ORACLE

Oracle Cloud Infrastructure (OCI) Network Firewall

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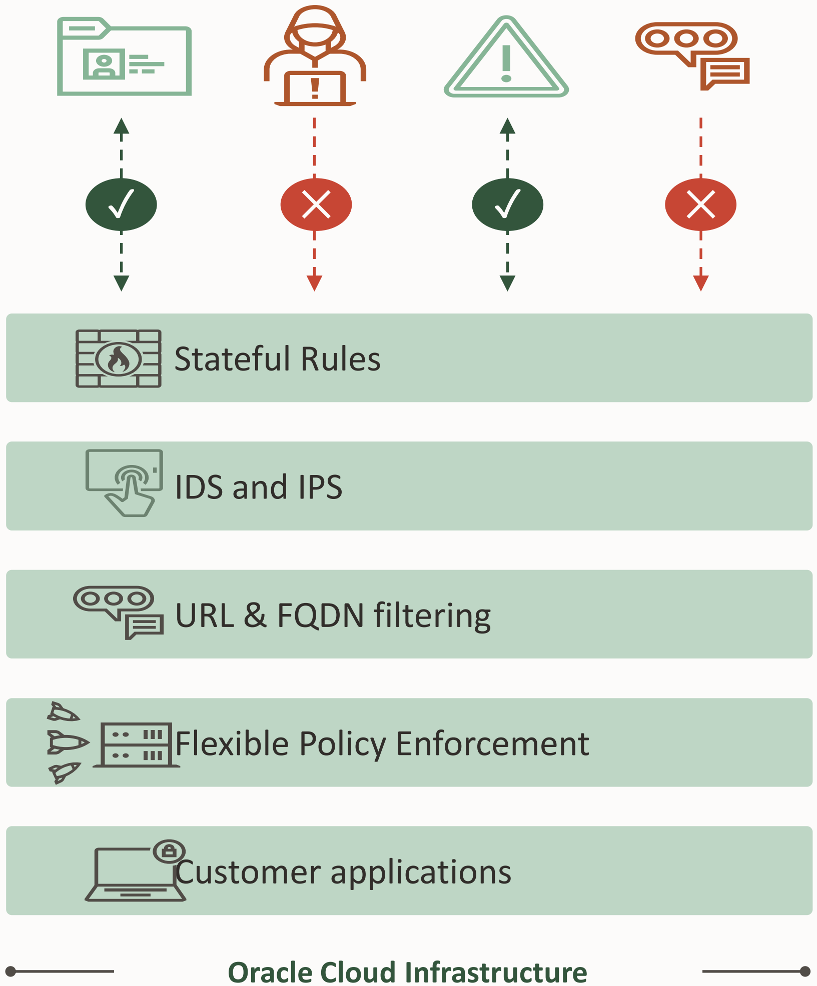
OCI Network Firewall features



Stateful Rules

IDS and IPS

URL & FQDN filtering

Flexible Policy Enforcement

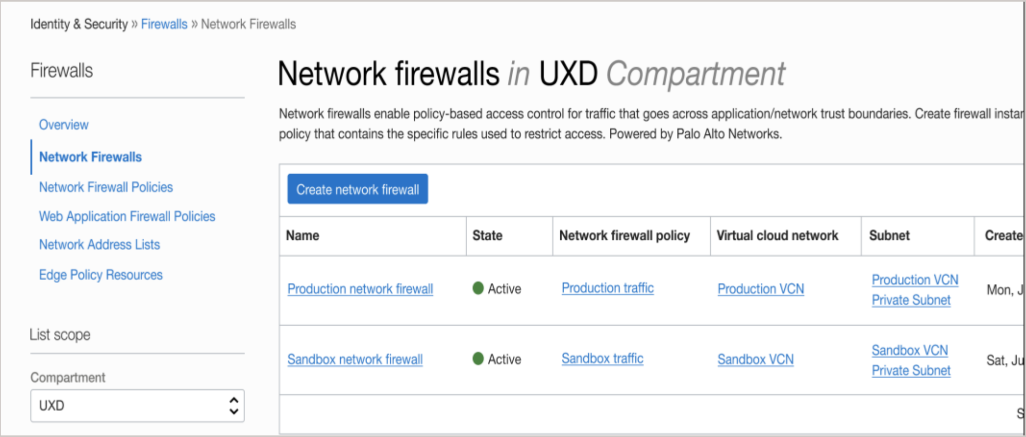
Customer applications

Oracle Cloud Infrastructure

- Stateful filtering Allow or Deny rules based on 5-tuple information for both IPv4 and IPv6 traffic.
- Industry-leading signature-based threat detection and prevention (IDS/IPS) engine to automatically stop known malware, spyware, C2 and vulnerability exploits.
- Control inbound and outbound HTTP/S traffic to a specified list of FQDN including wild cards and custom URLs.
- Secure inbound, outboud and lateral network/application traffic.
  Can be enforced on OCI gateways as well as intra-vcn subnet traffic.

OCI Network Firewall

OCI Network Firewall is a cloud-native managed firewall service that is built using industry leading **Palo Alto Networks** next-generation firewall technology. It provides advanced threat protection capabilities including custom URL filtering, intrusion prevention and detection (IDS/IPS), and TLS inspection to help prevent malicious traffic and malware propagation.



Network firewalls *in* UXD *Compartment*

Network firewalls enable policy-based access control for traffic that goes across application/network trust boundaries. Create firewall instar policy that contains the specific rules used to restrict access. Powered by Palo Alto Networks.

Name	State	Network firewall policy	Virtual cloud network	Subnet	Create
Production network firewall	● Active	Production traffic	Production VCN	Production VCN Private Subnet	Mon, J
Sandbox network firewall	● Active	Sandbox traffic	Sandbox VCN	Sandbox VCN Private Subnet	Sat, Ju

Customer benefits

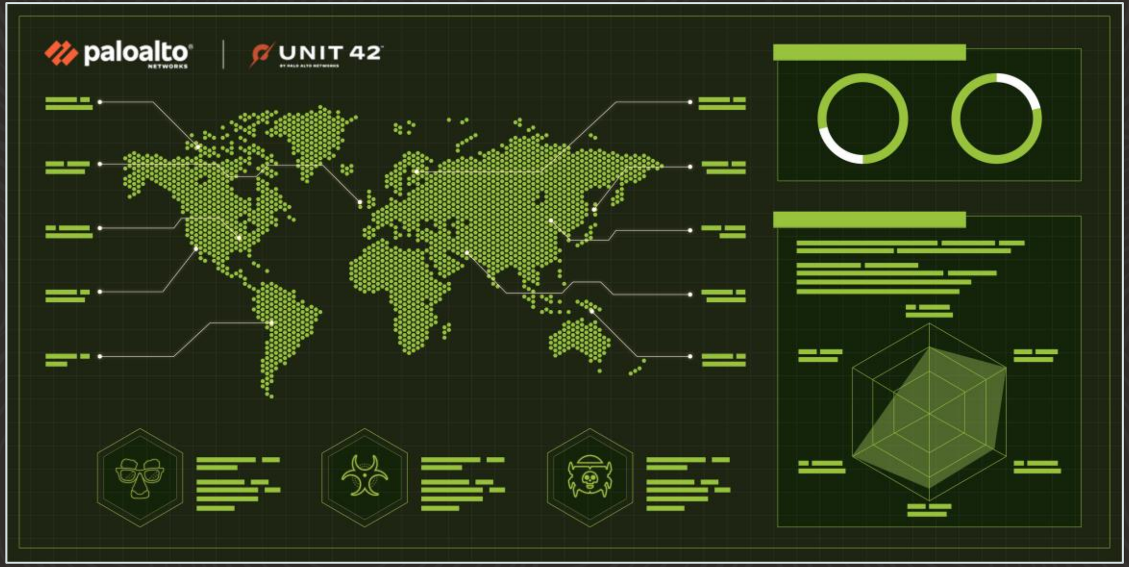
- **Cloud-Native Firewall** - Scalable native service that eliminates the need to manage additional third-party security infrastructure.
- **Deep Integration with OCI** - Natively integrated with OCI platform including logging and metrics services.
- **Layered Defense** - Easily apply deeper security controls and segmentation for encrypted and non-encrypted traffic to customer workloads on OCI.
- **Advanced Threat Protection** – Industry leading threat protection to help monitor and block malware, spyware and vulnerability exploits.
- **Meet Compliance Goals** – Helps meet compliance requirements and stringent security needs of regulated environments.

Intrusion Detection and Prevention and TLS/SSL encrypted traffic inspection

- Integrated IDS and IPS solution built with Palo Alto Networks' threat analysis engine and Unit 42 - security research teams that identify new threat signatures and detection mechanisms.

- Helps detect (IDS) and block (IPS) known exploits, malware, malicious URLs, spyware, command and control (C2) attacks.

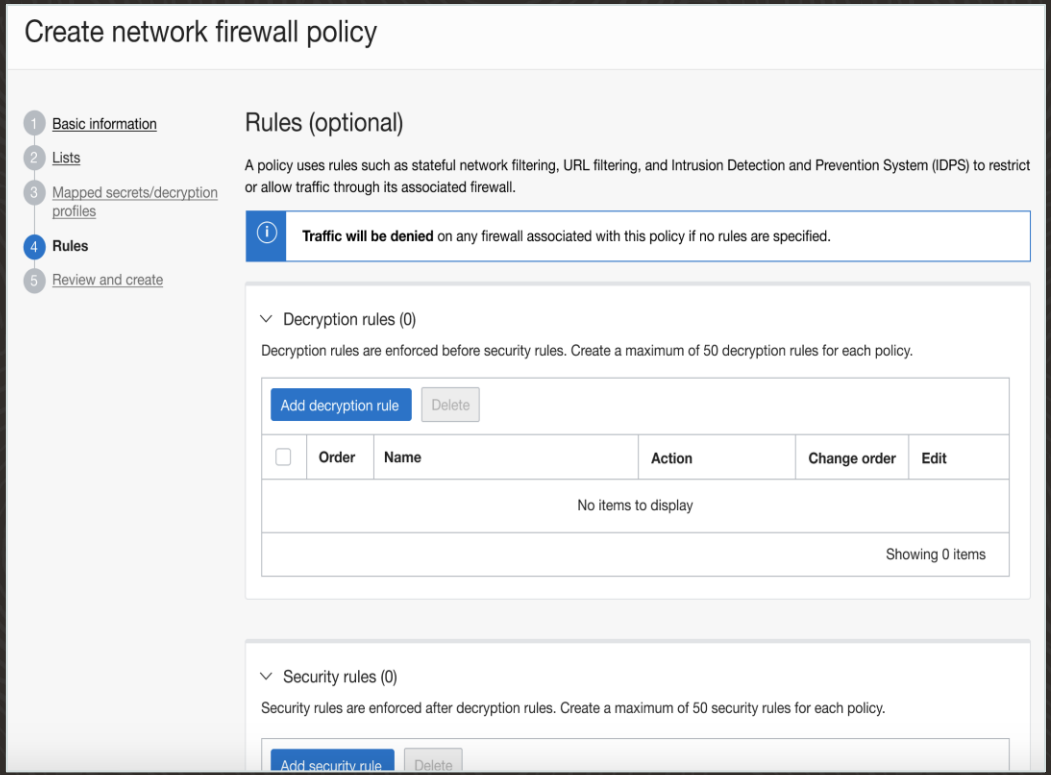
- **Use case:** OCI Network firewall is to be able to apply **Intrusion Detection and Prevention (IDS/IPS) controls to the traffic, including encrypted traffic over SSL/TLS secure channels and to do this, the NGFW must decrypt the SSL/TLS encrypted traffic.**



Stateful Firewall Rules

Enforce *allow* or *deny* stateful filtering rules based on 5-tuple information (source and destination IP address (both IPv4 and IPv6), port, and protocol.

- Rules can be enforced in a customer defined priority order across multiple virtual networks.
- The stateful firewall takes into account the context of traffic flows for more granular policy enforcement.



Create network firewall policy

1. Basic information
2. Lists
3. Mapped secrets/decryption profiles
4. Rules
5. Review and create

Rules (optional)

A policy uses rules such as stateful network filtering, URL filtering, and Intrusion Detection and Prevention System (IDPS) to restrict or allow traffic through its associated firewall.

Traffic will be denied on any firewall associated with this policy if no rules are specified.

Decryption rules (0)

Decryption rules are enforced before security rules. Create a maximum of 50 decryption rules for each policy.

□	Order	Name	Action	Change order	Edit
No items to display					

Showing 0 items

Security rules (0)

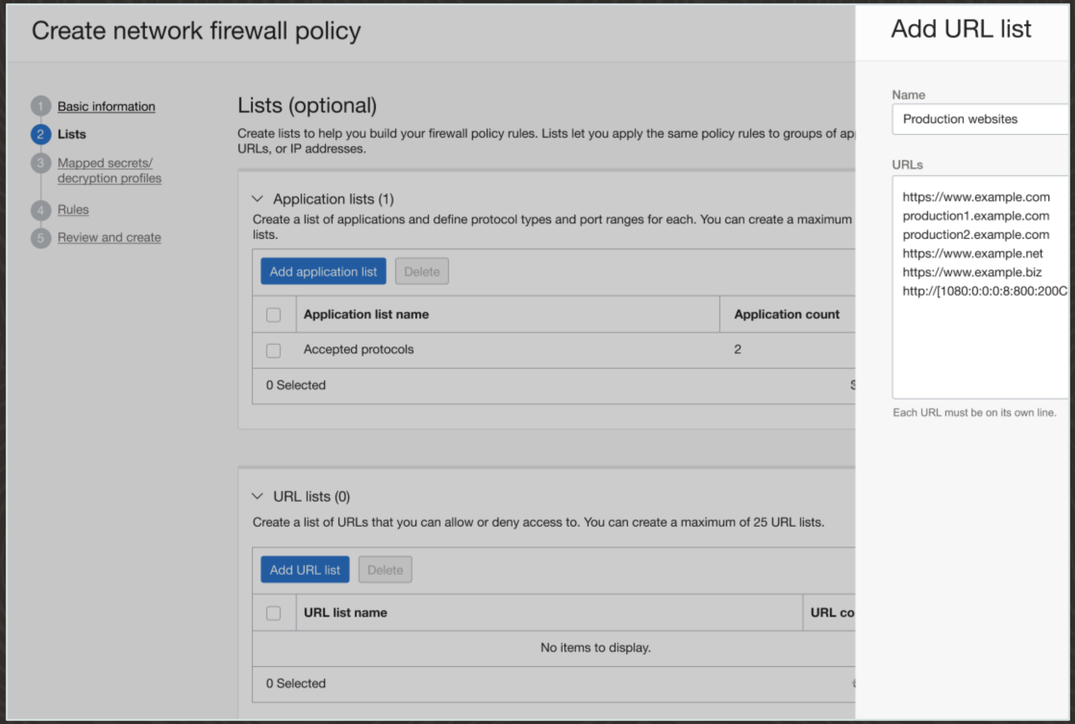
Security rules are enforced after decryption rules. Create a maximum of 50 security rules for each policy.

URL and FQDN Filtering

Use these rules to restrict traffic to a user specified list of fully qualified domain names (FQDN) including wild cards and custom URLs.

- Flexible enforcement for both inbound and outbound traffic

- **SSL Inspection** - allows inspection of HTTPS (TLS 1.2 and 1.3) encrypted traffic. Natively integrated with highly secure OCI Vault.



Create network firewall policy

Lists (optional)

Create lists to help you build your firewall policy rules. Lists let you apply the same policy rules to groups of ap URLs, or IP addresses.

Application lists (1)

Create a list of applications and define protocol types and port ranges for each. You can create a maximum lists.

☐	Application list name	Application count
☐	Accepted protocols	2

0 Selected

URL lists (0)

Create a list of URLs that you can allow or deny access to. You can create a maximum of 25 URL lists.

☐	URL list name	URL co
	No items to display.	

0 Selected

Add URL list

Name: Production websites

URLs:

```
https://www.example.com
production1.example.com
production2.example.com
https://www.example.net
https://www.example.biz
http://[1080:0:0:0:8:800:200C
```

Each URL must be on its own line.

Difference between Network Security List/groups and OCI Network Firewall features

Network Security lists and groups

Stateful Rules and Stateless Rules for both IPv4 and IPv6 traffic.

CIDR Range or Service (Source IP and Destination IP)

Protocol

Source port

Destination port

>> Access control list on Subnet and NIC level.

>>By default every traffic is denied. Rules need to be created to allow the traffic.

Deny rules can not be created.

OCI Network Firewall

Stateful filtering Allow or Deny rules based on 5-tuple information for both IPv4 and IPv6 traffic.

Signature-based threat detection and prevention (IDS/IPS) engine.

Control inbound and outbound HTTP/S traffic to a specified list of FQDN including wild cards and custom URLs.

Decryption profiles for inbound and outbound HTTPS inspection.

Policies manage traffic for intra VCN and Inter VCN centrally.

OCI Network Firewall and WAF – Better Together

- **OCI Network Firewall** helps secure network and application workloads. It enables policy based visibility and control over applications, users and content including access control, SSL decryption, threat prevention, URL filtering and IDS/IPS capabilities.

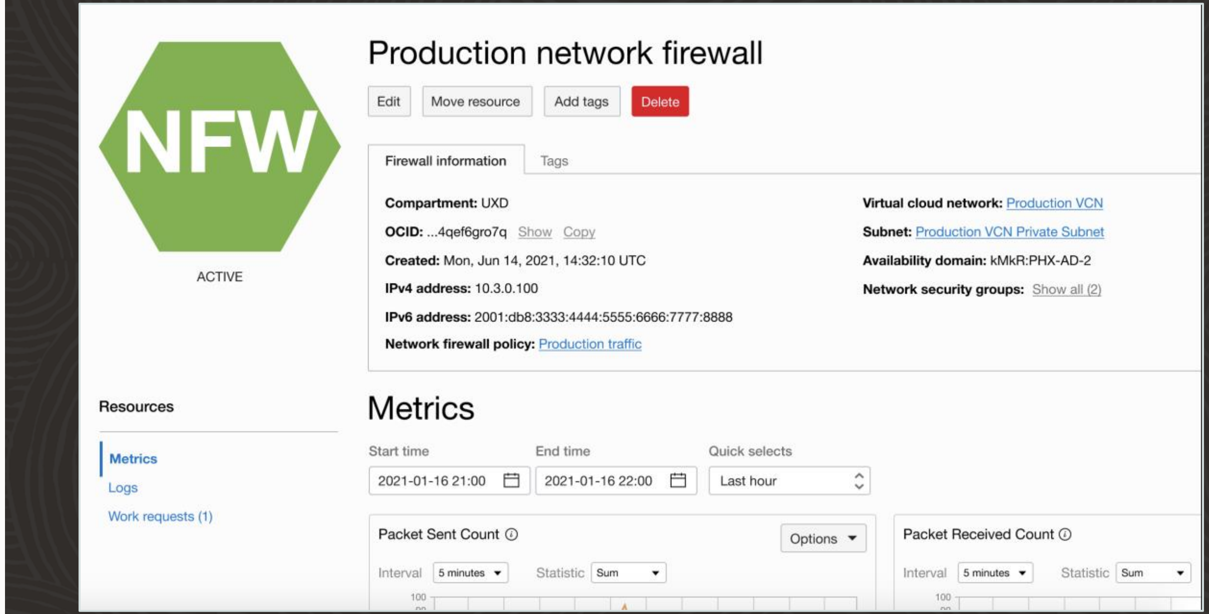
- **OCI WAF** is primarily focused on the security of web applications and operates at the layer 7 (HTTP/S). It helps stop layer 7 attacks whether it’s an attempt to exploit vulnerable code-level vulnerabilities such as SQL injection and other OWASP Top 10 vulnerabilities, or a layer 7 DDoS attack.

- **Layered Defense** - In most cases it’s important to employ both technologies given the various potential points for intrusion across both networks and web applications.

  - For e.g., in 3-tier architecture web-tier can be protected using WAF. But, web tier to app tier and app tier to database tier communications are protected using Network Firewall.

Logging, Monitoring and Analytics

- Network Firewall metrics help monitor the health, capacity, and performance of firewall policies and resources.
- Alarms and Notifications can be configured to notify you when metrics meet alarm-specified triggers.
- Network Firewall logs (integrated with OCI logging) enable you to understand what rules and the countermeasures triggered by requests.
- Logging Analytics provides the *analytics*, making it simpler to explore the data, analyze patterns and out-liners, provide machine learning in the form of clustering and linking, create dashboards, provide topology drill-downs and much more.



Production network firewall

Compartment: UXD

OCID: ...4qef6gro7q Show Copy

Created: Mon, Jun 14, 2021, 14:32:10 UTC

IPv4 address: 10.3.0.100

IPv6 address: 2001:db8:3333:4444:5555:6666:7777:8888

Network firewall policy: Production traffic

Virtual cloud network: Production VCN

Subnet: Production VCN Private Subnet

Availability domain: kMkR:PHX-AD-2

Network security groups: Show all (2)

Metrics

Start time 2021-01-16 21:00

End time 2021-01-16 22:00

Quick selects Last hour

Packet Sent Count — Interval 5 minutes, Statistic Sum

Packet Received Count — Interval 5 minutes, Statistic Sum

OCI Network Firewall – Key Use Cases

- Internet facing applications: Perimeter security
  - Protect against known vulnerabilities, until you have time to patch/update
  - For example: CVE-2017-5638 for Apache Struts
- Outbound: Protect against exfiltration
  - Allow Ubuntu servers to only do apt-get to *.canonical.com for updates
  - Allow only connections to payment gateway to *.amex.com
- East-West between VCNs or subnets: App Segmentation & Zero Trust
  - Block all threats from moving laterally between different trust domains
  - Allow only approved DB admins to only run SQL transactions against MySQL

OCI Network Firewall Is...

Best-in-class

Powered by Industry Leading Palo Alto Networks technology, best-in-class network security for all your apps

Cloud-Native

Deep integration with OCI platform and features, cloud-native form factor & deployment models

Automated

Easy integration into DevOps processes for automated deployment and scaling

Easy to Manage

Centralized management and Flexible Policy Enforcement

Thank you