HUAWEI ENTERPRISE ICT SOLUTIONS A BETTER WAY

# Huawei Next-Generation Anti-DDoS Solution

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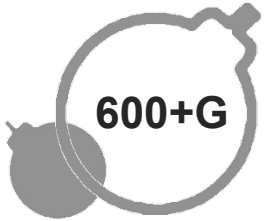
# DDoS Attacks Trends

## Attacks Traffic Larger




2014-15

3X Growth in max. attack traffic volume

8X >20 Gbps attacks

6X Growth in average attack bandwidth

## More Mobile-Based Attacks

2014-15

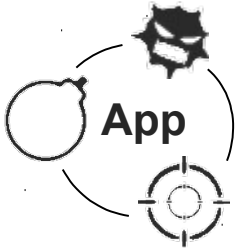
331 LTE commercial use networks

Smart terminal growth

46%

Increases in Mobile attack tools

## More Application Attacks



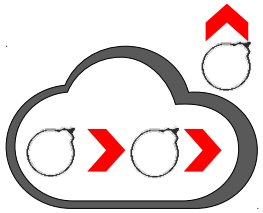

2014-15

42% Application level targeted attack growth

26% HTTP flood

40% Hybrid attack growth

## More Attacks launched from DCs



A growing number of attacks coming from Internet Data Centers.

Compromised DC servers being used as zombies.

IDCs have huge attack bandwidth capabilities.

Majority of large scale attacks are from IDCs.



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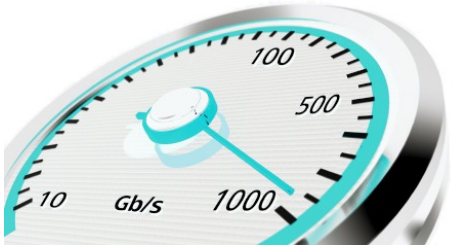
# Anti-DDoS Solution You Need

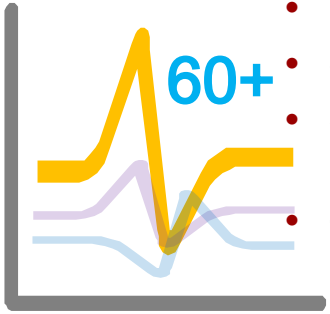
- ✓ **Excellent Capabilities** - to detect and defend wide range of attacks
- ✓ **Rich Knowledge** - large attack database with most up-to-date intelligence
- ✓ **Dynamic Solution** - scale from a small local attack to a large volumetric attacks

# Huawei Anti-DDoS Capabilities




- **T-grade defense performance**
  120G/240G LPU ， 160G SPU
  1.44Tbps defense performance
- **Attack response time: <5s**
- **Latency: 80us**

## T-grade Defense Performance




- **5 dimensions**
  qps, pps, bps, cps, and ratio
- **8 protocol families**
  IP, TCP, UDP, ICMP, HTTP, DNS, HTTPS, and SIP
- **38 protocol statuses**
  TCP Flags, TCP connections, TCP window size, UDP fragment, HTTP connections, HTTP URI, HTTP Host, SSL Renegotiating, DNS query, and DNS domain...
- **60+ traffic models**
  TCP SYN pps, UDP packet bps, DNS pps, HTTP get QPS, SIP pps, ICMP pps, TCP FIN pps, and TCP ACK pps...

## 60+ Traffic Models

- **Global botnet IP reputation**
  Reputation database with **5 million** IP addresses with dynamic updates on a daily basis.
- **Local real-time session reputation**
  **Tens of millions of sessions** guarantee authorized users' service access.
- **Proactive botnet defense feature library**
  **500+** active zombie, Trojan horse, and worm control packet feature library and C&C domains library.

## Full-Scale Reputation System

- **Dynamic fingerprint learning**
  Over 20,000 dynamic fingerprint features with real-time updates to find out attacks.
- **Static fingerprints**
  **10+** global active zombie tools fingerprints
- **Web intrusion fingerprints**
  **400+** SQL injection and XSS fingerprints

## Fingerprint Protection



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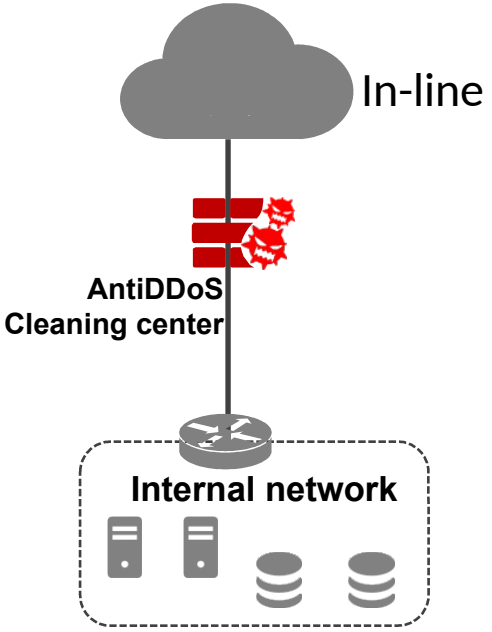
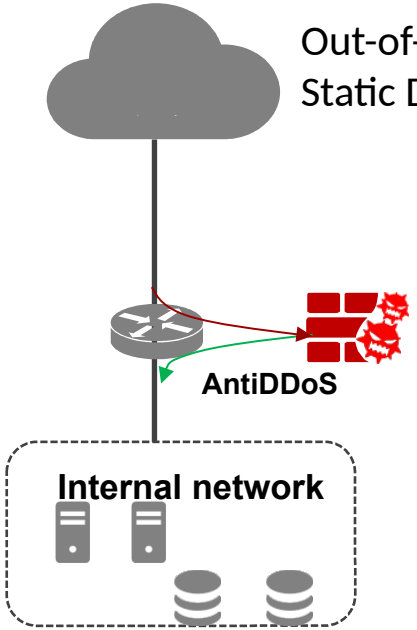
# Huawei Knowledge in Threat Intelligences

| | IP Reputation Signature | DDoS Tools Signature | Web Intrusion Signature | Malware Traffic Signature |
|---|---|---|---|---|
| **Function** | Identify the Botnet DDoS attack by IP Reputation database | Identify the DDoS attack by DDoS attack tools database | Identify the DDoS attack by web intrusion database | Botnet detecting and blocking |
| **Capacity** | 5M | 10+ category | 1) 200+ SQL intrusion<br>2) 200+ XSS | 1) 60+ Trojan<br>2) 150+ worm<br>3) 280+ backdoor |
| **Source** | 1. Buy from Cyren<br>2. Honeynet(China, HK)<br>3. Open sources*<br>4. Partnership: Tencent, Baidu, Nexusguard<br>5. DNS-based detection botnet(2016Q4) | Huawei Self-developed (Huawei Security Research Center) | Huawei Self-developed (Huawei Security Research Center) | Huawei Self-developed (Huawei Security Research Center) |
| **Update interval** | Daily | Weekly | Weekly | Weekly |

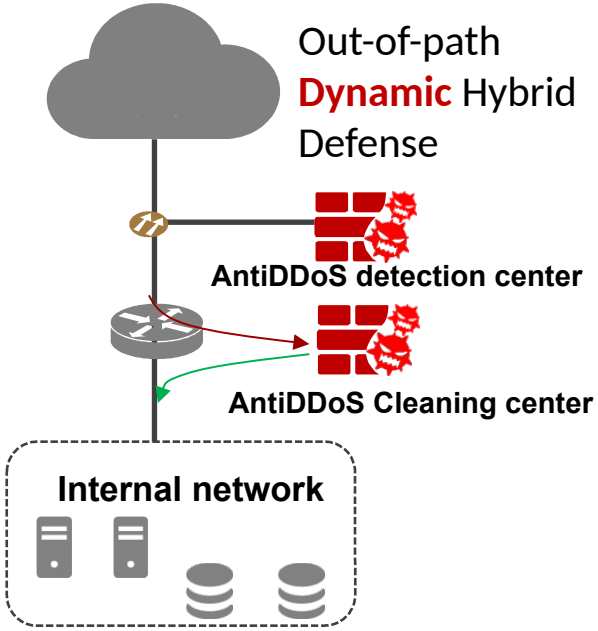
# Deployment Scenarios




- Transparent/Router Mode
- Support bypass
- Middle-Size deployment
- Simple deployment




- Suit for IDC scenario
- High Reliability
- Lower cost deployment




- Can be operate as service in IDC Scenario
- High Reliability
- Easy to manage



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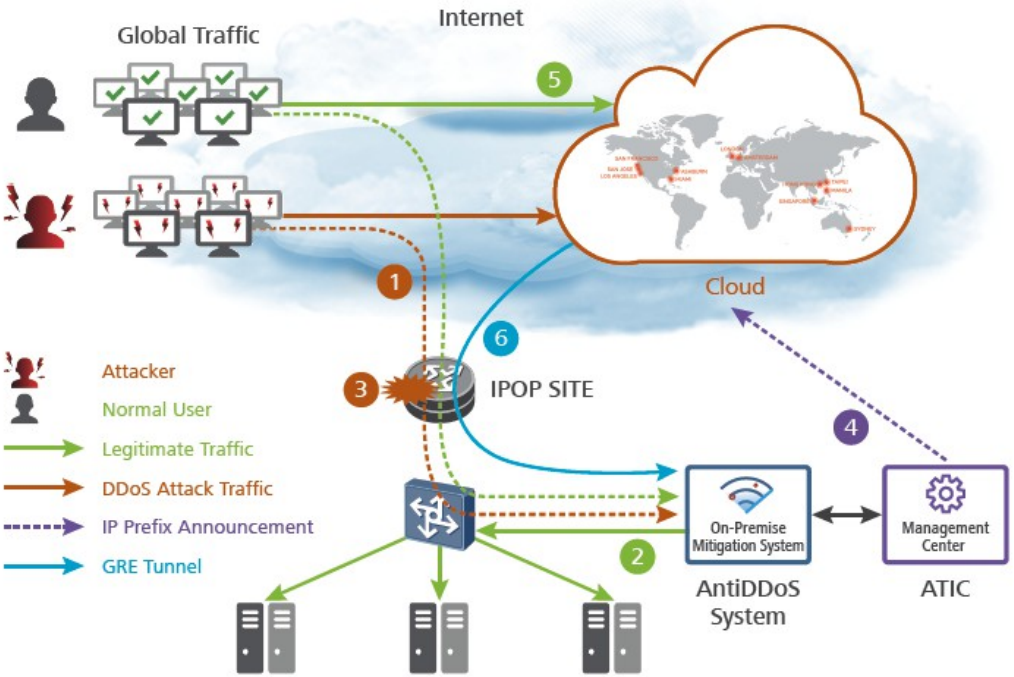
# Huawei Dynamic Hybrid DDoS Mitigation Solution




① Global attack traffic mixed with normal traffic comes into customers network.

② Huawei on-premise mitigation system mitigates the attack traffic and re-inject normal traffic into customers network.

③ The attack traffic increases continuously and exceeds the network threshold, which causes congestion of the upstream link.

④ Huawei DDoS Management Center sends cloud mitigation signal to Cloud.

⑤ Global scrubbing centers advertise routes and distribute traffic.

⑥ After mitigation, the normal traffic will be re-injected into customer's network via GRE tunnels.

# Huawei Global Cloud Scrubbing Centers

- Huawei & partners provide cloud mitigation center in Asia , Europe, and North America to mitigate the global DDoS attack
- A total of 2T+ mitigation capacity help to resolve the super large traffic attack which congest the uplink.


| Partner | capacity | Region | Mitigation Center |
|---|---|---|---|
| Global | 1.2T | USA | • San Jose<br>• Miami<br>• Los Angeles<br>• Ashburn |
| | | Europe | • London |
| | | Asia | • Singapore<br>• Hong Kong |
| China | 1.2T | China | • Beijing<br>• Shanghai<br>• Guangzhou<br>• Hong Kong |



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# Detection Options (Flow vs. Per-Packet)

| | Flow-base Detection | Per-packet-based Detection |
|---|---|---|
| Protection Capability | Volumetric attack<br>Session Exhaustion attack | Volumetric attack<br>Session Exhaustion attack<br>**Application Layer attack** |
| Response Time | 2~3+ minutes | **2~3 seconds** |
| Requirements on Router/Switch | **Routers or switches must support feature to exports netflow information** | **No additional requirements on existing network's router and switch** |
| Performance demand | Lower for large network(>200Gbps)<br>(Based on flow sample, e.g. 1000:1) | Higher for large network(>200Gbps)<br>(Detects every packets) |
| Scalability | Not linear expansion<br>1. If the network bandwidth is lower than the flow analyzer capacity, no need to expand flow analyzer<br>2. If the network bandwidth exceeds the capacity of flow analyzer, expand to flow analyzer) | Add detection links<br>(Linear expansion with physical network bandwidth growth) |
| Summary | Less accurate detection and longer latency<br>Additional requirements on NEs | Faster and more accurate detection<br>No additional requirements on exiting NEs;<br>Higher cost, need expansion with network links |

# Key Differentiations of Huawei Hybrid DDoS Solution

- Per packet detection
  - no performance impact to existing network infrastructure
  - detection in 2-3 seconds
- Protection against application-layer and volumetric attacks
- Global scrubbing centers – 2.4T total capacity
- Near-source mitigation
- Automatic cloud signaling trigger cloud mitigation
- Collaboration: Global threat intelligence coverage
- Real-time monitoring through portal


# Huawei Enterprise A Better Way