Introduction

This article describes the network speed requirements and network traffic used by 3Shape Unite (Dental Desktop) solutions. This is relevant for any customer that intends to use 3Shape Unite (Dental Desktop) so their network is prepared to use them properly without having any disruptions caused by unintended blockers, this needs to be done by the customer Network administrator or IT department.

Network speed requirements

Parameter	TRIOS, Implant Studio, Design Studio, Dental System, Ortho System	3Shape Unite Server
Internet upload [1]	Minimum - 5 Mbit/s Recommended - 25 Mbit/s or faster	
Internet download [1]	Minimum - 5 Mbit/s Recommended - 25 Mbit/s or faster	
Internal network - wired	Minimum - 100BASE-T (100 Mbit/s) Recommended - 1000BASE-T (1 Gbit/s)	
Internal network - wireless	Recommended - 5Ghz 802.11AC (100-300Mbit/s) [2,3]	Must be wired

(1) The effective internet upload and download speed may be tested using free tools available on the internet, e.g. www.speedtest.net

(2) The minimum effective upload and download speed between wireless client and dental desktop server: 50 Mbit/s (effective speed)

(3) Wired network connection recommended for dedicated design stations for TRIOS Design Studio, Implant Studio and Dental System.

Overview versions & executables

Version name	Dental Desktop versions included	Client executable	Server executable
Dental Desktop (pre-Unite)	1.1.1.0 - 1.7.18.0	DentalDesktop.exe	DentalDesktopServer.NTService.exe
Unite 21.x	1.7.19.0 - 1.7.40.0	DentalDesktop.exe	DentalDesktopServer.NTService.exe
Unite 23.x	1.7.80.0 - 1.7.8x.x	DentalDesktop.exe	DentalDesktopServer.NTService.exe
Unite 24.x	1.8.0.0 - 1.8.x.x	DentalDesktop.exe	DentalDesktopServer.Service.exe

External Traffic (over the Internet)

Traffic from 3Shape Unite (Dental Desktop) system on internal network to internet (i.e. across customers' firewalls).

Note: 3Shape's software uses URLs to identify service endpoints, not IP-addresses. Customers blocking outgoing traffic in their firewalls based on IP-addresses becomes vulnerable as URL to IP mapping are changing over time outside 3Shape's control. This will cause outgoing traffic to be blocked and the system to partly stop working.

3Shape Communicate

Case sharing between Clinics, Labs and Design Services.

URL	Port	Protocol	Encryption	Executable	Current IP addresses
eu15.3shapecommunicate.com (Europe only)				Server	94.245.89.109, 52.169.75.116
am15.3shapecommunicate.com (Americas only)				Server	191.236.56.157, 40.76.58.234
as15.3shapecommunicate.com (Asia only)	443	TCP, HTTPS	TLS AES-256	Server	191.234.23.106, 52.229.154.166

URL	Port	Protocol	Encryption	Executable	Current IP addresses
dme.3shapecommunicate.com				Server	191.237.69.109, 23.96.105.230
activeregions.3shapecommunicate.com				Server	104.211.49.150
caseorigin.3shapecommunicate.com				Server	104.211.49.150
masterdatadiscovery.3shapecommunicate.com					

3Shape Account

Authentication of client and lab Communicate accounts, sign in to 3Shape Unite and other 3Shape services.

URL	Port	Protocol	Encryption	Executable	Current IP addresses
auth.3shapecommunicate.com				Server	137.116.115.186, 104.45.193.253
companymigration.identity.3shape.com				Client	
connections.3shapecommunicate.com				Client	
data.identity.3shape.com				Server, Client	20.85.251.32, 104.45.193.253
identity.3shape.com				Server, Client	20.85.251.32, 104.45.193.253
profile.identity.3shape.com				Client	
treatmentgroups.identity.3shape.com				Client	
ui.companymigration.identity.3shape.com				Client	
users.3shapecommunicate.com	443	TCP, HTTPS	TLS AES-256	Server	137.116.115.186, 104.45.193.253

URL	Port	Protocol	Encryption	Executable	Current IP addresses
users.3shapecommunicate.com				Client	
portal.3shapecommunicate.com	80	TCP, HTTP		Client	

Cloud Storage

URL	Port	Protocol	Encryption	Machine/application
cloud.raven.3shape.com (CNAME), production-trafficmanager.westeurope.azurecontainer.io (A Record)	5455			Hosted on Azure
Region 1 (Americas): 4.156.253.43 Region 2 (Asia): 20.255.43.66 Region 3 (Europe): 108.141.98.45 Region 4 (China): 143.64.162.78	7000, 8501	TCP	SSL/TLS (based on KMS certificates)	Hosted on Azure

Cloud License

URL	Port	Protocol	Encryption	Executable	Current IP addresses
client.license.3shape.com	443	TCP, HTTPS	TLS AES-256	Client	10.16.24.7, 13.107.213.44,13.107.246.44 (Azure managed)

Workflow Automation

Cloud-based algorithms for workflow automation. Only used by some 3Shape Apps, for instance TRIOS Treatment Simulator, TRIOS Patient Monitoring and Automate Crown.

URL	Port	Protocol	Encryption	Executable	Current IP addresses
eucloudservices.3shapecommunicate.com (Europe only)					40.91.205.128
amcloudservices.3shapecommunicate.com (Americas only)					52.171.58.190
ascloudservices.3shapecommunicate.com (Asia only)	443	TCP, HTTPS	TLS AES-256	Client	52.148.92.120

Windows OS Updates

Security and certificate updates (through WSUS - Windows Server Update Services). Only relevant for TRIOS Move and TRIOS Cart installations, and laptops supplied by 3Shape.

Notes:

- triosmsu.westeurope.cloudapp.azure.com - 3Shape administrated server using build-in update mechanism in Windows.

- triosmsu.3shape.com - 3Shape administrated server (virtual computer) using build-in update mechanism in Windows. Used to redirect to Azure server.

URL	Port	Protocol	Encryption	Executable	Current IP addresses
triosmsu.westeurope.cloudapp.azure.com					40.113.140.19
triosmsu.3shape.com	8530	HTTP	None	Windows	CNAME

3Shape Unite Store (Software Updates)

Used when updating 3Shape Unite (Dental Desktop) and its software modules.

URL	Port	Protocol	Encryption	Executable	Current IP addresses
beta.store.3shape.com					13.107.213.69 (Azure managed)
ui.store.3shape.com					13.107.213.69 (Azure managed)
asset.productmarketingcloud.com					13.90.213.204
pages.3shape.com	443	HTTPS	TLS AES-256	Client	104.17.72.206, 104.17.70.206, 104.17.71.206, 104.17.73.206, 104.17.74.206
updates.3shape.com	80	TCP, HTTP	None	Server, Client	195.49.233.139
3shapeconfig.com		TCP, HTTPS	TLS	Server	52.178.142.100
cdn.3shapeconfig.com	443	TCP, HTTPS	TLS	Server	CNAME

URL	Port	Protocol	Encryption	Executable	Current IP addresses
fonts.googleapis.com	443	HTTPS	TLS 1.2/1.3	Client	Google managed
maps.googleapis.com	443	HTTPS	TLS 1.2/1.3	Client	Google managed
pimcdn.3shape.com	443	HTTPS	TLS 1.2/1.3	Client	Azure managed
dc.services.visualstudio.com	443	HTTPS	TLS 1.2/1.3	Client	Microsoft managed
prodbetast77.blob.core.windows.net	443	HTTPS	TLS 1.2/1.3	Client	Microsoft managed
fonts.gstatic.com	443	HTTPS	TLS 1.2/1.3	Client	Google managed
asset-prod1a-euw.productmarketingcloud.com	443	HTTPS	TLS 1.2	Client	20.31.30.204 (managed by eCom team PIM setup)
addressvalidation.googleapis.com	443	HTTPS	TLS 1.2/1.3	Client	Google managed

Licensing (dongle-based)

Renewal of license subscriptions, CAD points, and site options.

URL	Port	Protocol	Encryption	Executable	Current IP addresses
www.3shape.com	80	TCP, HTTP	Custom	Server, Client DongleServer.exe	CNAME record pointing to CloudFlare https://www.cloudflare.com/ips/

Remote access for Support

Two integrations are needed for to be able to provide support for customers:

1. Teamviewer-based screen sharing so the customer can enable reseller or 3Shape Customer Support to access the system remotely for trouble-shooting. For more information on TeamViewer connections, see here: https://www.teamviewer.com/en/trust-center/security/#destination-ip-address

2. Connection to 3Shape to allow customers to access direct support from 3Shape (as a part of TRIOS Care). This integration is needed for Dental Desktop 1.7.19.0 and newer. The connection will be performed on the Dental Desktop client executable before 1.7.23.0 and on the Dental Desktop Server executable with 1.7.23.0 and newer

URL	Port	Protocol	Encryption	Executable	Current IP addresses
teamviewer.com (incl. all sub domains such as master10. teamviewer.com)	5938	TCP	AES-256	3Shape_Support_Participant.exe, (Teamviewer.exe)	Examples of IPs: 185.188.32.4, 195.244.97.214. (can change dynamically according to www.teamviewer.com)
communicate-framework.3shape.com	443	HTTP	TLS, AES-128	Client (1.7.19.0-1.7.22.*)	CNAME to eu-communicate-framework-p-trafficmanager.trafficmanager.net Reserved IP 168.61.91.95
login.microsoftonline.com	443	HTTPS	TLS, AES-256	Server (1.7.23.0 and newer)	CNAME

Training videos

Used when accessing the training videos in 3Shape Unite Help Center.

URL	Port	Protocol	Encryption	Executable	Current IP addresses
community.3shape.com	443	TCP, TLS	AES-256	Client	104.20.92.111 104.20.93.111

Feedback Reports

Used when sending feedback reports to 3Shape for advanced trouble-shooting. All ePHI data is removed locally before the case is being sent.

URL	Port	Protocol	Encryption	Executable	Current IP addresses
ftp.3shape.com	21, 40000-41000	TCP, FTP	ZIP-based encryption	Client	195.49.233.138

Usage Statistics

Used for sending Information on the usage on the system for product improvements purposes. The transferred information contains no user or patient information.

URL	Port	Protocol	Encryption	Executable	Current IP addre
feedback.3shape.com*	80	TCP, HTTP	Proprietary	Server, Client, ThreeShape.BlueWhale.DataService.exe	195.49.233.14 CNAME to feedback.3shape.com.cdn.c
dataservice.3shape.com				ThreeShape.BlueWhale.DataService.exe	CNAME to d1ym2p1v6r5g6z.clo
orca.3shape.com	443	TCP, HTTPS	TLS AES-256	TBC	CNAME to orca.3shape.com.cdn.clo

Internet checking

Used for diagnostics purposes (checking if the system has an internet connection).

URL	Port	Protocol	Encryption	Executable	Current IP addresses
3shape.com	80, 443	TCP, HTTP, HTTPS	None	Server, Client	52.169.143.141
microsoft.com					40.112.72.205

URL	Port	Protocol	Encryption	Executable	Current IP addresses
www.google.com					216.58.192.0 - 216.58.223.255

Internal Traffic (within customer's network)

This section lists all connections within the local network between the Dental Desktop Server, Dental Desktop Client PCs, TRIOS scanner, CAM and locally running 3rd party integrations.

Client-Server

The ports mentioned should be open for incoming traffic on the Dental Desktop Server PC. Only relevant if using a client-server setup.

URL	Port	Protocol	Encryption	Executable	Examples of IP addresses
N/A	5480	HTTP			N/A
N/A	5481	TCP, SSL	TLS		
N/A	5482-5483	UDP			N/A
N/A	5484	HTTPS	TLS	Server, Client	N/A
N/A	27027	TCP	Custom	Client to DongleServer.exe	N/A
N/A	27027	TCP	Custom	Server to DongleServer.exe	N/A
N/A	N/A	ICMP		Client	N/A

Database Traffic

Dental Desktop installs SQL Server Express 2012 locally. Network traffic is not required for standard server installations. The installer allows the administrators to specify an external database server. Installing Dental Desktop with remote SQL server is not fully supported.

URL	Port	Protocol	Encryption	Executable	Examples of IP addresses
N/A	custom (default: 1433)	TCP	none / SSL (optional)	Server, DentalDesktopServer.MigrationToRaven.exe	N/A

Local 3rd Party Integration: Webservice for PMS (API) and DTX Studio Clinic

The ports mentioned should be open for incoming traffic on the Dental Desktop Server PC. Only relevant if using a 3rd party software accessing the PMS (Practice Management System) API. This can be PMS systems or imaging systems like DTX Studio Clinic from Envista.

URL	Port	Protocol	Encryption	Executable	Examples of IP addresses
N/A	5484	HTTPS/TCP	TLS/SSL	Server (PMS software)	N/A
N/A	5490/5491	HTTPS/TCP	TLS/SSL	ThreeShape.Integrations.PracticeManagement.WebService.exe	N/A

Local 3rd Party Integration: Straumann/DentalWings CARES Visual Chairside and coDiagnostiX

Dental Desktop 1.7.3.0 and later is able to send cases to CARES Visual Chairside and coDiagnostiX software from Straumann / DentalWings. This is an optional feature that will have to be enabled and configured by the end-user.

URL	Port	Protocol	Encryption	Executable	Examples of IP addresses
N/A	5353	UDP multicast		Client	N/A
N/A	20099 Cares Visual Chairside				
N/A	20100 CoDiagnostiX	HTTP/TCP	none	Server	local network

Local 3rd Party Web Embedded Integration: ClearCorrect App, Automate Nightguard, Reveal DDX App and Automate Crown

URL	Port	Protocol	Encryption	Executable	Examples of IP addresses
https://api.clearcorrect.com/ https://eshop-dr.clearcorrect.com/ https://dr.clearcorrect.com/authentication				ThreeShape.Integrations.ClearCorrect.Web Embedded.dll	
https://automate.3shape.com/				ThreeShape.Integrations.Automate.Nightguard.WebEmbedded.dll	
https://ddxdental.com/				ThreeShape.Integrations.DDX.Reveal.Web Embedded.dll	
https://automate.3shape.com/	N/A	HTTPS/TCP	TLS/SSL	ThreeShape.Integrations.Automate.Crown.WebEmbedded.dll	N/A

Remote scanning

When using remote lab scanning in ScanIT Dental, the ports mentioned should be open for incoming traffic on the remote scanning PC.

URL	Port	Protocol	Encryption	Executable	Examples of IP addresses
N/A	3781	TCP	none	ScanServer.exe	N/A

Scanner Traffic

This section lists all connections between the physical TRIOS 3 Scanner device and the Dental Desktop Client PC.

TRIOS 3 Wired, TRIOS 3 Wireless & TRIOS 4

Only relevant for PCs connected to either a wired or wireless TRIOS 3 or 4 scanner. Note, for wireless scanners there is a difference between running a direct connection (using a TP-Link adapter, where the scanner has a set fixed IP addresses 10.33.3.1/10.33.3.3) and a TRIOS Share connection (where the scanner

has a dynamic IP address obtained from a DHCP server). Wired scanners adhere to the fixed IP scenario.

URL	Port	Protocol	Encryption	Executable	Examples of IP addresses
Fixed or dynamic IP address	58220-58230 (local) or dynamic	UDP	None	Client (Inbound rule from remote port 58218)	10.33.3.3 (fixed IP), 192.168.1.42 (dynamic IP)

TRIOS 3 Wireless & TRIOS 4

Only relevant for PCs connected to wireless TRIOS 3 or TRIOS 4 scanner. This is an addition to the above.

URL	Port	Protocol	Encryption	Executable	Examples of IP addresses
Fixed or dynamic IP address	21 (FTP), 80 (HTTP),	TCP, FTP, HTTP	None	Client	10.33.3.1 (fixed IP), 192.168.1.42 (dynamic IP)
Fixed or dynamic IP address	23796 (SMORP)	TCP	SMORP is a secure proprietary protocol	Client	10.33.3.1 (fixed IP), 192.168.1.42 (dynamic IP)

TRIOS 5

Only relevant for PCs connected to wireless TRIOS 5.

URL	Port	Protocol	Encryption	Executable	Examples of IP addresses
Dynamic IP address	23796 (SMORP)	TCP	SMORP is a secure proprietary protocol	Client	192.168.1.42

F8

Only relevant for PCs connected to a wired F8 Lab scanner.

URL	Port	Protocol	Encryption	Executable	Examples of IP addresses
Dynamic or link-local IP address	23796 (SMORP)	TCP	SMORP is a secure proprietary protocol	ScanServer.exe	192.254.137.42,192.168.137.42

CAM

Only relevant for PCs having the CAM server installed. The CAM installer adds rules for these ports to the local firewall.

Milling machines & 3D printers

URL	Port	Protocol	Encryption	Executable	Machine/application
N/A	2277	TCP			Ivoclar PrograMill One cp1 software
N/A	2278	TCP			Ivoclar PrograMill One cp 2 software
N/A	1900	UDP		CAMbridge.exe	Ivoclar PrograMill One cp 1 and cp2 software
N/A	2048 -2070	TCP		CAMbridge.exe / DswHost.exe	Ivoclar PrograMill One
http://localhost:8000 /CeramillMotion/S1274	8000	TPC	AES-256	CAMbridge.exe	Ceramill Motion

3Shape Produce

3Shape Produce is the new CAM integration Module replacing the former CAMbridge/CAMserver solution. Produce exposes a grpc API. In the grpc context Produce is the client and software implemented by partners (milling machines or printer manufacturers) are servers. These servers can be installed somewhere in the same local network as Unite.

URL	Port	Protocol	Encryption	Executable
All active adapters addresses (for broadcast) any address inputted for unicast	6643	UDP (brodcast and unicast)	None	DentalDesktop.exe
Any address in the local network	Any port the partner chooses	HTTP (grpc)	Might use SSL	

CAMServer

URL	Port	Protocol	Encryption	Executable	Examples of IP addresses
N/A	4380	TCP		CAMbridge.exe	http://localhost:4380/CAMbridge
N/A	5480	TPC		CAMbridge.exe	

- dental
- 3shape
- connection
- network
- port
- traffic
- communicate
- url
- blocks
- firewalls
- restriction
- tchnclst