TETRAFLEX® ANDROID CLIENT

The TetraFlex® Android Client is enabling users to log on to a TetraFlex® network as a registered soft terminal being a fully integrated part of the TetraFlex® communication system.

The TetraFlex® Android Client registers in the TetraFlex® system similar to other Tetra terminals with its own SSI number and user number set up in the subscriber register with a Profile associated and with defined Group(s).

The TetraFlex® Android Client is supported from TetraFlex® software version 7.7.8 and onwards. The TetraFlex® Android Client communicates to all terminal types of the subscriber register, including unified numbering, allowing call forwarding or simultaneous ringing of different devices.

Functions and Features

The TetraFlex® Android Client supports the following modes of communication:

1. Can make and receive group calls to and from Tetra Radios, other soft terminals, DAMM Dispatchers and other compatible units connected to the DAMM TetraFlex® infrastructure.**

2. Duplex calls to and from Tetra Radios, other soft terminals, DAMM Dispatchers and other compatible units connected to the DAMM TetraFlex® infrastructure.**

3. SDS to and from Tetra Radios, other soft terminals, DAMM Dispatchers and other compatible units connected to the DAMM TetraFlex® infrastructure

4. File / Image transfer to and from other soft terminals, DAMM Dispatchers and other compatible units connected to the DAMM TetraFlex® infrastructure

5. Video Streaming to and from other soft terminals, DAMM Dispatchers and other compatible units connected to the DAMM TetraFlex® infrastructure**

**voice type calls and video streaming require broadband network with Quality of Service (QoS), sufficient bandwidth and adequate coverage

The TetraFlex® Android Client as a fully integrated part to the DAMM TetraFlex® system can thereby access all TetraFlex® gateways and can be monitored and recorded by the TetraFlex® Voice and Data Log system.

System Overview
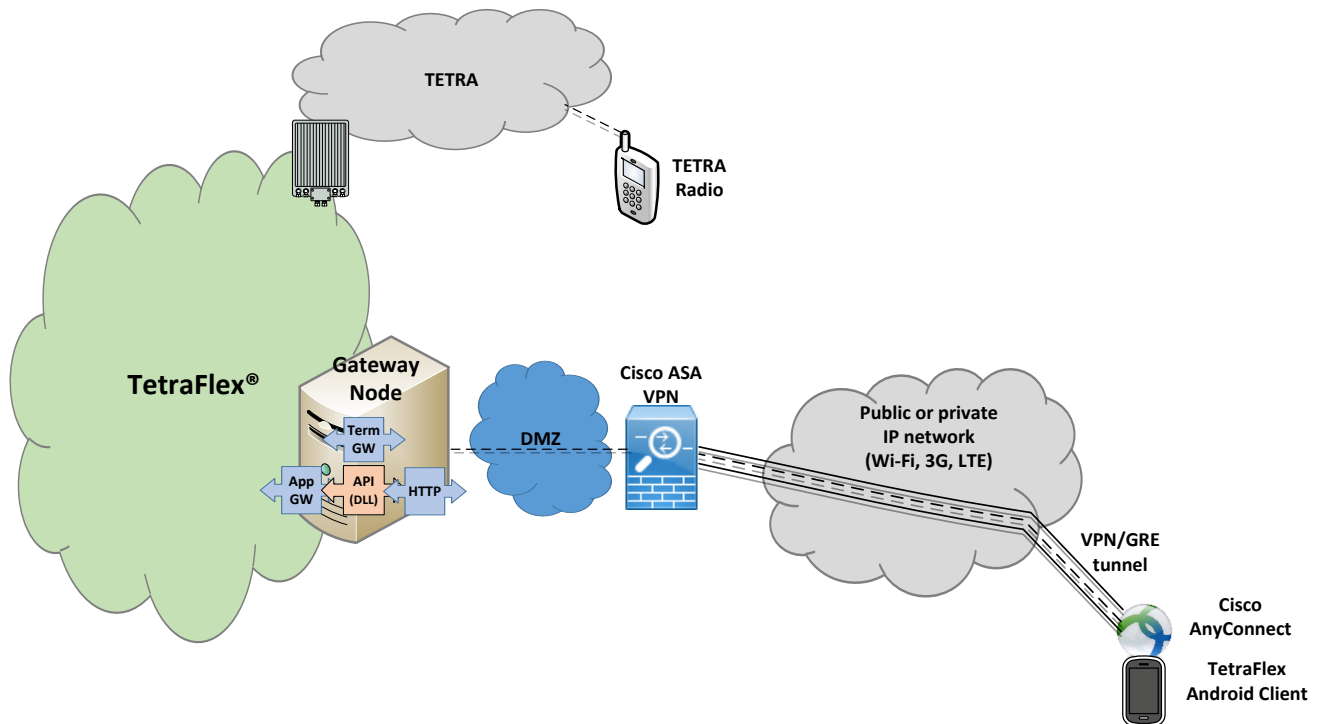
The system overview is showing the connection and communication possibilities. The TetraFlex® Android Client can be connected either via a public or private IP system to the TetraFlex® backbone.

For a public IP network DAMM recommends using Cisco ASA routers to establish a secure and encrypted VPN tunnel to each device. Of course, routers, networks and connections can be built redundant.

A minimal configuration for a Private IP network can be made by just connecting the WAN connection on the TetraFlex® Backbone to a Wi-Fi access point.

Security

An important and vital subject of such operations and user cases is the possibility of enhanced security. The TetraFlex® network and TetraFlex® Android Client ensures any smartphone connection to be authenticated either by the smartphone or by the TetraFlex® network or even mutual similar as for standard Tetra terminals.

The high-secured AES256 bit encryption algorithm method can be used in combination with the user PIN code to access the connection and to protect integrity and communication on the IP back bone layer.

DAMM recommends for public networks to register via secured IP connectivity using encrypted SSL tunneling protocol communication reaching the DMZ.

This can be obtained by using a Cisco ASA/AnyConnect Firewall Router.

TetraFlex® Android Client can be configured to initiate the AnyConnect VPN automatically at startup.

The TetraFlex® Android Client can store multiple different Android Client profiles. This makes is possible to connect with different subscriber numbers, with different settings or to different TetraFlex® systems.

Application Client Registration

Having stable and reliable coverage from the IP network, such as; Wi-Fi, 3G or LTE the smartphone with the TetraFlex® Android Client will register itself automatically to the TetraFlex® Terminal Gateway.

Up to 100 clients may be connected to each TetraFlex® Gateway Node, running the TetraFlex® Terminal Gateway and HTTP service.

The HTTP Service is responsible for features like:

- Synchronizing contacts between subscriber database and Android client
- Interpretation of status SDS messages
- GPS positions of smartphones and TETRA radios
- File and image transfer
- Distribution of TetraFlex® Android Client software updates

Distribution

The TetraFlex® Android Client is distributed via the TetraFlex® software, and can be found under:

c:\Tetra\Share\AndroidClient\TetraFlexAndroidClient.apk

- and will thus not be available via Google Play Store.

The .apk file (Android Application Package) must be downloaded to each Android unit and installed.

The TetraFlex® Android Client can be updated from a central point, via the Gateway Node. If a new version is available, it is indicated on the Client, which then can be downloaded via the HTTP service*.

The Cisco AnyConnect can be installed via Google Play Store.

* To permit installation of software coming from outside of the Google Play Store, your security settings need to be adjusted, to allow software applications from "unknown sources".

Voice communication

Utilizing the full integration of the Android Clients into the TetraFlex® system, it is possible to listen and talk into group calls as well initiating or receiving full duplex individual calls.

Individual calls can be established by typing user number, ISSI or unified number of the other party.

It is possible to scan up to 8 different talk groups simultaneously, and listen to two audio streams at the same time. Group calls can be muted/unmuted at any time and priority can be set between individual and group calls.

The availability of the called terminal will be directly indicated, for example with greyed symbol if unavailable.

Symbols will inform the calling party which kind of device is being called (TETRA terminal, Android Client or Dispatcher).

SDS and positioning

Using the TetraFlex® Android Client being member of the TETRA system there is access to receive and to send SDS messages.

The TetraFlex® Android Client allows for sending GPS position data continuously, on request or never.

Assumed the TetraFlex® Android Client have GPS and network coverage its position will be send to the TetraFlex® control room and fleet management GUI in the TetraFlex® Dispatcher or any third party fleet management application.

Picture, video and data transfer
Utilizing the Android smartphones camera and broadband connection, it is possible transfer images and live video to the TetraFlex® control and dispatch management system.
This can be done in a safe way, taking advantage of the encrypted and secured IP connection to the TetraFlex® Gateway Node.

Images and files will be transmitted in a compressed format. A 3rd party standard smartphone application for unzipping received files is required.

Usage Cases examples

- Coverage extension for non-critical operation. Global Coverage extension for voice calls. For commuting workers between two sites as well as employees in far-away offices

- Low-cost alternative to expensive TETRA terminals for non-critical users

- Data or video transfer for maintenance workers along pipelines or railway tracks

- For inspection of certain issues stream a video from a damaged system directly to the dispatcher. To speed up decision process

- Check certain pictures e.g. number plates or codes automatically with a database

- Share status information and location update across a nationwide network, e.g. fleet management, taxi companies, trains/ metro installations or others

Requirement

TetraFlex® Android Client	Requirement / Recommendation
TetraFlex® Android Client	One TetraFlex® Terminal Gateway License per user
Hardware requirements	Android Operating System based Smartphone
Software requirements	Android Version 4.0 or higher
Air interface	Wi-Fi, UMTS/HSPA (3G) or LTE (4G)
Voice Codec	Selectable: CELP/Tetra or G.711 A-law
Minimum bandwidth requirement for the IP network	CELP/Tetra: 12 Kbit/s G.711 A-law: 69 Kbit/s (per simplex call)
Hardware recommendations for the IP backbone	Cisco ASA router 5505 or 5512
Software recommendations	Cisco AnyConnect VPN client
Tested and approved terminals	Samsung S6, HTC One (Others on request)

Specification

TetraFlex® Android Client	Value
Number of Connections per Gateway Node	Up to 100*
Number of parallel voice streams	2 streams (2 groups or 1 duplex call)
Number of parallel scanned groups	Up to 8
Number of gateways per profile	1 to 2
Number of stored last dialed numbers	Up to 30
Authentication	yes

*) Depending of the number of TetraFlex® Terminal Gateways located in the node dongle used for other applications e.g. for group bridge.

TetraFlex® Gateway Node Minimum Hardware Requirements

Processor:	Intel Xeon; Quad core; 2,40 GHz; 10MB Cache
Hard Drives	1 x 256GB HDD
RAM	4GB RDIMM, 1333MHz
Ethernet:	2 x Gigabit Ethernet ports
Operating system:	Windows 7, Windows 8, Windows 10 Windows Server 2008 R2 with SP1 Windows Server 2012

Ordering

Item number	Description
TF-ST-AC	TetraFlex® Android Client license, per client **

**) containing the TF-DL-N10-TERM GW TetraFlex® Terminal Gateway license.