Grandstream Networks, Inc.

Advice of Charge Guide

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SUPPORTED DEVICES

Following table shows Grandstream products supporting Advice of Charge feature:

Model	Supported	Active by default	Firmware
Basic IP Phones **GXP16XX Series**			
GXP1610	Yes	Yes	1.0.3.28 or higher
GXP1620/1625	Yes	Yes	1.0.3.28 or higher
GXP1628	Yes	Yes	1.0.3.28 or higher
GXP1630	Yes	Yes	1.0.3.28 or higher
Mid-Range IP Phones **GXP17XX Series**			
GXP1760	Yes	Yes	1.0.0.37 or higher
GXP1780/1782	Yes	Yes	1.0.0.37 or higher
High End IP Phones **GXP21XX Series**			
GXP2130	Yes	Yes	1.0.7.25 or higher
GXP2140	Yes	Yes	1.0.7.25 or higher
GXP2160	Yes	Yes	1.0.7.25 or higher
GXP2135	Yes	Yes	1.0.7.25 or higher
GXP2170	Yes	Yes	1.0.7.25 or higher
IP Video Phones for Android **GXV32XX Series**			
GXV3240	Yes	Yes	1.0.3.92 or higher
GXV3275	Yes	Yes	1.0.3.92 or higher

INTRODUCTION

Advice of Charge service provides users with a way of tracking the actual cost of a specific call either prior or after calls are made.

Invocation of the Advice of Charge service is performed by the originating node, thus this feature should be enabled from the service provider or SIP server side. Once AoC is invoked, the originating node receives charging information using supplementary service data structures.

This guide describes types of AoC how to use the Advice of Charge (AoC) service, and some screenshots showing the AoC information received during and at the end of calls.

ADVICE OF CHARGE TYPES

Two AoC types are available, each type determines AoC information to be returned at a different point in the call:

- **AoC during the call (AoC-D):** AoC-D provides the user with information about cost of the call during the call. For example, a subtotal of the cost could be sent to the user on an interval basis.
- **AoC at the end of the call (AoC-E):** AoC-E provides the user side with the total cost of the call at the time the call is ended (or later).

EXAMPLES OF CHARGING RATE VALUES

Based on the charging mechanism, users may or may not receive AoC information. Charging information might be displayed at different times during a call on the originating node phone's screen.

The most popular AoC values are:

- Basic communication details (Call duration, Current call charge, Final call charge …).
- Price per time unit.
- Flat rate.

Users may request to their service providers some supplementary service operations or a user-to-user information transfer which include the following charge rate values:

- Price per time unit and time unit.
- Flat rate (a fixed currency value per event).
- Special charging code.
- Price per volume unit and volume unit.

AOC USE CASE

AoC information should be included in SIP messages respecting XML format. Call originating GXP phones will fetch data received and display it on the LCD screen.

AoC Information During the Call (AoC-D)

During an active call, service provider or SIP server (with AoC-D service enabled) may send charging information embedded in periodic **SIP INFO** messages including current consumption or other charging data.

Please refer to the following Wireshark capture showing AoC-D information in SIP INFO message:

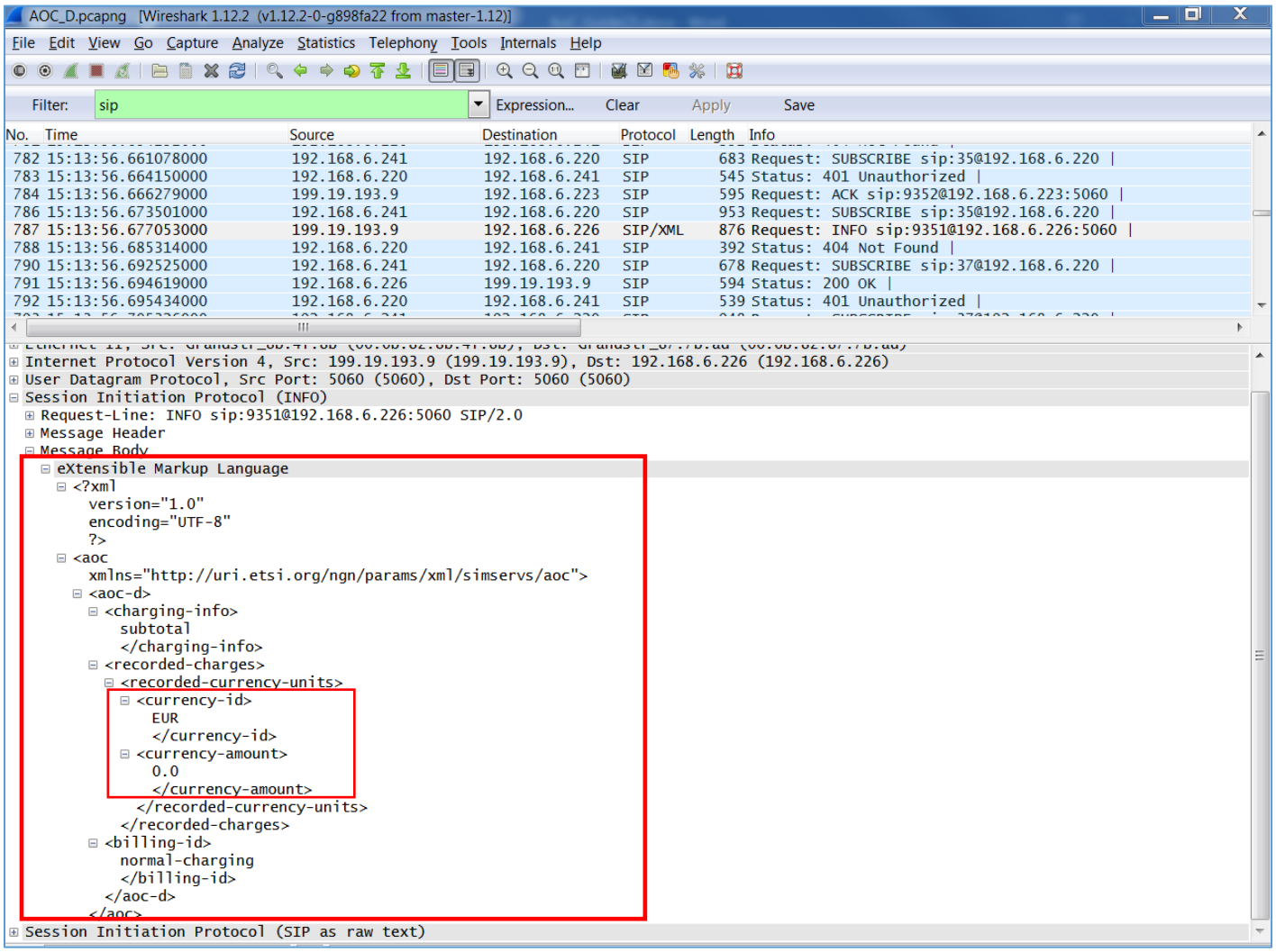

Figure 1: SIP INFO containing AoC information during the call

AoC Information at the End of the Call (AoC-E)

At the end of a call, service provider or SIP server (with AoC-E service enabled) may send charging information embedded in a **SIP BYE** or **200 OK** messages including summary of ended call (duration, costs, final charge and price per time).

AoC-E in SIP BYE message

When the phone originating the call is not the one ending the call, AoC-E information will be included in **SIP BYE** as shown in the following Wireshark capture:

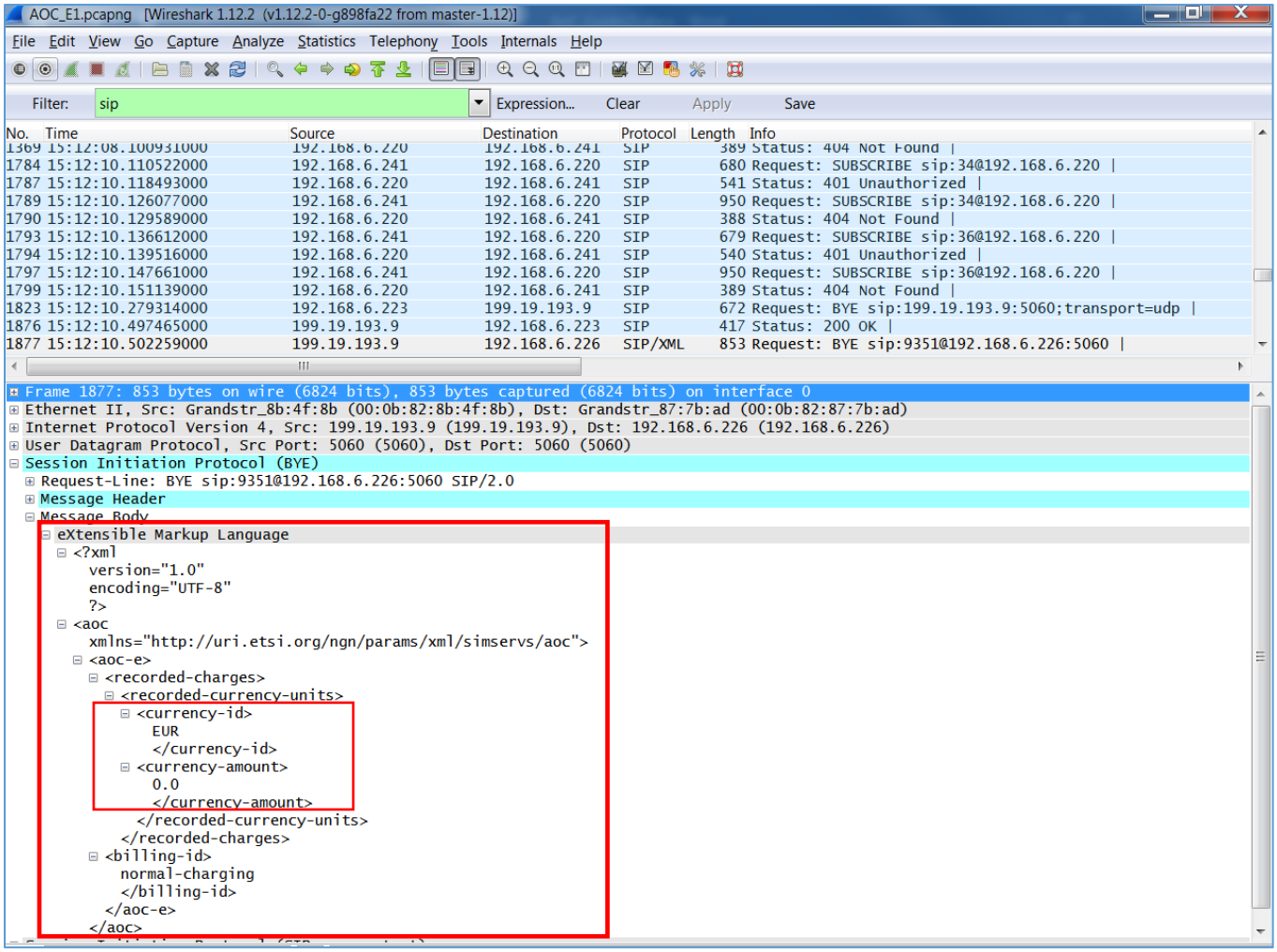

Figure 2: SIP BYE containing AoC information at the end of the call

AoC-E in SIP 200 OK message

When the phone originating the call is the one ending the call, AoC-E information will be included in SIP 200 OK message (response to BYE message). Please refer to the following Wireshark capture showing AoC-E information in SIP 200 OK message:

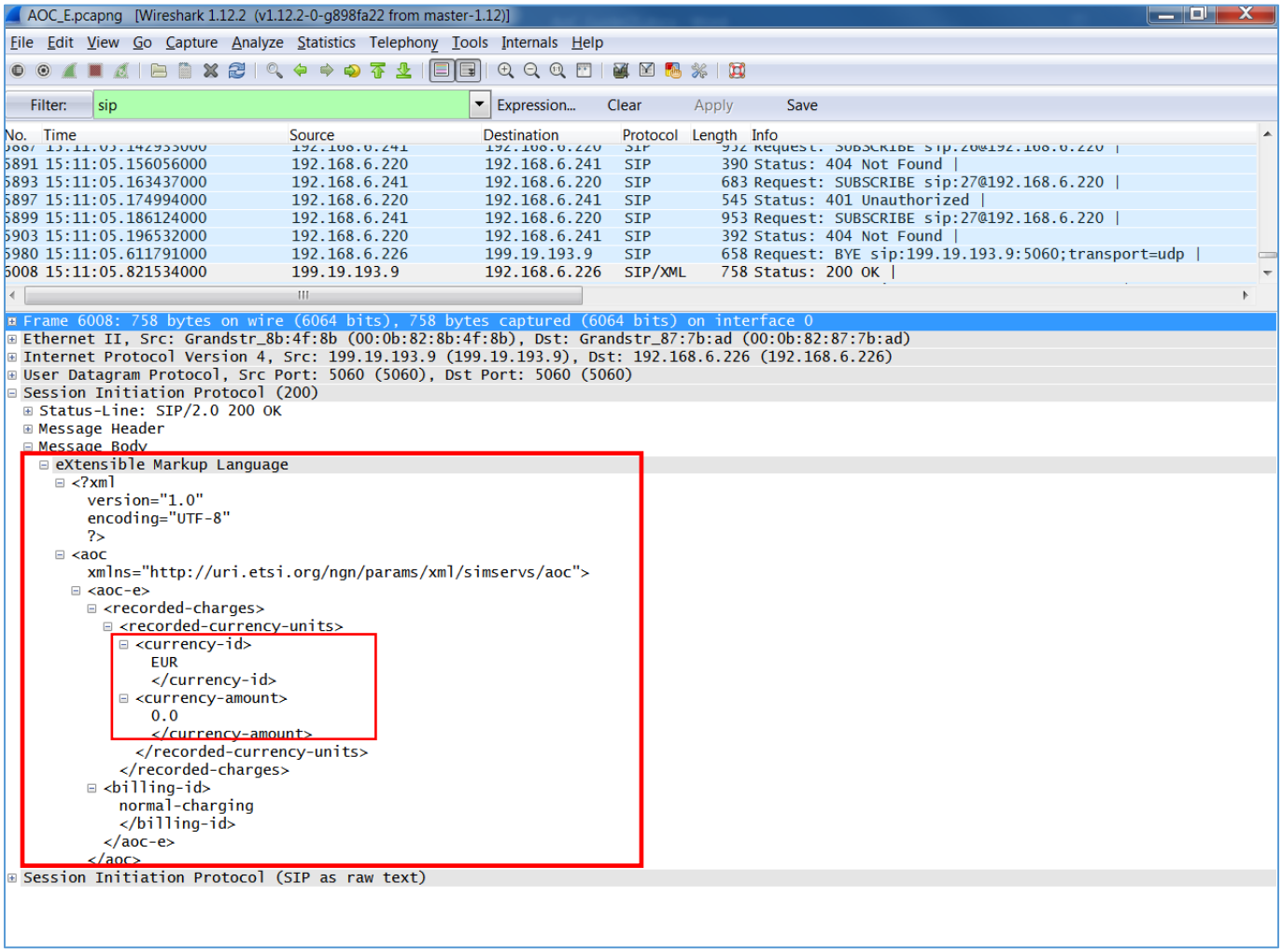

Figure 3: SIP 200 OK containing AoC information at the end of the call

EXAMPLES OF AOC INFORMATION DISPLAYED

Following screenshots show how AoC-D and AoC-E information are displayed in each one of GXP and GXV models:

GXP16xx Series (GXP1628 as example)

Figure 4: AoC-D displayed during a call on GXP1628

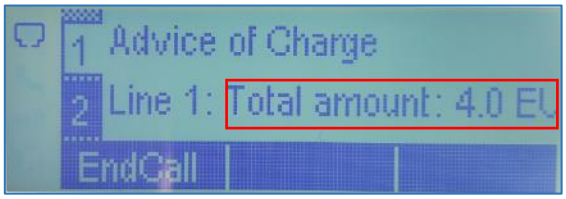

Figure 5: AoC-E displayed at the end of a call on GXP1628

GXV17xx Series (GXV1780 as example)

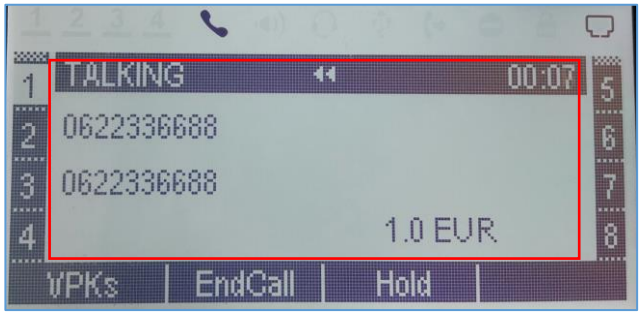

Figure 6: AoC-D displayed during a call on GXP1780

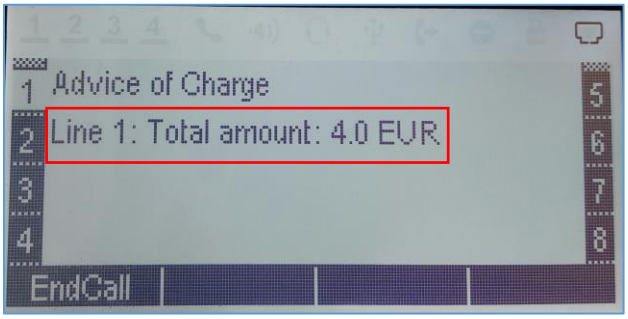

Figure 7: AoC-E displayed at the end of a call on GXP1780

GXP21xx Series (GXP2135 as example)

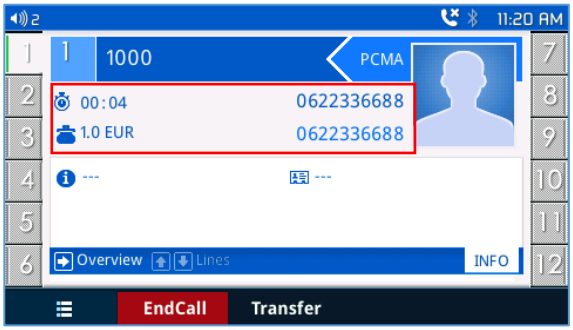

Figure 8: AoC-D displayed during a call on GXP2135

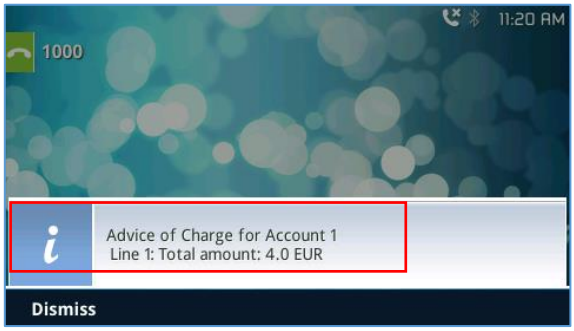

Figure 9: AoC-E displayed at the end of a call on GXP2135

GXV32xx Series (GXV3275 as example)

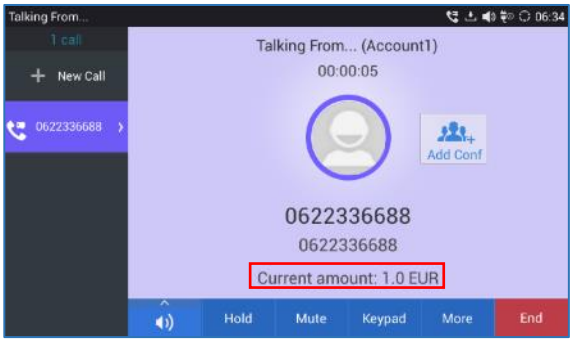

Figure 10: AoC-D displayed during a call on GXV3275

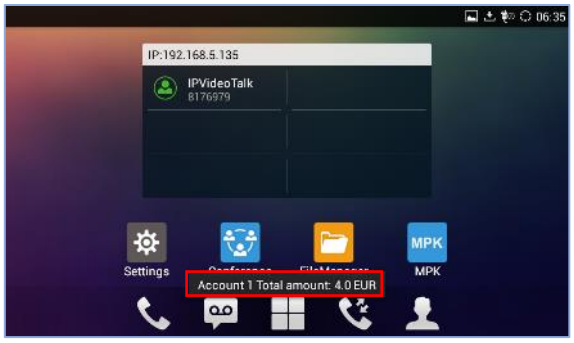

Figure 11: AoC-E displayed at the end of a call on GXV3275