



**7450 ETHERNET SERVICE SWITCH  
7750 SERVICE ROUTER  
Virtualized Service Router**

**Release 22.10**

**Application Assurance  
App-Groups and Applications Support**

**3HE21029 AAAA TQZZA**

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## 1.0 OVERVIEW

The Nokia Application Assurance solution is a stateful packet and flow processing engine that uses state-of-the-art combinations of identification techniques to classify un-encrypted, encrypted, and obfuscated applications for data mining, charging, and control in Broadband, WiFi, Mobile, and Business VPN networks.

Traffic identification accuracy with up-to-date traffic detection is achieved by constantly maintaining our database of supported application signatures, monitoring new functionalities and new software versions, and by adding new signatures based on customer feedback or market/region-specific requirements.

Application Assurance identification techniques:

- Software defined layer 3 to 7 header and payload pattern-based protocol signatures
- Configurable layer 3 to 7 field and expression matching
- Inspection across packets and flows
- Control protocol monitoring to data flow association (for example, SIP/RTP, RTSP/RTP)
- Behavioral and numerical analysis

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## 2.0 APPLICATION UPDATES

Network operators can update both the AA protocol signatures and the AA policy configuration on a regular basis to benefit from new/updated applications maintained by Nokia. The software updates are referred to as ISA-AA SW updates, regardless of the HW version of the ISA, or if it is the ISAv task of a VSR or CMG.

### 2.1 AA Protocol Signature Upgrades

Protocol signatures are contained in the isa-aa.tim file provided with every new minor release. This file also contains the Application Assurance software loaded on the ISA during the MDA boot process. For 7450 and 7750 platforms using MS-ISA or MS-ISA2, the binary file is decoupled from rest of the router software and therefore can be updated with no service impact as it only updates the ISA-AA MDAs. For CMG deployments, signature upgrade without service impact is supported in Release 9.0r5 or higher. For details please refer to the Software Release Notes for the current release.

- Applications that require a protocol signature upgrade include: BitTorrent, Skype, XboxLive, QQ, FTP, RDP, SAP, and so on
- Maintenance update frequency: within each major release, for every minor release (2 months), or more frequently for important updates
- Recommended customer update frequency: as needed depending on the AA use cases deployed

### 2.2 AA Policy Configuration Upgrades

The AA policy configuration consists primarily of expressions, which are matched against strings in various protocol header fields. The list of header fields used in expression matching is provided in the table below.

The AA policy configuration can be updated in service with no service impact, on 7450, 7750, and virtual systems.

- Applications that only require a policy configuration upgrade include: Twitter, Google, Netflix, Dropbox, Waze, LifeSize, Salesforce, and so on
- Maintenance update frequency: every week (up to every day)
- Recommended customer update frequency: quarterly to keep the AA classification as up to date as possible

Note: The Nokia Network Services Platform (NFM-P component) can be used to synchronize the AA policy across the network and update the AA protocol signatures.

<b>Expression Type</b>	<b>Associated Protocols</b>	<b>Description</b>
citrix-app	citrix_ica	Citrix-published application name
h323-product-id	h225, h245, rtp_h323	H323/H232 product ID
http-host	http, http2c, quic, shoutcast, spdy, tls, tls_http2, wsp_http	Host/server name
http-referer	http, shoutcast	Referer in HTTP request
http-uri	http, shoutcast, wsp_http	URI in HTTP request
http-user-agent	http, quic, shoutcast, wsp_http	User agent in HTTP request
rtmp-page-host	rtmp, rtmpt	Page host in RTMP/RTMPT handshake
rtmp-page-uri	rtmp, rtmpt	Page URI in RTMP/RTMPT handshake
rtmp-swf-host	rtmp, rtmpt	SWF host in RTMP/RTMPT handshake
rtmp-swf-uri	rtmp, rtmpt	SWF URI in RTMP/RTMPT handshake
rtmp-tc-host	rtmp, rtmpt	TC host in RTMP/RTMPT handshake
rtmp-tc-uri	rtmp, rtmpt	TC URI in RTMP/RTMPT handshake
rtsp-host	rtp_rtsp, rtsp	Host in RTSP requests
rtsp-ua	rtp_rtsp, rtsp	User agent in RTSP requests
rtsp-uri	rtp_rtsp, rtsp	URI in RTSP requests
sip-mt	rtp_sip	Media type in SIP request exchange
sip-ua	rtp_sip, sip	User agent in SIP request exchange
sip-uri	rtp_sip, sip	URI in SIP request exchange
tls-cert-subj-common-name	dtls, tls, tls_http2	Subject common-name from server certificate
tls-cert-subj-org-name	dtls, tls, tls_http2	Subject organization-name from server certificate

---

## 3.0 APPLICATION SUPPORT LIST

This chapter provides a list of the latest supported protocols and applications organized by application group.

This grouping of applications to app-groups is fully flexible and can be modified by configuration to match specific service provider requirements for reporting and control.

Each application in this list contains the following information:

- Application name
- Description
- Transport: Transport protocol, can be "TCP", "UDP", "TCP and UDP" or "Other"
- Components: List of the different traffic classifications within the same application

### 3.1 Business

<b>Application</b>	<b>Citrix IMA</b>
Description	Citrix Independent Management Architecture
Transport	TCP
Components	Citrix IMA Sessions
<b>Application</b>	<b>CORBA</b>
Description	CORBA Applications
Transport	TCP
Components	CORBA GIOP V3.1 and below
<b>Application</b>	<b>FIX</b>
Description	Financial Information eXchange
Transport	TCP
Components	Financial Information Exchange (FIX) Protocol Version 4.x Financial Information Exchange (FIX) Protocol Version 5.0 FIX Transport (FIXT) Protocol Version 1.1
<b>Application</b>	<b>Google Classroom</b>
Description	Classroom services
Transport	TCP and UDP
Components	Google Classroom Calendar over QUIC Google Classroom Calendar over TLS Google Classroom Classes over QUIC Google Classroom Classes over TLS Google Classroom To-do over QUIC Google Classroom To-do over TLS
<b>Application</b>	<b>Google Docs</b>
Description	Google Docs online word processor
Transport	TCP and UDP
Components	Google Docs over QUIC Google Docs over TLS

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**Application**

Description  
Transport  
Components

**IP Printing**

IP Print Services  
TCP and UDP  
Common UNIX Printing System (CUPS)  
IP Printing Protocol  
IP Printing Protocol over TLS (IANA Registered Port)

**Application**

Description  
Transport  
Components

**iSCSI**

SCSI over IP network storage  
TCP and UDP  
iSCSI

**Application**

Description  
Transport  
Components

**LDAP**

Lightweight Directory Access Protocol  
TCP and UDP  
LDAP  
LDAP: CLDAP

**Application**

Description  
Transport  
Components

**Microsoft Office 365**

MS Office apps on the cloud  
TCP  
Microsoft Office 365 Email & Calendar  
Microsoft Office 365 One Note  
Microsoft Office 365 SharePoint Online  
Microsoft Office 365 Web Applications

**Application**

Description  
Transport  
Components

**Microsoft Teams**

Microsoft Teams communication and collaboration platform  
TCP and UDP  
Microsoft Teams Audio Call over TCP  
Microsoft Teams Audio Call over UDP  
Microsoft Teams Group Audio Call over TCP  
Microsoft Teams Group Audio Call over UDP  
Microsoft Teams Group Video Call over TCP  
Microsoft Teams Group Video Call over UDP  
Microsoft Teams Instant Messaging over TLS  
Microsoft Teams Video Call over TCP  
Microsoft Teams Video Call over UDP

**Application**

Description  
Transport  
Components

**Moodle**

Moodle Learning Management System  
TCP  
Moodle over HTTP  
Moodle over TLS

**Application**

Description  
Transport  
Components

**Oracle Tuxedo**

Oracle Tuxedo middleware  
TCP  
Oracle JOLT  
Oracle PeopleSoft Application Designer  
Oracle TUXEDO

---

**Application**

Description  
Transport  
Components

**SAP**

SAP applications  
TCP  
SAP Connector  
SAP GUI  
SAP WEB access over TLS

**Application**

Description  
Transport  
Components

**Salesforce**

Online business cloud solution  
TCP  
Salesforce over HTTP  
Salesforce over TLS

**Application**

Description  
Transport  
Components

**Siebel**

Siebel suite of applications  
TCP  
Siebel Mobile Clients  
Siebel Web Clients

**Application**

Description  
Transport  
Components

**Slack**

Slack online communication and collaboration platform  
TCP  
Slack over TLS

**Application**

Description  
Transport  
Components

**Symantec Backup**

Enterprise backup software from Symantec  
TCP  
Symantec Backup Exec over TCP

**Application**

Description  
Transport  
Components

**VMware**

VMware vSphere virtualization suite  
TCP and UDP  
VMware ESX Server  
VMware VMotion

**Application**

Description  
Transport  
Components

**WeSchool**

WeSchool Classroom services  
TCP  
WeSchool File Sharing over TLS  
WeSchool Groups over TLS  
WeSchool over TLS

## 3.2 Database

**Application**

Description  
Transport  
Components

**IBM DB2**

IBM DB2 SQL  
TCP  
IBM DAS (Database Administration Service)  
IBM DRDA (Distributed Relational Database Architecture)

---

<b>Application</b>	<b>Microsoft SQL</b>
Description	Microsoft SQL Server
Transport	TCP and UDP
Components	MSSQL Management Console MSSQL Tabular Data Stream (TDS) over TCP/UDP/SMB MSSQL UDP Notifications

<b>Application</b>	<b>MySQL</b>
Description	MySQL Database
Transport	TCP
Components	MySQL Network Protocol (Version 10 and below)

<b>Application</b>	<b>Oracle</b>
Description	Oracle Transparent Network Substrate Protocol
Transport	TCP
Components	Oracle Net8 Oracle TNS (Transparent Network Substrate)

<b>Application</b>	<b>PostGRESQL</b>
Description	Open-source Database Management System
Transport	TCP
Components	PostgreSQL Network Protocol (up to version 3)

<b>Application</b>	<b>Sybase</b>
Description	Sybase applications
Transport	TCP and UDP
Components	Sybase Advantage Server Sybase ASE (Adaptive Server Architecture) Sybase SQL Anywhere

### 3.3 Existing/Empty TCP

<b>Application</b>	<b>Empty TCP</b>
Description	TCP flows with no data content
Transport	TCP
Components	TCP with no payload

<b>Application</b>	<b>Existing TCP</b>
Description	Pre-existing traffic
Transport	TCP
Components	Existing TCP

### 3.4 File Hosting

<b>Application</b>	<b>Amazon Photos</b>
Description	Amazon photos cloud storage
Transport	TCP
Components	Amazon Photos storage and sharing over TLS

---

**Application**

Description

Transport

Components

**Apple iCloud**

Apple's iCloud service

TCP

iCloud "find iPhone" over TLS

iCloud Contacts/Calendar/Photo Sync over TLS

iCloud Mail over TLS

iCloud Storage over TLS

iMessage Picture/Video over TLS

**Application**

Description

Transport

Components

**Crocko**

One-Click File Hosting Site

TCP

EasyShare over HTTP

**Application**

Description

Transport

Components

**Cyberlockers**

Online file hosting, file storage, and cloud storage services

TCP

1fichier.com over HTTP(S)

4shared.com over HTTP(S)

archive.org over HTTP(S)

box.com over HTTP(S)

depositfiles.com over HTTP(S)

filefactory.com over HTTP(S)

hightail.com over HTTP(S)

hitfile.net over HTTP(S)

nitroflare.com over HTTP(S)

pcloud.com over HTTP(S)

rapidgator.net over HTTP(S)

sendspace.com over HTTP(S)

solidfiles.com over HTTP(S)

turbobit.net over HTTP(S)

uploadboy.com over HTTP(S)

uptobox.com over HTTP(S)

userscloud.com over HTTP(S)

vivo.sx over HTTP(S)

**Application**

Description

Transport

Components

**DepositFiles**

One-Click File Hosting Site : DepositFiles

TCP

DepositFiles over HTTP

**Application**

Description

Transport

Components

**Dropbox**

Web-based file hosting and sharing

TCP

Dropbox Capture

Dropbox Docsend

Dropbox file storage and sharing over TLS

Dropbox Paper

Dropbox Passwords

Dropbox Replay

---

Dropbox Transfer

**Application**

Description

Transport

Components

**Google Drive**

Google personal cloud storage

TCP and UDP

Google Drive File Hosting over QUIC

Google Drive File Hosting over TLS

Google Drive File Sharing over QUIC

Google Drive File Sharing over TLS

**Application**

Description

Transport

Components

**MediaFire**

One-Click File Hosting Site : MediaFire

TCP

MediaFire API over HTTP

MediaFire over HTTP

MediaFire over TLS

**Application**

Description

Transport

Components

**Mega**

Mega file hosting and chat service

TCP and UDP

Mega over HTTP

Mega over TLS

Mega Video Call over RTP

Mega Voice Call over RTP

**Application**

Description

Transport

Components

**MegaVideo**

One-Click File Hosting Site : MegaVideo

TCP

MegaVideo over HTTP

**Application**

Description

Transport

Components

**Microsoft OneDrive**

Microsoft OneDrive Cloud Storage

TCP

OneDrive File Storage and Sharing over HTTP

OneDrive File Storage and Sharing over TLS

OneDrive Office Web Apps

**Application**

Description

Transport

Components

**Newsgroups**

Network News Transport Protocol

TCP

Newsgroups Binverse TLS

Newsgroups Easynews TLS

Newsgroups Eweka TLS

Newsgroups Giganews TLS

Newsgroups NewgroupDirect TLS

Newsgroups Newshosting TLS

Newsgroups Ngroups TLS

Newsgroups NNTP

Newsgroups Pureusenet TLS

Newsgroups Supernews TLS

Newsgroups ThunderNews TLS

---

Newsgroups UsenetServer TLS

**Application**

Description  
Transport  
Components

**SendSpace**

One-Click File Hosting Site : SendSpace  
TCP  
SendSpace over HTTP  
SendSpace over TLS

**Application**

Description  
Transport  
Components

**Uploading.com**

One-Click File Hosting Site : Uploading.com  
TCP  
Uploading.com over HTTP

**Application**

Description  
Transport  
Components

**ZShare**

One-Click File Hosting Site : ZShare  
TCP  
ZShare over HTTP

## 3.5 File Transfer

**Application**

Description  
Transport  
Components

**CIFS**

Common Internet File System / Server Message Block  
TCP and UDP  
Server Message Block 1.0 / Common Internet File System  
Server Message Block 2.x  
Server Message Block 3.x  
SMB over NetBIOS

**Application**

Description  
Transport  
Components

**CVS**

Concurrent Version System  
TCP  
CVS Client-Server

**Application**

Description  
Transport  
Components

**FTP**

File Transfer Protocol  
TCP  
File Transfer Protocol (FTP) Control  
File Transfer Protocol (FTP) Data

**Application**

Description  
Transport  
Components

**FTP Server**

Subscriber hosted File Transfer Protocol  
TCP  
Subscriber Hosted File Transfer Protocol (FTP) Data  
Subscriber Hosted File Transfer Protocol (FTP) Control

**Application**

Description  
Transport  
Components

**Resilio**

Resilio peer-to-peer file synchronization application traffic  
TCP and UDP  
Resilio Data Relay over TCP  
Resilio Data Transfer over TCP

---

Resilio Data Transfer over UDP  
Resilio over HTTP

**Application**

Description

Transport

Components

**Rsync**

File transfer and synchronization protocol

TCP

RSYNC File Transfer and Synchronization

RSYNC File Transfer and Synchronization over RSH

**Application**

Description

Transport

Components

**Subversion**

Subversion Revision Control System

TCP and UDP

Subversion (SVN) Protocol

Subversion over HTTP

**Application**

Description

Transport

Components

**TFTP**

Trivial File Transfer Protocol

UDP

Trivial File Transfer Protocol (TFTP) Control

Trivial File Transfer Protocol (TFTP) Data

**Application**

Description

Transport

Components

**TFTP Server**

Subscriber hosted Trivial File Transfer Protocol

UDP

Subscriber Hosted Trivial File Transfer Protocol (TFTP) Control

Subscriber Hosted Trivial File Transfer Protocol (TFTP) Data

## 3.6 Gaming

**Application**

Description

Transport

Components

**Apple Game Center**

Apple social gaming network

TCP and UDP

Apple Game Center Online Gameplay over TLS

Apple Game Center Peer-to-Peer Multiplayer Protocol over UDP

**Application**

Description

Transport

Components

**Arena of Valor**

Arena of Valor game

TCP and UDP

Arena of Valor Gameplay

Honor of Kings Gameplay

**Application**

Description

Transport

Components

**Blizzard**

General Blizzard entertainment applications

TCP

Battle.net Desktop App over TLS

Battle.net Mobile App over TLS

Battle.net Web Account Management over TLS

Blizzard In-Game Non-Gameplay Battle.net Traffic over TCP

Blizzard over HTTP

Blizzard over TLS

---

Blizzard Shop over QUIC

**Application**

Description

Transport

Components

**Clash of Kings**

Clash of Kings mobile game

TCP

Clash of Kings Gameplay over TCP

Clash of Kings over HTTP

Clash of Kings over TLS

Clash of Kings: The West Gameplay over TCP

Clash of Kings: The West over HTTP

**Application**

Description

Transport

Components

**Crisis Action**

FPS game on mobile

TCP and UDP

Crisis Action Game Play over TCP

Crisis Action Notifications over UDP

**Application**

Description

Transport

Components

**Dagor Engine**

Dagor game engine gameplay

UDP

Gaijin Dagor Engine Online Gameplay over UDP

**Application**

Description

Transport

Components

**Dragon Nest**

Action MMORPG game for windows and mobile.

TCP and UDP

Dragon Nest Chat over TCP

Dragon Nest Download and Updates over TLS

Dragon Nest Gameplay over TCP

Dragon Nest Gameplay over UDP

Dragon Nest M Chat over TCP

Dragon Nest M Gameplay over TCP

Dragon Nest M Gameplay over UDP

Dragon Nest M Updates over TLS

**Application**

Description

Transport

Components

**EA Mobile**

Electronic Arts mobile games platform

TCP

EA Mobile games platform over HTTP

EA Mobile games platform over TLS

FIFA Mobile Soccer Gameplay over HTTP

FIFA Mobile Soccer Gameplay over TLS

**Application**

Description

Transport

Components

**Fortnite**

Fortnite by Epic Games

TCP and UDP

Fortnite Gameplay

Fortnite Matchmaking

**Application**

Description

Transport

**Frostbite Engine**

Frostbite engine gameplay traffic

UDP

---

Components	EA Frostbite Engine Gameplay over UDP
<b>Application</b>	<b>Garena Free Fire</b>
Description	Online battle royale mobile game
Transport	TCP and UDP
Components	Garena Free Fire Audio Call over RTP Garena Free Fire Game Updates over TLS Garena Free Fire Gameplay over TCP Garena Free Fire Gameplay over TLS Garena Free Fire Gameplay over UDP Garena Free Fire Instant Messaging over TLS
<b>Application</b>	<b>GOG</b>
Description	GOG digital distribution platform for video games and films
Transport	TCP
Components	GOG Galaxy over HTTP GOG Galaxy over TLS GOG over HTTP GOG over TLS
<b>Application</b>	<b>Growtopia</b>
Description	Growtopia mobile game
Transport	TCP and UDP
Components	Growtopia gaming over UDP Growtopia over HTTP Growtopia over TLS
<b>Application</b>	<b>King Games</b>
Description	Variations of Candy Crush Games
Transport	TCP
Components	Candy Crush Friends Saga over HTTP Candy Crush Friends Saga over TLS Candy Crush Jelly Bean over HTTP Candy Crush Jelly Bean over TLS Candy Crush Saga traffic over HTTP Candy Crush Saga traffic over TLS Candy Crush Soda over HTTP Candy Crush Soda over TLS
<b>Application</b>	<b>League Of Legends</b>
Description	League Of Legends game
Transport	TCP and UDP
Components	League of Legends Gaming over UDP League of Legends over HTTP League of Legends over TLS
<b>Application</b>	<b>Lineage Revolution</b>
Description	MMORPG by Netmarble for mobile devices
Transport	TCP
Components	Lineage Revolution Game Updates over HTTP Lineage Revolution Gameplay over HTTP

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Lineage Revolution Gameplay over TCP  
Lineage Revolution Gameplay over TLS  
Lineage Revolution Instant Messaging over TCP

**Application**

Description

Transport

Components

**Lords Mobile**

Strategy game by IGG for mobile devices

TCP

Lords Mobile Chat over TCP

Lords Mobile Gameplay over HTTP

Lords Mobile Gameplay over TCP

**Application**

Description

Transport

Components

**Minecraft**

Minecraft and Minecraft Personal Edition

TCP and UDP

Master for Minecraft

Minecraft Bedrock Edition over UDP

Minecraft Multiplayer Traffic (PS4)

Minecraft Network Play over TCP

Minecraft Network Traffic (XBox ONE)

Minecraft over HTTP

Minecraft over TLS

Minecraft Personal Edition Network Play over UDP

**Application**

Description

Transport

Components

**Mobile Legends**

Mobile Legends game by Moonton

TCP

Mobile Legends Gameplay

Mobile Legends over HTTP

**Application**

Description

Transport

Components

**PlayStation Network**

Sony PlayStation online experience

TCP

PS4: Account Management

PS4: Browser

PS4: Matchmaking for Online Gaming

PS4: Online Documentation

PS4: Store

PS4: System Update

PS5: Account Management

PS5: Browser

PS5: Matchmaking for Online Gaming

PS5: Online Documentation

PS5: Store

PS5: System Update

**Application**

Description

Transport

Components

**PlayStation Now**

PlayStation Now cloud gaming service

UDP

Playstation Now Gaikai streaming over HTTP

Playstation Now Gaikai streaming over TLS

PlayStation Now Game Streaming over UDP

<b>Application</b>	<b>Pokemon Go</b>
Description	Location-based augmented reality mobile game
Transport	TCP
Components	Pokemon GO over HTTP Pokemon GO over TLS
<b>Application</b>	<b>PUBG</b>
Description	PlayerUnknown's Battlegrounds game
Transport	TCP and UDP
Components	Peacekeeper Elite Gameplay over TCP PUBG Gameplay over TCP PUBG Gameplay over TLS PUBG Gameplay over UDP PUBG Mobile Gameplay over TCP PUBG Mobile Gameplay over TLS
<b>Application</b>	<b>Rules of Survival</b>
Description	Online battle royale mobile and desktop game
Transport	TCP and UDP
Components	Rules of Survival Gameplay over TCP Rules of Survival Gameplay over UDP
<b>Application</b>	<b>Slither.io</b>
Description	Slither.io gaming
Transport	TCP
Components	Slither.io Gameplay over HTTP Slither.io Gameplay over TCP Slither.io Gameplay over TLS
<b>Application</b>	<b>Starcraft II</b>
Description	Real-time strategy game by Blizzard Entertainment
Transport	TCP and UDP
Components	StarCraft II Direct Download Updates StarCraft II Online Gameplay StarCraft II Portal over HTTP
<b>Application</b>	<b>Steam</b>
Description	Steam gaming and entertainment platform
Transport	TCP and UDP
Components	CS2:GO Gameplay over UDP Dota2 Gameplay over UDP Steam Chat Mobile App over TLS Steam Community APIs over TLS Steam Community Broadcast over TLS Steam Desktop Client over TLS Steam Mobile App over TLS Steam Online Gameplay over UDP Steam over TLS Steam Text Chat over TLS Steam Voice Chat over RTP

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**Application**  
Description  
Transport  
Components

**Supercell Gaming**  
Supercell Gaming  
TCP and UDP  
Clash of Clans gameplay over TLS  
Clash Royale gameplay over TLS  
Supercell gameplay over TCP  
Supercell gameplay over TLS  
Supercell gameplay over UDP

**Application**  
Description  
Transport  
Components

**World of Warcraft**  
Online role-playing game by Blizzard Entertainment  
TCP and UDP  
World of Warcraft Akamai CDN traffic over HTTP.  
World of Warcraft Armory  
World of Warcraft Direct Download Updates  
World of Warcraft Online Gameplay  
World of Warcraft Web over HTTP

**Application**  
Description  
Transport  
Components

**Xbox LIVE**  
Xbox LIVE Gaming Service  
TCP and UDP  
Xbox 360 Marketplace over HTTP  
Xbox 360 Online Gameplay over UDP  
Xbox LIVE Content Delivery over HTTP  
Xbox LIVE over IPSec  
Xbox LIVE over TLS  
Xbox LIVE over TLS (Xbox One)

**Application**  
Description  
Transport  
Components

**Zynga**  
Zynga Online Gaming  
TCP  
Zynga Web/Gaming over HTTP  
Zynga Web/Gaming over TLS

## 3.7 Mail

**Application**  
Description  
Transport  
Components

**Domino**  
IBM Lotus Notes / Domino  
TCP  
Domino NRPC  
Domino NRPC over NetBIOS  
Domino Unencrypted Domino WEB Access

**Application**  
Description  
Transport  
Components

**Gmail**  
Google webmail  
TCP  
Gmail over HTTP  
Gmail over QUIC  
Gmail over TLS

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Gmail over TLS for IMAP/POP3/SMTP

**Application**

Description

Transport

Components

**IMAP**

Internet Message Access Protocol v4

TCP

Internet Message Access Protocol (IMAP) Version 4

**Application**

Description

Transport

Components

**IMAP Server**

IMAP v4 served by subscribers

TCP

IMAP version 4

**Application**

Description

Transport

Components

**Mail.ru**

Russian Email and Web Portal and IM Services

TCP and UDP

Mail.Ru Agent Audio/Video Chat over RTP

Mail.Ru Email

Mail.Ru File Transfer

Mail.Ru Web over HTTP

**Application**

Description

Transport

Components

**Microsoft Exchange**

Microsoft Exchange mail, calendaring, contacts and tasks

TCP and UDP

MS Exchange ActiveSync

MS Exchange MAPI

MS Exchange OWA

**Application**

Description

Transport

Components

**Microsoft Exchange Server**

Microsoft Exchange served by subscribers

TCP and UDP

MS Exchange ActiveSync

MS Exchange MAPI

MS Exchange OWA

**Application**

Description

Transport

Components

**Microsoft Mail**

Microsoft Live Mail

TCP

Microsoft Live and Hotmail over HTTP

Microsoft Live and Hotmail over TLS

**Application**

Description

Transport

Components

**POP3**

Post Office Protocol version 3

TCP

Post Office Protocol Version 3 (POP3) over TCP

Post Office Protocol Version 3 (POP3) over TLS (IANA Registered Port)

**Application**

Description

Transport

Components

**POP3 Server**

Subscriber hosted Post Office Protocol Version 3

TCP

Subscriber Hosted Post Office Protocol Version 3

Subscriber Hosted Post Office Protocol Version 3 over TLS (IANA Registered Port)

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<b>Application</b>	<b>SMTP</b>
Description	Simple Mail Transfer Protocol
Transport	TCP
Components	Simple Mail Transfer Protocol (SMTP) over TCP Simple Mail Transfer Protocol (SMTP) over TLS (IANA Registered Port)

<b>Application</b>	<b>SMTP Server</b>
Description	Subscriber hosted Simple Mail Transfer Protocol
Transport	TCP
Components	Subscriber Hosted SMTP over TCP Subscriber Hosted SMTP over TLS (IANA Registered Port)

<b>Application</b>	<b>Yahoo Mail</b>
Description	Yahoo Mail
Transport	TCP
Components	Yahoo Mail over TLS

## 3.8 Multimedia Streaming

<b>Application</b>	<b>8tracks</b>
Description	8track internet radio
Transport	TCP
Components	8tracks audio streaming over tls

<b>Application</b>	<b>AfreecaTV</b>
Description	Afreeca TV live video hosting and streaming service
Transport	TCP
Components	Afreeca TV Broadcast Afreeca TV Korea over HTTP Afreeca TV Korea over RTMP Afreeca TV P2P

<b>Application</b>	<b>Amazon Music</b>
Description	Amazon Music Streaming Service
Transport	TCP
Components	Amazon Music Download over TLS Amazon Music Streaming over TLS

<b>Application</b>	<b>Amazon Video</b>
Description	Amazon Prime Video and Video-on-Demand
Transport	TCP and UDP
Components	Amazon Prime Video Channels over HTTP Amazon Prime Video Channels over QUIC Amazon Prime Video Channels over TLS Amazon Prime Video Download over HTTP Amazon Prime Video Download over TLS Amazon Prime Video Live NFL Game over TLS Amazon Prime Video Streaming over HTTP Amazon Prime Video Streaming over TLS

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Amazon Prime Video Watch Party over TLS

**Application**

Description

Transport

Components

**Apple Music**

Streaming audio, music-videos and radio

TCP

Apple Music Streaming over HTTP

Apple Music Streaming over TLS

**Application**

Description

Transport

Components

**Apple TV Plus**

Apple streaming service

TCP

Apple TV Plus Video Download over TLS

Apple TV Plus Video Streaming over TLS

**Application**

Description

Transport

Components

**BBC iPlayer**

BBC iPlayer internet television and radio

TCP

BBC iPlayer Audio/Video Streaming over HTTP

BBC iPlayer Audio/Video Streaming over RTMP

BBC iPlayer Audio/Video Streaming over RTMPT

**Application**

Description

Transport

Components

**Beatport**

Beatport: DJ and Dance Music

TCP

Beatport audio streaming over tls

**Application**

Description

Transport

Components

**BIGO LIVE**

BIGO LIVE streaming social media app

TCP and UDP

BIGO LIVE Audio/Video Streaming over UDP

BIGO LIVE Instant Messaging over TCP

BIGO LIVE over HTTP/TLS

**Application**

Description

Transport

Components

**Clubhouse**

Clubhouse Audio Streaming Service

TCP and UDP

Clubhouse Audio over UDP

Clubhouse over TLS

**Application**

Description

Transport

Components

**Crackle**

Crackle online video streaming

TCP

Crackle Video Streaming over HTTP

Crackle Video Streaming over RTMPE

Crackle Video Streaming over TLS

**Application**

Description

Transport

Components

**Dailymotion**

Dailymotion video sharing

TCP

Dailymotion over HTTP

Dailymotion over TLS

---

**Application**

Description

Transport

Components

**Deezer**

Deezer audio streaming

TCP

Deezer over HTTP

Deezer over TLS

**Application**

Description

Transport

Components

**Discovery Plus**

Discovery Plus Multimedia Streaming Service

TCP

Discovery Plus Video Streaming over TLS

**Application**

Description

Transport

Components

**Disney Plus**

Disney streaming service

TCP

Disney Plus GroupWatch Video Streaming over HTTP

Disney Plus GroupWatch Video Streaming over TLS

Disney Plus Video Download over HTTP

Disney Plus Video Streaming over HTTP

Disney Plus Video Streaming over TLS

**Application**

Description

Transport

Components

**ESPN**

ESPN Sports

TCP

ESPN Audio/Video Streaming over RTMP

ESPN Audio/Video Streaming over RTMPT

ESPN Audio/Video Streaming over RTP

ESPN over HTTP

ESPN over TLS

**Application**

Description

Transport

Components

**Funshion**

Funshion (Feng Xing) Peer-to-Peer video streaming

TCP and UDP

Funshion Live TV Streaming over HTTP

Funshion Streaming over HTTP

Funshion Streaming Protocol

**Application**

Description

Transport

Components

**Hallo**

Hallo Video Streaming Service

TCP and UDP

Hallo Audio and Video over UDP

Hallo over TLS

**Application**

Description

Transport

Components

**HBO**

HBO streaming video on demand

TCP

Asia: HBO Go

Brazil: HBO Go over HTTP

Brazil: HBO Go over TLS

Europe: HBO Go

HBO Nordic over HTTP

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HBO Nordic over TLS  
HBO Now over HTTP  
HBO Now over TLS  
US: HBO Go over HTTP  
US: HBO Go over TLS  
US: HBO MAX over TLS

**Application**

Description

Transport

Components

**HTTP Audio**

Hypertext Transfer Protocol audio content

TCP

HTTP ASF audio not identified as other applications  
HTTP Audio content-type not identified as other applications  
HTTP FLV audio not identified as other applications  
HTTP M4A/B/P content-type not identified as other applications  
HTTP MP4 content-type not identified as other applications  
HTTP Ogg content-type not identified as other applications  
HTTP Quicktime audio not identified as other applications

**Application**

Description

Transport

Components

**HTTP Audio Server**

Subscriber hosted HTTP audio content

TCP

HTTP ASF server audio not identified as other applications  
HTTP Audio server content-type not identified as other applications  
HTTP FLV server audio not identified as other applications  
HTTP M4A/B/P server content-type not identified as other applications  
HTTP MP4 server content-type not identified as other applications  
HTTP Ogg server content-type not identified as other applications  
HTTP Quicktime server audio not identified as other applications

**Application**

Description

Transport

Components

**HTTP Video**

Hypertext Transfer Protocol video content

TCP

HTTP ASF video content-type not identified as other Applications  
HTTP ASF video payload not identified as other Applications  
HTTP F4F video content-type not identified as other Applications  
HTTP MMS framed video content-type not identified as other Applications  
HTTP Move QMX video not identified as other Applications  
HTTP Move QSS video not identified as other Applications  
HTTP MP4 video content-type not identified as other Applications  
HTTP MP4 video F-type payload not identified as other Applications  
HTTP MP4 video payload not identified as other Applications  
HTTP Shockwaveflash video payload not identified as other Applications  
HTTP Video content-type not identified as other Applications  
HTTP WebM video payload not identified as other Applications

**Application**

Description

Transport

Components

**HTTP Video Server**

Subscriber hosted HTTP video content

TCP

HTTP ASF video content-type not identified as other Applications  
HTTP ASF video payload not identified as other Applications  
HTTP MMS framed video content-type not identified as other Applications

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HTTP Move QMX video not identified as other Applications  
HTTP Move QSS video not identified as other Applications  
HTTP MP4 video content-type not identified as other Applications  
HTTP MP4 video F-type payload not identified as other Applications  
HTTP MP4 video payload not identified as other Applications  
HTTP Shockwaveflash video payload not identified as other Applications  
HTTP video content-type not identified as other Applications

**Application**

Description

Transport

Components

**Hulu**

Hulu online video streaming

TCP

Hulu Audio/Video Streaming over HTTP

Hulu Audio/Video Streaming over RTMPE

Hulu Audio/Video Streaming over RTMPT

Hulu Audio/Video Streaming over TLS

Hulu Live Traffic

**Application**

Description

Transport

Components

**iHeartRadio**

Broadcast, podcast and streaming radio platform

TCP

iHeartRadio Control and Track Selection

iHeartRadio live radio over tls

**Application**

Description

Transport

Components

**iQiyi**

Chinese online and P2P video streaming service. Formerly PPStream

TCP and UDP

iQiyi / PPStream over HTTP video with identifiable strings

iQiyi / PPStream Streaming Protocol over UDP

iQiyi / PPStream Video over RTMFP

iQiyi / PPStream Video over TLS

iQiyi / PPStream Web Player over HTTP

**Application**

Description

Transport

Components

**JOOX**

JOOX Music Streaming

TCP

JOOX Mobile Live Broadcast over HTTP

JOOX Mobile Music Download over HTTP

JOOX Mobile Music Streaming over HTTP

JOOX Mobile Video Streaming over HTTP

JOOX Web Access/Streaming over HTTP

JOOX Web Access/Streaming over TLS

**Application**

Description

Transport

Components

**LiveXLive**

Premium music streaming platform

TCP

LiveXLive audio streaming over TLS

LiveXLive browsing over http

LiveXLive video streaming over TLS

**Application**

Description

**Microsoft Movies and TV**

Microsoft movie and tv marketplace

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Transport Components	TCP Microsoft Movies and TV Browsing Microsoft Movies and TV Downloads Microsoft Movies and TV Purchasing Microsoft Movies and TV Streaming
<b>Application</b> Description Transport Components	<b>Migu Video</b> Migu Video platform TCP Migu Video over HTTP Migu Video over TLS Migu Video Streaming over HTTP
<b>Application</b> Description Transport Components	<b>Napster</b> Napster music streaming (formerly Rhapsody) TCP Napster audio streaming over http Napster audio streaming over tls Napster Control and Track Selection
<b>Application</b> Description Transport Components	<b>Netflix</b> Netflix Multimedia Service TCP Netflix Video Download over HTTP Netflix Video Download over TLS Netflix Video Streaming over HTTP Netflix Video Streaming over TLS
<b>Application</b> Description Transport Components	<b>OllehTV</b> Olleh TV live video and video on demand service TCP OllehTV Catalogue over HTTP/TLS OllehTV Music(Video) Streaming/Download over HTTP OllehTV Video Streaming/Download over HTTP
<b>Application</b> Description Transport Components	<b>Pandora Radio</b> Pandora internet radio TCP Pandora Radio over TLS Pandora Radio Web/Streaming over HTTP
<b>Application</b> Description Transport Components	<b>PeacockTV</b> PeacockTV streaming service TCP and UDP PeacockTV traffic over quic PeacockTV traffic over tls
<b>Application</b> Description Transport Components	<b>Periscope</b> Periscope Twitter live video feed and streaming TCP and UDP Periscope over HTTP

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	Periscope over RTMP Periscope over TLS
<b>Application</b>	<b>PPTV</b>
Description	Synacast PPLive Peer-to-Peer internet television
Transport	TCP and UDP
Components	PPTV Player over HTTP PPTV Streaming over HTTP PPTV Streaming Protocol
<b>Application</b>	<b>Qobuz</b>
Description	Qobuz Music Streaming and Downloading
Transport	TCP
Components	Qobuz Music Download over TLS Qobuz Music Streaming over TLS Qobuz over TLS
<b>Application</b>	<b>QQ Music</b>
Description	freemium music streaming service owned by Tencent under QQ brand
Transport	TCP
Components	QQ Music Karaoke Mobile Live Broadcast over HTTP QQ Music Music Download over TLS QQ Music Music Streaming over HTTP QQ Music Video Download over TLS QQ Music Video Streaming over HTTP
<b>Application</b>	<b>QQ Video</b>
Description	Tencent QQ video streaming service
Transport	TCP
Components	iflix Video Streaming and Download over HTTP iflix Video Streaming and Download over TLS Tencent QQ Video Browsing Tencent QQ Video Download over HTTP Tencent QQ Video Download over TLS Tencent QQ Video Streaming over HTTP Tencent QQ Video Streaming over TLS
<b>Application</b>	<b>Radio Paradise</b>
Description	Radio Paradise listener supported radio
Transport	TCP
Components	Radio Paradise audio streaming over tls
<b>Application</b>	<b>Real Player</b>
Description	Real Networks Data Transport
Transport	UDP
Components	Real Player over HTTP Real Player RDT Data
<b>Application</b>	<b>Red Bull TV</b>
Description	Red Bull TV live and on demand video streaming
Transport	TCP

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Components	Red Bull TV Live video over TLS Red Bull TV over HTTP Red Bull TV Video Streaming over TLS
<b>Application</b>	<b>Roku</b>
Description	Roku Multimedia Streaming Service
Transport	TCP
Components	Roku over TLS
<b>Application</b>	<b>RTMP Streaming</b>
Description	Real Time Messaging Protocol for video streaming
Transport	TCP and UDP
Components	Encrypted RTMP Streaming Real-Time Media Flow Protocol (RTMFP) Streaming Real-Time Messaging Protocol (RTMP) Streaming RTMP Streaming over HTTP
<b>Application</b>	<b>RTSP</b>
Description	IETF RFC 2326: Real Time Streaming Protocol
Transport	TCP and UDP
Components	Real-Time Streaming Protocol (RTSP) Control and Data over TCP RTSP Audio/Video Streaming over RTP
<b>Application</b>	<b>SHOUTcast</b>
Description	SHOUTcast audio streaming protocol
Transport	TCP
Components	SHOUTcast Audio Streaming
<b>Application</b>	<b>Shazam</b>
Description	Music Discovery Application
Transport	TCP and UDP
Components	Shazam over quic Shazam over tls, tls_http2
<b>Application</b>	<b>Slingbox</b>
Description	Slingbox video streaming and remote control
Transport	TCP and UDP
Components	Sling TV Slingbox Remote Control Slingbox Video Streaming Slingbox Web/Streaming over HTTP
<b>Application</b>	<b>SoundCloud</b>
Description	Audio upload and streaming application
Transport	TCP
Components	SoundCloud over HTTP SoundCloud over TLS
<b>Application</b>	<b>Spotify</b>
Description	Spotify music streaming
Transport	TCP and UDP

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Components	Spotify Control and Track Selection Spotify Protocol Audio Streaming Spotify Web Streaming over HTTP Spotify Web Streaming over RTMP Spotify Web Streaming over TLS
<b>Application</b>	<b>Stan</b>
Description	Australian over-the-top streaming service
Transport	TCP and UDP
Components	Stan Video Streaming over HTTP Stan Video Streaming over QUIC Stan Video Streaming over TLS Stan Video Subtitles over TLS Stan Video Thumbnails over TLS
<b>Application</b>	<b>Tidal</b>
Description	Tidal Music/Video Streaming
Transport	TCP
Components	Tidal Music Download (on Mobile Platforms) over HTTP Tidal Music/Video Streaming over HTTP(S) Tidal Web Access over HTTPS
<b>Application</b>	<b>TikTok-Douyin</b>
Description	TikTok/Douyin video streaming, social media platform
Transport	TCP and UDP
Components	Douyin Upload Video HTTP Douyin Upload Video TLS Douyin Video Chat HTTP Douyin Video Chat TLS Douyin Video Streaming over HTTP Douyin Video Streaming over HTTP Video Douyin Video Streaming over TLS TikTok Audio/Video Streaming over HTTP TikTok Audio/Video Uploading over HTTP TikTok Messaging over HTTP TikTok Messaging over TLS TikTok over HTTP TikTok over TLS
<b>Application</b>	<b>TiVo</b>
Description	TiVo channel guide, program info, broadband media
Transport	TCP
Components	TiVo Program Information and Channel Guide
<b>Application</b>	<b>Toutiao</b>
Description	Toutiao multimedia news engine
Transport	TCP
Components	Toutiao Browsing over HTTP/TLS Toutiao Content Comment over HTTP/TLS Toutiao Live Broadcast on Xigua Platform over TLS Toutiao Upload Video over HTTP/TLS

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Toutiao Video Streaming over HTTP/TLS

**Application**

Description

Transport

Components

**Tuneln Radio**

Global Internet Radio

TCP

Tuneln Radio app browsing over http

Tuneln Radio app browsing over tls/tls\_http2

**Application**

Description

Transport

Components

**TV 2 Sumo**

TV2 Group streaming service

TCP and UDP

TV 2 Sumo TV Channels Streaming over HTTPS

TV 2 Sumo TV Channels Streaming over QUIC

TV 2 Sumo Video Streaming over HTTPS

TV 2 Sumo Video Streaming over QUIC

**Application**

Description

Transport

Components

**TwitchTv**

Twitch.tv live video streaming

TCP

Twitch Audio/Video Streaming over RTMP

Twitch Audio/Video Streaming over RTMPT

Twitch Live Video over TLS

Twitch Online Chat over TCP

Twitch Video Streaming over HTTPS

Twitch Web over HTTP

**Application**

Description

Transport

Components

**Ustream**

Ustream live video streaming

TCP

Ustream Audio/Video Streaming over RTMP

Ustream Audio/Video Streaming over RTMPT

Ustream Online Chat over TCP

Ustream Web/Streaming over HTTP

Ustream Web/Streaming over TLS

**Application**

Description

Transport

Components

**Vimeo**

Vimeo Video Streaming and Content Creation

TCP

Livestream Client Traffic over TLS

Livestream Live Video Streaming over HTTP

Livestream Live Video Streaming over QUIC

Livestream Live Video Streaming over TLS

Livestream VOD Video Streaming over HTTP

Magisto over TLS

Vimeo Client Traffic over TLS

Vimeo Video Download over TLS

Vimeo Video Streaming over HTTP

Vimeo Video Streaming over QUIC

Vimeo Video Streaming over TLS

Vimeo Video Uploading over HTTP

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<b>Application</b>	<b>Viu</b>
Description	Viu Video on Demand Streaming
Transport	TCP
Components	Viu Catalogue Browsing over TLS Viu Video Streaming/Download over TLS
<b>Application</b>	<b>VOOV</b>
Description	Live Streaming and Social Video Application
Transport	TCP
Components	VOOV Live Broadcast over RTMP VOOV Live Streaming over HTTP VOOV Mini Video Streaming over HTTP
<b>Application</b>	<b>VUDU</b>
Description	VUDU P2P distributed internet television
Transport	TCP and UDP
Components	VUDU P2P Streaming Protocol VUDU Web/Streaming over HTTP VUDU Web/Streaming over TLS
<b>Application</b>	<b>Youku Tudou</b>
Description	Alibaba hosted video content for Youku and Tudou
Transport	TCP
Components	Youku over HTTP2c Youku Tudou Video Browsing Youku Tudou Video Download over HTTP Youku Tudou Video Streaming over HTTP Youku Tudou Video Streaming over TLS Youku Tudou Video Third-party Video over HTTP
<b>Application</b>	<b>YouTube</b>
Description	YouTube Web video site
Transport	TCP and UDP
Components	Youtube Music Google Music over TLS Google Video over HTTP Google Video over TLS YouTube Audio/Video Streaming over HTTP YouTube Audio/Video Streaming over QUIC YouTube Audio/Video Streaming over RTMP YouTube Audio/Video Streaming over RTMPE YouTube Audio/Video Streaming over RTMPT YouTube Audio/Video Streaming over RTP YouTube Audio/Video Streaming over TLS YouTube Gaming over TLS YouTube Kids Web Browsing over TLS YouTube Live YouTube Messaging over TLS YouTube over HTTP YouTube over QUIC YouTube over TLS

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Youtube Premium  
YouTube Shorts

## 3.9 Network Infrastructure

### Application

Description

Transport

Components

### BGP

Border Gateway Protocol

TCP

Border Gateway Protocol

### Application

Description

Transport

Components

### DCERPC

DCE Remote Procedure Calls

TCP and UDP

DCERPC over SMB

DCERPC over TCP

DCERPC over UDP

### Application

Description

Transport

Components

### DHCP

Dynamic Host Configuration Protocol

UDP

Dynamic Host Configuration Protocol over UDP

### Application

Description

Transport

Components

### DNS

Domain Name System

TCP and UDP

Domain Name System (DNS) over TCP

Domain Name System (DNS) over UDP

### Application

Description

Transport

Components

### DNS Server

Subscriber hosted Domain Name System

TCP and UDP

Subscriber Hosted Domain Name System (DNS) over TCP

Subscriber Hosted Domain Name System (DNS) over UDP

### Application

Description

Transport

Components

### Encrypted DNS

Encrypted Domain Name System

TCP

Public DNS over HTTPS Services

Public DNS over QUIC Services

Public DNS over TLS Services

### Application

Description

Transport

Components

### Flow Information Export

NetFlow and IPFIX (cflowd) flow export and sFlow packet capture and statistics

UDP

IPFIX over UDP

NetFlow Version 5

NetFlow Version 8

NetFlow Version 9

sFlow Version 5

<b>Application</b>	<b>ICMP</b>
Description	Internet Control Message Protocol
Transport	Other
Components	Internet Control Message Protocol (ICMP) over IP Internet Control Message Protocol (ICMP) over IPv6
<b>Application</b>	<b>ISAKMP</b>
Description	Internet Security Association and Key Management Protocol
Transport	UDP
Components	Internet Security Association and Key Management Protocol (ISAKMP) Version 1 Internet Security Association and Key Management Protocol (ISAKMP) Version 2
<b>Application</b>	<b>Kerberos</b>
Description	Kerberos Version 5 Network Authentication
Transport	TCP and UDP
Components	Kerberos Authentication
<b>Application</b>	<b>LLMNR</b>
Description	Link Local Multicast Name Resolution
Transport	UDP
Components	Link Local Multicast Name Resolution (LLMNR)
<b>Application</b>	<b>MQTT</b>
Description	Message Queue Telemetry Transport
Transport	TCP
Components	MQTT TLS over TCP MQTT v3.1 over TCP MQTT v3.1.1 over TCP MQTT v5 over TCP
<b>Application</b>	<b>NDMP</b>
Description	Network Data Management Protocol
Transport	TCP
Components	NDMP over TCP
<b>Application</b>	<b>NetBIOS</b>
Description	NetBIOS name service
Transport	TCP and UDP
Components	NetBIOS Encapsulated Datagrams NetBIOS Name Service (NBNS) NetBIOS Session Service (NBSS)
<b>Application</b>	<b>NTP</b>
Description	Network Time Protocol
Transport	UDP
Components	Network Time Protocol Version 1 Network Time Protocol Version 2 Network Time Protocol Version 3 Network Time Protocol Version 4

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**Application**

Description

Transport

Components

**OSPF**

Open Shortest Path First routing protocol

Other

Open Shortest Path First (OSPF) over IP

Open Shortest Path First (OSPF) over IPv6

**Application**

Description

Transport

Components

**SNMP**

Simple Network Management Protocol

TCP and UDP

Simple Network Management Protocol (SNMP) Version 1

Simple Network Management Protocol (SNMP) Version 2 Community-Based

Simple Network Management Protocol (SNMP) Version 2 User-Based

Simple Network Management Protocol (SNMP) Version 3

**Application**

Description

Transport

Components

**STUN**

RFC 5389 - Session Traversal Utilities for NAT

TCP and UDP

Session Traversal Utilities for NAT (STUN) over TCP

Session Traversal Utilities for NAT (STUN) over UDP

Session Traversal Utilities for NAT Interleaved with RTP

Traversal Using Relay NAT (TURN) over TCP

**Application**

Description

Transport

Components

**SunRPC**

Sun Microsystems Remote Procedure Call

TCP and UDP

Open Network Computing Remote Procedure Call over TCP

**Application**

Description

Transport

Components

**Syslog**

IETF RFC 3164 Syslog

TCP and UDP

Syslog over TCP

Syslog-ng over TCP

## 3.10 Peer to Peer

**Application**

Description

Transport

Components

**Ares**

Ares Galaxy peer-to-peer file sharing

TCP and UDP

Ares Chatting

Ares File Sharing

**Application**

Description

Transport

Components

**Bitcoin**

Bitcoin cryptocurrency network traffic

TCP

Bitcoin Network Traffic over TCP

Stratum Mining Traffic over TCP

**Application**

Description

Transport

**BitTorrent**

BitTorrent peer-to-peer file sharing

TCP and UDP

---

Components	BitTorrent Peer-to-Peer Encrypted File Transfer BitTorrent Peer-to-Peer Unencrypted File Transfer BitTorrent Tracker Announce and Scrape BitTorrent Tracker over UDP uTorrent Transport Protocol (uTP) over UDP
<b>Application</b> Description Transport Components	<b>DHT</b> Distributed Hash Table used by peer-to-peer applications UDP Distributed Hash Table (DHT) Data for Ares Distributed Hash Table (DHT) Data for Azureus Distributed Hash Table (DHT) Data for BitTorrent Distributed Hash Table (DHT) Data for eMule/Kademlia
<b>Application</b> Description Transport Components	<b>Direct Connect</b> Direct Connect peer-to-peer file sharing TCP and UDP Direct Connect Client-Server Direct Connect Peer-to-Peer File Transfer Direct Connect Server-Server
<b>Application</b> Description Transport Components	<b>eMule</b> eMule & eDonkey peer-to-peer file sharing TCP and UDP eMule Control eMule Data eMule Encrypted Data
<b>Application</b> Description Transport Components	<b>Gnutella</b> Gnutella peer-to-peer file sharing TCP and UDP Gnutella Control Gnutella Unencrypted Data Gnutella2 Control Gnutella2 Unencrypted Data
<b>Application</b> Description Transport Components	<b>Hotline</b> Hotline peer-to-peer file sharing TCP and UDP Hotline Community Chat Hotline Peer-to-Peer File Sharing
<b>Application</b> Description Transport Components	<b>OpenFT</b> Open FastTrack peer-to-peer file sharing TCP OpenFT Control and Data over HTTP OpenFT Data over TCP
<b>Application</b> Description Transport	<b>SoulSeek</b> SoulSeek peer-to-peer file sharing TCP

---

Components	SoulSeek Community over HTTP SoulSeek Peer-to-Peer File Sharing
<b>Application</b>	<b>Xunlei</b>
Description	Xunlei/thunder peer-to-peer file sharing
Transport	TCP and UDP
Components	Xunlei Client Announce and Server Registration over TCP Xunlei Client Keep-Alive over UDP Xunlei Encrypted File Transfer Xunlei File Transfer over HTTP

## 3.11 Real-Time Communication

<b>Application</b>	<b>AOL Instant Messenger</b>
Description	AOL Instant Messenger Application Suite
Transport	TCP and UDP
Components	AOL Instant Messaging Multimedia over RTMP AOL Instant Messaging over HTTP AOL Online Talk to AOL Oscar Chat over TCP AOL Oscar Chat over TCP AOL Oscar File Transfer over TCP AOL Oscar Voice/Video over TCP AOL Oscar Voice/Video over UDP AOL Pro Voice/Video over TCP AOL Pro Voice/Video over UDP
<b>Application</b>	<b>Apple FaceTime</b>
Description	Apple FaceTime calling and iChat video chatting
Transport	UDP
Components	FaceTime Group Video Call FaceTime Group Voice Call FaceTime Video Call over RTP FaceTime Video Call over SIP RTP FaceTime Video Call over SIP RTP over unencrypted TLS FaceTime Voice Call over RTP FaceTime Voice Call over SIP RTP
<b>Application</b>	<b>Asterisk</b>
Description	Inter-Asterisk Exchange
Transport	UDP
Components	Asterisk IAX2 protocol
<b>Application</b>	<b>B-Messenger</b>
Description	B-Messenger chat and video/audio calls
Transport	TCP and UDP
Components	B-Messenger Audio/Video Call over RTMFP B-Messenger Audio/Video Call over RTMP B-Messenger Chat over TLS B-Messenger over TLS

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<b>Application</b>	<b>Betamax VoIP</b>
Description	Betamax VoIP Telephony
Transport	TCP and UDP
Components	Betamax Audio over SIP RTP Betamax VoIP Protocol
<b>Application</b>	<b>BiP</b>
Description	BiP messaging and voip service
Transport	TCP and UDP
Components	BiP Audio/Video Call over UDP BiP Games over TLS BiP over TLS
<b>Application</b>	<b>BOTIM</b>
Description	BOTIM real time communication
Transport	TCP and UDP
Components	BOTIM File Sharing over TLS BOTIM over TCP BOTIM Unicast Audio/Video Call over UDP
<b>Application</b>	<b>Chime-Chime SDK</b>
Description	Video and audio conferencing SDK
Transport	TCP and UDP
Components	Chime-Chime SDK Video/Audio calls over RTP
<b>Application</b>	<b>Control4</b>
Description	Control4 VoIP application for automation services
Transport	UDP
Components	Control4 Voip over RTP
<b>Application</b>	<b>DingTalk</b>
Description	VoIP Application
Transport	TCP and UDP
Components	DingTalk File Sharing over TCP DingTalk Instant Messaging over TCP DingTalk Live Stream over RTMP DingTalk over TCP DingTalk RTP Audio/Video Call over UDP
<b>Application</b>	<b>Discord</b>
Description	Discord VoIP application for gaming communities
Transport	TCP and UDP
Components	Discord File Transfer over TLS Discord Group Video Call over RTP Discord Group Voice Call over RTP Discord Instant Messaging over TLS Discord Push To Talk Communication over UDP Discord Screensharing over UDP Discord Video Call over RTP Discord Voice Call over RTP Discord Web Site and Software Download over HTTP

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Discord Web Site and Software Download over TLS

**Application**

Description

Transport

Components

**Ekiga**

Ekiga Softphone

UDP

EKiga Audio over H323 RTP

**Application**

Description

Transport

Components

**Fring**

Mobile Instant Messaging and VoIP

TCP and UDP

Fring fringOut

Fring Group Video Chat

Fring Live Chat

Fring Video Chat

**Application**

Description

Transport

Components

**Google Hangouts**

Google Hangouts VoIP and instant messaging

TCP and UDP

Google Hangouts Audio

Google Hangouts File Transfer

Google Hangouts Instant Messaging

Google Hangouts over HTTP

Google Hangouts over TLS

Google Hangouts Video

**Application**

Description

Transport

Components

**Google Meet**

Google video-communication service

TCP and UDP

Google Meet Audio Call over RTP

Google Meet Duo Audio Call over RTP

Google Meet Duo Video Call over RTP

Google Meet over TLS

Google Meet Video Call over RTP

**Application**

Description

Transport

Components

**GoToMeeting**

Audio and Video conferencing platform

TCP and UDP

GoToMeeting Audio Call over UDP

GoToMeeting Audio Video Conference over RTP

GoToMeeting over TLS

GoToMeeting Video Call over UDP

**Application**

Description

Transport

Components

**H323**

ITU-T H.323 family of audio visual communications

TCP and UDP

H.225 Protocol

H.245 Protocol

H323 RTP Data (Audio/Video/Conferencing)

Q.931 Protocol

T.125 Protocol

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<b>Application</b>	<b>Hike Messenger</b>
Description	Hike Messenger instant messaging service
Transport	TCP and UDP
Components	Hike Messenger file transfer over TLS Hike Messenger instant messaging over TLS Hike Messenger video calls over UDP Hike Messenger voice calls over UDP Hike Messenger website over HTTP Hike Messenger website over TLS

<b>Application</b>	<b>ICQ</b>
Description	ICQ Instant Messenger
Transport	TCP
Components	ICQ Audio/Video Call over TCP ICQ Facebook Chat over TCP ICQ File Transfer over TCP ICQ Instant Messaging ICQ Picture Sharing over TCP

<b>Application</b>	<b>IMO Instant Messenger</b>
Description	IMO Instant Messenger
Transport	TCP and UDP
Components	IMO file transfer over TCP IMO group video calls over UDP IMO group voice calls over UDP IMO instant messaging over TCP IMO video calls over UDP IMO voice calls over UDP IMO Website over HTTP IMO Website over TLS

<b>Application</b>	<b>IRC</b>
Description	RFC 1459 Internet Relay Chat
Transport	TCP
Components	IRC Chat IRC File Transfer IRC Ident (RFC1413 user identification)

<b>Application</b>	<b>Jajah</b>
Description	Jajah IP Telephony Platform
Transport	TCP
Components	Jajah over HTTP Jajah.Web Audio Call over HTTP

<b>Application</b>	<b>Kakao</b>
Description	Kakao social application suite
Transport	TCP and UDP
Components	KakaoStory Photo and Video Sharing KakaoTalk Audio Calling KakaoTalk Community Chat KakaoTalk Group Audio Calling

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KakaoTalk Group Live Talk  
KakaoTalk Image Sharing and Multimedia Messaging  
KakaoTalk Text Messaging  
KakaoTalk Video Calling

**Application**

Description  
Transport  
Components

**LINE**

LINE communication application  
TCP and UDP  
LINE Group Video over RTP  
LINE Group Voice over RTP  
LINE Instant Messaging over SPDY  
LINE Instant Messaging over TLS  
LINE LIVE Videos Streaming over RTMP  
LINE LIVE Videos Streaming over TLS  
LINE Video over RTP  
LINE Voice over RTP

**Application**

Description  
Transport  
Components

**LifeSize**

LifeSize Video Conferencing System  
TCP and UDP  
LifeSize H323 RTP Audio/Video Conferencing  
LifeSize SIP RTP Audio/Video Conferencing

**Application**

Description  
Transport  
Components

**Megaco**

Media Gateway Controller / H248  
UDP  
Megaco Gateway Control Protocol (H.248)

**Application**

Description  
Transport  
Components

**MGCP**

Media Gateway Control Protocol  
UDP  
Media Gateway Control Protocol (MGCP)

**Application**

Description  
Transport  
Components

**Microsoft Communicator**

Microsoft Office Communicator  
TCP and UDP  
MS Communicator Audio/Video Call  
MS Communicator Audio/Video Call over SIP RTP  
MS Communicator File Sharing  
MS Communicator Instant Messaging  
MS Communicator Screen Sharing

**Application**

Description  
Transport  
Components

**Microsoft Messenger**

Microsoft Windows Live Messenger  
TCP and UDP  
MSN Messenger Audio/Video over MSN MSGR RTP  
MSN Messenger File Transfer  
MSN Messenger Instant Messaging

**Application**

Description

**NetMeeting**

Microsoft NetMeeting Voice/Video conferencing

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Transport Components TCP and UDP  
NetMeeting Audio/Video/Conferencing over H323 RTP  
NetMeeting File Transfer over T.125  
NetMeeting Remote Desktop over T.125  
NetMeeting Whiteboarding over T.125

**Application**  
Description  
Transport Components  
**Nimbuzz**  
Mobile Instant Messaging and VoIP  
TCP and UDP  
Nimbuzz File Transfer  
Nimbuzz Instant Messaging  
Nimbuzz over TLS  
Nimbuzz Web Audio/Video Call over HTTP  
NimbuzzOut Audio/Video Call over RTP

**Application**  
Description  
Transport Components  
**OhPhone**  
Open H323 Project OhPhone  
TCP and UDP  
OhPhone Audio over H323 RTP

**Application**  
Description  
Transport Components  
**Primus**  
Primus SIP Communication  
UDP  
Primus Audio Call/Conferencing over SIP RTP  
Primus Voicemail over SIP RTP

**Application**  
Description  
Transport Components  
**QQ**  
Tencent QQ Instant Messaging  
TCP and UDP  
QQ File transfers  
QQ Instant Messaging  
QQ Live Video Streaming  
QQ Online file storage  
QQ Pet  
QQ Video Chatting  
QQ Voice Messaging  
QQ+ Web Desktop  
QQMail

**Application**  
Description  
Transport Components  
**Rebtel**  
Rebtel messaging and voip service  
TCP and UDP  
Rebtel Audio Call over RTP  
Rebtel over TLS

**Application**  
Description  
Transport Components  
**RTP**  
IETF RFC 3550: Real Time Transfer Protocol  
TCP and UDP  
RTP interleaved with DTLS  
RTP interleaved with STUN  
RTP over TCP

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RTP over UDP  
RTP within TURN

**Application**

Description

Transport

Components

**SIP**

Session Initiation Protocol - IETF RFC 3261

TCP and UDP

SIP Control

SIP RTP Data Audio

SIP RTP Data Conferencing

SIP RTP Data IM

SIP RTP Data Video

**Application**

Description

Transport

Components

**Signal**

Signal instant messaging and audio/video calls

TCP and UDP

Signal Audio Calling over RTP

Signal Instant Messaging over TLS

Signal Video Calling over RTP

**Application**

Description

Transport

Components

**SipGate**

A VoIP service provider

TCP and UDP

SipGate Audio/Conferencing/Voicemail over SIP RTP

SipGate over HTTP

SipGate over TLS

**Application**

Description

Transport

Components

**Skinny**

Cisco Skinny Call Control Protocol

TCP and UDP

Skinny Audio/Video/Conferencing over RTP

Skinny SCCP Control

**Application**

Description

Transport

Components

**Skype**

Skype VoIP application

TCP and UDP

Skype Audio Call over UDP

Skype Audio Call over TCP

Skype Desktop Sharing

Skype Facebook Video Chatting

Skype File Transfer

Skype Group Audio Call over TCP

Skype Group Audio Call over UDP

Skype Group Video Call over TCP

Skype Group Video Call over UDP

Skype Instant Messaging

Skype Meet Now over TCP

Skype Meet Now over UDP

Skype over TLS

Skype Translator

Skype Video Call over TCP

Skype Video Call over UDP

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## SkypeIn/SkypeOut Audio Call over UDP

### **Application**

Description

Transport

Components

### **Talkatone**

Talkatone voice and instant messaging application

TCP and UDP

Talkatone file sharing over TLS

Talkatone instant messaging over TLS

Talkatone voice call over UDP

Talkatone voice messaging over HTTP

Talkatone web site over HTTP

Talkatone web site over TLS

### **Application**

Description

Transport

Components

### **Tango**

Tango voice over internet, video conferencing, text messaging and photo sharing

TCP and UDP

Tango Audio/Video over TCP/UDP

Tango Emoticon, Animations, and Game Downloads over HTTP

Tango Instant Messaging over TLS

Tango Live over TLS

Tango Live over UDP

Tango Photo Sharing over TLS

### **Application**

Description

Transport

Components

### **TeamSpeak**

TeamSpeak voice chat

TCP and UDP

TeamSpeak Version 2 Voice Chat

TeamSpeak Version 3 File Transfer

TeamSpeak Version 3 Voice Chat

### **Application**

Description

Transport

Components

### **Telepresence**

Cisco Telepresence video conference

TCP and UDP

Telepresence Audio/Video/Conferencing over SIP RTP

### **Application**

Description

Transport

Components

### **Threema**

Mobile Instant Messaging

TCP and UDP

Threema Attachments over TLS

Threema Instant Messaging over TCP

Threema Voip Calls over RTP

Threema Web Attachments over TLS

Threema Web Instant Messaging over TCP

### **Application**

Description

Transport

Components

### **Ventrilo**

Ventrilo live chat

TCP and UDP

Ventrilo Audio Conferencing

### **Application**

Description

Transport

### **Viber**

Mobile Instant Messaging and VoIP

TCP and UDP

---

Components  
Viber Control over HTTP  
Viber Control over TCP  
Viber Group Video Call over RTP  
Viber Group Voice Call over RTP  
Viber Instant Messaging over TLS  
Viber Media Transfer via AmazonAWS CDN over TLS  
Viber Video Call over UDP  
Viber Voice Call over UDP  
Viber Web / Audio-Call over TLS

**Application**  
Description  
Transport  
Components

**Vonage**  
Vonage VoIP service  
UDP  
Vonage SIP RTP Audio  
Vonage SIP RTP Audio Conferencing  
Vonage SIP RTP Voicemail

**Application**  
Description  
Transport  
Components

**Voxofon**  
Voxofon instant messaging and audio calls  
TCP and UDP  
Voxofon Audio Call over RTP  
Voxofon over TLS

**Application**  
Description  
Transport  
Components

**WebEx**  
Cisco WebEx online collaboration tool  
TCP and UDP  
Jabber IM Voice/Video Call  
WebEx Application and Desktop Sharing  
WebEx File Sharing  
WebEx Online Conferencing over TLS  
WebEx Voice/Video Conferencing  
WebEx Whiteboard

**Application**  
Description  
Transport  
Components

**WeChat**  
WeChat/Weixin Instant Messaging  
TCP and UDP  
WeChat Moments (social networking)  
WeChat Shake over HTTP  
Weixin Audio and Video Chatting  
Weixin File Transfers and Sticker Sharing  
Weixin Instant Messaging

**Application**  
Description  
Transport  
Components

**Whats App**  
Free Encrypted Messaging and VoIP Service  
TCP and UDP  
WhatsApp Attachments over TLS  
WhatsApp Group Video Call over RTP  
WhatsApp Group Voice Call over RTP  
WhatsApp Instant Messaging  
WhatsApp Video Call over RTP  
WhatsApp Voice Call over RTP

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WhatsApp Web/Desktop over TLS

**Application**

Description

Transport

Components

**Wire**

Wire instant messaging and audio/video calls

TCP and UDP

Wire Audio Call over RTP

Wire File Transfer over TLS

Wire Group Audio Call over RTP

Wire Instant Messaging over TLS

Wire Screen Sharing over DTLS

Wire Video Call over RTP

**Application**

Description

Transport

Components

**Wyze**

Wyze real-time smart home camera traffic

TCP and UDP

Wyze application traffic over TLS

Wyze camera real time audio traffic over UDP

Wyze camera real time video traffic over UDP

**Application**

Description

Transport

Components

**XMeeting**

Voice/Video Conferencing application for Mac OSX

TCP and UDP

XMeeting Audio/Video/Conferencing over H323 RTP

**Application**

Description

Transport

Components

**XMPP**

XMPP messaging and file transfers excluding GoogleTalk

TCP

XMPP File Transfer

XMPP Instant Messaging

**Application**

Description

Transport

Components

**Yahoo Messenger**

Yahoo Instant Messenger

TCP and UDP

Yahoo Messenger File Transfer over HTTP

Yahoo Messenger File Transfer over TCP

Yahoo Messenger over HTTP

Yahoo Messenger over SIP

Yahoo Messenger over TCP

Yahoo Messenger over UDP

Yahoo Messenger Voice/Video over TCP

Yahoo Messenger Voice/Video over UDP

Yahoo Messenger Webcam over TCP

**Application**

Description

Transport

Components

**Zello**

Push-to-talk VoIP

TCP and UDP

Zello Audio Call over UDP

Zello over TLS

**Application**

Description

**Zoom**

Video and audio conferencing platform

---

Transport	TCP and UDP
Components	Zoom Audio/Video Calling over TLS Zoom Audio/Video Calling over UDP Zoom Desktop and Screen Sharing over TLS Zoom Desktop and Screen Sharing over UDP Zoom File Sharing over TLS Zoom File Sharing over UDP Zoom over TLS

## 3.12 Social Networking

<b>Application</b>	<b>Askfm</b>
Description	Askfm social networking
Transport	TCP
Components	Askfm Chat over TLS Askfm over HTTP Askfm over TLS

<b>Application</b>	<b>Badoo</b>
Description	Badoo dating application and website browsing
Transport	TCP and UDP
Components	Badoo dating application browsing traffic over QUIC Badoo dating application browsing traffic over TLS Badoo website browsing traffic over QUIC Badoo website browsing traffic over TLS

<b>Application</b>	<b>Facebook</b>
Description	Facebook social networking
Transport	TCP
Components	Facebook Live Broadcast over QUIC Facebook over HTTP Facebook over QUIC TCP Facebook over QUIC UDP Facebook over TLS Facebook Video over TLS Messenger Instant Messaging Messenger Video Call over RTP Messenger Voice Call over RTP

<b>Application</b>	<b>Foursquare</b>
Description	Location-based Searches and Recommendations
Transport	TCP
Components	Foursquare over HTTP Foursquare over TLS Swarm by Foursquare over HTTP Swarm by Foursquare over TLS

<b>Application</b>	<b>Grindr</b>
Description	Grindr Gay dating and chat application
Transport	TCP

---

Components Grindr Searching, Chatting, and Listening over TLS

**Application**

Description

Transport

Components

**Happn**

Happn online dating application

TCP and UDP

Happn over QUIC

Happn over TLS

**Application**

Description

Transport

Components

**Instagram**

Instagram photo editing and sharing

TCP and UDP

Instagram Audio Call over RTP

Instagram Group Audio Call over RTP

Instagram Group Video Chat over RTP

Instagram Live Broadcast

Instagram Live Broadcast with co-host(s) over RTP

Instagram over HTTP

Instagram over QUIC

Instagram over QUIC-over-TCP

Instagram over TLS

Instagram Video Chat over RTP

Threads over QUIC

Threads over TLS

**Application**

Description

Transport

Components

**Kuaishou Kwai**

Kuaishou Kwai video streaming, social media platform

TCP

Kuaishou Kwai Audio/Video Uploading on Mobile over HTTP

Kuaishou Kwai over HTTP

Kuaishou Kwai over TLS

Kuaishou Kwai Video Streaming over HTTP

Kuaishou media traffic over UDP

**Application**

Description

Transport

Components

**LinkedIn**

Business oriented social networking site LinkedIn

TCP

LinkedIn Blogs over HTTP

LinkedIn over HTTP

LinkedIn over TLS

SlideShare over HTTP

SlideShare over TLS

**Application**

Description

Transport

Components

**MySpace**

MySpace social networking

TCP

MySpace over HTTP

**Application**

Description

Transport

Components

**Pinterest**

Pinterest photo sharing

TCP

Pinterest over HTTP

---

Pinterest over TLS

**Application**

Description

Transport

Components

**Snapchat**

Snapchat instant photo and multimedia messaging

TCP and UDP

Snapchat Communication over TLS

Snapchat Group Messaging

Snapchat Group Video over RTP

Snapchat Group Voice over RTP

Snapchat Instant Messaging over TLS

Snapchat over QUIC

Snapchat Video over RTP

Snapchat Voice over RTP

**Application**

Description

Transport

Components

**Telegram**

Telegram instant messaging and file transfers

TCP and UDP

Telegram File Transfers

Telegram Group Video call over UDP

Telegram Group Voice call over UDP

Telegram Instant Messaging

Telegram Photo, Video and Sticker Sharing

Telegram Secret Chats

Telegram Video call over UDP

Telegram Voice call over UDP

Telegram Voice Messaging

Telegram Web over TLS

**Application**

Description

Transport

Components

**Tinder**

Tinder online dating application

TCP and UDP

Tinder over TLS

Tinder Video Call over RTP

**Application**

Description

Transport

Components

**Tumblr**

Tumblr microblogging and social networking

TCP

Tumblr over HTTP

Tumblr over TLS

**Application**

Description

Transport

Components

**Twitter**

Twitter social networking and microblogging

TCP

Twitter Live Broadcast over TLS

Twitter over HTTP

Twitter over TLS

Twitter Space over TLS

Vine Camera over TLS

**Application**

Description

**Vkontakte**

Russian social networking web site

---

Transport	TCP
Components	Vkontakte Audio/Video Call over RTP Vkontakte Instant Messaging Vkontakte Live Broadcast over TLS Vkontakte over HTTP Vkontakte over TLS Vkontakte Video Streaming over TLS

### 3.13 Software Update

<b>Application</b>	<b>Apple App Store and iTunes</b>
Description	Apple App Store and iTunes
Transport	TCP
Components	Apple App Store Downloads over HTTP Apple App Store Downloads over TLS Apple App Store Video Previews over TLS Apple iTunes DAAP Media Sharing Protocol Apple iTunes Streaming over HTTP Apple iTunes Streaming over TLS

<b>Application</b>	<b>Apple Update</b>
Description	Apple Operating System Updates
Transport	TCP
Components	Apple iOS Update Downloads over HTTP Apple iOS Updates over TLS Apple macOS Update Downloads over HTTP Apple macOS Updates over TLS

<b>Application</b>	<b>Google Play Store</b>
Description	Google Play Online Marketplace
Transport	TCP
Components	Google Play Store Download over HTTP Google Play Store Download over QUIC Google Play Store Download over TLS

<b>Application</b>	<b>Microsoft Update</b>
Description	Microsoft Software updates
Transport	TCP
Components	Windows App downloads over HTTP Windows App downloads over TCP Windows Update over HTTP Windows Update over TCP

<b>Application</b>	<b>Security Update</b>
Description	Antivirus/Internet security software updates
Transport	TCP
Components	Security Update: 360 Total Security HTTP Update Security Update: Avast! Antivirus HTTP Update Security Update: AVG Antivirus & Internet Security HTTP Update Security Update: Avira Antivirus HTTP Update

Security Update: Avira Antivirus TLS Update  
 Security Update: BitDefender Antivirus HTTP Update  
 Security Update: Comodo Antivirus HTTP Update  
 Security Update: Comodo Antivirus TLS Update  
 Security Update: ESET Antivirus HTTP Update  
 Security Update: Kaspersky Antivirus HTTP Update  
 Security Update: McAfee Antivirus HTTP Update  
 Security Update: MS Defender HTTP Update  
 Security Update: MS Security Essentials HTTP Update  
 Security Update: Symantec/Norton Antivirus & Internet Security HTTP Update

### 3.14 Tunnel and Remote Access

<b>Application</b>	<b>Apple iCloud Relay</b>
Description	IOS and OSX browse proxy
Transport	UDP
Components	Apple IOS Browse Proxy over QUIC Apple OSX Browse Proxy over QUIC
<b>Application</b>	<b>Avast Secureline VPN</b>
Description	Avast Secureline VPN Service
Transport	UDP
Components	Avast SecureLine VPN IPSec traffic over UDP Avast SecureLine VPN openVPN traffic over UDP
<b>Application</b>	<b>Avira Phantom VPN</b>
Description	Avira Phantom VPN Service
Transport	TCP and UDP
Components	Avira Phantom VPN HTTPS Proxy Traffic over TCP Avira Phantom VPN HTTPS Web and Client Traffic over TCP Avira Phantom VPN IPSec NAT Traversal over UDP Avira Phantom VPN OpenVPN over TCP Avira Phantom VPN WireGuard over UDP
<b>Application</b>	<b>Cisco AnyConnect</b>
Description	Cisco AnyConnect
Transport	TCP and UDP
Components	AnyConnect DTLS over UDP AnyConnect TLS over TCP OpenConnect DTLS over UDP OpenConnect TLS over TCP
<b>Application</b>	<b>Citrix ICA</b>
Description	Citrix Independent Computing Architecture
Transport	TCP and UDP
Components	Citrix ICA Citrix ICA Application Browsing Citrix ICA Common Gateway Protocol Citrix ICA XML Application Browsing

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**Application**

Description

Transport

Components

**CyberGhost VPN**

CyberGhost VPN Service

TCP and UDP

CyberGhost IPsec traffic over UDP

CyberGhost OpenVPN traffic over TCP

CyberGhost OpenVPN traffic over UDP

CyberGhost website and client traffic over TLS

CyberGhost website traffic over HTTP

**Application**

Description

Transport

Components

**DNS Tunnel**

Tunneled data encapsulated within DNS

UDP

Element53 DNS Tunnel over UDP

Iodine Derived DNS Tunnel over UDP

SlowDNS Tunnel over UDP

VPNoverDNS Tunnel over UDP

YourFreedom DNS Tunnel over UDP

**Application**

Description

Transport

Components

**DroidVPN**

DroidVPN VPN

UDP

DroidVPN UDP Mode 1

**Application**

Description

Transport

Components

**DTLS**

Datagram Transport Layer Security

UDP

Datagram Transport Layer Security (DTLS) Version 1.0

Datagram Transport Layer Security (DTLS) Version 1.2

DTLS Session Resumption using Session ID

**Application**

Description

Transport

Components

**Encrypt.me**

Encrypt.me VPN Service

TCP and UDP

Encrypt.me HTTPS Web and Client Traffic over TCP

Encrypt.me IPsec NAT Traversal over UDP

Encrypt.me OpenVPN over TCP

Encrypt.me OpenVPN over UDP

**Application**

Description

Transport

Components

**F-Secure Freedom VPN**

F-Secure Freedom VPN Service

TCP and UDP

F-Secure Freedom IPsec traffic over UDP

F-Secure Freedom openVPN traffic over TCP

F-Secure Freedom openVPN traffic over UDP

F-Secure Freedom website and client traffic over TLS

F-Secure Freedom website traffic over HTTP

**Application**

Description

Transport

Components

**Froot VPN**

FrootVPN VPN service

TCP and UDP

FrootVPN IPsec traffic over UDP

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FrootVPN openVPN traffic over TLS  
FrootVPN openVPN traffic over UDP  
FrootVPN PPTP traffic over UDP  
FrootVPN website and client traffic over TLS  
FrootVPN website traffic over HTTP

**Application**

Description  
Transport  
Components

**GRE**

Generic Routing Encapsulation  
Other  
Generic Routing Encapsulation (GRE) over IP  
Generic Routing Encapsulation (GRE) over IPv6

**Application**

Description  
Transport  
Components

**GTP**

GPRS Tunneling Protocol  
UDP  
GPRS Tunneling Protocol for Charging Transfer (GTP')  
GPRS Tunneling Protocol for Control (GTP-C) Version 1  
GPRS Tunneling Protocol for Control (GTP-C) Version 2  
GPRS Tunneling Protocol for User Data (GTP-U)

**Application**

Description  
Transport  
Components

**HideMe VPN**

HideMe VPN Service  
TCP and UDP  
HideMe Cisco IPsec traffic over UDP  
HideMe IPsec NAT Traversal traffic over UDP  
HideMe L2TP traffic over UDP  
HideMe OpenVPN traffic over UDP  
HideMe PPTP traffic over UDP  
HideMe Proxy over Socks  
HideMe SSTP traffic over UDP  
HideMe website and client traffic over HTTP/TLS  
HideMe Wireguard traffic over UDP

**Application**

Description  
Transport  
Components

**HideMyAss VPN**

HideMyAss VPN Service  
TCP and UDP  
HideMyAss IPsec traffic over UDP  
HideMyAss openVPN traffic over TCP  
HideMyAss openVPN traffic over UDP  
HideMyAss PPTP traffic over TCP  
HideMyAss website traffic over HTTP  
HideMyAss website traffic over TLS

**Application**

Description  
Transport  
Components

**Hola VPN**

Hola VPN Service  
TCP  
Hola VPN IPsec traffic over UDP  
Hola VPN traffic over HTTP  
Hola VPN traffic over TLS

<b>Application</b>	<b>HotspotShield VPN</b>
Description	HotspotShield VPN service
Transport	TCP and UDP
Components	HotspotShield VPN / Better VPN IPSec NAT Traversal over UDP HotspotShield VPN / Betternet VPN OpenVPN traffic over UDP HotspotShield VPN / Betternet VPN WireGuard over UDP
<b>Application</b>	<b>IP in IP</b>
Description	IP in IP tunneling
Transport	Other
Components	IP in IP IPv6 in IP
<b>Application</b>	<b>IPSec</b>
Description	IPSec applications
Transport	Other
Components	IPSec over IP (IANA Registered Ports) IPSec over IP (IANA Registered Protocol Numbers) IPSec over IPv6 (IANA Registered Ports) IPSec over IPv6 (IANA Registered Protocol Numbers)
<b>Application</b>	<b>IPSec NAT Traversal</b>
Description	RFC 3948: UDP Encapsulated IPSec NAT traversal
Transport	UDP
Components	IPSec Encapsulating Security Payload (ESP) over UDP IPSec NAT Traversal Keep-Alive UDP Encapsulated ISAKMP
<b>Application</b>	<b>IVPN</b>
Description	IVPN Service
Transport	TCP and UDP
Components	IVPN IPSec over UDP IVPN openVPN over TCP IVPN openVPN over UDP IVPN over WireGaurd IVPN Web and Client over HTTP IVPN Web and Client over TLS
<b>Application</b>	<b>Ivacy VPN</b>
Description	Ivacy VPN Service
Transport	TCP and UDP
Components	Ivacy OpenVPN traffic over TCP Ivacy OpenVPN traffic over UDP Ivacy VPN IPSec traffic over UDP Ivacy VPN traffic over TLS
<b>Application</b>	<b>L2TP</b>
Description	Layer 2 Tunneling Protocol
Transport	UDP
Components	Layer 2 Tunneling Protocol (L2TP) over IP (IANA Registered Protocol Number) Layer 2 Tunneling Protocol (L2TP) over IPv6 (IANA Registered Protocol Number)

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Layer 2 Tunneling Protocol (L2TP) over UDP  
Layer 2 Tunneling Protocol (L2TP) over UDP (IANA Registered Port)

**Application**

Description

Transport

Components

**Mullvad VPN**

Mullvad VPN Service

TCP and UDP

Mullvad OpenVPN traffic over TCP

Mullvad OpenVPN traffic over UDP

Mullvad Website traffic over HTTP

Mullvad Website traffic over TLS

**Application**

Description

Transport

Components

**Nord VPN**

Nord VPN Service

TCP and UDP

NordVPN HTTPS Proxy Traffic over TCP

NordVPN HTTPS Web and Client Traffic over TCP

NordVPN IPsec NAT Traversal over UDP

NordVPN OpenVPN over TCP

NordVPN OpenVPN over UDP

NordVPN OpenVPN Scramble over TCP

NordVPN OpenVPN Scramble over UDP

NordVPN WireGuard (NordLynx) over UDP

**Application**

Description

Transport

Components

**OnlineShield VPN**

OnlineShield VPN Service

TCP and UDP

OnlineShield VPN IPsec traffic over UDP

OnlineShield VPN openVPN traffic over TCP

OnlineShield VPN openVPN traffic over UDP

OnlineShield VPN website traffic over HTTP

OnlineShield VPN website traffic over TLS

**Application**

Description

Transport

Components

**OpenVPN**

Open source secure VPN

TCP and UDP

OpenVPN with Key Negotiation over TCP

**Application**

Description

Transport

Components

**PCoIP**

PCoIP remote desktop protocol

TCP and UDP

PCoIP Control over TLS

PCoIP Data over UDP

**Application**

Description

Transport

Components

**PPTP**

Point-to-Point Tunneling Protocol

TCP

Point-to-Point Tunneling Protocol Control

Point-to-Point Tunneling Protocol GRE/PPP Data

**Application**

Description

**Proton VPN**

ProtonVPN service

---

Transport Components TCP and UDP  
ProtonVPN IPsec traffic over UDP  
ProtonVPN openVPN traffic over TCP  
ProtonVPN openVPN traffic over UDP  
ProtonVPN website and client traffic over HTTPS

**Application**  
Description  
Transport Components  
**Pure VPN**  
Pure VPN Service  
TCP and UDP  
PureVPN HTTPS Proxy Traffic over TCP  
PureVPN HTTPS Web and Client Traffic over TCP  
PureVPN IPsec NAT Traversal over UDP  
PureVPN OpenVPN over TCP  
PureVPN OpenVPN over UDP  
PureVPN WireGuard over UDP

**Application**  
Description  
Transport Components  
**pcAnywhere**  
Symantec pcAnywhere  
TCP and UDP  
pcAnywhere Desktop sharing  
pcAnywhere File transfer

**Application**  
Description  
Transport Components  
**Remote Desktop**  
Remote Desktop protocol  
TCP and UDP  
Remote Desktop Protocol (RDP) over TCP  
Remote Desktop Protocol (RDP) over UDP

**Application**  
Description  
Transport Components  
**Remote Desktop Server**  
Subscriber hosted Remote Desktop Protocol  
TCP and UDP  
Subscriber Hosted Remote Desktop Protocol (RDP) over TCP  
Subscriber Hosted Remote Desktop Protocol (RDP) over UDP

**Application**  
Description  
Transport Components  
**Rlogin**  
RFC1258 rlogin virtual terminal  
TCP  
Rlogin Kerberos authenticated remote login  
Rlogin Remote login

**Application**  
Description  
Transport Components  
**Rsh**  
Unix Remote Shell  
TCP  
Rsh Kerberos authenticated remote shell  
Rsh Remote shell command

**Application**  
Description  
Transport Components  
**Safer VPN**  
SaferVPN Services  
TCP and UDP  
SaferVPN IPsec traffic over UDP  
SaferVPN L2TP traffic over UDP

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SaferVPN openVPN traffic over TCP  
SaferVPN openVPN traffic over UDP  
SaferVPN PPTP traffic over UDP  
SaferVPN website and client traffic over TLS  
SaferVPN website traffic over HTTP

**Application**

Description

Transport

Components

**Satellite TV Card Sharing**

Satellite TV card sharing protocols

TCP

CCcam (C-Lines and F-Lines) Satellite Card Sharing over TCP

Newcamd (N-Lines) Satellite Card Sharing over TCP

**Application**

Description

Transport

Components

**Snap VPN**

Snap VPN Service

TCP and UDP

Snap VPN OpenVPN Scramble over TCP

Snap VPN OpenVPN Scramble over UDP

SnapVPN IPsec NAT Traversal over UDP

**Application**

Description

Transport

Components

**SOCKS**

Socket Secure (SOCKS) proxy

TCP

Socket Secure (SOCKS) Version 4

Socket Secure (SOCKS) Version 4a

Socket Secure (SOCKS) Version 5

**Application**

Description

Transport

Components

**SSH**

Secure Shell

TCP

Secure Shell (SSH) Version 1

Secure Shell (SSH) Version 2

**Application**

Description

Transport

Components

**Strong VPN**

Strong VPN Service

TCP and UDP

StrongVPN HTTPS Web and Client Traffic over TCP

StrongVPN IPsec NAT Traversal over UDP

StrongVPN OpenVPN over TCP

StrongVPN OpenVPN over UDP

StrongVPN OpenVPN Scramble over TCP

StrongVPN OpenVPN Scramble over UDP

StrongVPN PPTP over TCP

StrongVPN SSTP over TCP

StrongVPN WireGuard over UDP

**Application**

Description

Transport

Components

**SurfEasy VPN**

SurfEasy VPN Service

TCP and UDP

SurfEasy VPN HTTPS Web and Client Traffic over TCP

SurfEasy VPN IPsec NAT Traversal over UDP

SurfEasy VPN OpenVPN over UDP

<b>Application</b>	<b>TeamViewer</b>
Description	TeamViewer remote control, desktop access, and file sharing
Transport	TCP and UDP
Components	TeamViewer over HTTP TeamViewer over HTTP Proxy TeamViewer over TCP TeamViewer over TLS TeamViewer over UDP
<b>Application</b>	<b>Telnet</b>
Description	Teletype Network
Transport	TCP
Components	Telnet over TCP Telnet over TLS (IANA Registered Port)
<b>Application</b>	<b>Teredo</b>
Description	IPv6 tunneling over IPv4
Transport	UDP
Components	Teredo Tunneling IPv6 over IP
<b>Application</b>	<b>TLS</b>
Description	Transport Layer Security (TLS) and Secure Socket Layer (SSL)
Transport	TCP
Components	Secure Sockets Layer (SSL) Version 2 Secure Sockets Layer (SSL) Version 3 TLS Session Resumption using Session ID TLS Session Resumption using Session Ticket Transport Layer Security (TLS) Version 1.0 Transport Layer Security (TLS) Version 1.1 Transport Layer Security (TLS) Version 1.2
<b>Application</b>	<b>TN3270</b>
Description	TN3270 Remote Terminal
Transport	TCP
Components	TN3270
<b>Application</b>	<b>Tor</b>
Description	Tor anonymity network
Transport	TCP
Components	Tor obfsproxy over TCP Tor over HTTP Tor over TLS
<b>Application</b>	<b>Turbo VPN</b>
Description	Turbo VPN Service
Transport	TCP and UDP
Components	Turbo VPN IPsec NAT Traversal over UDP Turbo VPN OpenVPN Scramble over TCP Turbo VPN OpenVPN Scramble over UDP Turbo VPN unknown_udp [ DTS 391172]

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**Application**

Description  
Transport  
Components

**Ultrasurf**

Ultrasurf Internet traffic obfuscation  
TCP  
Ultrasurf over TLS

**Application**

Description  
Transport  
Components

**Unlimited VPN**

Unlimited VPN Service  
TCP and UDP  
Unlimited VPN HTTPS Proxy Traffic over TCP  
Unlimited VPN HTTPS Web and Client Traffic over TCP  
Unlimited VPN IPSec NAT Traversal over UDP  
Unlimited VPN OpenVPN over TCP  
Unlimited VPN OpenVPN over UDP  
Unlimited VPN PPTP over TCP  
Unlimited VPN WireGuard over UDP

**Application**

Description  
Transport  
Components

**VNC**

Virtual Network Computing  
TCP and UDP  
Virtual Network Computing (VNC) Remote Frame Buffer  
Virtual Network Computing (VNC) Remote Frame Buffer for Apple

**Application**

Description  
Transport  
Components

**VNC Server**

Subscriber hosted Virtual Network Computing  
TCP and UDP  
Subscriber Hosted Virtual Network Computing (VNC) Remote Frame Buffer  
Subscriber Hosted Virtual Network Computing (VNC) Remote Frame Buffer for Apple

**Application**

Description  
Transport  
Components

**VPNSecure.me**

VPNSecure.me Service  
TCP and UDP  
VPNSecure.me SSH tunnel traffic  
VPNSecure.me VPN traffic over OpenVPN TCP  
VPNSecure.me VPN traffic over OpenVPN UDP  
VPNSecure.me VPN traffic over Tor  
VPNSecure.me VPN website traffic over HTTP  
VPNSecure.me VPN website traffic over TLS

**Application**

Description  
Transport  
Components

**Vypr VPN**

Vypr VPN Service  
TCP and UDP  
VyprVPN HTTPS Web and Client Traffic over TCP  
VyprVPN IPSec NAT Traversal over UDP  
VyprVPN OpenVPN over TCP  
VyprVPN OpenVPN over UDP  
VyprVPN PPTP over TCP  
VyprVPN WireGuard over UDP

**Application**

Description

**Windscribe VPN**

Windscribe VPN Service

Transport Components	TCP and UDP Windscribe VPN IPsec traffic over UDP Windscribe VPN traffic over OpenVPN TCP Windscribe VPN traffic over OpenVPN UDP Windscribe VPN website traffic over HTTP Windscribe VPN website traffic over TLS
<b>Application</b> Description Transport Components	<b>Wire Tun</b> Wire Tun VPN UDP Wire Tun VPN traffic over UDP
<b>Application</b> Description Transport Components	<b>WireGuard</b> WireGuard VPN UDP WireGuard Cloudflare Variant over UDP WireGuard Protocol over UDP
<b>Application</b> Description Transport Components	<b>XWindows</b> X Window System graphical user interface for networked computers TCP and UDP XDMCP Server Discovery XWindows Remote GUI
<b>Application</b> Description Transport Components	<b>YourFreedom VPN</b> YourFreedom VPN TCP and UDP YourFreedom VPN over FTP Active YourFreedom VPN over FTP Passive YourFreedom VPN over HTTP YourFreedom VPN over HTTP Get Variant YourFreedom VPN over HTTP Post Variant YourFreedom VPN over TCP YourFreedom VPN over TLS YourFreedom VPN over UDP YourFreedom VPN over UDP Packet Count Port Hopping Variant YourFreedom VPN over UDP Time Based Port Hopping Variant YourFreedom VPN URL over HTTP YourFreedom VPN URL over TLS
<b>Application</b> Description Transport Components	<b>Zoog VPN</b> ZoogVPN Service TCP and UDP Zoog VPN DTLS over udp Zoog VPN WireGuard traffic over UDP ZoogVPN IPsec traffic over UDP ZoogVPN openVPN traffic over TCP ZoogVPN openVPN traffic over UDP ZoogVPN website and client traffic over TLS ZoogVPN website traffic over HTTP

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## 3.15 Unidentified

<b>Application</b>	<b>Non TCP UDP</b>
Description	IP traffic which is not TCP or UDP
Transport	Other
Components	Non TCP UDP
<b>Application</b>	<b>Unidentified TCP</b>
Description	Traffic that could only be identified as TCP
Transport	TCP
Components	Unidentified TCP
<b>Application</b>	<b>Unidentified UDP</b>
Description	Traffic that could only be identified as UDP
Transport	UDP
Components	Unidentified UDP

## 3.16 Unknown

<b>Application</b>	<b>Unknown</b>
Description	Default Application Unknown
Transport	TCP and UDP
Components	cut through cut through by default policy denied by default policy

## 3.17 Web

<b>Application</b>	<b>Adobe Document Cloud</b>
Description	Adobe web-based collaboration tools suite
Transport	TCP
Components	Acrobat PDF Services Adobe Sign
<b>Application</b>	<b>Advertising Statistics</b>
Description	Advertising/Tracking Statistics
Transport	TCP
Components	Advertising Statistics Doubleclick over QUIC Advertising Statistics Adtech Network Advertising Statistics AOL Network Advertising Statistics AppNexus Network Advertising Statistics Atlas Solutions Advertising Statistics comScore (Voice Five) Network Advertising Statistics Google Network Advertising Statistics Quantserve tracking Advertising Statistics Revenue Science Network Advertising Statistics Yahoo Network

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**Application**  
Description  
Transport  
Components

**Akamai**  
Content Delivery Network and Cloud Services  
TCP and UDP  
Akamai CDN over GQUIC  
Akamai CDN over HTTP  
Akamai CDN over TLS

**Application**  
Description  
Transport  
Components

**Alibaba**  
Alibaba Group  
TCP  
Alibaba Browsing Traffic over HTTP  
Alibaba Browsing Traffic over TLS

**Application**  
Description  
Transport  
Components

**Alibaba Cloud**  
Alibaba Cloud Services  
TCP  
Alibaba Cloud CDN over TLS

**Application**  
Description  
Transport  
Components

**Alipay**  
Alipay online payment  
TCP  
Alipay Online Payments over HTTP  
Alipay Online Payments over TLS

**Application**  
Description  
Transport  
Components

**Amazon**  
Amazon online shopping  
TCP  
Amazon Live Video over TLS  
Amazon over HTTP  
Amazon over TLS

**Application**  
Description  
Transport  
Components

**Apple**  
Apple web services  
TCP  
Apple Web Services over HTTP  
Apple Web Services over TLS

**Application**  
Description  
Transport  
Components

**Apple Maps**  
Apple mapping service  
TCP  
Apple MapKit API  
Apple Maps over HTTP  
Apple Maps over TLS

**Application**  
Description  
Transport  
Components

**Apple News**  
Apple news  
TCP  
Apple News over TLS

**Application**  
Description

**Apple Push Notification**  
Apple Push Notification service

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Transport Components	TCP Apple Push Notifications to iOS and MacOS Third-party Push Notifications to Apple
<b>Application</b> Description Transport Components	<b>AutoNavi</b> Navigation, map searching, and map editing application TCP AutoNavi over HTTP AutoNavi over TLS
<b>Application</b> Description Transport Components	<b>Baidu</b> Baidu web search and services TCP Baidu Baike Baidu Image Baidu Map Baidu Music Baidu Tieba Baidu Website and Search traffic over HTTP Baidu Zhidao
<b>Application</b> Description Transport Components	<b>Baidu Maps</b> Navigation, map searching, and map editing application TCP Baidu Maps AR over TLS Baidu Maps over HTTP Baidu Maps over TLS
<b>Application</b> Description Transport Components	<b>Blogger</b> Google Blogger and Blogspot multi-user blogs TCP Blogger over HTTP Blogger over QUIC
<b>Application</b> Description Transport Components	<b>beIN Sports</b> beIN SPORTS television sports TCP beIN Sports CONNECT over TLS beIN SPORTS over TLS
<b>Application</b> Description Transport Components	<b>CNN</b> CNN news TCP CNN Live (goCNN) over HTTP(S) CNN over HTTP(S) CNN VoD over HTTP(S)
<b>Application</b> Description Transport Components	<b>Craigslist</b> Craigslist classified advertisements TCP Craigslist over HTTP

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Craigslist over TLS

**Application**

Description

Transport

Components

**DiDi**

Ride Hailing Service

TCP

DiDi Mobile over TLS

DiDi Ride Matching Protocol

DiDi Web Access over TLS

**Application**

Description

Transport

Components

**El Mercurio On-Line**

Chilean news site

TCP

El Mercurio On-Line over HTTP

El Mercurio On-Line over TLS

**Application**

Description

Transport

Components

**Epic Browser**

Epic web search and services

TCP and UDP

Epic Browser Proxy VPN over TCP

Epic Website and Search over TLS

**Application**

Description

Transport

Components

**eBay**

eBay online auctions and classified marketplaces

TCP

eBay Kijiji over HTTP

eBay Kijiji over TLS

eBay over HTTP

eBay over TLS

**Application**

Description

Transport

Components

**Firestore Cloud Messaging**

Firestore Cloud Messaging Push notification service

TCP

Firestore Cloud Messaging Push Notifications

**Application**

Description

Transport

Components

**Flickr**

Flickr image and video hosting

TCP

Flickr over HTTP

Flickr over TLS

**Application**

Description

Transport

Components

**Globo**

Rede Globo Brazilian television network

TCP

Globo over HTTP

Globo over TLS

**Application**

Description

Transport

Components

**Go-Jek**

Ride Hailing and On-Demand Logistic Services

TCP

Go Jek On-Demand Services over TLS

Go Jek Web over HTTP

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Go Jek Web over TLS

**Application**

Description

Transport

Components

**Google**

Google Internet-based Services

TCP

Google over QUIC

Google Plus over TLS

Google Tag Manager analytics.

Google Website and Search over HTTP

Google Website and Search over TLS

**Application**

Description

Transport

Components

**Google APIs**

Google APIs services

TCP and UDP

Google APIs over QUIC

Google APIs over TLS

**Application**

Description

Transport

Components

**Google Chrome Data Compression**

Google Chrome web page compression through proxied browsing

TCP

Google Chrome Data Saver over QUIC

Google Chrome Data Saver over TLS proxy

**Application**

Description

Transport

Components

**Google Earth And Maps**

Google client and browser based maps

TCP

Google Earth over HTTP

Google Earth over TLS

Google Maps over HTTP

Google Maps over QUIC

Google Maps over TLS

Google Street View over HTTP

Google Street View over TLS

**Application**

Description

Transport

Components

**Google User Content**

Google User Content traffic

TCP and UDP

Google User Content over QUIC

Google User Content over TLS

**Application**

Description

Transport

Components

**Grab**

Ride Hailing and On-Demand Logistic Services

TCP

Grab On-Demand Services over TLS

Grab Web over TLS

**Application**

Description

Transport

Components

**HERE WeGo**

Navigation, map searching, and map editing applications

TCP

HERE Car map download feature

HERE WeGO Map Creator over HTTP

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HERE WeGO Map Creator over TLS  
HERE WeGO Maps over HTTP  
HERE WeGO Maps over TLS

**Application**

Description

Transport

Components

**HTTP**

Hypertext Transfer Protocol

TCP

HyperText Transfer Protocol (HTTP) Version 1.x

Unencrypted Hypertext Transfer Protocol (HTTP) Version 2

Unencrypted SPDY over TCP

Wireless Application Protocol (WAP) Version 2.0

**Application**

Description

Transport

Components

**HTTP Server**

Subscriber hosted HTTP content

TCP

Subscriber Hosted Hypertext Transfer Protocol (HTTP) Version 1.x

Subscriber Hosted Wireless Application Protocol (WAP) Version 2.0

**Application**

Description

Transport

Components

**HTTPS**

Secure Hypertext Transfer Protocol

TCP

Hypertext Transfer Protocol (HTTP) Version 1.x over TLS (IANA Registered Port)

Hypertext Transfer Protocol (HTTP) Version 2.0 over TLS (IANA Registered Port)

**Application**

Description

Transport

Components

**HTTPS Server**

Subscriber hosted HTTPS content

TCP

Subscriber Hosted HTTP Version 1.x over TLS (IANA Registered Port)

Subscriber Hosted HTTP Version 2.0 over TLS (IANA Registered Port)

**Application**

Description

Transport

Components

**IMDb**

The Internet Movie Database

TCP

IMDb over HTTP

IMDb over TLS

**Application**

Description

Transport

Components

**Imgur**

Imgur image sharing community and image host

TCP

Imgur over HTTP

Imgur over TLS

**Application**

Description

Transport

Components

**Jingdong**

Jingdong Chinese e-commerce platform

TCP

Jingdong e-commerce over HTTP

Jingdong e-commerce over TLS

Jingdong Live Streaming over TLS

Jingdong Video Content over RTMP

<b>Application</b>	<b>Meituan-Dianping</b>
Description	Chinese Group Buying and Retail Services
Transport	TCP
Components	Dianping over HTTP Dianping over TLS Meituan over HTTP Meituan over TLS Meituan-Dianping over TCP
<b>Application</b>	<b>Microsoft</b>
Description	Microsoft MSN and Live Services
Transport	TCP
Components	MSN over HTTP MSN Video over HTTP
<b>Application</b>	<b>Microsoft Bing</b>
Description	Microsoft Bing services
Transport	TCP
Components	Microsoft Bing over HTTP Microsoft Bing over TLS
<b>Application</b>	<b>MMS</b>
Description	Multimedia Messaging Service MM1 over WAP1.x/WAP2.x
Transport	TCP and UDP
Components	MMS WAP1.x (WSP) Text/Multimedia MMS WAP1.x (WTP/WSP) Text/Multimedia MMS WAP2.x (HTTP) Text/Multimedia
<b>Application</b>	<b>Mozilla</b>
Description	Mozilla Firefox core domains, APIs and application updates
Transport	TCP
Components	Mozilla Update: Firefox HTTP Update Mozilla Update: Thunderbird HTTP Update
<b>Application</b>	<b>Naver</b>
Description	Naver Web Portal and applications
Transport	TCP
Components	Naver Cloud Storage over TLS Naver Mail over TLS Naver Music over RTMPE Naver Music/Audio Clip over HTTP(S) Naver Navigation over TLS Naver TV and Live Streaming over HTTP(S) Naver TV and Live Streaming over QUIC Naver V Live Video Streaming over HTTP(S) Naver V Live Video Streaming over QUIC Naver Web Access over HTTP(S)
<b>Application</b>	<b>OpenSports</b>
Description	Sports league management
Transport	TCP

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Components	OpenSports over HTTP OpenSports over TLS
<b>Application</b>	<b>Opera Mini</b>
Description	Opera Mini mobile web browsing, compressed and proxied through Opera servers
Transport	TCP
Components	Opera Mini Web Browsing
<b>Application</b>	<b>PayPal</b>
Description	Online payment service for individuals and merchants
Transport	TCP
Components	PayPal Web Traffic over TLS
<b>Application</b>	<b>Phoenix Television</b>
Description	Phoenix New Media television network
Transport	TCP
Components	Phoenix Television Video Content over HTTP Phoenix Television Video Content over RTMP Phoenix Television Video Content over TLS Phoenix Television Web Content over HTTP Phoenix Television Web Content over TLS
<b>Application</b>	<b>Photobucket</b>
Description	Photobucket image and video hosting
Transport	TCP
Components	Photobucket over HTTP Photobucket over TLS
<b>Application</b>	<b>QUIC</b>
Description	Quick UDP Internet Connections
Transport	UDP
Components	Google Quick UDP Internet Connections (gQUIC) IETF QUIC Multipath QUIC Extension QUIC over TCP
<b>Application</b>	<b>Reddit</b>
Description	Reddit social news and media aggregation
Transport	TCP
Components	Reddit over HTTP Reddit over TLS
<b>Application</b>	<b>Runtastic</b>
Description	Adidas running and fitness tracking apps
Transport	TCP
Components	Runtastic Running over HTTP Runtastic Running over TLS Runtastic Training over HTTP Runtastic Training over TLS

---

**Application**

Description

Transport

Components

**SAPO**

SAPO portal and internet services

TCP

SAPO Mobile Apps

SAPO over HTTP

SAPO over TLS

SAPO Web Mail

**Application**

Description

Transport

Components

**Sharebox**

Sharebox Korea media streaming and peer-to-peer service

TCP and UDP

Sharebox Korea Media Streaming over HTTP

Sharebox Korea Peer-to-Peer over TCP

Sharebox Korea Peer-to-Peer over UDP

Sharebox Korea Website over HTTP

**Application**

Description

Transport

Components

**Sina**

Sina group core content

TCP

Sina Mail over HTTP

Sina Mail over TLS

Sina News over HTTP

Sina News over TLS

Sina Video Content over HTTP

Sina Video Content over TLS

Sina Weibo over HTTP

Sina Weibo over TLS

SinaCloud over HTTP

SinaCloud over TLS

**Application**

Description

Transport

Components

**Speedtest.net**

Speedtest.net internet performance measurement traffic

TCP

Speedtest OpenVPN traffic over UDP

Speedtest partner servers over TLS

Speedtest.net Adaptive Video

Speedtest.net Data Transfer Protocol over TCP [308812]

Speedtest.net Map for ISP coverage over TLS

Speedtest.net Standard Partner Sites over HTTP

Speedtest.net User-Agents over HTTP

Speedtest.net Website over HTTP

Speedtest.net Website over TLS

**Application**

Description

Transport

Components

**Taobao**

Taobao online shopping

TCP

Taobao over HTTP

Taobao over SPDY

Taobao over TLS

---

**Application**

Description

Transport

Components

**Tencent Cloud**

Tencent cloud services

TCP

Tencent Browsing over TLS

Tencent Cloud Services over HTTP

Tencent Cloud Services over TLS

Tencent Cloud Storage over TLS

**Application**

Description

Transport

Components

**TomTom**

GPS, navigation and map searching applications

TCP

TomTom AmiGo application over TLS

TomTom Go application over TLS

TomTom GO Ride application over TLS

TomTom website over TLS

**Application**

Description

Transport

Components

**Tripadvisor**

Online travel agency

TCP

Tripadvisor over HTTP

Tripadvisor over TLS

**Application**

Description

Transport

Components

**Uber**

Uber Ride Sharing Company, Maps traffic under Google Earth And Maps.

TCP

Uber Maps Mobile over TLS

Uber Ride Sharing Browser over TLS

Uber Ride Sharing Mobile over TLS

Uber Texting over TLS

Uber Voice Call over RTP

UberEats over TLS

**Application**

Description

Transport

Components

**WAP**

Wireless Application Protocol

UDP

WAP 1.x WSP over UDP

WAP 1.x WSP over WTP

**Application**

Description

Transport

Components

**Waze**

Community-based traffic and navigation

TCP

Waze Navigation and Live Traffic over TLS

Waze over HTTP

**Application**

Description

Transport

Components

**Wikimedia**

Wikipedia and other Wikimedia projects

TCP

Wikibooks over HTTP/TLS

Wikidata over HTTP/TLS

Wikimedia over HTTP

Wikimedia over TLS

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Wikinews over HTTP/TLS  
Wikipedia over HTTP  
Wikipedia over TLS  
Wikiquote over HTTP/TLS  
Wikisource over HTTP/TLS  
Wikispecies over HTTP/TLS  
Wikiversity over HTTP/TLS  
Wiktionary over HTTP/TLS

**Application**

Description

Transport

Components

**Windows Push Notification**

Microsoft windows push notification service

TCP

Windows Push Notifications from Microsoft to Windows Clients

Windows Push Notifications from Third-party to Microsoft

**Application**

Description

Transport

Components

**Yahoo**

Yahoo Internet-based services

TCP and UDP

Yahoo over HTTP

Yahoo over TLS

**Application**

Description

Transport

Components

**Yandex**

Yandex Russian search engine

TCP

Yandex over HTTP

Yandex over TLS

**Application**

Description

Transport

Components

**Yandex Maps**

Yandex mapping and navigation services

TCP

Yandex Maps

Yandex Navigator

Yandex Taxi

Yandex Taximeter

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## 4.0 FLOW ATTRIBUTES SUPPORT

With flow attributes enabled in an application-assurance group, each flow is assigned a confidence value for each enabled attribute. The confidence of a flow-attribute is expressed as a value within the range 0 to 100, or 255. A confidence value equal to 0 indicates with certainty that an attribute does not apply to a flow, while a value equal to 100 indicates that an attribute is certain to apply to a flow. Alternatively, a confidence value equal to 255 indicates that an attribute has not completed its assessment (the flow attribute may be disabled, determination may be in progress or not, the flow attribute is not applicable to the flow's protocol).

Flow Attribute	Description
abr_service	<p>The abr_service attribute is assigned to flows for the set of AA protocols which transmit adaptive bit-rate media and which can react automatically to changes in network conditions caused by network congestion or traffic management policy. The abr_service attribute confidence is determined through protocol analysis.</p>
audio	<p>The audio attribute is assigned to real-time and on-demand audio media flows transferred between a sender and a receiver. The audio attribute confidence is determined through protocol analysis or through analysis of flow behavior.</p> <p>A real-time audio detection algorithm records a high audio confidence for audio call flows using popular SIP, RTP and WebRTC frameworks. A multiplexed audio/video call, for example, is assigned a high confidence for both audio and video attributes.</p> <p>A high audio confidence value is applied to protocols used for audio streaming and real-time communication.</p> <p>The audio attribute may be used with the real_time_communication attribute to identify and include/exclude audio call flows from policy action.</p>
download	<p>The download attribute is assigned to all TCP and UDP flows which have a high likelihood of exchanging data predominantly in the network to subscriber direction over the lifetime of a flow. The download attribute confidence is determined through analysis of flow behavior and assessment is completed after approximately 64 data packets have been transmitted in a flow.</p>
encrypted	<p>The encrypted attribute is assigned to all TCP and UDP flows where the initial packet payloads or the entirety of the exchange is encrypted. An encrypted attribute confidence is determined by protocol analysis or statistical analysis.</p>
esni	<p>The esni attribute is assigned to all TLS sessions which are established using the Encrypted Server Name Indication TLS handshake extension and is determined by protocol analysis.</p>

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**real\_time\_communication** The real-time communication attribute is assigned to flows that provide a low latency or real-time exchange of information between two or more communicating endpoints. A real-time communication attribute confidence is determined by protocol analysis.

**upload** The upload attribute is assigned to all TCP and UDP flows which have a high likelihood of exchanging data predominantly in the subscriber to network direction over the lifetime of a flow. The upload attribute confidence is determined through analysis of flow behavior and assessment is completed after approximately 64 data packets have been transmitted in a flow.

**video** The video attribute is assigned to real-time and on-demand video media flows transferred between a sender and receiver, including standardized and proprietary video streaming protocols, as well as real-time video chat services.

The video attribute confidence is determined by protocol analysis or by behavioral and machine-learning techniques.

A real-time video detection algorithm records a high video confidence for video call flows over popular SIP, RTP and WebRTC frameworks. A multiplexed audio/video call flow, for example, is assigned a high confidence for both audio and video attributes.

The video attribute may be used with the `real_time_communication` attribute to identify and include/exclude video call flows from policy.

The encrypted video detection algorithm is trained to identify video streams delivered over TLS and QUIC and which utilize common streaming technologies including MPEG/WebM Dynamic Adaptive Streaming over HTTP (DASH), HTTP Live Streaming (HLS), and Microsoft Smooth Streaming (MSS). The algorithm recognizes video streams from a wide variety of over-the-top video streaming applications such as YouTube, Netflix and Amazon.

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## 5.0 BLOCK VPN SUPPORT LIST

This chapter provides a list of supported VPN applications grouped together under the parent application BlockVPN.

Many of these VPN applications cannot be individually reported or controlled because they use common tunneling protocols. Therefore, a common parent application, BlockVPN, has been provided that allows the reporting and control of all the VPN applications as a single application.

Please contact the support organization to make use of the BlockVPN application.

The table below contains information about the individual VPN applications within the BlockVPN parent application.

- Application Name
- Components: List of the different traffic types classified within the same application

### Parent Application:

Application	BlockVPN
Description	Collection of VPN applications for block policy
Transport	TCP and UDP

### Child Applications:

Application	Cisco AnyConnect
Components	AnyConnect DTLS over UDP AnyConnect TLS over TCP
Application	Avast Secureline VPN
Components	Avast SecureLine VPN IPSec traffic over UDP Avast SecureLine VPN openVPN traffic over UDP
Application	Avira Phantom VPN
Components	Avira Phantom VPN HTTPS Proxy Traffic over TCP Avira Phantom VPN HTTPS Web and Client Traffic over TCP Avira Phantom VPN IPSec NAT Traversal over UDP Avira Phantom VPN OpenVPN over TCP Avira Phantom VPN WireGuard over UDP
Application	CyberGhost VPN
Components	CyberGhost IPSec traffic over UDP CyberGhost OpenVPN traffic over TCP CyberGhost OpenVPN traffic over UDP CyberGhost website and client traffic over TLS CyberGhost website traffic over HTTP
Application	DroidVPN
Components	DroidVPN UDP Mode 1

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Application Components	<p>Encrypt.me</p> <p>Encrypt.me HTTPS Web and Client Traffic over TCP</p> <p>Encrypt.me IPsec NAT Traversal over UDP</p> <p>Encrypt.me OpenVPN over TCP</p> <p>Encrypt.me OpenVPN over UDP</p>
Application Components	<p>F-Secure Freedom VPN</p> <p>F-Secure Freedom IPsec traffic over UDP</p> <p>F-Secure Freedom openVPN traffic over TCP</p> <p>F-Secure Freedom openVPN traffic over UDP</p> <p>F-Secure Freedom website and client traffic over TLS</p> <p>F-Secure Freedom website traffic over HTTP</p>
Application Components	<p>Froot VPN</p> <p>FrootVPN IPsec traffic over UDP</p> <p>FrootVPN openVPN traffic over TLS</p> <p>FrootVPN openVPN traffic over UDP</p> <p>FrootVPN PPTP traffic over UDP</p> <p>FrootVPN website and client traffic over TLS</p> <p>FrootVPN website traffic over HTTP</p>
Application Components	<p>HideMe VPN</p> <p>HideMe Cisco IPsec traffic over UDP</p> <p>HideMe IPsec NAT Traversal traffic over UDP</p> <p>HideMe L2TP traffic over UDP</p> <p>HideMe OpenVPN traffic over UDP</p> <p>HideMe PPTP traffic over UDP</p> <p>HideMe Proxy over Socks</p> <p>HideMe SSTP traffic over UDP</p> <p>HideMe website and client traffic over HTTP/TLS</p> <p>HideMe Wireguard traffic over UDP</p>
Application Components	<p>HideMyAss VPN</p> <p>HideMyAss IPsec traffic over UDP</p> <p>HideMyAss openVPN traffic over TCP</p> <p>HideMyAss openVPN traffic over UDP</p> <p>HideMyAss PPTP traffic over TCP</p> <p>HideMyAss website traffic over HTTP</p> <p>HideMyAss website traffic over TLS</p>
Application Components	<p>Hola VPN</p> <p>Hola VPN IPsec traffic over UDP</p> <p>Hola VPN traffic over HTTP</p> <p>Hola VPN traffic over TLS</p>
Application Components	<p>HotspotShield VPN</p> <p>HotspotShield VPN / Better VPN IPsec NAT Traversal over UDP</p> <p>HotspotShield VPN / Betternet VPN OpenVPN traffic over UDP</p> <p>HotspotShield VPN / Betternet VPN WireGuard over UDP</p>

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Application Components	IPSec NAT Traversal IPSec Encapsulating Security Payload (ESP) over UDP IPSec NAT Traversal Keep-Alive
Application Components	Ivacy VPN Ivacy OpenVPN traffic over TCP Ivacy OpenVPN traffic over UDP Ivacy VPN IPSec traffic over UDP Ivacy VPN traffic over TLS
Application Components	IVPN IVPN IPSec over UDP IVPN openVPN over TCP IVPN openVPN over UDP IVPN over WireGaurd IVPN Web and Client over HTTP IVPN Web and Client over TLS
Application Components	L2TP Layer 2 Tunneling Protocol (L2TP) over IP (IANA Registered Protocol Number) Layer 2 Tunneling Protocol (L2TP) over IPv6 (IANA Registered Protocol Number) Layer 2 Tunneling Protocol (L2TP) over UDP Layer 2 Tunneling Protocol (L2TP) over UDP (IANA Registered Port)
Application Components	Mullvad VPN Mullvad OpenVPN traffic over TCP Mullvad OpenVPN traffic over UDP Mullvad Website traffic over HTTP Mullvad Website traffic over TLS
Application Components	Nord VPN NordVPN HTTPS Proxy Traffic over TCP NordVPN HTTPS Web and Client Traffic over TCP NordVPN IPSec NAT Traversal over UDP NordVPN OpenVPN over TCP NordVPN OpenVPN over UDP NordVPN OpenVPN Scramble over TCP NordVPN OpenVPN Scramble over UDP NordVPN WireGuard (NordLynx) over UDP
Application Components	OnlineShield VPN OnlineShield VPN IPSec traffic over UDP OnlineShield VPN openVPN traffic over TCP OnlineShield VPN openVPN traffic over UDP OnlineShield VPN website traffic over HTTP OnlineShield VPN website traffic over TLS
Application Components	Cisco AnyConnect OpenConnect DTLS over UDP OpenConnect TLS over TCP

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Application Components	OpenVPN OpenVPN with Key Negotiation over TCP
Application Components	PPTP Point-to-Point Tunneling Protocol Control Point-to-Point Tunneling Protocol GRE/PPP Data
Application Components	Proton VPN ProtonVPN IPsec traffic over UDP ProtonVPN openVPN traffic over TCP ProtonVPN openVPN traffic over UDP ProtonVPN website and client traffic over HTTPS
Application Components	Pure VPN PureVPN HTTPS Proxy Traffic over TCP PureVPN HTTPS Web and Client Traffic over TCP PureVPN IPsec NAT Traversal over UDP PureVPN OpenVPN over TCP PureVPN OpenVPN over UDP PureVPN WireGuard over UDP
Application Components	Safer VPN SaferVPN IPsec traffic over UDP SaferVPN L2TP traffic over UDP SaferVPN openVPN traffic over TCP SaferVPN openVPN traffic over UDP SaferVPN PPTP traffic over UDP SaferVPN website and client traffic over TLS SaferVPN website traffic over HTTP
Application Components	SSH Secure Shell (SSH) Version 1 Secure Shell (SSH) Version 2
Application Components	Snap VPN Snap VPN OpenVPN Scramble over TCP Snap VPN OpenVPN Scramble over UDP SnapVPN IPsec NAT Traversal over UDP
Application Components	SOCKS Socket Secure (SOCKS) Version 4 Socket Secure (SOCKS) Version 4a Socket Secure (SOCKS) Version 5
Application Components	Strong VPN StrongVPN HTTPS Web and Client Traffic over TCP StrongVPN IPsec NAT Traversal over UDP StrongVPN OpenVPN over TCP StrongVPN OpenVPN over UDP StrongVPN OpenVPN Scramble over TCP StrongVPN OpenVPN Scramble over UDP

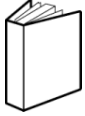
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	StrongVPN PPTP over TCP StrongVPN SSTP over TCP StrongVPN WireGuard over UDP
Application Components	SurfEasy VPN SurfEasy VPN HTTPS Web and Client Traffic over TCP SurfEasy VPN IPsec NAT Traversal over UDP SurfEasy VPN OpenVPN over UDP
Application Components	Tor Tor obfsproxy over TCP Tor over HTTP Tor over TLS
Application Components	Turbo VPN Turbo VPN IPsec NAT Traversal over UDP Turbo VPN OpenVPN Scramble over TCP Turbo VPN OpenVPN Scramble over UDP Turbo VPN unknown_udp [ DTS 391172]
Application Components	IPsec NAT Traversal UDP Encapsulated ISAKMP
Application Components	Unlimited VPN Unlimited VPN HTTPS Proxy Traffic over TCP Unlimited VPN HTTPS Web and Client Traffic over TCP Unlimited VPN IPsec NAT Traversal over UDP Unlimited VPN OpenVPN over TCP Unlimited VPN OpenVPN over UDP Unlimited VPN PPTP over TCP Unlimited VPN WireGuard over UDP
Application Components	VPNSecure.me VPNSecure.me SSH tunnel traffic VPNSecure.me VPN traffic over OpenVPN TCP VPNSecure.me VPN traffic over OpenVPN UDP VPNSecure.me VPN traffic over Tor VPNSecure.me VPN website traffic over HTTP VPNSecure.me VPN website traffic over TLS
Application Components	Vypr VPN VyprVPN HTTPS Web and Client Traffic over TCP VyprVPN IPsec NAT Traversal over UDP VyprVPN OpenVPN over TCP VyprVPN OpenVPN over UDP VyprVPN PPTP over TCP VyprVPN WireGuard over UDP
Application Components	Windscribe VPN Windscribe VPN IPsec traffic over UDP Windscribe VPN traffic over OpenVPN TCP

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	Windscribe VPN traffic over OpenVPN UDP
	Windscribe VPN website traffic over HTTP
	Windscribe VPN website traffic over TLS
Application Components	Wire Tun
	Wire Tun VPN traffic over UDP
Application Components	WireGuard
	WireGuard Cloudflare Variant over UDP
	WireGuard Protocol over UDP
Application Components	Zoog VPN
	Zoog VPN DTLS over udp
	Zoog VPN WireGuard traffic over UDP
	ZoogVPN IPsec traffic over UDP
	ZoogVPN openVPN traffic over TCP
	ZoogVPN openVPN traffic over UDP
	ZoogVPN website and client traffic over TLS
	ZoogVPN website traffic over HTTP

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