Open SSDP Report

A scan report on your network or constituency

@shadowserver

contact@shadowserver.org
• Introduce what is meant by an Open SSDP service

• Introduce Shadowserver scans and methodology

• Highlight a sample Open SSDP report

• Describe key features of the report

• Demonstrate how a National CERT or network owner can action an Open SSDP report

• Offer guidance on how to protect and secure SSDP

• Provide a key list of Shadowserver online resources to enable report subscription and use
• Shadowserver scans the entire IPv4 Internet for over 90 different network protocols every day (as of 2022-04-27), and also performs IPv6 scans based on IPv6 hitlists for selected protocols

• These are primarily "hello" type application scans

• Shadowserver does not exploit any vulnerability

• Scans allow for identifying misconfigured, vulnerable or abusable devices, unnecessarily exposed attack surfaces, or are simply just population enumeration scans

• Read more on why we scan at: https://www.shadowserver.org/news/the-scannings-will-continue-until-the-internet-improves/
SSDP (Simple Service Discovery Protocol) is deployed in networks for plug-and-play discovery (UPnP)

Devices receive broadcast messages from other UPnP devices to interconnect, for example IP cameras, routers and Smart TVs

Publicly exposed SSDP services can be abused for reflection-based distributed denial-of-service attack (DDoS)

IP address spoofing generates large responses to significantly smaller SSDP network queries, tricking servers to respond and flood the victim with data
• A project to search for publicly available Open SSDP servers:  https://scan.shadowserver.org/ssdp/

• These servers have the potential to be used in amplification attacks and if at all possible, we would like to see these services made un-available to attackers that would abuse these resources

• We are querying all computers with routable IPv4 addresses that are not firewalled from the internet on port 1900/udp SEARCH request and capturing the response

• For an overview of UDP amplification attacks please read:
  https://www.cisa.gov/uscert/ncas/alerts/TA14-017A
Open SSDP Report


- Report is available as a file in CSV format

- The report filename contains `scan_ssdp`

- All timestamps are in UTC

- Reports can be sent as e-mail attachments, or downloaded via HTTP or obtained via a RESTful API

- For more documentation on API access, please visit the below URLs and send a request for access to contact@shadowserver.org
Open SSDP Report

This report identifies hosts that have the Simple Service Discovery Protocol (SSDP) running and accessible on the Internet.

These services have the potential to be used in amplification attacks by criminals that wish to perform denial of service attacks.

For more details behind the scan methodology and a daily update of global SSDP scan statistics please visit our dedicated SSDP scan page.

For more information on our scanning efforts, check out our Internet scanning summary page.

### Key event fields

**timestamp**
- Time that the IP was probed in UTC+0

**ip**
- The IP address of the device in question

**protocol**
- Protocol that the DNS response came on (usually UDP)

**port**
- Port that the SSDP response came from

**hostname**
- Reverse DNS name of the device in question

**tag**
- Will always be SSDP

**header**
- The initial HTTP (HTTP over UDP) header that was received

**asn**
- ASN of where the device in question resides

**geo**
- Country where the device in question resides

**region**
- State / Province / Administrative region where the device in question resides

**city**
- City in which the device in question resides

**sysctl**
- GMT timestamp when the response was created

**cache_control**
- Cache-control — how long to wait for more communication

**location**
- URL of where the XML service description is located

**server**
- Server information of a Host that supports LDAP

**search_target**
- Search Target (ST) value

**unique_service_name**
- USN field contains compilation of uuid:uuid_of_Host:device:ST_of_response

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**Example Event**

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<thead>
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<th>geo</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/03/2022 00:02</td>
<td>65.25.X.X</td>
<td>udp</td>
<td>1900</td>
<td>cpe-65-25-192-8.new.xx.xx</td>
<td>ssdp</td>
<td>53HTTP/1.1 200 OK</td>
<td>10796</td>
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**Action an Open SSDP report**
## Action an Open SSDP report

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- **NetRange:** 65.24.0.0 - 65.34.31.255
- **CIDR:** 65.24.0.0/13, 65.32.0.0/15, 65.34.0.0/19
- **NetName:** ROADRUNNER-CENTRAL
- **NetHandle:** NET-65-24-0-0-1
- **Parent:** NET65 (NET-65-0-0-0-0)
- **NetType:** Direct Allocation
- **OriginAS:**
- **Organization:** Charter Communications Inc (CC-3517)
- **RegDate:** 2000-08-22
- **Updated:** 2021-04-01
- **Ref:** https://rdap.arin.net/registry/ip/65.24.0.0

- **OrgName:** Charter Communications Inc
- **OrgID:** CC-3517
- **Address:** 6175 S. Willow Dr
- **City:** Greenwood Village
- **StateProv:** CO
- **PostalCode:** 80011
- **Country:** US
- **RegDate:** 2010-10-10
- **Updated:** 2021-11-01
- **Comment:** Legacy Time Warner Cable IP Assets
- **Ref:** https://rdap.arin.net/registry/entity/CC-3517

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**IP WHOIS 65.25.X.X**
Verifying our results

• The scan results may contain false positives if an actor attempts to spoof UDP replies to our scans
• In some cases when hosts have multiple interfaces we may register a scan response from another interface with another IP, but report it out as the IP we scanned for
• If you would like to test your own device to see if it has SSDP (UPnP) enabled, you can do the following
  • In one window, start tcpdump with the command: "tcpdump -n host [IP]" and then in a second window, enter:
    
    perl -e 'print "M-SEARCH * HTTP/
    1.1\r\nHost:239.255.255.250:1900\r\nST:upnp:rootdevice\r\nMan: "ssdp:discover"\r\nMX:3\r\n\n" > /dev/udp/[IP]/1900

• If your device has SSDP enabled, you should see a fair amount of traffic on the tcpdump window
• Make sure your queries are not being filtered
• Remember the scan results we share are for the previous day (up to 24 hour delay)
Open SSDP - PROTECT

- No reason to have an SSDP service exposed on the public Internet

- Aside from abuse for DDoS attacks, it can also expose an additional attack surface

- Block inbound and outbound UDP port 1900 traffic on your firewall

- Follow best security practice to reduce your network attack surface
Summary & Key Report Pages

Reports overview
- https://www.shadowserver.org/what-we-do/network-reporting/get-reports/
- https://www.shadowserver.org/what-we-do/network-reporting/

Report Updates
- https://www.shadowserver.org/news-insights/
- Twitter @shadowserver
- Mailing list access send request to contact@shadowserver.org and request access to public@shadowserver.org
- Or subscribe directly at https://mail.shadowserver.org/mailman/listinfo/public

Reports API
- Request access to contact@shadowserver.org