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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 8,531,971**

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EXHIBIT LIST

- Ex. 1001 U.S. Patent No. 8,531,971 to Duan
- Ex. 1002 U.S. Patent No. 8,531,971 Prosecution History
- Ex. 1003 CN 2004 1 0030955
- Ex. 1004 CN 2004 1 0033721
- Ex. 1005 WO 2005/096547 (PCT/CN2005/000388)
- Ex. 1006 U.S. Patent No. 8,009,573 to Duan
- Ex. 1007 U.S. Patent No. 8,009,573 Prosecution History
- Ex. 1008 U.S. Patent Application No. 13/190,817 Prosecution History
- Ex. 1009 U.S. Patent No. 7,450,591 to Körling *et al.*
- Ex. 1010 U.S. Patent No. 7,450,591 Prosecution History
- Ex. 1011 WO 2004/036825 (PCT/SE2003/001122)
- Ex. 1012 U.S. Provisional Application No. 60/418,547 to Körling *et al.*
- Ex. 1013 3GPP TR 23.825 (V1.2.0) (2003-11)
- Ex. 1014 U.S. Patent Pub. No. 2002/0165958 to Duffield *et al.*
- Ex. 1015 Declaration of Dr. Paul Min
- Ex. 1016 Declaration of Mark Grayson
- Ex. 1017 Dr. Paul Min Curriculum Vitae
- Ex. 1018 Internet Archive of 3GPP Database (May 18, 2004), *available at*
https://web.archive.org/web/20040518183918/http://www.3gpp.org/ftp/specs/archive/23_series/23.825/
- Ex. 1019 Internet Archive of 3GPP Database (Mar. 8, 2015), *available at*
https://web.archive.org/web/20150308024711/http://www.3gpp.org/ftp/specs/archive/23_series/23.825/

- Ex. 1020 Invitation to Nov. 24-28, 2003 SA2 Meeting in New York, *available at* http://www.3gpp.org/ftp/tsg_sa/WG2_Arch/TSGS2_36_New_York/Invitation/
- Ex. 1021 Meeting Minutes from Nov. 24-28, 2003 SA2 Meeting in New York, *available at* http://www.3gpp.org/ftp/tsg_sa/WG2_Arch/TSGS2_36_New_York/report/
- Ex. 1022 3GPP Meeting Registration for Nov. 24-28, 2003 SA2 Meeting in New York, *available at* <http://webapp.etsi.org/3GPPRegistration/fViewPart.asp?mid=23040>
- Ex. 1023 3GPP TS 23.125 (V6.2.0) (2004-09)
- Ex. 1024 Change Request Tdoc S2-041454, 3GPP TSG SA WG2 Meeting #39, ShenZhen, China, April 19-23, 2004, *available at* http://www.3gpp.org/ftp/tsg_sa/wg2_arch/TSGS2_39_Shenzhen/Tdocs/S2-041454.zip
- Ex. 1025 Internet Archive of 3GPP Database (Mar. 8, 2015), *available at* https://web.archive.org/web/20150308020217/http://www.3gpp.org/ftp/specs/archive/23_series/23.125/
- Ex. 1026 Invitation to Sept. 7-16, 2004 TSG #25 Meeting in Palm Springs, *available at* http://www.3gpp.org/ftp/tsg_sa/TSG_SA/TSGS_25/Invitation/
- Ex. 1027 Meeting Minutes from Sept. 7-16, 2004 TSG #25 Meeting in Palm Springs, *available at* http://www.3gpp.org/ftp/tsg_sa/TSG_SA/TSGS_25/Report/
- Ex. 1028 3GPP Meeting Registration for Sept. 7-16, 2004 TSG #25 Meeting in Palm Springs, *available at* <http://webapp.etsi.org/3GPPRegistration/fViewPart.asp?mid=22815>
- Ex. 1029 3GPP Specifications – Numbering Scheme (Oct. 3, 2003), *available at* <https://web.archive.org/web/20031003215125/http://www.3gpp.org/specs/numbering.htm>
- Ex. 1030 3GPP Specifications – Numbering Scheme (Feb. 5, 2004), *available at* <https://web.archive.org/web/20040205170822/http://www.3gpp.org/specs/numbering.htm>

- Ex. 1031 3GPP Specification Series: 23 Series (Dec. 6, 2003), *available at*
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<https://web.archive.org/web/20040205130026/http://www.3gpp.org/ftp/Specs/html-info/23-series.htm>
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- Ex. 1035 3GPP ftp – 3GPP 23.125, *available at*
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- Ex. 1037 Internet Archive of 3GPP.org/about (Feb. 6, 2004), *available at*
<http://web.archive.org/web/20040206082055/http://www.3gpp.org/About/about.htm/>
- Ex. 1038 Seurre, Emmanuel *et al.*, GPRS for Mobile Internet (Artech House 2003)
- Ex. 1039 Certificate of Translation of CN 2004 1 0030955
- Ex. 1040 Certificate of Translation of CN 2004 1 0033721
- Ex. 1041 Certificate of Translation of WO 2005/096547
(PCT/CN2005/000388)
- Ex. 1042 Affidavit of Christopher Butler Corresponding to Exhibit 1018
- Ex. 1043 Affidavit of Christopher Butler Corresponding to Exhibit 1019
- Ex. 1044 Affidavit of Christopher Butler Corresponding to Exhibit 1025
- Ex. 1045 Affidavit of Christopher Butler Corresponding to Exhibit 1029

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- Ex. 1046 Affidavit of Christopher Butler Corresponding to Exhibit 1030
- Ex. 1047 Affidavit of Christopher Butler Corresponding to Exhibit 1031
- Ex. 1048 Affidavit of Christopher Butler Corresponding to Exhibit 1032
- Ex. 1049 Affidavit of Christopher Butler Corresponding to Exhibit 1034
- Ex. 1050 Affidavit of Christopher Butler Corresponding to Exhibit 1036
- Ex. 1051 Affidavit of Christopher Butler Corresponding to Exhibit 1037
- Ex. 1052 3GPP TS 29.207 (V5.6.0) (2003-12)
- Ex. 1053 Redlines showing the differences between 3GPP TS 23.125 (V2.0.0) (2004-03) and 3GPP TS 23.125 (V6.2.0) (2004-09)

I. Introduction.

Cisco Systems, Inc. petitions for *inter partes* review of claims 1–11 of United States Patent No. 8,531,971, titled “Method for Controlling Charging of Packet Data Service.” The ’971 patent claims priority benefit to two April 2004 Chinese applications. However, the challenged claims recite limitations having no written description support in the Chinese applications. Therefore, the earliest possible priority date of the ’971 patent is the March 28, 2005 PCT application date.

The challenged claims of the ’971 patent recite a method and system for controlling charging of a packet data service utilizing components such as a Traffic Plane Function (“TPF”) and Charging Rule Function (“CRF”). These components were well-known and standardized by the 3rd Generation Partnership Project (3GPP) organization before the earliest possible priority date of the ’971 patent. Indeed, over half of the ’971 patent describes existing mechanisms for controlling charging packet data service that were standardized by 3GPP, an organization in which Patent Owner actively participated.

The ’971 patent contends that it improved upon the charging mechanisms defined in the 3GPP specification. However, this alleged improvement was also included in a 3GPP specification, 3GPP 23.125 V6.2.0, published in September 2004 prior to the PCT application date of the ’971 patent. Petitioner demonstrates

that the September 2004 3GPP 23.125 standard anticipates the challenged claims. Further, Petitioner's expert, Dr. Min, who has 30 years of experience in the field, explains that both sending event triggers from a CRF to a TPF and requesting charging rules according to the encountered events were widely known and in use in the industry prior to the earliest possible priority date of the '971 patent. Thus, the alleged improvement upon the 3GPP specification was also well known.

Petitioner demonstrates herein that at least a reasonable likelihood exists that all 11 claims of the '971 patent are unpatentable. Accordingly, Petitioner respectfully requests that the Board institute trial on the grounds set forth herein.

II. Mandatory notices (37 C.F.R. § 42.8(a)(1)).

REAL PARTY IN INTEREST: Cisco Systems, Inc. is the real party in interest.

RELATED MATTERS: The '971 patent is involved in the following cases that may affect or be affected by a decision in this proceeding: *Huawei Techs. Co. v. T-Mobile US, Inc.*, 2:16-cv-00055 (E.D. Tex. 2016) and *Cisco Systems, Inc. v. Huawei Techs. Co.*, IPR2017-02077 (September 8, 2017) (filed herewith).

LEAD AND BACKUP COUNSEL: Pursuant to 37 C.F.R. §§ 42.8(b)(3) and 42.10(a), Petitioner appoints Lori A. Gordon (Reg. No. 50,633) as its lead counsel and Daniel S. Block (Reg. No. 68,395) and Tyler J. Dutton (Reg. No. 75,069) as its back-up counsel, all at the address: STERNE, KESSLER, GOLDSTEIN & FOX, 1100

New York Avenue, N.W., Washington, D.C., 20005, phone number (202) 371-2600 and facsimile (202) 371-2540.

SERVICE INFORMATION: Petitioner consents to electronic service by email at the email addresses: lgordon-PTAB@skgf.com, dblock-PTAB@skgf.com, and tdutton-PTAB@skgf.com.

III. Grounds for standing (37 C.F.R. § 42.104(a)).

The undersigned and Cisco Systems, Inc. certify that the '971 patent is available for *inter partes* review. Cisco Systems, Inc. further certifies that it is not barred or estopped from requesting this *inter partes* review on the grounds identified herein.

IV. Identification of challenge (37 C.F.R. § 42.104(b)).

A. Citation of prior art.

The '971 patent claims priority through a continuation application to U.S. Patent No. 8,009,573 which is the national stage of international application PCT/CN2005/000388, filed on March 28, 2005. The '971 patent further claims priority to two Chinese applications, filed on April 1, 2004 and April 9, 2004. Cisco demonstrates in Section V.F. that none of the challenged claims are entitled to priority benefit of the April 2004 Chinese applications. Therefore, the earliest possible priority date is the filing date of the PCT application—March 28, 2005, which is also its U.S. filing date.

3GPP TS 23.125 (V6.2.0) (2004-09), titled “Overall High Level Functionality and Architecture Impacts of Flow Based Charging” (“3GPP 23.125 V6.2.0”)¹ (Ex. 1023), published in September 2004, is prior art under at least 35 U.S.C. § 102(a) because 3GPP 23.125 V6.2.0 was publicly available before the March 28, 2005 filing date of the PCT Application. 3GPP 23.125 V6.2.0 lists a September 2004 date on the face of the document. (3GPP 23.125 V6.2.0, pp. 1, 47.) 3GPP 23.125 V6.2.0 was presented and approved during the September 7–16, 2004 meeting in Palm Springs, California, which had 118 attendees spanning across the entire industry. (Ex. 1027, pp. 9, 35, 107, 130–31, 139–40, 242; Ex. 1028 (listing the attendees and the organizations represented).) 3GPP 23.125 V6.2.0 was uploaded to the 3GPP ftp server on September 22, 2004. (*See* Grayson Decl., ¶¶ 21–24 ; Ex. 1036.) And 3GPP 23.125 V6.2.0 has not been modified since. (*See* Grayson Decl., ¶ 10, 22; Ex. 1025; 1035.)

A person having ordinary skill in the art at the time of the invention (“POSITA”) would have been able to easily search for and find 3GPP 23.125

¹ A previously-filed IPR by Nokia Solutions and Networks US LLC, T-Mobile US, Inc., and T-Mobile USA, Inc. utilized a March 2004 Version of 3GPP TS 23.125 (V2.0.0). As Petitioner discusses in Section IX, significant differences exist between the March 2004 and September 2004 versions of 3GPP TS 23.125.

V6.2.0. (Grayson Decl., ¶¶ 13–15; Min Decl., ¶¶ 19, 34–35.) The 3GPP standards organization provided standards—including 3GPP 23.125 V6.2.0—online without restriction. (Grayson Decl., ¶ 5; Min Decl., ¶ 35.) A POSITA would have known to look at the 3GPP website, as such practice was customary in the art at the time of the invention. (Min Decl., ¶ 35.) For at least these reasons, 3GPP 23.125 V6.2.0 was publicly available well before the priority date of the '971 patent and therefore prior art.

U.S. Patent Pub. No. 2002/0165958 A1 to Duffield *et al.*, titled “Apparatus for size-dependent sampling for managing a data network” (“Duffield”) (Ex. 1014) is prior art under at least 35 U.S.C. § 102(b) because it was published on November 7, 2002, more than one year before the earliest possible effective filing date of the '971 patent. (Ex. 1014, face page (43).)

B. Statutory grounds for the challenge.

Cisco requests review of claims 1–11 on the following grounds:

GROUND 1: Claims 1–8 and 11 are unpatentable under 35 U.S.C. § 102 as anticipated by 3GPP 23.125 V6.2.0.

GROUND 2: Claims 9 and 10 are unpatentable under 35 U.S.C. § 103 as obvious over 3GPP 23.125 V6.2.0 in view of Duffield.

GROUND 3: Claims 2 and 6 are unpatentable under 35 U.S.C. § 103 as obvious over 3GPP 23.125 V6.2.0.

V. Background.

A. The 3rd Generation Partnership Project.

The '971 patent spends over five columns (more than it spends describing its purported invention) explaining the charging-flow systems disclosed in prior-art 3rd Generation Partnership Project (“3GPP”) specifications. As this Section explains, 3GPP was (and still is) a collaboration of organizational partners with the goal of standardizing telecommunications systems—including charging-flow systems—and was widely known and respected in the industry.

Established in 1998, 3GPP consists of a global collaboration of industry leaders in wireless technologies ranging from service providers to equipment manufacturers. (Ex. 1037, p. 1.) 3GPP also includes representatives from core telecommunications-standards organizations including the Alliance for Telecommunications Industry Solutions (ATIS) from the United States (responsible for the T1 standards), the European Telecommunications Standards Institute (ETSI), the Association of Radio Industries and Businesses (ARIB) from Japan, the China Communications Standards Association (CCSA), the Telecommunications Technology Association (TTA) from Korea, and the Telecommunication Technology Committee (TTC) from Japan. (*See* 1037, p. 1.) Representatives from 3GPP met, typically quarterly, to draft specifications and reports. (*See* Ex. 1037, p. 1; Ex. 1038, pp. 56–57; Min Decl., ¶ 34.) These

specifications and reports served as the blueprint for global standardization in mobile telecommunications. (*See* Ex. 1037, p. 1; Min Decl., ¶ 34.)

The 3GPP specifications provide end-to-end requirements for mobile networks and applications. Several of these 3GPP specifications and reports deal with the subject matter of the '971 patent, charging-flow systems (*i.e.*, how communications systems would charge users for different services). The ability to offer flexible charges to customers was important because prior to the 3GPP 23.125 standard, mobile-network technologies were evolving to offer users greater access to a diverse set of services (*e.g.*, voice, data, and multimedia services). (*See* Min Decl., ¶ 31.) This evolution in service drove a corresponding need for service providers to charge users for these services in a dynamic and flexible way. (*See* Min Decl., ¶ 31.) And, 3GPP 23.125, as detailed in V 6.2.0, provided this solution.

3GPP 23.125 V6.2.0 describes a system architecture that enables service providers to differentiate services and in turn, to charge users based on service-driven, flexible pricing models. (*See* 3GPP 23.125 V6.2.0, p. 9; Min Decl., ¶ 37.) 3GPP 23.125 V6.2.0 discloses two categories of charging systems: (1) online charging systems, and (2) offline charging systems:

3GPP 23.125 V6.2.0: Online Charging

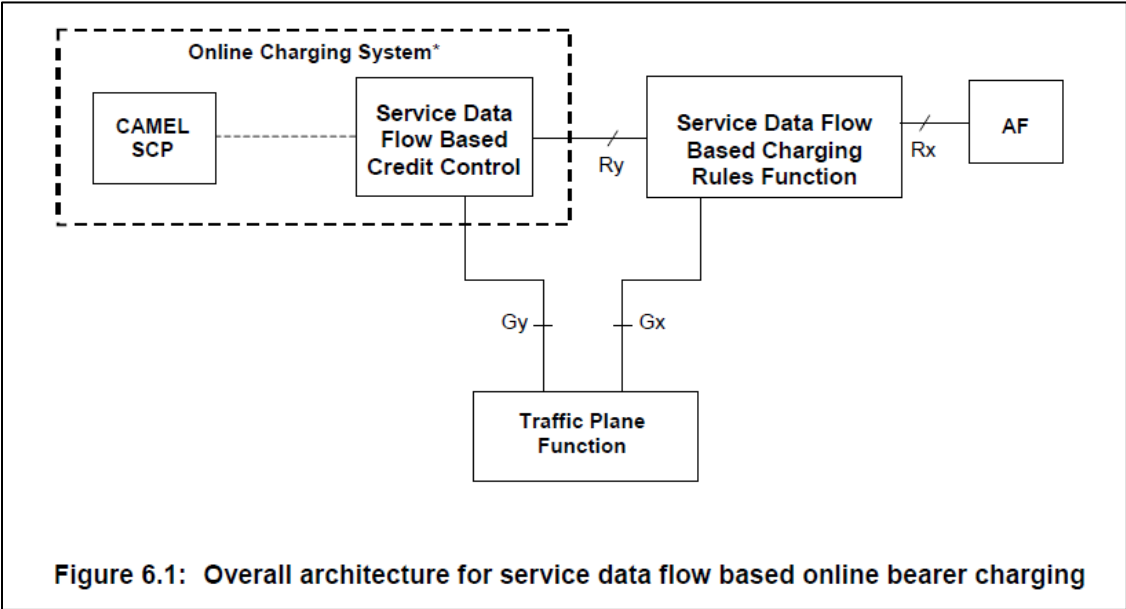


Figure 6.1: Overall architecture for service data flow based online bearer charging

(3GPP 23.125 V6.2.0, p. 17.)

3GPP 23.125 V6.2.0: Offline Charging

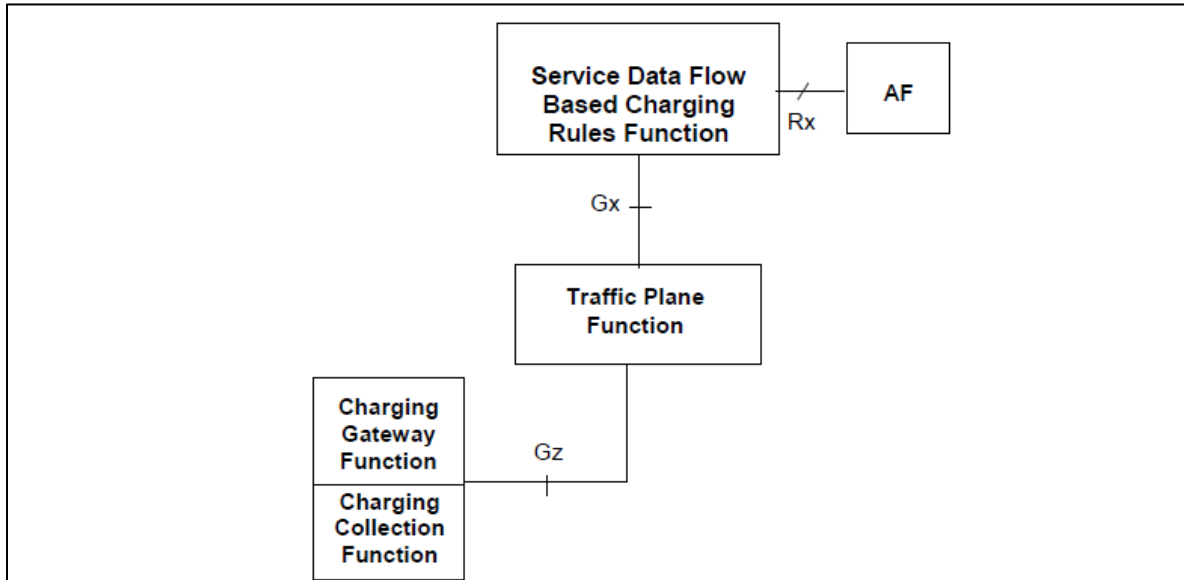


Figure 6.2: Overall architecture for service data flow based offline bearer charging

(3GPP 23.125 V6.2.0, p. 18.)

Online charging systems allow both prepaid and postpaid subscribers to be charged in real time. (See Min Decl., ¶ 33.) Offline charging systems collect charging records and then send the records to a billing system after the services are delivered. (See Min Decl., ¶ 32.) As shown in 3GPP 23.125 V6.2.0, the online system (above top) includes a TPF coupled to both a CRF (labeled “Service Data Flow Based Charging Rules Function”) and an Online Charging System. The offline system (above bottom) includes a TPF coupled to both a CRF an offline charging system (labeled “Charging Gateway Function/Charging Collection

Function”). Thus, both categories of charging systems use a CRF and a TPF.

(3GPP 23.125 V6.2.0, pp. 18–20.)

The CRF is responsible for calculating charging rules² to apply for a user. (3GPP 23.125 V6.2.0, p. 18; Min Decl., ¶ 38.) The CRF sends these charging rules to the TPF, which, in turn, enforces the rules. (3GPP 23.125 V6.2.0, pp. 18–20; Min Decl., ¶ 38.) To enable service providers to offer dynamic and flexible charging on a per-user basis, the TPF differentiates user data traffic, identifies the invoked service, and charges a user based on the charging rules received from the CRF that relate **to that service**. (3GPP 23.125 V6.2.0, pp. 19–20; Min Decl., ¶ 37.) In this manner, both the online and offline charging systems provide customized and flexible charging on a user-by-user basis and service-by-service basis. (Min Decl., ¶ 37.) For example, a service provider can charge a particular user differently based on whether a service is invoked when in the home network or in a visited network (*i.e.*, the user is roaming). (Min Decl., ¶ 31.) As a further example, the techniques of 3GPP 23.125 V6.2.0 allow a service provider to charge differently based on the quality of service the user desires. (Min Decl., ¶ 31.)

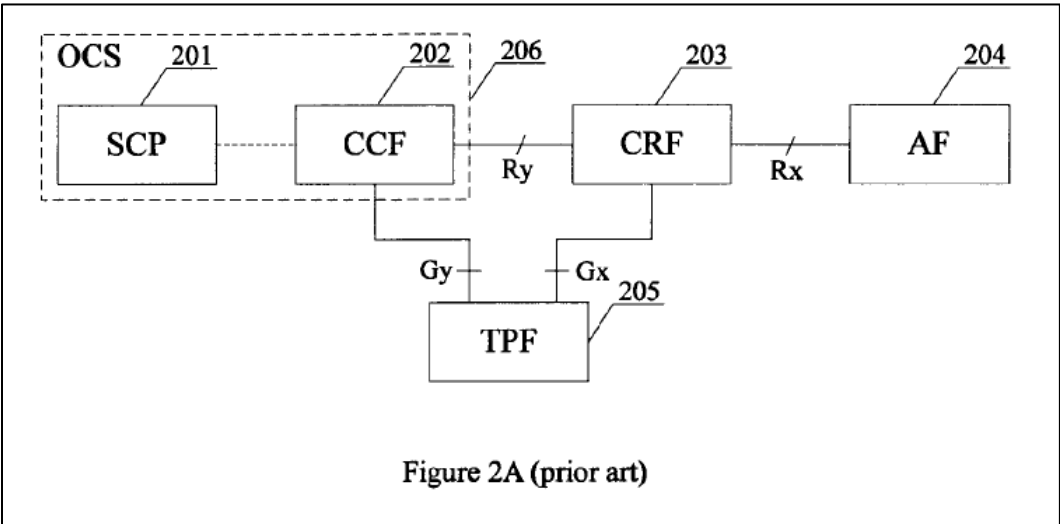
² Charging rules contain information that allow a service provider to identify the packets belonging to a particular service data flow and to define how the identified service data flow is to be charged. (3GPP 23.125 V6.2.0, pp. 11–13.)

B. The '971 patent.

The '971 patent acknowledges that online and offline charging systems were well known and standardized by 3GPP years before the earliest possible priority date of the '971 patent. (*See* '971 patent, 3:12–6:50.) The '971 patent also references and discusses these standardized online and offline charging systems in detail.

Figure 2A of the '971 patent (reproduced below) depicts the structure of an admitted prior art online charging system. ('971 patent, 7:52–53.) The online charging system in Figure 2A was part of the existing 3GPP specification, as shown in the comparison of Figure 2A and 3GPP 23.125 V6.2.0 below.

'971 Patent: Online Charging



(’971 patent, Figure 2A.)

3GPP 23.125 V6.2.0: Online Charging

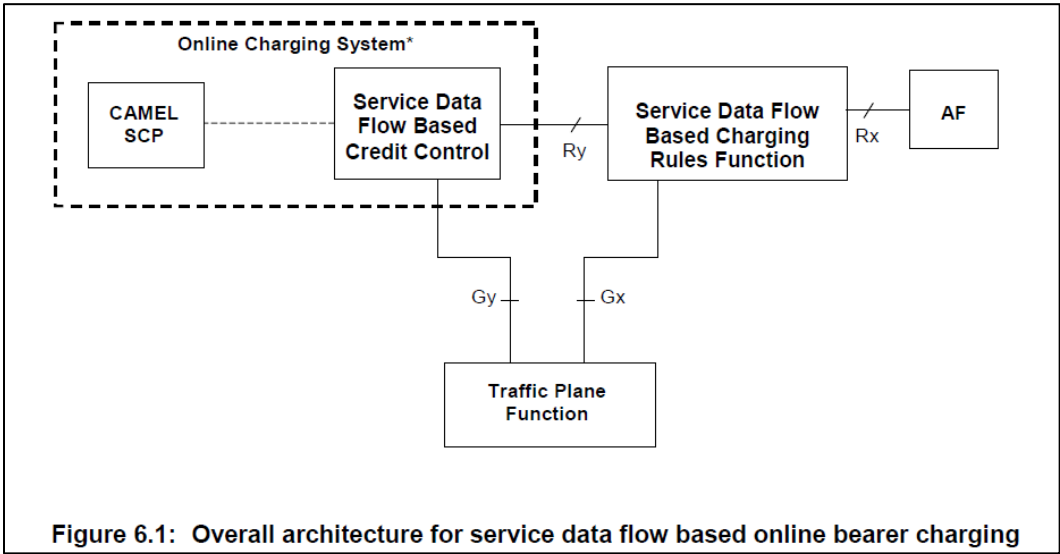
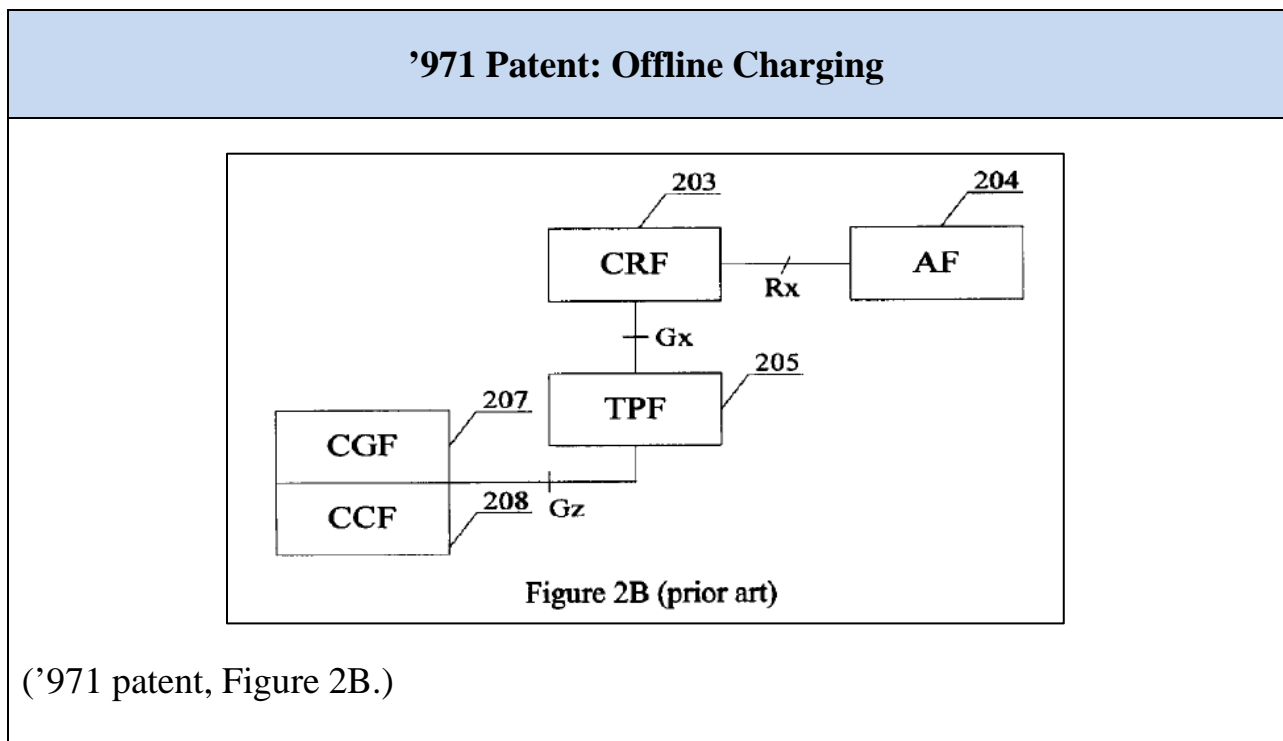


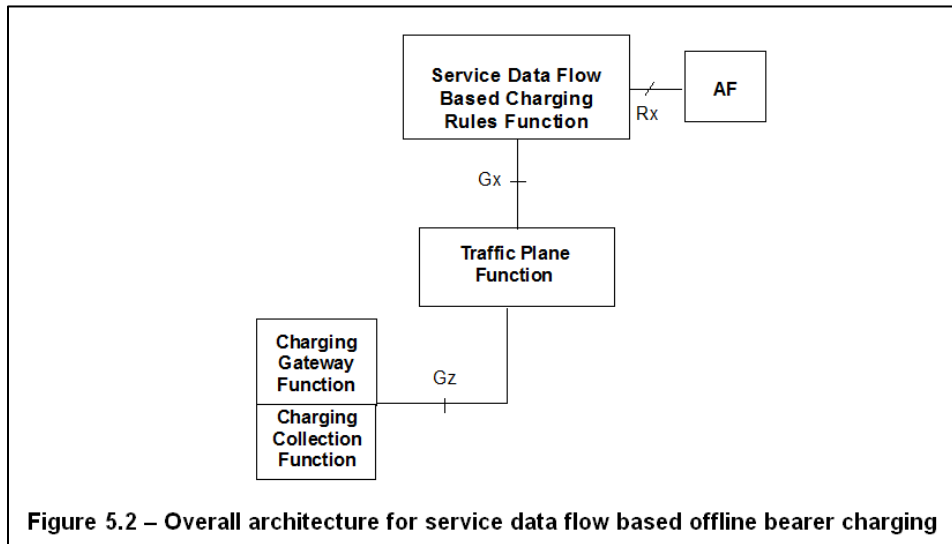
Figure 6.1: Overall architecture for service data flow based online bearer charging

(3GPP 23.125 V6.2.0, p. 17.)

Figure 2B of the '971 patent (reproduced below) depicts the structure of an admitted prior art offline charging system. ('971 patent, 7:54–55.) Like the online charging system, the offline charging system in Figure 2B was part of the existing 3GPP specification, as shown in the comparison of Figure 2B and 3GPP 23.125 V6.2.0 below.



3GPP 23.125 V6.2.0: Offline Charging



(3GPP 23.125 V6.2.0, p. 18.)

The background section of the '971 patent explains that in the 3GPP architecture, the TPF “bears IP Flows.”³ ('971 patent, 3:57–58.) “During the establishment of the IP Flow bearer, the TPF 205 sends a Charging Rule Request to the CRF 203.” ('971 patent, 3:58–61.) The CRF 203 then selects a proper charging rule and “returns the selected charging rule to the TPF 205.” ('971 patent,

³ A bearer is an information transmission path of defined capacity, delay, and bit error rate. A bearer service is a type of telecommunication service that provides the capability of transmission of signals between access points. (*See* Min Decl., ¶ 54.)

4:7–9.) Following receipt of the proper charging rule(s), the TPF 205 enforces the charging rules on the different IP flows. (*See* '971 patent, 4:18–21.) Thus, based on the charging rules supplied by the CRF 203 to the TPF 205, the TPF 205 can apply pricing models for different service flows: “for instance, Send/Receive email service may be charged based on trigger times of Sending and Receiving events, WAP browse service may be charged according to flow, file transfer service may also be charged according to flow, [etc.]” ('971 patent, 3:1–8.)

The '971 patent then describes the use of event triggers in the online and offline system architectures to request a change to the existing charging rules. ('971 patent, 3:66–4:29.) Specifically, an event trigger determines when the TPF signals the CRF that the TPF encountered a specific pre-defined event. (3GPP 23.125 V6.2.0, pp. 15–16, 31; Min Decl., ¶¶ 39–43.) When an event trigger is met, the TPF reauthorizes or requests updated charging rules. (*See* 3GPP 23.125 V6.2.0, pp. 15–16, 31; Min Decl., ¶¶ 42–44.)

The '971 patent acknowledges that event triggers were already included in the 3GPP standard: “[a]t present, the interactive mode concerning charging rule between TPF and the CRF is defined in 3GPP Specification like this: The TPF sends a Charging Rule Request to the CRF when a certain trigger event is met. The trigger event may be an event of establishing, modifying or deleting the bearer.” ('971 patent, 6:29–35.) According to the '971 patent, “[t]he event trigger of the

Charging Rule Request shall be set in the TPF in advance.” (’971 patent, 6:37–40.) The ’971 patent considers these predefined event triggers to be static because, after the event triggers are set during bearer establishment, the event triggers are not updated. (’971 patent, 7:29–33, 8:30–47.)⁴ However, according to the ’971 patent, static event triggers lack flexibility, leading to inefficiency. For example, “for some cases, the QoS parameters modified have little differences compared with original QoS parameters when the QoS parameters are modified during the modification of the bearer, and it is not necessary to modify the charging rules.” (’971 patent, 6:42–46.) In these cases, the ’971 contends “the CRF may select a charging rule similar to an original one to send to the TPF when the TPF sends the Charging Rule Request, thereby creating a great of [sic] redundant information.” (’971 patent, 6:47–50.)

The ’971 patent’s alleged improvement over the existing 3GPP event triggers is the introduction of “dynamic” triggers. According to the ’971 patent, static triggers are set in advance in the TPF, and “[w]hen a static event trigger is met, the TPF sends the Charging Rule Request to the CRF....” (’971 patent, 8:33–36.) In contrast, dynamic triggers are determined by the CRF, which communicates the triggers to the TPF. (’971 patent, 6:62–64.) Specifically, “the CRF is able to

⁴ Cisco does not acquiesce that the 3GPP event triggers are “static.”

flexibly set event triggers according to the charging-relevant input information and send the current event triggers to the TPF so that the TPF requests new charging rules from the CRF when a certain event trigger is met.” (’971 patent, 8:39–42.) For example, the CRF can use a different set of factors to determine and set an event trigger such as “self-stored information in the CRF, or charging-relevant input information provided by an Application Function (AF), an Online Charging System (OCS), the TPF, or any combinations of the AF, the OCS, and the TPF.” (’971 patent, 6:64–7:1.)

By allowing the CRF to define “event triggers” based on its rules, the ’971 patent system purportedly avoids sending unwanted Charging Rule Requests to the CRF. (’971 patent, 7:25–26.) In operation, when an event trigger is met, the TPF requests an updated charging rule from the CRF. (’971 patent, 8:18–22.) The CRF then selects an updated charging rule and returns the updated charging rule to the TPF:

When one of the event triggers is met, the TPF requests the charging rule from the CRF and provides charging-relevant input information. The CRF selects the proper charging rule according to the charging-relevant input information and sends the selected charging rule to the TPF.

(’971 patent, 8:18–22.)

Thus, dynamic event triggers operate similarly to the existing static event triggers. By using refined event triggers, the TPF can allegedly avoid redundant or unwanted requests for new charging rules. But as Petitioner will show in later sections, this concept was well known before the priority date of the '971 patent.

C. Prosecution history.

Patent Owner filed the '971 patent as an accelerated Track-One Application and included the March 2004 version of 3GPP 23.125 within its IDS. (Ex. 1002, p. 546 (Track One Request); Ex. 1002, p. 582 (although the applicant cited "3GPP TS 1.125" in the IDS, it submitted a copy of 3GPP TS 23.125).) The Examiner rejected the originally filed claims based on a number of prior-art references. Notably, the Examiner rejected the claims based on two 3GPP specifications (3GPP TS 32.240 and 3GPP TS 32.251). (Ex. 1002, p. 443 (Office Action mailed May 23, 2012).) Despite being an active participant in the 3GPP standards efforts, Patent Owner represented to the Patent Office that the 3GPP specification was not a prior art publication: "there is no publication date or any other information that can identify the publication date of these cited 3GPP references. If the Examiner continues alleging that these references disclose the features of Applicant's claims, Applicant requests that the Examiner provides specific version and publication date of these references." (Ex. 1002, p. 457 (Response mailed Mar. 20, 2012).) And in response, the Examiner withdrew the rejection. But 3GPP specifications,

such as 3GPP 23.125 V6.2.0, were prior art publications to the '971 patent as Petitioner demonstrates in Section IV. The claims of the '971 patent would not have issued had the Office had the benefit of the full record or if the applicant had been candid about the public availability of the 3GPP standards.

The Examiner also rejected the claims over the admitted prior art (“APA”) in the '971 patent in view of U.S. Pub. No. 2004/0162054 to Thiebot. (Ex. 1002, p. 523 (Office Action mailed Dec. 20, 2011).) To overcome this rejection, Patent Owner argued that “in *APA*, the event trigger is not determined by the CRF and there is no transmission of the event trigger from the CRF to TPF to control the TPF. In contrast, claim 7 recites that the event triggers are ‘determined by the CRF’ and are ‘received from the CRF ... to control the TPF.’” (Ex. 1002, p. 331 (Response, mailed Sept. 24, 2012) (emphasis and ellipses in original).) Based on this argument and a corresponding amendment to the independent claims, the Examiner subsequently allowed the claims.

But determining an event trigger by a CRF and transmitting the event trigger from the CRF to the TPF was not new. 3GPP 23.125 V6.2.0 explicitly teaches both of these features.

D. Level of ordinary skill in the art.

A person of ordinary skill in the art at the time of the claimed invention would have had a B.S. degree in Computer Science, Electrical Engineering, or an

equivalent field, as well as at least 3–5 years of academic or industry experience in the relevant field. (Min Decl., ¶¶ 29–30.)

E. Claim construction.

The claim terms are to be given their plain and ordinary meaning under the broadest reasonable interpretation, as understood by a POSITA and consistent with the disclosure. Claims in the '971 patent were challenged in two prior IPR proceedings, IPR2017-00673 and IPR2017-00698. Institution in both proceedings was denied. However, the claim construction of three terms—“event triggers,” “CRF,” and “TPF”—was addressed in the dissent of IPR2017-00673. *T-Mobile US, Inc. v. Huawei Techs. Co.*, IPR2017-00673, Paper 10 at 3 (Aug. 4, 2017) (Horvath, J., dissent). Specifically, in this proceeding, the dissent determined that the plain and ordinary meaning of “event triggers” is “network events that cause a charging decision to be made,” the plain and ordinary meaning of “CRF” is “a logical network entity that receives a charging request and responds with a charging rule;” and the plain and ordinary meaning of “TPF” is “a logical network entity that bears IP flows and executes charging rules, including the GGSN in GPRS networks.” *Id.* For the purpose of this *inter partes* review under the broadest reasonable interpretation standard, Petitioner does not dispute these constructions. Petitioner reserves the right to present different constructions in District Court, where a different claim-construction standard applies.

Like “event triggers,” “CRF,” and “TPF,” the remaining terms recited in the challenged claims are well-known and described in various 3GPP standards. The plain and ordinary meaning of these terms is therefore known and understood. Accordingly, no constructions beyond the plain and ordinary meaning are required.

F. Patent Owner is not entitled to the priority benefit of the 2004 Chinese applications.

The '971 patent claims priority through continuations to the national stage of international application PCT/CN2005/000388, filed on March 28, 2005. The '971 patent further claims priority to two Chinese applications filed on April 1 and April 9, 2004 (Ex. 1003 and Ex. 1004). Translations of the Chinese applications, together with supporting affidavits, are provided as Exhibits 1039 and 1040.

An international application designating the United States is entitled to the right of priority based on a prior national application provided that the conditions of 35 U.S.C. § 120 are met. *See* 35 U.S.C. § 365(c). Section 120, in turn, requires that the claims meet the written description and enablement requirements of 35 U.S.C. § 112 to obtain benefit of the earlier filing date. *See* 35 U.S.C. §§ 112 and 120. Patent Owner will be unable to discharge its burden to show that the challenged claims of the '971 patent are entitled to priority benefit of the Chinese

applications because the Chinese applications do not provide written description support for the claimed “event triggers.”⁵

To satisfy the written description requirement, the disclosure of the Chinese applications must “convey with reasonable clarity to those skilled in the art that, as of the filing date sought, [the inventor] was in possession of the invention.” *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563–64 (Fed. Cir. 1991). Specifically, a patent owner must prove that it had possession of the full scope of the claim. *See Lizardtech, Inc. v. Earth Resource Mapping*, 424 F.3d 1336, 1344–46 (Fed. Cir. 2005).

At the time of the Chinese applications, Patent Owner was not in possession of the full scope of the claims of the ’971 patent. Each independent claim in the ’971 patent includes an element reciting a set of alternative event trigger limitations: “*wherein the event triggers comprise at least one of a change of a Serving GPRS Support Node (SGSN), a change of a Public Land Mobile Network (PLMN), a change of a Radio Access Technology (RAT) type, a change of a Traffic*

⁵ It is Patent Owner’s burden to establish that it is entitled to the priority date of the earlier Chinese applications. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1279–80 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)).

Flow Template (TFT), or a change of Quality of Service (QoS).” Neither Chinese application describes or depicts each and every one of these recited event trigger limitations. (Min Decl., ¶¶ 53–56.) Because of this failure to provide support for each of the recited alternative event trigger limitations, the Chinese application fails to satisfy the written description requirement of 35 U.S.C. § 112. *See In re DiLeone*, 436 F.2d 1404, 1405 n.1 (C.C.P.A. 1971) (where a claim recites a set of alternative limitations, the patent owner must demonstrate support for each of the alternative limitations); *see also In re Gosteli*, 872 F.2d 1008 (Fed. Cir. 1989) (no written description support for a genus when the foreign application disclosed only a species).

A comparison between the Chinese applications and the '971 patent further highlights the failure to provide written description support for each of the recited set of alternative event trigger limitations. (Min Decl., ¶¶ 53–56.) As demonstrated below, Patent Owner introduced entirely new “event trigger” limitations into its specification after filing the Chinese applications. (Min Decl., ¶¶ 54–56.) These new “event trigger” limitations are explicitly recited in each of the independent claims. The Federal Circuit has consistently found that written description issues arise when an applicant introduces new matter. *See In re Baker*, 559 F.2d 588, 593 (C.C.P.A. 1977) (Rich, J., concurring) (“The basic problem here is simple: new matter, in violation of 35 U.S.C. § 132, was inserted by amendment and the claim

contains that new matter. It therefore lacks [written description] support and must be rejected.”). Thus, the introduction of the claimed “event triggers” in the later filed applications is further evidence that Patent Owner lacked adequate written description support for the claims in the Chinese applications.

As shown below, the Chinese applications describe event triggers only related to a bearer service modification, modified different levels divided for the quality of service (QoS) parameters, and bearer service deletion. Additionally, the Chinese applications do not include any broadening language showing possession of the specific event triggers later claimed. (Min Decl., ¶ 56.)

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Step 602: After receiving the Request Charging Rules, the CRF sets the dynamic trigger event of the charging rule required by the TPF to request and then sends a Request Dynamic Event Report to the TPF. The Request Dynamic Event Report contains a dynamic events list of dynamic trigger event A, dynamic trigger event B, dynamic trigger event C, etc., which can be bearer service modification, modified different levels divided for the QoS parameters, or bearer service deletion.

(Ex. 1039, *17.)

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Step 602: After receiving the Request Charging Rules, the CRF sets the dynamic trigger event of the charging rule required by the TPF to request and then sends a Request Dynamic Event Report to the TPF. The Request Dynamic Event Report contains a dynamic events list of dynamic trigger event A, dynamic trigger event B, dynamic trigger event C, etc., which can be bearer service modification, modified different levels divided for the QoS parameters, or bearer service deletion.

(Ex. 1040, *17.)

In contrast with the Chinese applications, the '971 patent discloses and claims embodiments of other, new event triggers:

Step 602: After receiving the Charging Rule Request, the CRF sets dynamic event triggers at which the TPF is required to request charging rules, and then sends a Request Dynamic Event Report to the TPF. The Request Dynamic Event Report carries a list of dynamic event triggers, such as dynamic event trigger A, dynamic event trigger B and dynamic event trigger C. **These events may be a plurality of various Modify Bearer Events, such as the change of the SGSN, of the Public Land Mobile Network (PLMN), of the Radio Access Technology (RAT) type, of the Traffic Flow Template, and of the QoS.**

('971 patent, 8:48–57 (emphasis added).)

The event triggers claimed in the '971 patent were not included in the Chinese applications. The Chinese applications state only that the event triggers can include a bearer service modification, modified different levels divided for the quality of service (QoS) parameters, and bearer service deletion. (See Ex. 1039, *17; Ex. 1040, *17.) The modification of the bearer service referenced in both of the Chinese applications changes the QoS, the radio priority level, or the parameters defined during bearer establishment. (Min Decl., ¶ 54.) The bearer **service** modification, however, does not refer to bearer modifications, such as a change of the SGSN, the PLMN, the RAT type, or the traffic flow template disclosed in the '971 patent and described in more detail below. (Min Decl., ¶ 54.) The modified different levels divided for the quality of service (QoS) parameters referenced in both of the Chinese applications is a type of modification that defines the quality of service related to a particular bearer. (Min Decl., ¶ 54.) And the deletion of the bearer (*i.e.*, bearer service termination) referenced in both of the Chinese applications occurs after a request to remove service. (Min Decl., ¶ 54; *see also* 3GPP 23.125 V6.2.0, pp. 19–20.)

Nothing would have indicated to a POSITA that the applicants, at the time of the Chinese applications, possessed or contemplated event triggers such as a change in a Serving GPRS Support Node (SGSN)—a network element that manages GPRS mobility and performs the access control functions—or a change

of a Public Land Mobile Network (PLMN)—the network offering mobile services to the bearer—because a change in SGSN or PLMN is not a modification of the bearer service, a modification in QoS, or a deletion of the bearer. (Min Decl., ¶¶ 54–56.) Changing the SGSN or PLMN becomes necessary when a mobile device changes its location as it is roaming. (Min Decl., ¶ 55.) In such situations, the mobile device needs to change the access point to the network and in some cases even needs to change the network protocols. (Min Decl., ¶ 55) Changing the SGSN or PLMN also requires significantly-different actions to be taken by the mobile device and the network infrastructure, e.g., handover to a different base station, different encoding schemes for the data, adjusting data rates, changing data and control formats, etc. (Min Decl., ¶ 55.) Whereas changing the SGSN or PLMN is a modification of the bearer, these changes are not modifications of the bearer service.

The applicant introduced entirely new “event triggers” after filing the Chinese applications. Accordingly, these new “event trigger” limitations constitute new matter, not disclosed or contemplated in the earlier filed Chinese applications. Consequently, the Patent Owner will not be able to discharge its burden to prove that the ’971 patent is entitled to the priority benefit of the Chinese applications because the Chinese applications do not provide written description support for the

full claim scope of any claim in the '971 patent. (Min Decl., ¶ 56.) Thus, the '971 patent is not entitled to priority dating back to April 2004 for these claims.

VI. Ground 1: 3GPP 23.125 V6.2.0 anticipates claims 1–8 and 11.

The claims of the '971 patent are directed to and anticipated by the subject matter disclosed in the prior art 3GPP specification, 3GPP 23.125 V6.2.0. During prosecution, the Examiner applied two 3GPP specifications (3GPP TS 32.240 and 3GPP TS 32.251). (Ex. 1002, p. 443 (Office Action mailed May 23, 2012).)

However, Patent Owner argued that the Examiner did not provide publication evidence and therefore could not maintain the rejection. (Ex. 1002, p. 457

(Response mailed Mar. 20, 2012).) Patent Owner's argument is surprising given

Patent Owner participated in the development of the 3GPP specifications. (*See* Ex.

1028.) Above, Petitioner established that 3GPP 23.125 V6.2.0 was publically

available by September 22, 2004. And because the claims of the '971 patent are

not entitled to the benefit of the Chinese applications, the 3GPP 23.125 V6.2.0

specification is prior art under at least 35 U.S.C. § 102(a).

A. 3GPP 23.125 V6.2.0 anticipates claims 1 and 5.

1. 3GPP 23.125 V6.2.0 discloses “[a method / communication system] for controlling charging of packet data service,” as recited in claims 1 and 5.

Independent claims 1 and 5 recite a method and system, respectively, “*for controlling charging of packet data service.*” 3GPP23.125 V6.2.0 discloses these preamble limitations. (Min Decl., ¶¶ 58–61.)

3GPP 23.125 V6.2.0 explains that its “functions are provided by the network for service **data flow based charging ... Provision and control of charging** rules on service data flow level.” (3GPP 23.125 V6.2.0, p. 11(emphasis added).) With 3GPP 23.125 V6.2.0, “[i]t shall be possible to apply differentiated charging for the traffic flows belonging to different services (a.k.a. different service data flows) even if they use the same PDP Context.” (3GPP 23.125 V6.2.0, p. 9.)

The online and offline charging systems disclosed in 3GPP 23.125 V6.2.0 are configured to perform different charging models. (*See* 3GPP 23.125 V6.2.0, pp. 10–11.) As explained in the following Sections, these charging models perform the steps of the method claimed in the ’971 patent.

2. 3GPP 23.125 V6.2.0 discloses “a Traffic Plane Function (TPF) which is in communication with a Charging Rule Function (CRF)” as recited in claim 5 and a TPF and CRF as recited in claim 1.

The communication system of independent claim 5 recites two elements: “*a Traffic Plane Function (TPF) which is in communication with a Charging Rule*

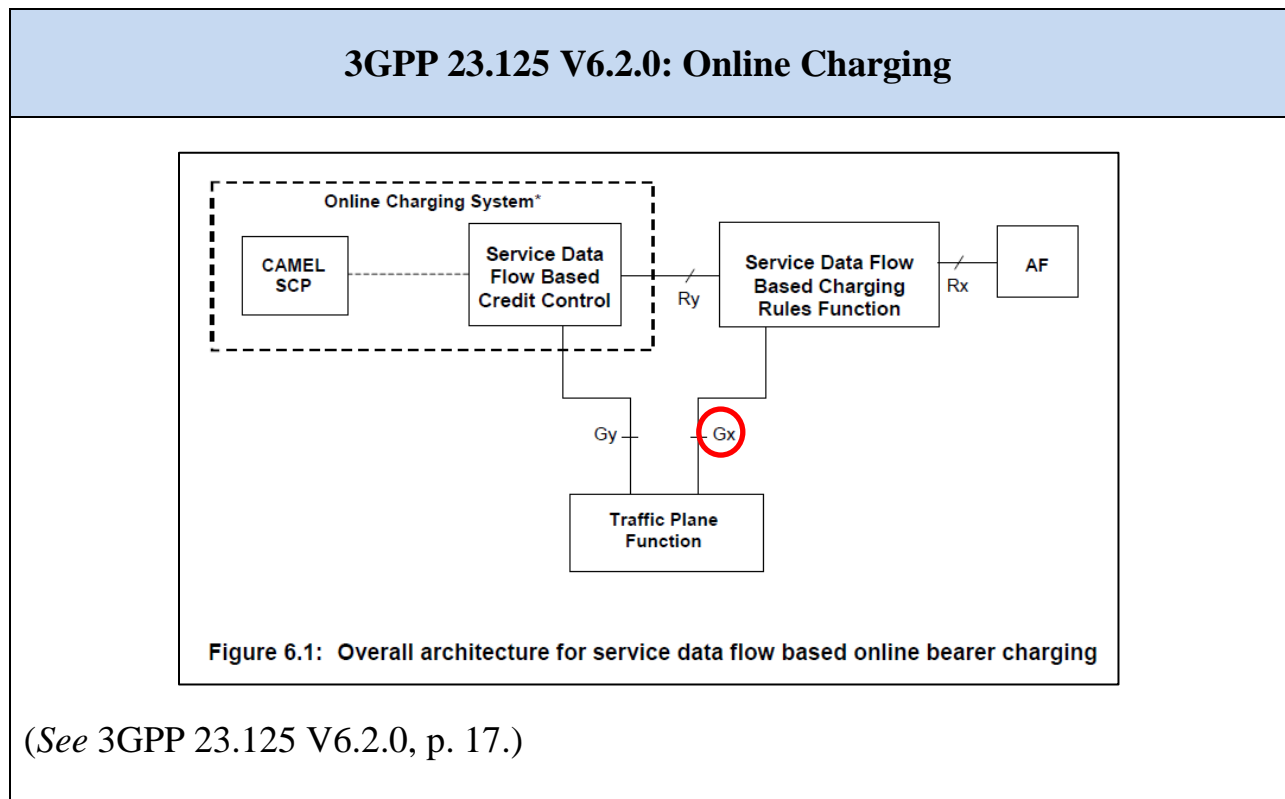
Function (CRF).” Independent method claim 1 also recites “*a Traffic Plane Function*” and “*a Charging Rule Function*” in its limitations. As discussed below, 3GPP 23.125 V6.2.0 discloses these limitations. (Min Decl., ¶¶ 62–67.)

3GPP 23.125 V6.2.0 discloses a “*TPF*”: “The Traffic Plane Function shall be capable of differentiating user data traffic belonging to different service data flows for the purpose of collecting offline charging data and performing online credit control.” (3GPP 23.125 V6.2.0, p. 19; *see also* p. 18 (disclosing the offline charging architecture, including a TPF).)

3GPP 23.125 V6.2.0 also discloses a “*CRF*”: “The Service Data Flow Based Charging Rules Function provides service data flow level charging rules.” (3GPP 23.125 V6.2.0, p. 18.) “This functionality is required for both offline and online charging.” (3GPP 23.125 V6.2.0, p. 18; *see also* pp. 17–18 (disclosing the offline and online charging architectures, including a CRF).)

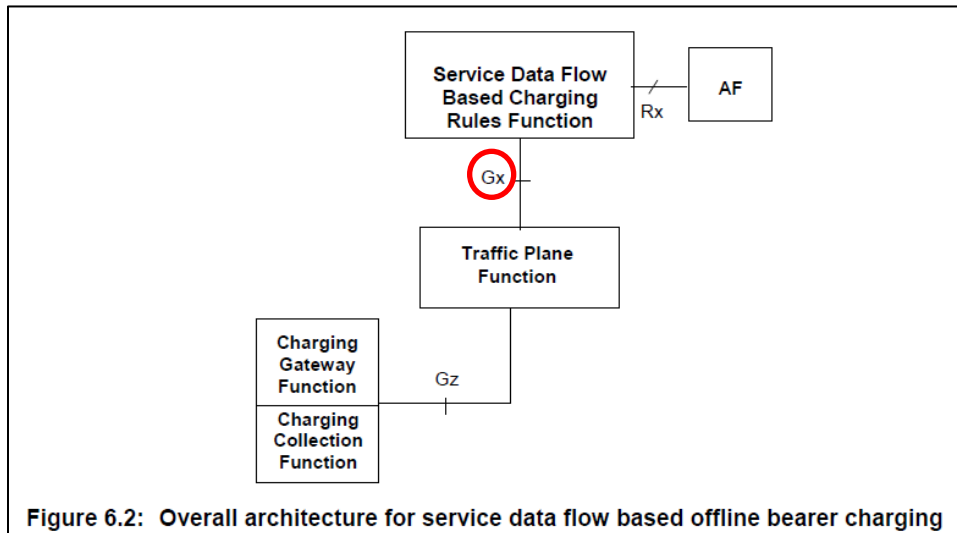
3GPP 23.125 V6.2.0’s TPF is also “in communication with” the CRF. As shown in the annotated Figures below, both the offline and online charging architectures of 3GPP 23.125 V6.2.0 have an interface between the TPF and CRF (referred to as the Gx interface), which the TPF uses for communication with the CRF and vice versa. (*See* 3GPP 23.125 V6.2.0, p. 21.) The Gx, among other things, supports the functions of requesting charging rules from the TPF to the CRF and provisioning charging rules from the CRF to the TPF. (3GPP 23.125

V6.2.0, p. 21.) For example, via this interface, “[t]he TPF requests the charging rules to be applied” and in response to this request, “[t]he CRF identifies the charging rules that are applicable to the TPF.” (3GPP 23.125 V6.2.0, p. 22.) “The CRF then sends the charging rule information to the TPF.” (3GPP 23.125 V6.2.0, p. 22.)



(See 3GPP 23.125 V6.2.0, p. 17.)

3GPP 23.125 V6.2.0: Offline Charging



(See 3GPP 23.125 V6.2.0, p. 18.)

3. 3GPP 23.125 V6.2.0 discloses the “receiv[ing/e]” limitation of independent claims 1 and 5.

Independent claim 1 recites “*receiving, by a Traffic Plane Function (TPF), event triggers to control the TPF from a Charging Rule Function (CRF).*”

Independent claim 5 similarly recites “*receive, from the CRF, event triggers to*

control the TPF.” Petitioner demonstrated in the previous section that 3GPP

23.125 V6.2.0 discloses a TPF in communication with a CRF. 3GPP 23.125 V6.2.0

further discloses that the TPF receives “*event triggers to control the TPF*” from the

CRF. (Min Decl., ¶¶ 68–71.)

In 3GPP 23.125 V6.2.0, “[e]vent triggers apply to both offline and online charging.” (3GPP 23.125 V6.2.0, p. 15.) The event triggers are received at the TPF

from the CRF: “The event triggers are provided by the CRF to the TPF using Provision Charging Rule Procedure.” (3GPP 23.125 V6.2.0, p. 15; *see also* pp. 15–16, 31 (disclosing additional details about the event triggers).)⁶

Event triggers dictate how the TPF shall function, and accordingly control the TPF. (Min Decl., 71.) Specifically, “[e]vent triggers determine when the TPF **shall** signal to the CRF that a bearer has been modified or a specific event has been detected.” (3GPP 23.125 V6.2.0, p. 16 (emphasis added).) Additionally, “the TPF **shall** first use the event triggers to determine whether to request the charging rules for the new bearer characteristics from the charging rules function.” (3GPP 23.125 V6.2.0, p. 20 (emphasis added).) And “[t]he Traffic Plane function **shall** report triggered Events of an existing charging rule for both offline and on-line charging.” (3GPP 23.125 V6.2.0, p. 14 (emphasis added).)

⁶ As discussed in Section IX, the functionality of the TPF receiving event triggers from a CRF was not included in the March 2004 version of 3GPP 23.125 applied in IPR2017-00673 and IPR2017-00698.

4. 3GPP 23.125 V6.2.0 discloses “wherein the event triggers are determined by the CRF,” as recited in claims 1 and 5.

Independent claims 1 and 5 both recite “*wherein the event triggers are determined by the CRF.*” 3GPP 23.125 V6.2.0 discloses these limitations. (Min Decl., ¶ 72.)

The event triggers of 3GPP 23.125 V6.2.0 are determined by the CRF: “the CRF also determines which event triggers shall be monitored by the TPF.” (3GPP 23.125 V6.2.0, p. 25.)⁷

5. 3GPP 23.125 V6.2.0 discloses the “determin[ing/e]” limitation of independent claims 1 and 5.

Independent claims 1 and 5 each recites that the TPF determines “*whether a request for charging rule is required to be sent to the CRF according to the event triggers.*” 3GPP 23.125 V6.2.0 discloses this limitation. (Min Decl., ¶¶ 73–75.)

3GPP 23.125 V6.2.0 discloses a TPF that determines whether a request for charging rule is required to be sent to the CRF: “The TPF requests the charging rules to be applied: [1] At bearer service establishment (PDP context establishment for GPRS) or, [2] At bearer service modification (PDP context modification for

⁷ As discussed in Section IX, the functionality of the CRF determining which event triggers the TPF monitors was not included in the March 2004 version of 3GPP 23.125 applied in IPR2017-00673 and IPR2017-00698.

GPRS) if the Event trigger is met, or [3] At bearer service termination (PDP context deactivation for GPRS).” (3GPP 23.125 V6.2.0, p. 21.)

In 3GPP 23.125 V6.2.0, the TPF makes the determination according to the event triggers: “Event triggers determine when the TPF shall signal to the CRF that a bearer has been modified or a specific event has been detected.” (3GPP 23.125 V6.2.0, p. 16.) “If the bearer is modified by changing the bearer characteristics, the TPF shall first use the event triggers to determine whether to request the charging rules for the new bearer characteristics from the charging rules function.” (3GPP 23.125 V6.2.0, p. 20, *see also* 26–29 (disclosing bearer service modification for online and offline charging, which has the TPF use event triggers to determine whether a request for charging rules is required).)

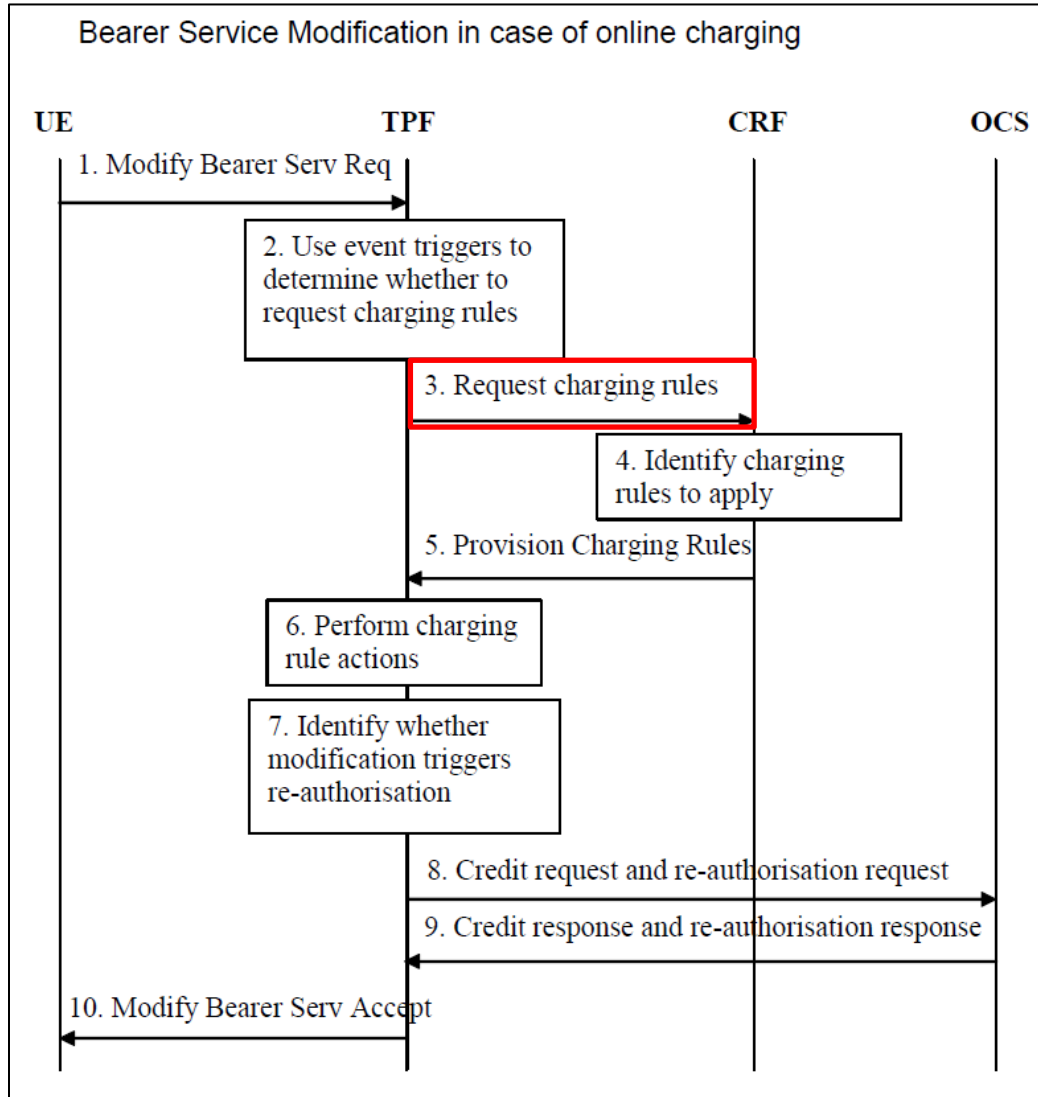
6. 3GPP 23.125 V6.2.0 discloses the “*send[ing]*” limitations of independent claims 1 and 5.

Independent claim 1 recites “*sending, by the TPF, the request for charging rule to the CRF, if one or more of the event triggers received from the CRF is met.*” Independent claim 5 similarly recites “*wherein the TPF is configured to: send the request for charging rule to the CRF if one or more of the event triggers received from the CRF is met.*” 3GPP 23.125 V6.2.0 discloses these limitations. (Min Decl., ¶¶ 76–78.)

The TPF in the system of 3GPP 23.125 V6.2.0 sends the request for a charging rule to the CRF over the Gx interface:⁸ “The GX reference point supports the following functions: ... Request for Charging Rules (from TPF to CRF).” (3GPP 23.125 V6.2.0, p. 21.) Further, as illustrated in figures reproduced from 3GPP 23.125 V6.2.0 provided below with annotation, when bearer service modification is requested in either online and offline charging, the TPF sends a request for charging rules to the CRF. (*See* 3GPP 23.125 V6.2.0, pp. 26–29.)

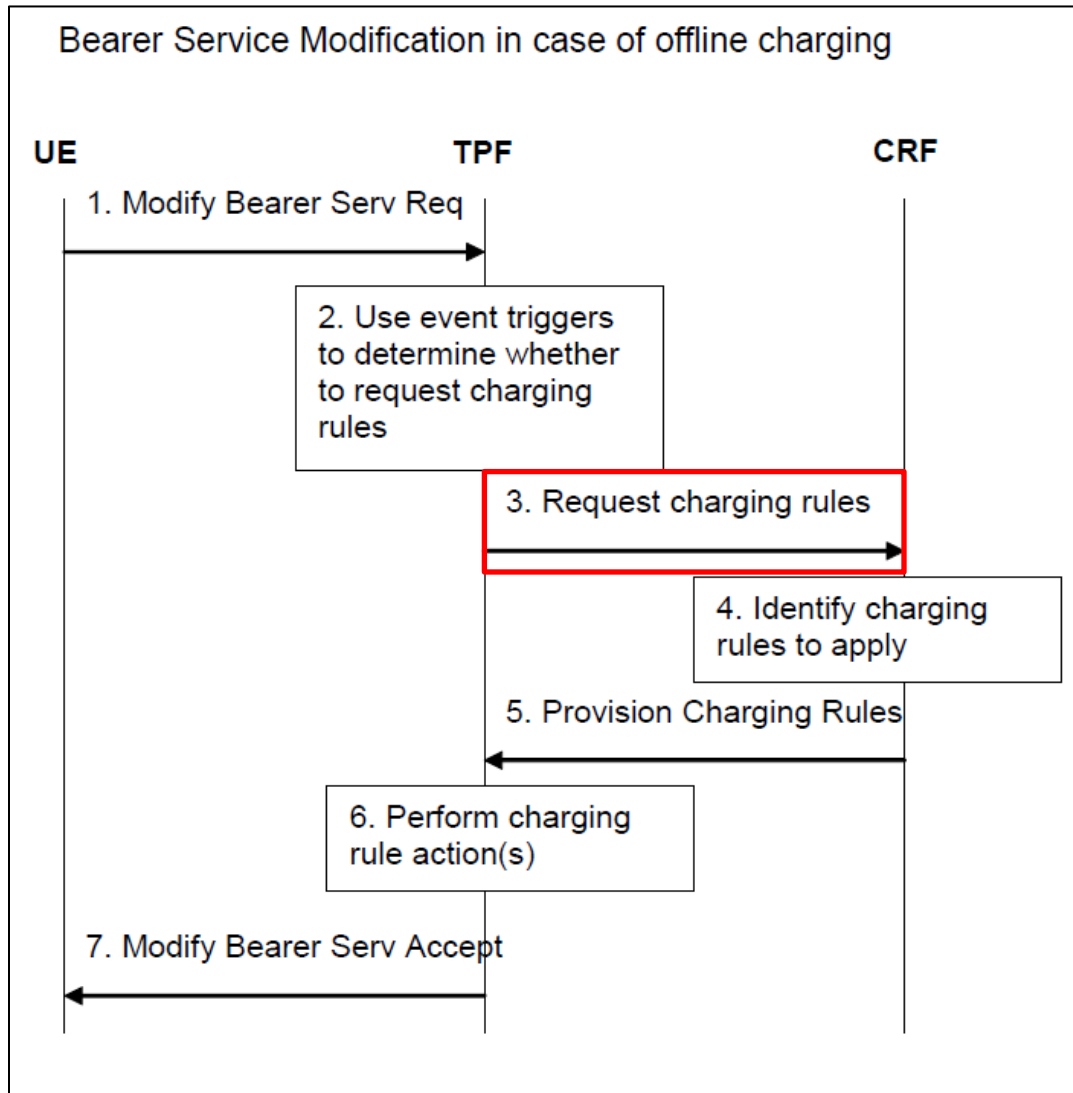
⁸ The Gx interface is a reference point that couples the CRF and TPF and “enables the use of service data flow based charging rules such as counting number of packets belonging to a rate category in the IP-Connectivity Network.” (3GPP 23.125 V6.2.0, pp. 17, 18, 21.)

3GPP 23.125 V6.2.0: Online Charging



(See 3GPP 23.125 V6.2.0, p. 28.)

3GPP 23.125 V6.2.0: Offline Charging

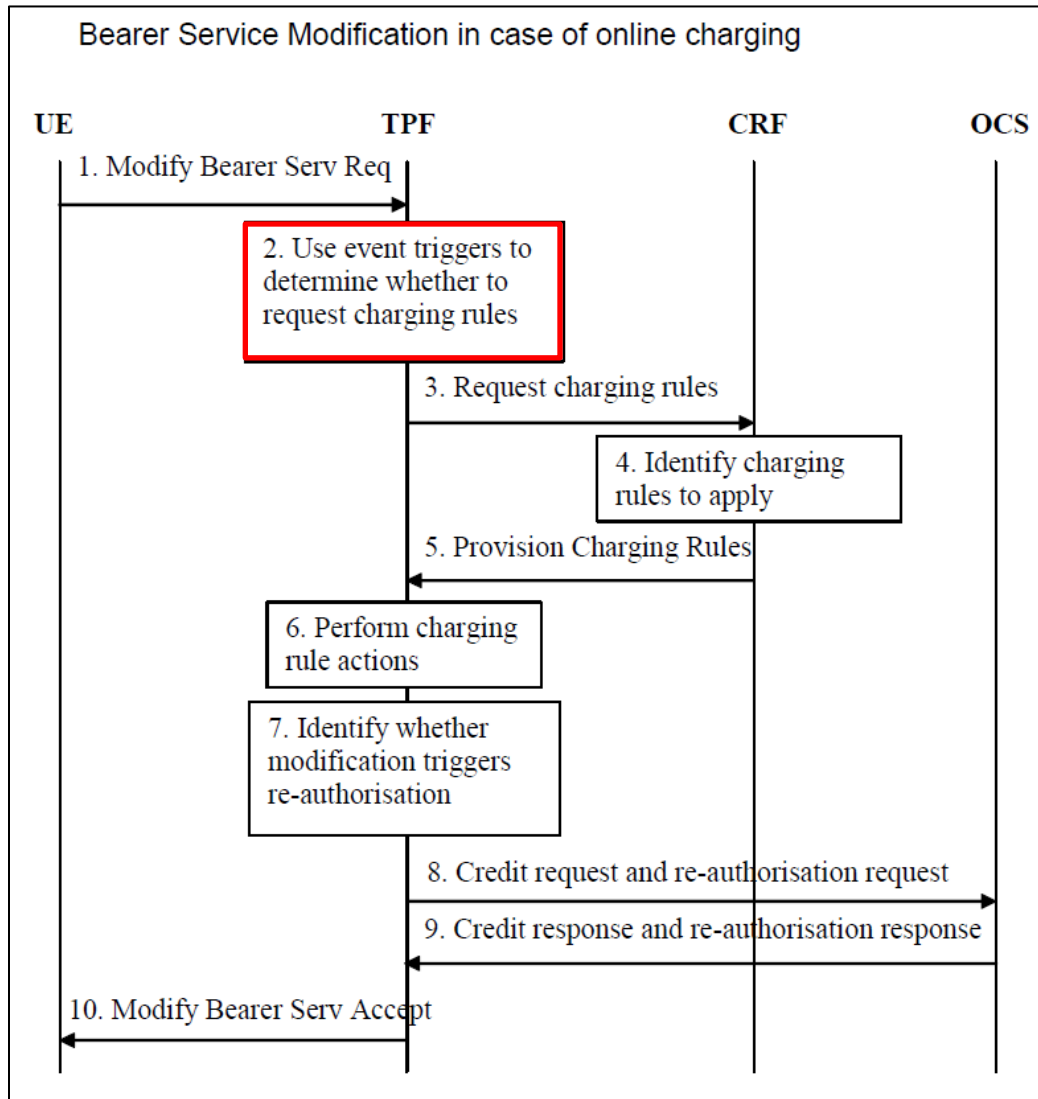


(See 3GPP 23.125 V6.2.0, p. 26.)

The TPF sends the request for charging rules when an event trigger received from the CRF is met: “The TPF requests the charging rules to be applied ... [a]t bearer service modification (PDP context modification for GPRS) if the Event

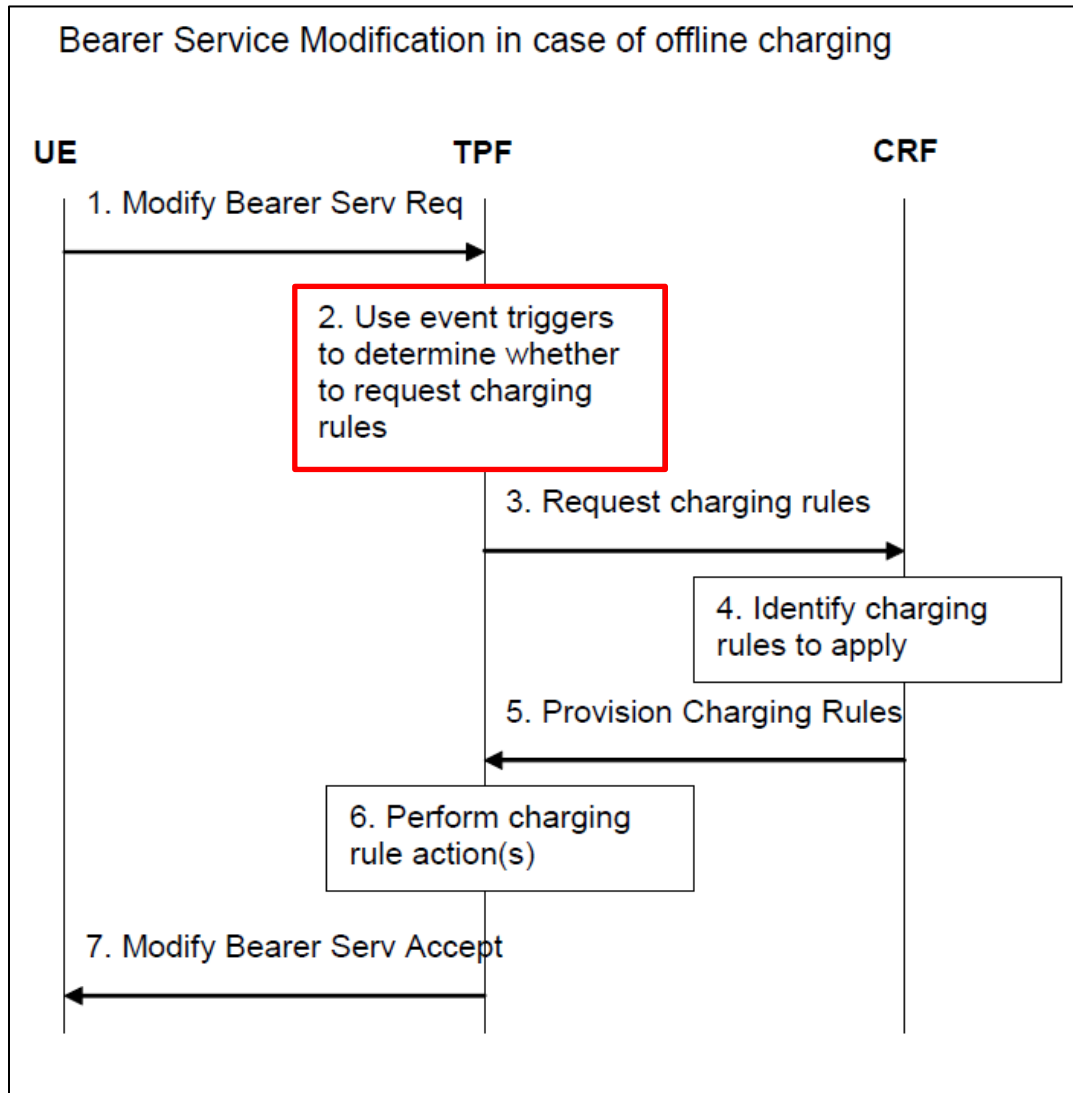
trigger is met.” (3GPP 23.125 V6.2.0, p. 21; *see also* p. 20 (“If the bearer is modified by changing the bearer characteristics, the TPF shall first use the event triggers to determine whether to request the charging rules for the new bearer characteristics from the charging rules function.”).) Further, as shown in the same figures from 3GPP 23.125 V6.2.0 provided below with annotations, the TPF sends a request for charging rules to the CRF after the TPF uses event triggers to determine whether to request charging rules. (*See* 3GPP 23.125 V6.2.0, pp. 26–29.)

3GPP 23.125 V6.2.0: Online Charging



(See 3GPP 23.125 V6.2.0, p. 28.)

3GPP 23.125 V6.2.0: Offline Charging



(See 3GPP 23.125 V6.2.0, p. 26.)

7. 3GPP 23.125 V6.2.0 discloses the “event triggers” limitation of independent claims 1 and 5.

Independent claims 1 and 5 each recite that the event triggers comprise at least one of a list of possible event triggers: “*a change of a Serving GPRS Support*

Node (SGSN), a change of a Public Land Mobile Network (PLMN), a change of a Radio Access Technology (RAT) type, a change of a Traffic Flow Template (TFT), or a change of Quality of Service (QoS)." (Min Decl., ¶ 80.)

3GPP 23.125 V6.2.0 discloses the listed event triggers: "Event triggers include GPRS events such as SGSN change, QoS change, RAT type change, TFT change." (3GPP 23.125 V6.2.0, p. 16.)

B. 3GPP 23.125 V6.2.0 anticipates claims 2 and 6.

Dependent claims 2 and 6 each recites "*wherein the request for charging rule carries an event identifier indicating the met event trigger.*" 3GPP 23.125 V6.2.0 discloses this limitation. (Min Decl., ¶¶ 81–83.) In 3GPP 23.125 V6.2.0, after the TPF determines a request for charging rules is required, "[t]he TPF requests the applicable charging rules indicating a bearer modification, and provides relevant input information for the charging rule selection." (3GPP 23.125 V6.2.0, pp. 26–27.) This relevant input information identifies the met event trigger because, for both online and offline charging, the TPF performs the function of "event indication." (3GPP 23.125 V6.2.0, p. 11.) And when a request for charging rules from the TPF arrives at the CRF, "the [CRF] shall be able to identify whether new charging rules need to be transferred to the Traffic Plane Function and respond accordingly." (3GPP 23.125 V6.2.0, p. 18.)

For the CRF to identify whether new charging rules need to be transferred when an event trigger is met (i.e., for a subsequent request for charging rules), the TPF must, in its request, identify that the charging rules request is “a subsequent request (i.e. for GPRS, a secondary PDP context establishment, or a PDP context modification).” (3GPP 23.125 V6.2.0, p. 21.) The TPF must, in its request, also identify the event “to allow the specific instance in the TPF/CRF to be identified for subsequent data exchange.” (3GPP 23.125 V6.2.0, pp. 21-22.) In other words, when an event trigger is met, the TPF sends an identifier along with its subsequent request for charging rules, and this request indicates the met event trigger such that the CRF knows which charging rules need to be re-provisioned. (Min Decl., ¶ 83; 3GPP 23.125 V6.2.0, p. 22 (“The request must provide further information used for the charging rule selection.”); *see also* pp. 27, 28 (steps 3–4).)

Accordingly, 3GPP 23.125 V.6.2.0 anticipates claims 2 and 6.

C. 3GPP 23.125 V6.2.0 anticipates claims 3 and 7.

Dependent claims 3 and 7 each recites “*wherein the request for charging rule carries charging-relevant input information which is provided to the CRF for charging rule selection.*” 3GPP 23.125 V6.2.0 discloses this limitation. (Min Decl., ¶¶ 84–86.)

3GPP 23.125 V6.2.0’s request for a charging rule carries charging-relevant input information: “The TPF requests the applicable charging rules indicating a

bearer modification, and provides relevant input information for the charging rule selection.” (3GPP 23.125 V6.2.0, pp. 27, 28, *see also* pp. 20, 24, 25, 29, 30 (providing relevant input information during bearer service establishment and bearer termination).) Since the request for charging rules includes relevant input information along with the request, the charging rule carries charging relevant input information. (Min Decl., ¶ 85.)

3GPP 23.125 V6.2.0 discloses that the information is provided to the CRF for charging rule selection: “The request must provide further information used for the charging rule selection.” (3GPP 23.125 V6.2.0, p. 22; *see also* 27, 28.) “The CRF determines the charging rules to be provisioned, based on information available to the CRF (e.g., ... the new information received from the TPF).” (3GPP 23.125 V6.2.0, pp. 27, 28.)

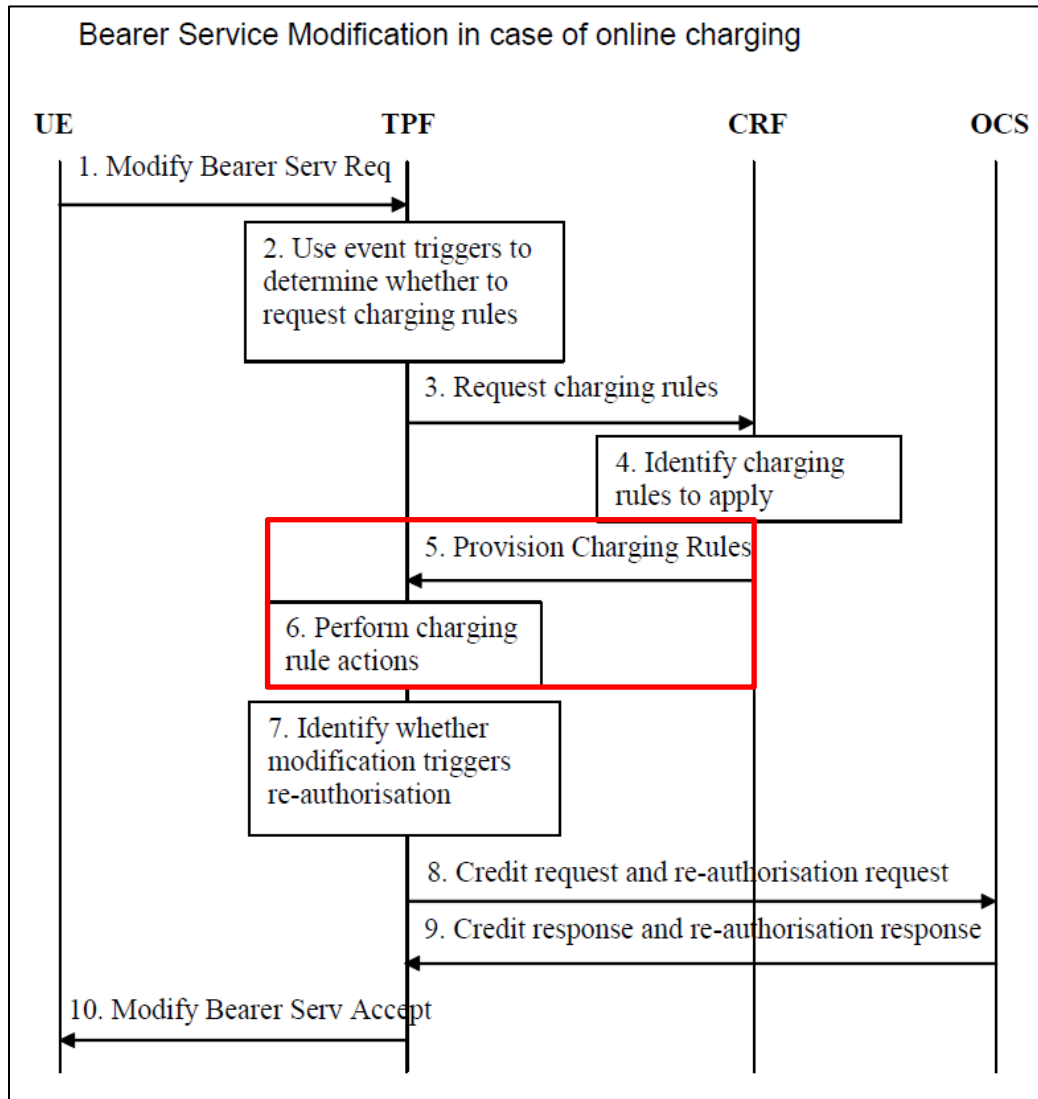
D. 3GPP 23.125 V6.2.0 anticipates claims 4 and 8.

Dependent claim 4 recites “*receiving, by the TPF, a charging rule from the CRF in a charging rule provision procedure.*” Dependent claim 8 similarly recites “*the TPF is further configured to receive a charging rule from the CRF in a charging rule provision procedure.*” 3GPP 23.125 V6.2.0 discloses these limitations. (Min Decl., ¶¶ 87–88.)

The TPF in 3GPP 23.125 V6.2.0 receives the charging rule from the CRF in a charging rule provision procedure: “The event triggers are provided by the CRF

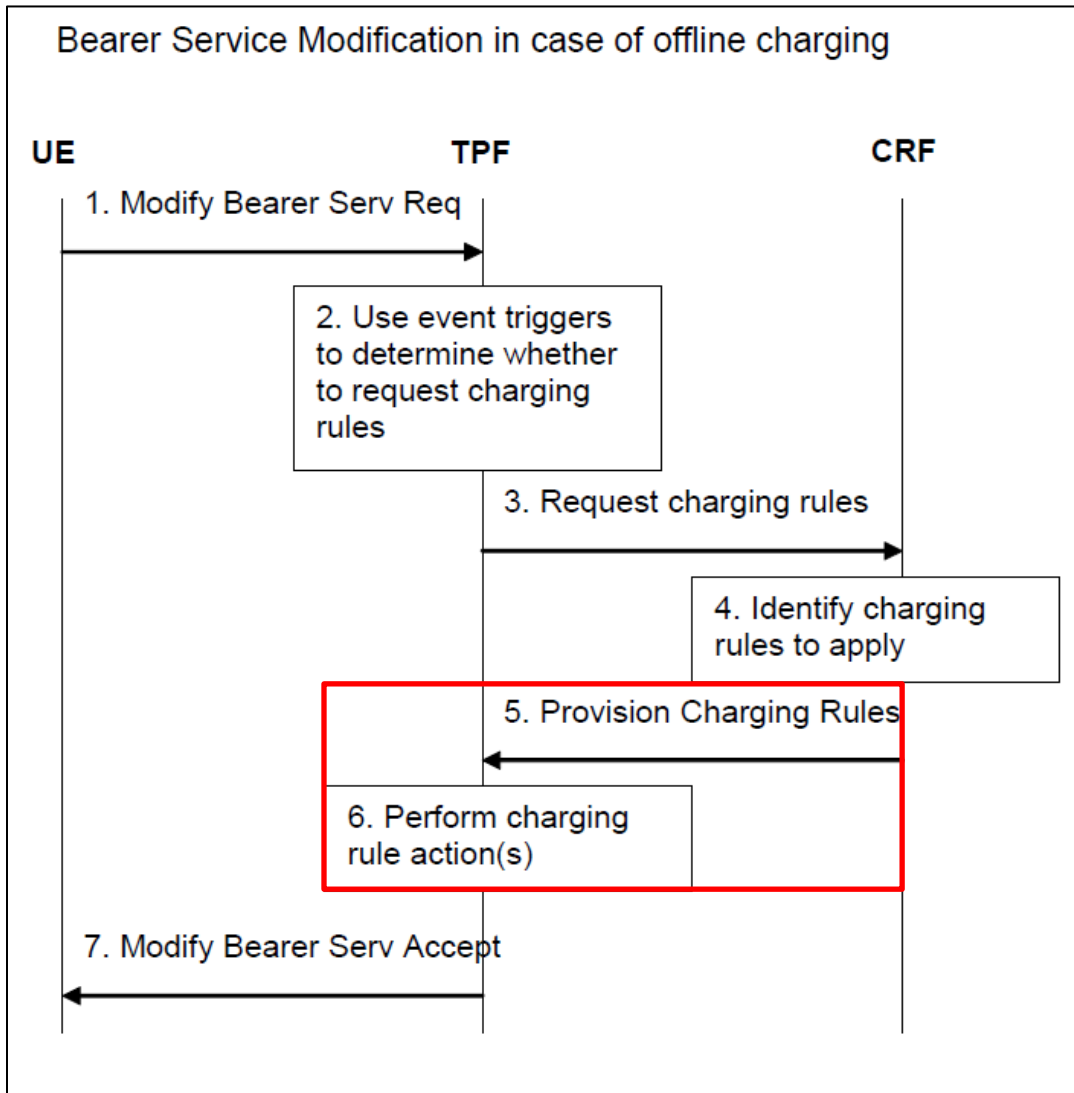
to the TPF using Provision Charging Rule procedure.” (3GPP 23.125 V6.2.0, p. 15.) The TPF also receives charging rules from the CRF in the charging rule provision procedure because “the Provision of Charging Rules may include charging rules and the associated action indications (install, modify, remove).” (3GPP 23.125 V6.2.0, p. 22.) Further, as shown below, 3GPP 23.125 V6.2.0 depicts the charging rule provision procedure as steps 5 and 6, that provision (provide) charging rules (step 5) and then perform charging rule action(s) (step 6). (See 3GPP 23.125 V6.2.0, pp. 26–29.)

3GPP 23.125 V6.2.0: Online Charging



(See 3GPP 23.125 V6.2.0, p. 28.)

3GPP 23.125 V6.2.0: Offline Charging



(See 3GPP 23.125 V6.2.0, p. 26.)

E. 3GPP 23.125 V6.2.0 anticipates claim 11.

Dependent claim 11 recites “*wherein the communication system is a general packet radio service (GPRS) communication system, and the TPF is a GPRS*”

Support Node (GGSN).” 3GPP 23.125 V6.2.0 discloses these limitations. (Min Decl., ¶¶ 89–91.)

The communication system described in 3GPP 23.125 V6.2.0 is a GPRS communication system: “The current level of traffic differentiation and traffic-type awareness of the GPRS architecture shall be extended beyond APN and PDP Context level.” (3GPP 23.125 V6.2.0, p. 9, *see also* p. 8 (stating that GPRS stands for “General Packet Radio Service”).) 3GPP 23.125 V6.2.0 also states that both the offline and online architectures are GPRS communication systems. (*See* 3GPP 23.125 V6.2.0, pp. 9, 21, 24–30.) And the “[e]vent triggers include GPRS events....” (3GPP 23.125 V6.2.0, p. 16.)

In the architecture of 3GPP 23.125 V6.2.0, the TPF is a GPRS Support Node (GGSN): “For GPRS, the traffic Plane Function is a logical function allocated to the GGSN.... For GPRS, the TPF/GGSN shall be able to do separate counts per PDP context for a single service data flow if it is transferred on more than one PDP context.” (3GPP 23.125 V6.2.0, p. 19; *see also* pp. 8, 13, 24–26, 28–30 (calling the TPF a GGSN).)

VII. Ground 2: Claims 9 and 10 are obvious over 3GPP 23.125 V6.2.0 and Duffield.

Claims 9 and 10 depend from independent claims 4 and 8, respectively. 3GPP 23.125 V6.2.0 teaches every limitation of dependent claims 4 and 8. 3GPP

23.125 V6.2.0 does not explicitly teach or suggest that the TPF performs “*charging information statistics according to the charging rule*” as recited in dependent claims 9 and 10. However, the combination of 3GPP 23.125 V6.2.0 and Duffield teaches this limitation, rendering claims 9 and 10 obvious. (Min Decl., ¶¶ 92–98.)

The TPF disclosed in 3GPP 23.125 V6.2.0 performs charging information statistics: “Flow based charging is assumed to provide complete coverage of all traffic, but it shall be possible to collect statistics on data volumes, which were not subject to service data flow based charging.” (3GPP 23.125 V6.2.0, p. 9.) These statistics are performed at the TPF, since the TPF bears the IP flows and the TPF is the function that generates reports including information such as “service data flow level byte counts (for volume based charging) and service data flow durations (for time based charging).” (3GPP 23.125 V6.2.0, pp. 11, 14 (“The Traffic Plane function shall report bearer charging information for online charging [and] The Traffic Plane function shall report bearer charging information for offline charging”); Min Decl., ¶ 93.)

3GPP 23.125 V6.2.0 uses statistics to understand the traffic flows, such as the data volumes not subject to service data flow based charging. (3GPP 23.125 V6.2.0, pp. 9, 11.) 3GPP 23.125 V6.2.0 also reports charging information based on the application of the bearer charging rules in the TPF. (3GPP 23.125 V6.2.0, p. 14.) From these teachings, a POSITA would have been motivated to find

references that describe the implementation details for methods and systems that perform statistics in a flow-based charging system. (Min Decl., ¶ 95.) This would have led a POSITA to Duffield.

Duffield explains that “[s]ervice providers of data networks [were] increasingly employing usage measurements as a component in customer charges.” (Duffield, ¶ 3.) Specifically, Duffield teaches “[a] complementary approach ... to measure (or at least summarize) all traffic, and then transmit the measurements to a back-office system for interpretation according to the charging policy.” (Duffield, ¶ 5.) These usage-measurement summaries can be created “by gathering packet headers, **or by forming flow statistics.**” (Duffield, ¶ 5 (emphasis added).) The gathering of these statistics is **essential**, according to Duffield: “[t]he collection of network usage data is essential for the engineering and management of communications networks.” (Duffield, ¶ 6.) Thus, to the extent 3GPP 23.125 V6.2.0 does not explicitly perform statistics *according to the charging rule*, Duffield discloses this feature because Duffield performs charging information statistics according to the “charging policy.” (Min Decl., ¶¶ 96–98.)

Given the importance of gathering and calculating such statistics in a charging system, as Duffield explains, it would have been obvious to perform such functionality in the TPF according to the charging rule. (Min Decl., ¶ 98.) As explained above, 3GPP 23.125 V6.2.0 discloses a CRF that provisions charging

rules to a TPF, which enforces the charging rules. (3GPP 23.125 V6.2.0, pp. 18–20, 31.) Duffield teaches that the measurements are made “according to the charging policy.” (See Duffield, ¶ 5) And since the systems in 3GPP 23.125 V6.2.0 enforces the charging rules/policy at the TPF, a POSITA would have found it obvious to incorporate Duffield’s teachings such that the TPF performs charging information statistics according to the charging rule. (Min Decl., ¶ 98.)

VIII. Ground 3: Claims 2 and 6 are obvious over 3GPP 23.125 V6.2.0.

Dependent claims 2 and 6 each recites “*wherein the request for charging rule carries an event identifier indicating the met event trigger.*” Petitioner established above in Section VI.B that 3GPP 23.125 V.6.2.0 teaches the subject matter of these claims. However, 3GPP23.125 V.6.2.0 does not explicitly provide the format and content of the message sent between the TPF and CRF. To the extent that the Board determines that 3GPP 23.125 V6.2.0 does not expressly or inherently disclose a request that carries an event identifier indicating the met event trigger, a POSITA would have found it obvious to include such an event identifier in the request from the TPF to the CRF. Explicitly identifying the met event trigger to the component that must select charging rules based on the occurrence of the event is the most efficient way for the TPF to signal to the remote CRF the occurrence of the event. (Min Decl., ¶ 100.) Indeed, it was well-known and common place to include an identification of an associated event or

condition in a message between two network elements. (Min Dec., ¶ 100; 3GPP 29.207, Ex. 1052, pp. 34, 54 (“indicating the detection of specific events”); Körling, Ex. 1009, 2:19–21, 6:65–7:2, 9:17–19, 10:11-1, 12:28–32.)

Further, 3GPP 23.125 V.6.2.0 (to the extent the Board does not find it explicitly or inherently disclosed) motivates the inclusion of an event identifier. As 3GPP 23.125 V6.2.0 explains, the TPF needs to send the CRF relevant input information, and “the [CRF] shall be able to identify whether new charging rules need to be transferred to the Traffic Plane Function and respond accordingly.” (3GPP 23.125 V6.2.0, p. 18.) The most efficient way to identify whether new charging rules need to be transferred is to identify the event that triggered the request. (Min Dec., ¶ 101.) A POSITA would have also understood that an identifier is the most expedient way for the CRF to return the proper charging rules and would prevent the CRF from sending unnecessary rules that do not need to be re-provisioned and would otherwise add unnecessary traffic in the network. (Min Dec., ¶ 101.) Thus, in view of 3GPP 23.125 V6.2.0’s own teachings about the requirement for the CRF to include relevant input information to identify which charging rules need to be provisioned to a TPF during subsequent request, a POSITA would have found it obvious to have the request for charging rule carry an event identifier indicating the met event trigger. (Min Dec., ¶¶ 99-101.)

IX. Grounds 1–3 are not redundant.

The grounds in this Petition are not redundant in view of the grounds in IPR2017-00673 and IPR2017-00698. Although the petitioners in IPR2017-00673 and IPR2017-00698 presented grounds relying upon the 3GPP 23.125 specification, the petitioners in IPR2017-00673 and IPR2017-00698 used a March 2004 version of the specification instead of the September 2004 version applied in the present IPR proceeding.

The September 2004 version of the 3GPP 23.125 specification, which Petitioner now presents in Grounds 1 and 2, is materially different than the March 2004 version and is therefore not redundant to the March 2004 version. (*See* Ex. 1053 (redlines showing the differences between 3GPP 23.125 V2.0.0 and 3GPP 23.125 V6.2.0). For example, among the many differences between the two documents, the March 2004 version of 3GPP 23.125 does not disclose a CRF that determines event triggers and a TPF that receives event triggers from the CRF. But the September 2004 version of 3GPP 23.125 discloses this feature. *Supra* Sections VI.A.3 and VI.A.4. These are the very features that Patent Owner alleged overcame the prior art during prosecution: “the event trigger is not determined by the CRF and there is no transmission of the event trigger from the CRF to [the] TPF to control the TPF.” (Ex. 1002, p. 331 (Response mailed Sept. 24, 2012))

Notably, the petitioners in IPR2017-00673 and IPR2017-00698 did not rely on the March 2004 version of 3GPP 23.125 as disclosing these claim limitations.

Because Petitioner is applying a materially-different reference (3GPP 23.125 V6.2.0, which was published in September 2004) in a different manner (anticipation versus obviousness), Grounds 1 and 2 are not redundant to the previously-filed grounds.

X. Conclusion.

Petitioner has demonstrated a reasonable likelihood of being able to prove, by a preponderance of the evidence, that: (1) 3GPP 23.125 teaches every element of claims 1–8 and 11; and (2) 3GPP 23.125 in view of Duffield teaches every element of claims 9 and 10. Accordingly, Petitioner requests *inter partes* review of claims 1–11 of U.S. Patent No. 8,531,971.

Respectfully submitted,

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CERTIFICATION OF SERVICE (37 C.F.R. §§ 42.6(e), 42.105(a))

The undersigned hereby certifies that on September 8, 2017, true and correct copies of the foregoing **PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 8,531,971**, the accompanying Power of Attorney, and all associated exhibits were served in their entirety on the following party via FedEx®:

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**CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME
LIMITATION, TYPEFACE REQUIREMENTS, AND TYPE STYLE
REQUIREMENTS**

1. This Petition complies with the type-volume limitation of 14,000 words, comprising 9,197 words, excluding the parts exempted by 37 C.F.R. § 42.24(a).

2. This Petition complies with the general format requirements of 37 C.F.R. § 42.6(a) and has been prepared using Microsoft® Word 2010 in 14-point Times New Roman.

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