



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

Release 23.10

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

3HE21030 AAAA TQZZA

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Table of Contents

1.0 OVERVIEW	1
2.0 APPLICATION UPDATES	2
2.1 AA Protocol Signature Upgrades	2
2.2 AA Policy Configuration Upgrades	2
3.0 APPLICATION SUPPORT LIST	4
3.1 Business	4
3.2 Database	6
3.3 Existing/Empty TCP	7
3.4 File Hosting	7
3.5 File Transfer	10
3.6 Gaming	11
3.7 Mail	16
3.8 Multimedia Streaming	18
3.9 Network Infrastructure	29
3.10 Peer to Peer	31
3.11 Real-Time Communication	33
3.12 Social Networking	43
3.13 Software Update	46
3.14 Tunnel and Remote Access	47
3.15 Unidentified	57
3.16 Unknown	57
3.17 Web	57
4.0 FLOW ATTRIBUTES SUPPORT	68
5.0 BLOCK VPN SUPPORT LIST	70

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

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.

Expression Type	Associated Protocols	Description
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

Application	Citrix IMA
Description	Citrix Independent Management Architecture
Transport	TCP
Components	Citrix IMA Sessions
Application	CORBA
Description	CORBA Applications
Transport	TCP
Components	CORBA GIOP V3.1 and below
Application	FIX
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
Application	Google Classroom
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
Application	Google Docs
Description	Google Docs online word processor
Transport	TCP and UDP
Components	Google Docs over QUIC Google Docs over TLS

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)

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

Application	MySQL
Description	MySQL Database
Transport	TCP
Components	MySQL Network Protocol (Version 10 and below)

Application	Oracle
Description	Oracle Transparent Network Substrate Protocol
Transport	TCP
Components	Oracle Net8 Oracle TNS (Transparent Network Substrate)

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

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

3.3 Existing/Empty TCP

Application	Empty TCP
Description	TCP flows with no data content
Transport	TCP
Components	TCP with no payload

Application	Existing TCP
Description	Pre-existing traffic
Transport	TCP
Components	Existing TCP

3.4 File Hosting

Application	Amazon Photos
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
Application	Garena Free Fire
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
Application	GOG
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
Application	Growtopia
Description	Growtopia mobile game
Transport	TCP and UDP
Components	Growtopia gaming over UDP Growtopia over HTTP Growtopia over TLS
Application	King Games
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
Application	League Of Legends
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
Application	Lineage Revolution
Description	MMORPG by Netmarble for mobile devices
Transport	TCP
Components	Lineage Revolution Game Updates over HTTP Lineage Revolution Gameplay over HTTP

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

Application	Pokemon Go
Description	Location-based augmented reality mobile game
Transport	TCP
Components	Pokemon GO over HTTP Pokemon GO over TLS
Application	PUBG
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
Application	Rules of Survival
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
Application	Slither.io
Description	Slither.io gaming
Transport	TCP
Components	Slither.io Gameplay over HTTP Slither.io Gameplay over TCP Slither.io Gameplay over TLS
Application	Starcraft II
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
Application	Steam
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

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

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)

Application	SMTP
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)

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

Application	Yahoo Mail
Description	Yahoo Mail
Transport	TCP
Components	Yahoo Mail over TLS

3.8 Multimedia Streaming

Application	8tracks
Description	8track internet radio
Transport	TCP
Components	8tracks audio streaming over tls

Application	AfreecaTV
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

Application	Amazon Music
Description	Amazon Music Streaming Service
Transport	TCP
Components	Amazon Music Download over TLS Amazon Music Streaming over TLS

Application	Amazon Video
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

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

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

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

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

	Periscope over RTMP Periscope over TLS
Application	PPTV
Description	Synacast PPLive Peer-to-Peer internet television
Transport	TCP and UDP
Components	PPTV Player over HTTP PPTV Streaming over HTTP PPTV Streaming Protocol
Application	Qobuz
Description	Qobuz Music Streaming and Downloading
Transport	TCP
Components	Qobuz Music Download over TLS Qobuz Music Streaming over TLS Qobuz over TLS
Application	QQ Music
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
Application	QQ Video
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
Application	Radio Paradise
Description	Radio Paradise listener supported radio
Transport	TCP
Components	Radio Paradise audio streaming over tls
Application	Real Player
Description	Real Networks Data Transport
Transport	UDP
Components	Real Player over HTTP Real Player RDT Data
Application	Red Bull TV
Description	Red Bull TV live and on demand video streaming
Transport	TCP

Components	Red Bull TV Live video over TLS Red Bull TV over HTTP Red Bull TV Video Streaming over TLS
Application	Roku
Description	Roku Multimedia Streaming Service
Transport	TCP
Components	Roku over TLS
Application	RTMP Streaming
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
Application	RTSP
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
Application	SHOUTcast
Description	SHOUTcast audio streaming protocol
Transport	TCP
Components	SHOUTcast Audio Streaming
Application	Shazam
Description	Music Discovery Application
Transport	TCP and UDP
Components	Shazam over quic Shazam over tls, tls_http2
Application	Slingbox
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
Application	SoundCloud
Description	Audio upload and streaming application
Transport	TCP
Components	SoundCloud over HTTP SoundCloud over TLS
Application	Spotify
Description	Spotify music streaming
Transport	TCP and UDP

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

Application

Stan

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

Application

Tidal

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

Application

TikTok-Douyin

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

Application

TiVo

Description

TiVo channel guide, program info, broadband media

Transport

TCP

Components

TiVo Program Information and Channel Guide

Application

Toutiao

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

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

Application

Description

Transport

Components

Viu

Viu Video on Demand Streaming

TCP

Viu Catalogue Browsing over TLS

Viu Video Streaming/Download over TLS

Application

Description

Transport

Components

VOOV

Live Streaming and Social Video Application

TCP

VOOV Live Broadcast over RTMP

VOOV Live Streaming over HTTP

VOOV Mini Video Streaming over HTTP

Application

Description

Transport

Components

VUDU

VUDU P2P distributed internet television

TCP and UDP

VUDU P2P Streaming Protocol

VUDU Web/Streaming over HTTP

VUDU Web/Streaming over TLS

Application

Description

Transport

Components

Youku Tudou

Alibaba hosted video content for Youku and Tudou

TCP

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

Application

Description

Transport

Components

YouTube

YouTube Web video site

TCP and UDP

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

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

Application	ICMP
Description	Internet Control Message Protocol
Transport	Other
Components	Internet Control Message Protocol (ICMP) over IP Internet Control Message Protocol (ICMP) over IPv6
Application	ISAKMP
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
Application	Kerberos
Description	Kerberos Version 5 Network Authentication
Transport	TCP and UDP
Components	Kerberos Authentication
Application	LLMNR
Description	Link Local Multicast Name Resolution
Transport	UDP
Components	Link Local Multicast Name Resolution (LLMNR)
Application	MQTT
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
Application	NDMP
Description	Network Data Management Protocol
Transport	TCP
Components	NDMP over TCP
Application	NetBIOS
Description	NetBIOS name service
Transport	TCP and UDP
Components	NetBIOS Encapsulated Datagrams NetBIOS Name Service (NBNS) NetBIOS Session Service (NBSS)
Application	NTP
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

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
Application	DHT
Description	Distributed Hash Table used by peer-to-peer applications
Transport	UDP
Components	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
Application	Direct Connect
Description	Direct Connect peer-to-peer file sharing
Transport	TCP and UDP
Components	Direct Connect Client-Server Direct Connect Peer-to-Peer File Transfer Direct Connect Server-Server
Application	eMule
Description	eMule & eDonkey peer-to-peer file sharing
Transport	TCP and UDP
Components	eMule Control eMule Data eMule Encrypted Data
Application	Gnutella
Description	Gnutella peer-to-peer file sharing
Transport	TCP and UDP
Components	Gnutella Control Gnutella Unencrypted Data Gnutella2 Control Gnutella2 Unencrypted Data
Application	Hotline
Description	Hotline peer-to-peer file sharing
Transport	TCP and UDP
Components	Hotline Community Chat Hotline Peer-to-Peer File Sharing
Application	OpenFT
Description	Open FastTrack peer-to-peer file sharing
Transport	TCP
Components	OpenFT Control and Data over HTTP OpenFT Data over TCP
Application	SoulSeek
Description	SoulSeek peer-to-peer file sharing
Transport	TCP

Components	SoulSeek Community over HTTP SoulSeek Peer-to-Peer File Sharing
Application	Xunlei
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

Application	AOL Instant Messenger
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
Application	Apple FaceTime
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
Application	Asterisk
Description	Inter-Asterisk Exchange
Transport	UDP
Components	Asterisk IAX2 protocol
Application	B-Messenger
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

Application

Description
Transport
Components

Betamax VoIP

Betamax VoIP Telephony
TCP and UDP
Betamax Audio over SIP RTP
Betamax VoIP Protocol

Application

Description
Transport
Components

BiP

BiP messaging and voip service
TCP and UDP
BiP Audio/Video Call over UDP
BiP Games over TLS
BiP over TLS

Application

Description
Transport
Components

BOTIM

BOTIM real time communication
TCP and UDP
BOTIM File Sharing over TLS
BOTIM over TCP
BOTIM Unicast Audio/Video Call over UDP

Application

Description
Transport
Components

Chime-Chime SDK

Video and audio conferencing SDK
TCP and UDP
Chime-Chime SDK Video/Audio calls over RTP

Application

Description
Transport
Components

Control4

Control4 VoIP application for automation services
UDP
Control4 Voip over RTP

Application

Description
Transport
Components

DingTalk

VoIP Application
TCP and UDP
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

Application

Description
Transport
Components

Discord

Discord VoIP application for gaming communities
TCP and UDP
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

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

Application	Hike Messenger
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

Application	ICQ
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

Application	IMO Instant Messenger
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

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

Application	Jajah
Description	Jajah IP Telephony Platform
Transport	TCP
Components	Jajah over HTTP Jajah.Web Audio Call over HTTP

Application	Kakao
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

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

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

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

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

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

Application

Description

Transport

Components

Askfm

Askfm social networking

TCP

Askfm Chat over TLS

Askfm over HTTP

Askfm over TLS

Application

Description

Transport

Components

Badoo

Badoo dating application and website browsing

TCP and UDP

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

Application

Description

Transport

Components

Facebook

Facebook social networking

TCP

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

Application

Description

Transport

Components

Foursquare

Location-based Searches and Recommendations

TCP

Foursquare over HTTP

Foursquare over TLS

Swarm by Foursquare over HTTP

Swarm by Foursquare over TLS

Application

Description

Transport

Grindr

Grindr Gay dating and chat application

TCP

Components	Grindr Searching, Chatting, and Listening over TLS
Application	Happn
Description	Happn online dating application
Transport	TCP and UDP
Components	Happn over QUIC Happn over TLS
Application	Instagram
Description	Instagram photo editing and sharing
Transport	TCP and UDP
Components	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	Kuaishou Kwai
Description	Kuaishou Kwai video streaming, social media platform
Transport	TCP
Components	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	LinkedIn
Description	Business oriented social networking site LinkedIn
Transport	TCP
Components	LinkedIn Blogs over HTTP LinkedIn over HTTP LinkedIn over TLS SlideShare over HTTP SlideShare over TLS
Application	MySpace
Description	MySpace social networking
Transport	TCP
Components	MySpace over HTTP
Application	Pinterest
Description	Pinterest photo sharing
Transport	TCP
Components	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

Application	Apple App Store and iTunes
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

Application	Apple Update
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

Application	Google Play Store
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

Application	Microsoft Update
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

Application	Security Update
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

Application	Apple iCloud Relay
Description	IOS and OSX browse proxy
Transport	UDP
Components	Apple IOS Browse Proxy over QUIC Apple OSX Browse Proxy over QUIC
Application	Avast Secureline VPN
Description	Avast Secureline VPN Service
Transport	UDP
Components	Avast SecureLine VPN IPSec traffic over UDP Avast SecureLine VPN openVPN traffic over UDP
Application	Avira Phantom VPN
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
Application	Cisco AnyConnect
Description	Cisco AnyConnect
Transport	TCP and UDP
Components	AnyConnect DTLS over UDP AnyConnect TLS over TCP OpenConnect DTLS over UDP OpenConnect TLS over TCP
Application	Citrix ICA
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

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

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

Application	HotspotShield VPN
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
Application	IP in IP
Description	IP in IP tunneling
Transport	Other
Components	IP in IP IPv6 in IP
Application	IPSec
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)
Application	IPSec NAT Traversal
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
Application	IVPN
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
Application	Ivacy VPN
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
Application	L2TP
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)

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

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

Application

Description

Transport

Components

TeamViewer

TeamViewer remote control, desktop access, and file sharing

TCP and UDP

TeamViewer over HTTP

TeamViewer over HTTP Proxy

TeamViewer over TCP

TeamViewer over TLS

TeamViewer over UDP

Application

Description

Transport

Components

Telnet

Teletype Network

TCP

Telnet over TCP

Telnet over TLS (IANA Registered Port)

Application

Description

Transport

Components

Teredo

IPv6 tunneling over IPv4

UDP

Teredo Tunneling IPv6 over IP

Application

Description

Transport

Components

TLS

Transport Layer Security (TLS) and Secure Socket Layer (SSL)

TCP

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

Application

Description

Transport

Components

TN3270

TN3270 Remote Terminal

TCP

TN3270

Application

Description

Transport

Components

Tor

Tor anonymity network

TCP

Tor obfsproxy over TCP

Tor over HTTP

Tor over TLS

Application

Description

Transport

Components

Turbo VPN

Turbo VPN Service

TCP and UDP

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

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
Application	Wire Tun
Description	Wire Tun VPN
Transport	UDP
Components	Wire Tun VPN traffic over UDP
Application	WireGuard
Description	WireGuard VPN
Transport	UDP
Components	WireGuard Cloudflare Variant over UDP WireGuard Protocol over UDP
Application	XWindows
Description	X Window System graphical user interface for networked computers
Transport	TCP and UDP
Components	XDMCP Server Discovery XWindows Remote GUI
Application	YourFreedom VPN
Description	YourFreedom VPN
Transport	TCP and UDP
Components	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
Application	Zoog VPN
Description	ZoogVPN Service
Transport	TCP and UDP
Components	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

3.15 Unidentified

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

3.16 Unknown

Application	Unknown
Description	Default Application Unknown
Transport	TCP and UDP
Components	cut through cut through by default policy denied by default policy

3.17 Web

Application	Adobe Document Cloud
Description	Adobe web-based collaboration tools suite
Transport	TCP
Components	Acrobat PDF Services Adobe Sign
Application	Advertising Statistics
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

Application	Akamai
Description	Content Delivery Network and Cloud Services
Transport	TCP and UDP
Components	Akamai CDN over GQUIC Akamai CDN over HTTP Akamai CDN over TLS

Application	Alibaba
Description	Alibaba Group
Transport	TCP
Components	Alibaba Browsing Traffic over HTTP Alibaba Browsing Traffic over TLS

Application	Alibaba Cloud
Description	Alibaba Cloud Services
Transport	TCP
Components	Alibaba Cloud CDN over TLS

Application	Alipay
Description	Alipay online payment
Transport	TCP
Components	Alipay Online Payments over HTTP Alipay Online Payments over TLS

Application	Amazon
Description	Amazon online shopping
Transport	TCP
Components	Amazon Live Video over TLS Amazon over HTTP Amazon over TLS

Application	Apple
Description	Apple web services
Transport	TCP
Components	Apple Web Services over HTTP Apple Web Services over TLS

Application	Apple Maps
Description	Apple mapping service
Transport	TCP
Components	Apple MapKit API Apple Maps over HTTP Apple Maps over TLS

Application	Apple News
Description	Apple news
Transport	TCP
Components	Apple News over TLS

Application	Apple Push Notification
Description	Apple Push Notification service

Transport Components	TCP Apple Push Notifications to iOS and MacOS Third-party Push Notifications to Apple
Application Description Transport Components	AutoNavi Navigation, map searching, and map editing application TCP AutoNavi over HTTP AutoNavi over TLS
Application Description Transport Components	Baidu 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
Application Description Transport Components	Baidu Maps Navigation, map searching, and map editing application TCP Baidu Maps AR over TLS Baidu Maps over HTTP Baidu Maps over TLS
Application Description Transport Components	Blogger Google Blogger and Blogspot multi-user blogs TCP Blogger over HTTP Blogger over QUIC
Application Description Transport Components	beIN Sports beIN SPORTS television sports TCP beIN Sports CONNECT over TLS beIN SPORTS over TLS
Application Description Transport Components	CNN CNN news TCP CNN Live (goCNN) over HTTP(S) CNN over HTTP(S) CNN VoD over HTTP(S)
Application Description Transport Components	Craigslist Craigslist classified advertisements TCP Craigslist over HTTP

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

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

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

Application	Meituan-Dianping
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
Application	Microsoft
Description	Microsoft MSN and Live Services
Transport	TCP
Components	MSN over HTTP MSN Video over HTTP
Application	Microsoft Bing
Description	Microsoft Bing services
Transport	TCP
Components	Microsoft Bing over HTTP Microsoft Bing over TLS
Application	MMS
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
Application	Mozilla
Description	Mozilla Firefox core domains, APIs and application updates
Transport	TCP
Components	Mozilla Update: Firefox HTTP Update Mozilla Update: Thunderbird HTTP Update
Application	Naver
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)
Application	OpenSports
Description	Sports league management
Transport	TCP

Components	OpenSports over HTTP OpenSports over TLS
Application	Opera Mini
Description	Opera Mini mobile web browsing, compressed and proxied through Opera servers
Transport	TCP
Components	Opera Mini Web Browsing
Application	PayPal
Description	Online payment service for individuals and merchants
Transport	TCP
Components	PayPal Web Traffic over TLS
Application	Phoenix Television
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
Application	Photobucket
Description	Photobucket image and video hosting
Transport	TCP
Components	Photobucket over HTTP Photobucket over TLS
Application	QUIC
Description	Quick UDP Internet Connections
Transport	UDP
Components	Google Quick UDP Internet Connections (gQUIC) IETF QUIC Multipath QUIC Extension QUIC over TCP
Application	Reddit
Description	Reddit social news and media aggregation
Transport	TCP
Components	Reddit over HTTP Reddit over TLS
Application	Runtastic
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	Tencent Cloud
Description	Tencent cloud services
Transport	TCP
Components	Tencent Browsing over TLS Tencent Cloud Services over HTTP Tencent Cloud Services over TLS Tencent Cloud Storage over TLS
Application	TomTom
Description	GPS, navigation and map searching applications
Transport	TCP
Components	TomTom AmiGo application over TLS TomTom Go application over TLS TomTom GO Ride application over TLS TomTom website over TLS
Application	Tripadvisor
Description	Online travel agency
Transport	TCP
Components	Tripadvisor over HTTP Tripadvisor over TLS
Application	Uber
Description	Uber Ride Sharing Company, Maps traffic under Google Earth And Maps.
Transport	TCP
Components	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	WAP
Description	Wireless Application Protocol
Transport	UDP
Components	WAP 1.x WSP over UDP WAP 1.x WSP over WTP
Application	Waze
Description	Community-based traffic and navigation
Transport	TCP
Components	Waze Navigation and Live Traffic over TLS Waze over HTTP
Application	Wikimedia
Description	Wikipedia and other Wikimedia projects
Transport	TCP
Components	Wikibooks over HTTP/TLS Wikidata over HTTP/TLS Wikimedia over HTTP Wikimedia over TLS

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

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>

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.

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

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>

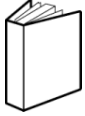
Application Components	IPSec NAT Traversal IPSec Encapsulating Security Payload (ESP) over UDP IPSec NAT Traversal Keep-Alive
Application Components	Ivacy VPN Ivacy OpenVPN traffic over TCP Ivacy OpenVPN traffic over UDP Ivacy VPN IPSec traffic over UDP Ivacy VPN traffic over TLS
Application Components	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

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

	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

	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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