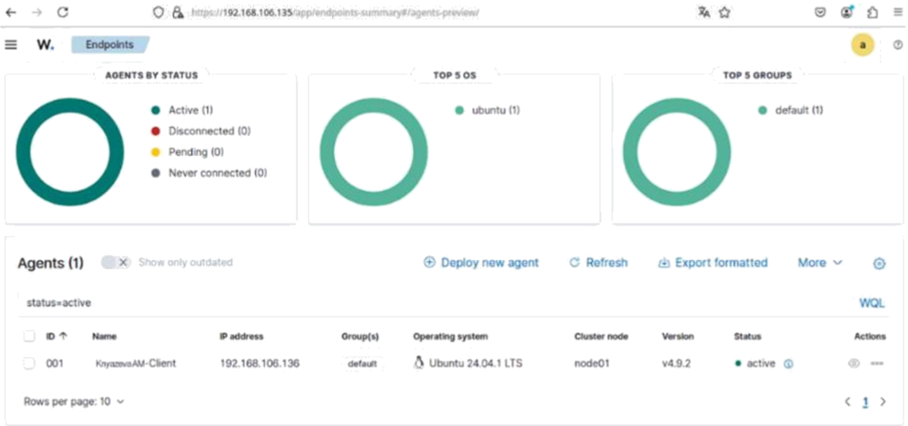
Security events from the knowledge base of adversary tactics and techniques based on real-world observations.

VirusTotal

Alerts resulting from VirusTotal analysis of suspicious files via an integration with their API.

SECURITY OPERATIONS

CLOUD SECURITY

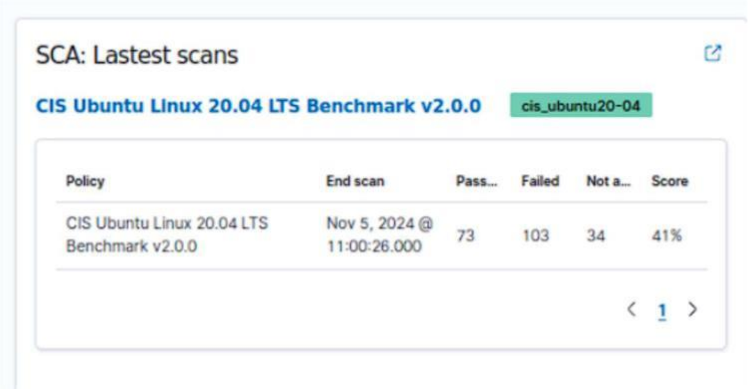


Agents (1)

status=active

ID	Name	IP address	Group(s)	Operating system	Cluster node	Version	Status	Actions
001	KnyazevaAM-Client	192.168.106.136	default	Ubuntu 24.04.1 LTS	node01	v4.9.2	● active	

Детектор уязвимостей для установленного агента:

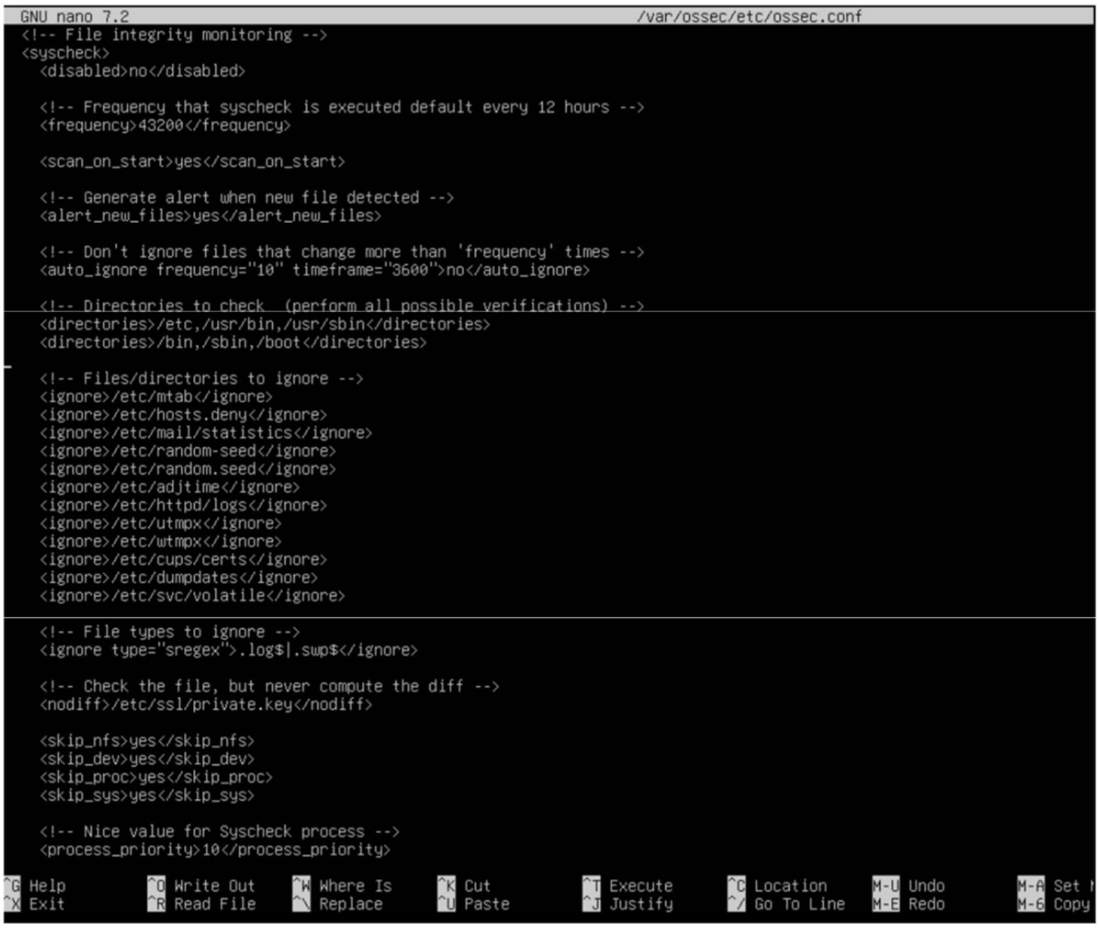


SCA: Lastest scans

CIS Ubuntu Linux 20.04 LTS Benchmark v2.0.0 cis_ubuntu20-04

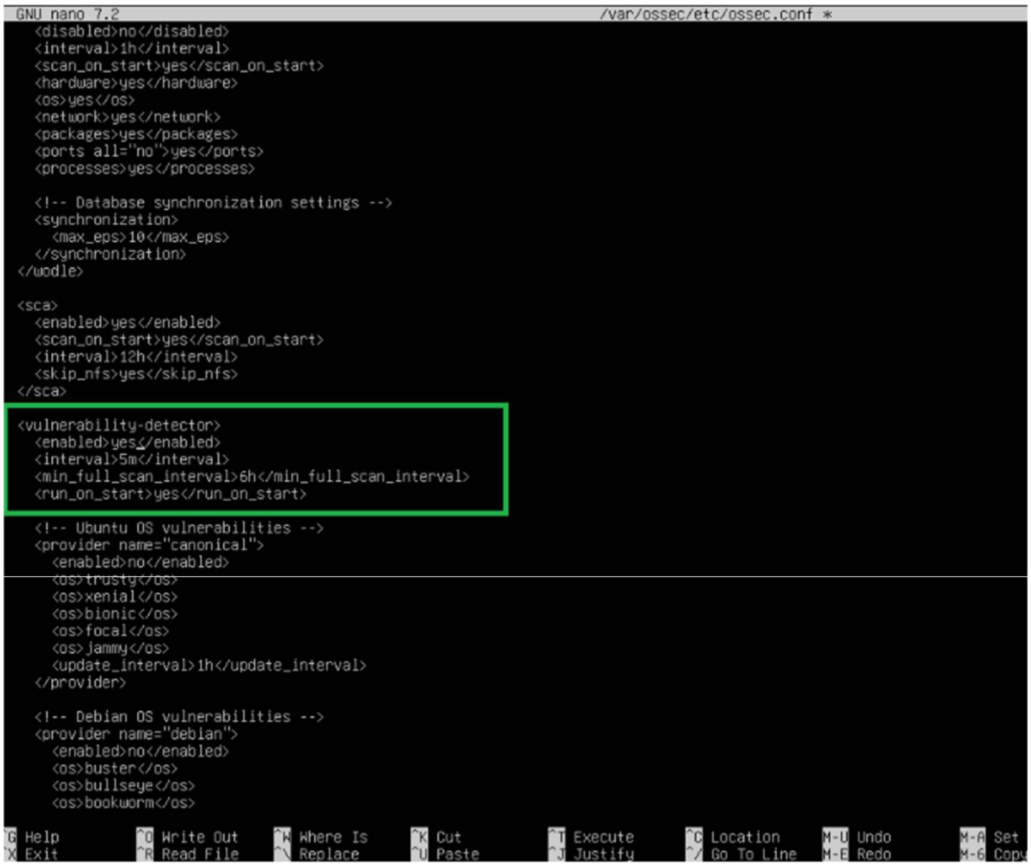
Policy	End scan	Pass...	Failed	Not a...	Score
CIS Ubuntu Linux 20.04 LTS Benchmark v2.0.0	Nov 5, 2024 @ 11:00:26.000	73	103	34	41%

Создание проверки целостности файлов:



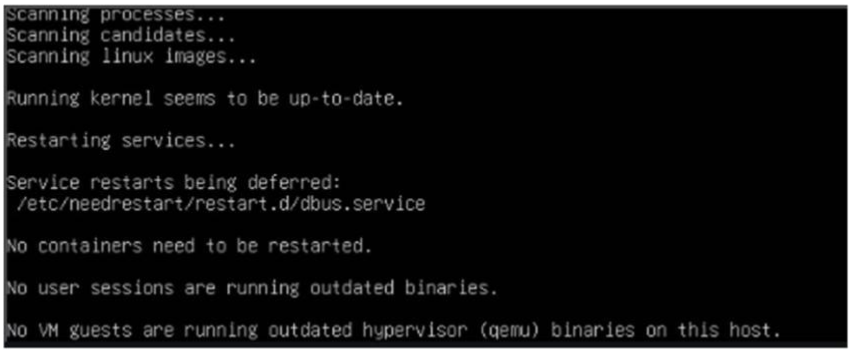
```
  GNU nano 7.2                                          /var/ossec/etc/ossec.conf
  <!-- File integrity monitoring -->
  <syscheck>
    <disabled>no</disabled>

    <!-- Frequency that syscheck is executed default every 12 hours -->
    <frequency>43200</frequency>

    <scan_on_start>yes</scan_on_start>

    <!-- Generate alert when new file detected -->
    <alert_new_files>yes</alert_new_files>

    <!-- Don't ignore files that change more than 'frequency' times -->
    <auto_ignore frequency="10" timeframe="3600">no</auto_ignore>

    <!-- Directories to check  (perform all possible verifications) -->
    <directories>/etc,/usr/bin,/usr/sbin</directories>
    <directories>/bin,/sbin,/boot</directories>

    <!-- Files/directories to ignore -->
    <ignore>/etc/mtab</ignore>
    <ignore>/etc/hosts.deny</ignore>
    <ignore>/etc/mail/statistics</ignore>
    <ignore>/etc/random-seed</ignore>
    <ignore>/etc/random.seed</ignore>
    <ignore>/etc/adjtime</ignore>
    <ignore>/etc/httpd/logs</ignore>
    <ignore>/etc/utmpx</ignore>
    <ignore>/etc/wtmpx</ignore>
    <ignore>/etc/cups/certs</ignore>
    <ignore>/etc/dumpdates</ignore>
    <ignore>/etc/svc/volatile</ignore>

    <!-- File types to ignore -->
    <ignore type="sregex">.log$|.swp$</ignore>

    <!-- Check the file, but never compute the diff -->
    <nodiff>/etc/ssl/private.key</nodiff>

    <skip_nfs>yes</skip_nfs>
    <skip_dev>yes</skip_dev>
    <skip_proc>yes</skip_proc>
    <skip_sys>yes</skip_sys>

    <!-- Nice value for Syscheck process -->
    <process_priority>10</process_priority>
^G Help        ^O Write Out   ^W Where Is    ^K Cut         ^T Execute     ^C Location    M-U Undo       M-A Set M
^X Exit        ^R Read File   ^\ Replace     ^U Paste       ^J Justify     ^/ Go To Line  M-E Redo       M-6 Copy
```

Настройка выявления уязвимостей:



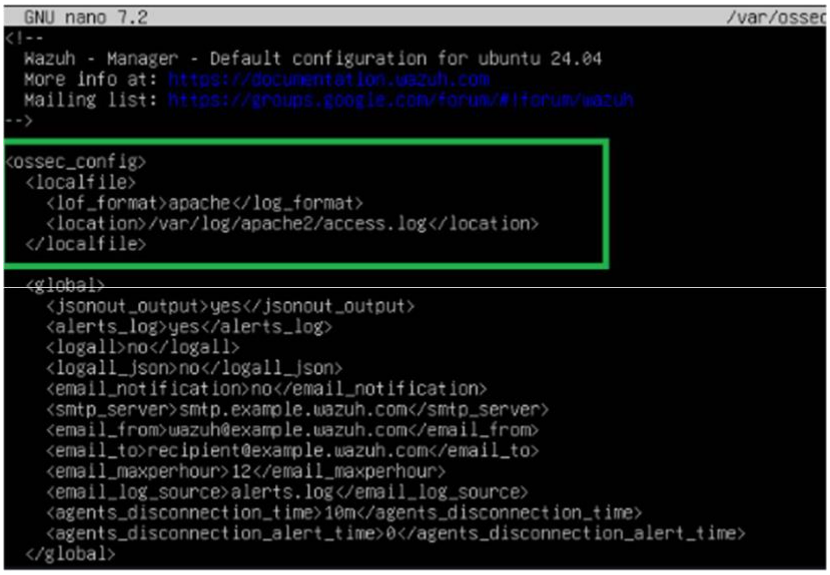
```
    <disabled>no</disabled>
    <interval>1h</interval>
    <scan_on_start>yes</scan_on_start>
    <hardware>yes</hardware>
    <os>yes</os>
    <network>yes</network>
    <packages>yes</packages>
    <ports all="no">yes</ports>
    <processes>yes</processes>

    <!-- Database synchronization settings -->
    <synchronization>
      <max_eps>10</max_eps>
    </synchronization>
  </wodle>

  <sca>
    <enabled>yes</enabled>
    <scan_on_start>yes</scan_on_start>
    <interval>12h</interval>
    <skip_nfs>yes</skip_nfs>
  </sca>

  <vulnerability-detector>
    <enabled>yes</enabled>
    <interval>5m</interval>
    <min_full_scan_interval>6h</min_full_scan_interval>
    <run_on_start>yes</run_on_start>

    <!-- Ubuntu OS vulnerabilities -->
    <provider name="canonical">
      <enabled>no</enabled>
      <os>trusty</os>
      <os>xenial</os>
      <os>bionic</os>
      <os>focal</os>
      <os>jammy</os>
      <update_interval>1h</update_interval>
    </provider>

    <!-- Debian OS vulnerabilities -->
    <provider name="debian">
      <enabled>no</enabled>
      <os>buster</os>
      <os>bullseye</os>
      <os>bookworm</os>
```

Настройка выявления скрытых процессов:



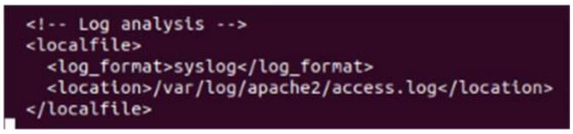
```
Scanning processes...
Scanning candidates...
Scanning linux images...

Running kernel seems to be up-to-date.

Restarting services...

Service restarts being deferred:
 /etc/needrestart/restart.d/dbus.service

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
```

Настройка выявления SQL-инъекций:



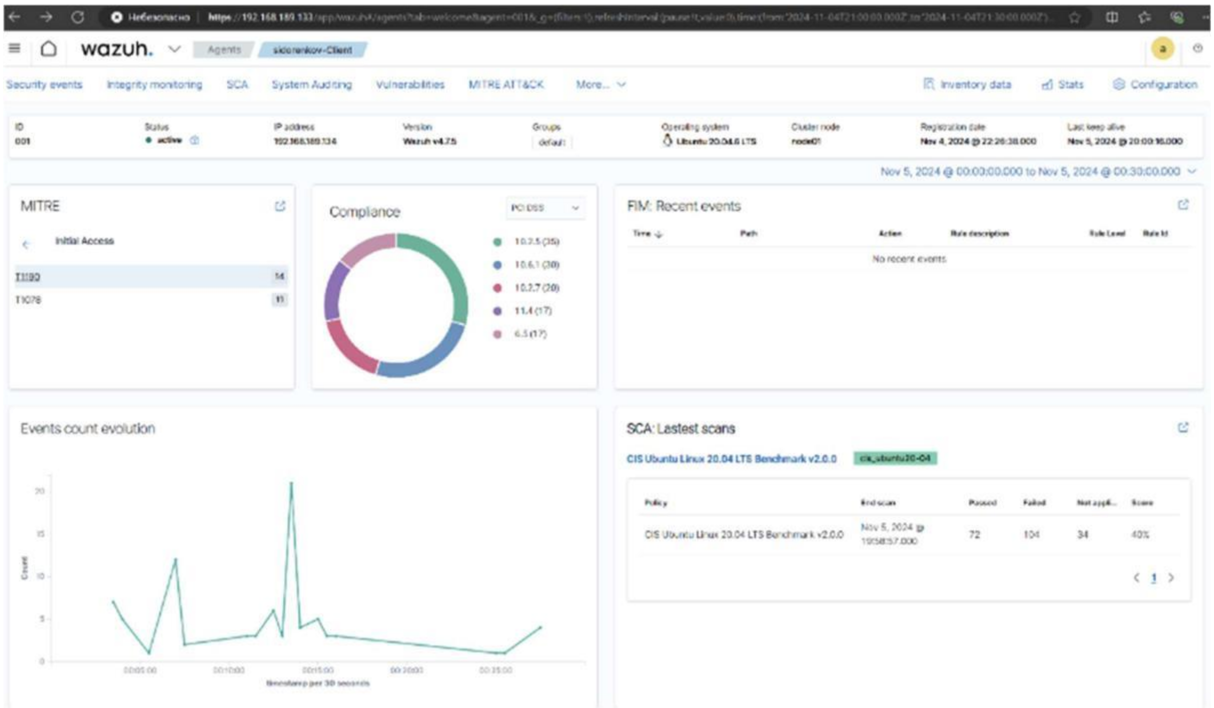
```
  GNU nano 7.2                                                    /var/ossec
<!--
  Wazuh - Manager - Default configuration for ubuntu 24.04
  More info at: https://documentation.wazuh.com
  Mailing list: https://groups.google.com/forum/#!forum/wazuh
-->

<ossec_config>
  <localfile>
    <lof_format>apache</log_format>
    <location>/var/log/apache2/access.log</location>
  </localfile>

  <global>
    <jsonout_output>yes</jsonout_output>
    <alerts_log>yes</alerts_log>
    <logall>no</logall>
    <logall_json>no</logall_json>
    <email_notification>no</email_notification>
    <smtp_server>smtp.example.wazuh.com</smtp_server>
    <email_from>wazuh@example.wazuh.com</email_from>
    <email_to>recipient@example.wazuh.com</email_to>
    <email_maxperhour>12</email_maxperhour>
    <email_log_source>alerts.log</email_log_source>
    <agents_disconnection_time>10m</agents_disconnection_time>
    <agents_disconnection_alert_time>0</agents_disconnection_alert_time>
  </global>
```

Настройка выявления web shell attack:



```
  <!-- Log analysis -->
  <localfile>
    <log_format>syslog</log_format>
    <location>/var/log/apache2/access.log</location>
  </localfile>
```

Проверка работы настроеннх ранее механизмов:



Небезопасно
https://192.168.189.133/app/wazuh#/agents?tab=welcome&agent=001&_g=(filters:!(),refreshInterval:(pause:!t,value:0),time:(from:'2024-11-04T21:00:00.000Z',to:'2024-11-04T21:30:00.000Z'))
wazuh.
Agents
sidorenkov-Client
Security events
Integrity monitoring
SCA
System Auditing
Vulnerabilities
MITRE ATT&CK
More...
Inventory data
Stats
Configuration

ID	Status	IP address	Version	Groups	Operating system	Cluster node	Registration date	Last keep alive
001	● active	192.168.189.134	Wazuh v4.7.5	default	Ubuntu 20.04.6 LTS	node01	Nov 4, 2024 @ 22:26:38.000	Nov 5, 2024 @ 20:00:16.000

Nov 5, 2024 @ 00:00:00.000 to Nov 5, 2024 @ 00:30:00.000

MITRE

Initial Access

T1190	14
T1078	11

Compliance

FIM: Recent events

Time	Path	Action	Rule description	Rule Level	Rule Id

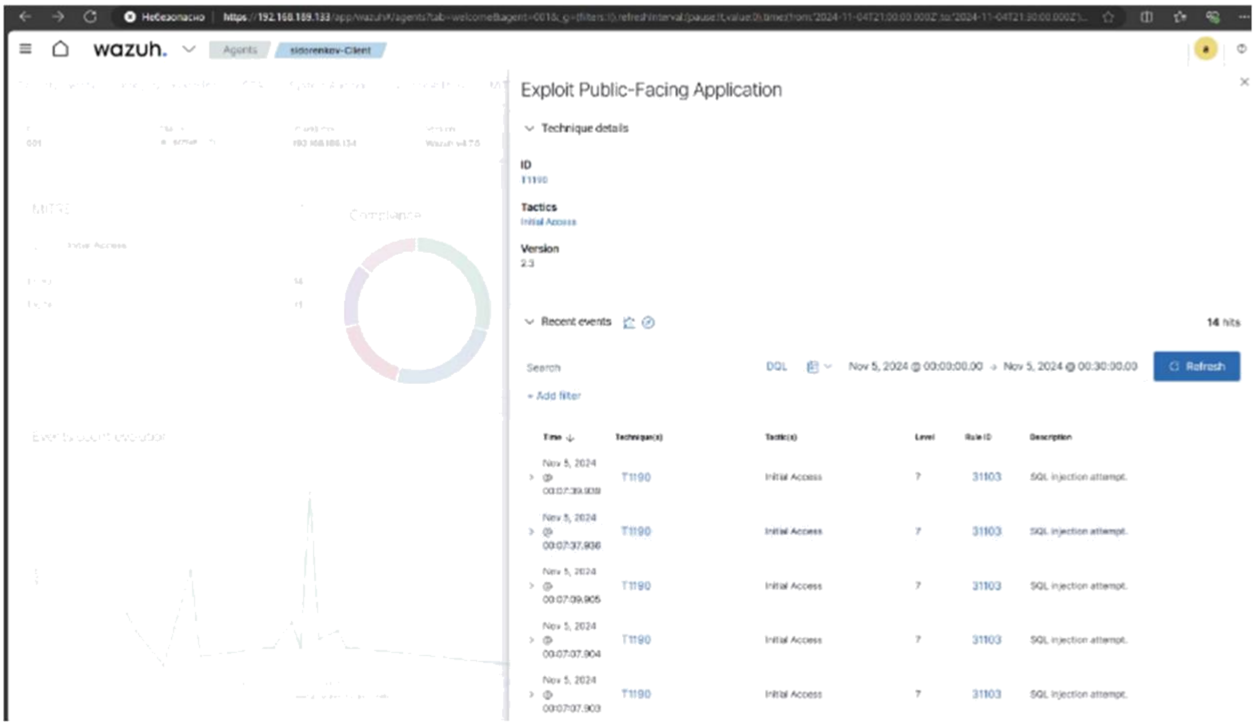
No recent events

Events count evolution

SCA: Lastest scans

CIS Ubuntu Linux 20.04 LTS Benchmark v2.0.0 cis_ubuntu20-04

Policy	End scan	Passed	Failed	Not appli...	Score
CIS Ubuntu Linux 20.04 LTS Benchmark v2.0.0	Nov 5, 2024 @ 19:58:57.000	72	104	34	40%



Небезопасно
https://192.168.189.133/app/wazuh#/agents?tab=welcome&agent=001&_g=(filters:!(),refreshInterval:(pause:!t,value:0),time:(from:'2024-11-04T21:00:00.000Z',to:'2024-11-04T21:30:00.000Z'))...
wazuh.
Agents
sidorenkov-Client
MITRE
Compliance
Initial Access

Exploit Public-Facing Application

Technique details

ID
T1190

Tactics
Initial Access

Version
2.3

Recent events — 14 hits

Search — DQL — Nov 5, 2024 @ 00:00:00.00 → Nov 5, 2024 @ 00:30:00.00 — Refresh

+ Add filter

Time ↓	Technique(s)	Tactic(s)	Level	Rule ID	Description
Nov 5, 2024 @ 00:07:39.909	T1190	Initial Access	7	31103	SQL injection attempt.
Nov 5, 2024 @ 00:07:37.906	T1190	Initial Access	7	31103	SQL injection attempt.
Nov 5, 2024 @ 00:07:09.905	T1190	Initial Access	7	31103	SQL injection attempt.
Nov 5, 2024 @ 00:07:07.904	T1190	Initial Access	7	31103	SQL injection attempt.
Nov 5, 2024 @ 00:07:07.903	T1190	Initial Access	7	31103	SQL injection attempt.