

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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ERICSSON INC.,  
Petitioner,

v.

KONINKLIJKE KPN N.V. and NEDERLANDSE ORGANISATIE VOOR  
TOEGEPAST-NATUURWETENSCHAPPELIJK ONDERZOEK TNO,  
Patent Owners.

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Case No. IPR2024-00237  
Patent 11,259,338

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**PETITION FOR *INTER PARTES* REVIEW  
OF U.S. PATENT NO. 11,259,338**

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**EXHIBIT LIST**

<b>Exhibit No.<sup>1</sup></b>	<b>Description</b>
<b>1001</b>	U.S. Patent No. 11,259,338 to Strijkers et al. (“the ’338 Patent”)
<b>1002</b>	Prosecution File History for the ’338 Patent
<b>1003</b>	Declaration of Zygmunt Haas
<b>1004</b>	International Pub. No. WO 2012/150882 to <i>Ostrup</i> et al. (“ <i>Ostrup</i> ”)
<b>1005</b>	3GPP TS 23.401 v.12.6.0 (“ <i>23.401</i> ”)
<b>1006</b>	U.S. Patent Pub. No. US 2013/0303114 to Ahmad et al. (“ <i>Ahmad</i> ”)
<b>1007</b>	Curriculum Vitae of Dr. Zygmunt Haas
<b>1008</b>	Declaration of Craig Bishop (3GPP date verification)
<b>1009</b>	Oxford American Dictionary, 2010 (excerpts).
<b>1010</b>	Claim Listing

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<sup>1</sup> Citations to patents are made by column and line cites; citations to patent publications are made by paragraph number; citations to other exhibits are made to the exhibit page number.

## I. INTRODUCTION

Ericsson Inc. (“Petitioner”) submits this Petition for *Inter Partes* Review (“IPR”) of claims 1-11 and 13-14 of U.S. Patent No. 11,259,338 (the “’338 Patent”). The ’338 Patent relates to handling connection setup requests in telecommunications networks. EX1001, 1:14-18. The independent claims are directed to the concept that a network node intercepts a connection setup request sent from a user equipment (UE) to a radio access network (RAN) and determines whether to fulfill the connection request based on available resources. EX1001, 14:2-25. If the request is not an emergency and if the network node has sufficient unreserved resources that are not reserved for so-called “*premium services*,” the connection setup request is passed on towards the network for further processing. *Id.*

In the Notice of Allowance, the Examiner stated that the “[i]nvention is directed towards supporting *premium services* in a wireless *telecommunication network* by blocking non-premium traffic and giving preference to *premium* traffic depending on available capacity,” but acknowledged that the “prior art discloses access class barring which is used to give priority to a particular class of traffic.” EX1002, 15 (emphasis in original). Techniques for reserving resources for so-called premium services were already well-known in the art at the time of the ’338 Patent. The grounds presented in this petition include art that was not before the Examiner, including *Ostrup*. *Ostrup* specifically teaches enabling access to a base station for

privileged (*i.e.*, “*premium*”) sessions, including the ability to pre-reserve resources for emergency calls and other high priority connection requests. EX1004, [00010].

The remaining concepts in the claims are taught or rendered obvious over *Ostrup* in light of the teachings and requirements of Technical Specification (TS) 23.401 of the LTE standard (which teaches standardized procedures for handling connection requests in LTE) and/or *Ahmad*. EX1004, [00030]-[00034], [00041-00042]; EX1005, 91-102; EX1006, [0112], [0113], [0188]; EX1003, Sections VIII and IX. As a result, the ’338 Patent represents no novel or non-obvious advance over the prior art. EX1003, Sections VIII and IX.

## **II. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8(A)(1)**

### **A. Real Party-in-Interest under 37 C.F.R. § 42.8(b)(1)**

RPI: The real parties in interest are Ericsson Inc. and Telefonaktiebolaget LM Ericsson. No other parties exercised or could have exercised control over this Petition; no other parties funded or directed this Petition.

### **B. Related Matters under 37 C.F.R. § 42.8(b)(2)**

Petitioner is not aware of any related matters that may affect, or may be affected by, decisions in this proceeding.

### **C. Lead and Back-Up Counsel under 37 C.F.R. § 42.8(b)(3)**

Petitioner provides the following designation of counsel.



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**D. Service Information under 37 C.F.R. § 42.8(b)(4)**

A copy of this entire Petition, including all Exhibits and a Power of Attorney, is being served by FEDERAL EXPRESS, costs prepaid, to the address of the attorney or agent of record at the USPTO: Hamilton, Brook, Smith & Reynolds, P.C., 55 Old Bedford Rd. Suite 200, Lincoln, MA 01773.

Petitioner consents to electronic service at the addresses provided above for lead and back-up counsel. A Power of Attorney is filed concurrently herewith under 37 C.F.R. § 42.10(b).

**III. FEES**

The Office is authorized to charge the fee in 37 C.F.R. § 42.15(a) to Deposit

Account No. 02-0384 and any additional fees that are due.

#### **IV. REQUIREMENTS UNDER 37 C.F.R. § 42.104**

##### **A. Grounds for Standing**

Petitioner certifies that the '338 Patent is eligible for IPR and that Petitioner is not barred or otherwise estopped.

##### **B. Priority Date**

The '338 Patent was filed as a PCT application on December 17, 2015. EX1001, Code 22. The '338 Patent entered national stage under 35 U.S.C. § 371 from PCT No. PCT/EP2015/080174 on June 20, 2017. *Id.*, Code 86. The '338 Patent claims priority on its face to EP application EP14199719, which was filed on December 22, 2014. *Id.*, Code 30. For purposes of this Petition, Petitioner assumes without conceding that under AIA § 102 the date of the earliest priority is no earlier than December 22, 2014.

##### **C. Prior Art**

**Exhibit 1004** – International Pub. No. WO 2012/150882 to Ostrup et al. (“*Ostrup*”) was filed as a PCT application on May 4, 2011, as International App. No. PCT/SE11/50558 and published in English on November 8, 2012. EX1004, Codes 21-22, 25-26, and 43. *Ostrup* qualifies as prior art under at least 35 U.S.C. § 102(a)(1).

**Exhibit 1005** – 3GPP TS 23.401 v.12.6.0 (“23.401”) was published by 3GPP by September 17, 2014. EX1008, ¶43. 23.401 qualifies as prior art under at least 35 U.S.C. §102(a)(1).

**Exhibit 1006** – U.S. Patent Publication No. US 2013/0303114 to *Ahmad* et al. (“*Ahmad*”) was filed on May 9, 2013 as App. No. 13/890,640 and published on November 14, 2013. EX1006, Codes 10, 21-22, and 43. *Ahmad* qualifies as prior art under at least 35 U.S.C. § 102(a)(1).

**D. Identification of Challenge and Statement of Precise Relief Requested**

Petitioner requests IPR of claims 1-11 and 13-14 of the ’338 Patent based on the following grounds:

Ground	Claims	Prior Art
1	1, 8-11, 13-14	§103 – <i>Ostrup</i> (EX1004) in view of 23.401 (EX1005)
2	2-7	§103 – <i>Ostrup</i> in view of 23.401 and <i>Ahmad</i> (EX1006)

Submitted with this Petition is a declaration of Dr. Zygmunt Haas (EX1003), a qualified technical expert. Also submitted is a declaration of Craig Bishop (EX1008), which establishes the public availability of 23.401 (EX1005).

**E. Institution is Proper Under § 325(d) and *Advanced Bionics*.**

None of the *Becton, Dickinson* factors weighs in favor of discretionary denial

under § 325(d). *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017) (precedential). *Ostrup, 23.401*, and *Ahmad* were not cited during prosecution of the '338 Patent. While a different version, v.9.16.0, of *23.401* was cited in an IDS dated September 2, 2021, it was not used in a rejection and was not the subject of any argument regarding patentability. The Board has declined to exercise its discretion to deny institution in situations where Petitioner relied upon prior art that was cited on the face of the challenged patent but was “not applied by the examiner...in any rejection of claims.” *Comcast Cable Communs., LLC v. Promptu Sys. Corp.*, Case No. IPR2018-00342, Paper 13 at 17 (PTAB July 19, 2018).

Moreover, the Examiner did not have the benefit of reviewing any version of *23.401* in light of *Ostrup* or *Ahmad*. This Petition thus does not present a situation in which “the same or substantially the same prior art or arguments previously were presented to the Office.” 35 U.S.C. § 325(d); *Oticon Medical AB et al. v. Cochlear Limited*, IPR2019-00975, Paper 15, 9-20 (PTAB Oct. 16, 2019) (precedential) (finding the first step of the *Advanced Bionics* framework was not satisfied because the particular combinations set forth in the petition were not considered by the examiner).

## **V. '338 PATENT OVERVIEW**

### **A. '338 Patent**

The '338 Patent describes methods for handling connection setup requests in a telecommunications network. EX1001, 1:14-18. The patent recognizes that prior solutions exist for determining whether to fulfill a connection setup request requesting establishment of a dedicated connection setup for a particular service in an LTE network. *Id.*, 1:22-26. The patent also recognizes that an existing approach involves a two-step process of first determining whether a subscriber has a right to use the requested service and then determining whether resources are available within the network to fulfil the request. *Id.*, 1:26-30. The '338 Patent contends that this two-step process “is not necessarily the most efficient approach because it is the radio access network (RAN) part of a telecommunications network, in particular the eNB serving the terminal, that typically presents problems in that the RAN part of the network does not have the resources to fulfil the request, which only becomes apparent in the second step.” *Id.*, 1:39-45.

The '338 Patent explains that the “RAN part of a telecommunications network is most prone to congestion.” *Id.*, 2:59-61. The patent further explains that some of these problems may be reduced or eliminated by intercepting connection setup requests in the RAN so that a determination can be made as to whether the RAN has sufficient resources to handle the request before passing the request on to the core network. *Id.*, 2:19-45. The '338 Patent further explains that part of that determination includes reserving resources exclusively for premium services and

determining whether non-premium requests can be fulfilled from non-reserved resources. *Id.*, 3:40-51.

The '338 Patent issued with 14 claims including independent claims 1, 9-11, and 14. EX1010 is a claim listing showing the limitations of all claims. Claim 1 is representative and recites:

1. A method for assisting in handling of connection setup requests in a telecommunications network, the method comprising:

intercepting, by a node, a connection setup request from a user equipment (UE) to a control node of a radio access network (RAN) part of the telecommunications network;

identifying, by the node, from the connection setup request, a service for which the connection setup is requested;

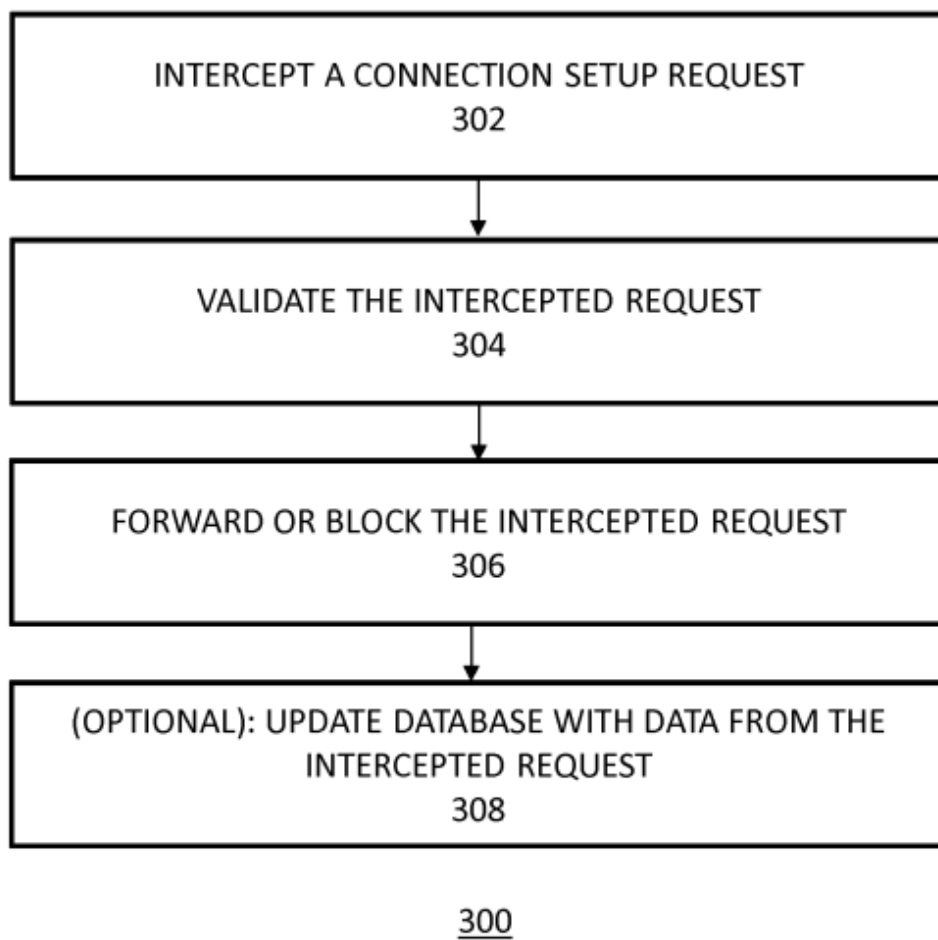
determining, by the node, that the identified service is not an emergency service;

determining, by the node, whether the connection setup request is to be fulfilled based at least on information comprising available resources in a network access point (NAP) serving the UE that are not reserved for premium services, a determination being a positive determination if, at the NAP serving the UE, there is sufficient unused

resource capacity that is not reserved for the connection setup requests for the one or more premium services; and

passing, by the node, the connection setup request for further processing within the telecommunications network only upon positive determination.

An illustrated embodiment is shown in Figure 3, which provides context for the steps recited in claim 1.



*Id.*, Figure 3. At step 302, “the RAN controller 210 intercepts a connection request

from the UE 206, via the NAP serving the UE (i.e., in this example—the eNB 212), to the control node of the RAN part of the telecommunications network (the control node being in this example the MME 214).” *Id.*, 8:63-9:1. “In step 304, the RAN controller 210 analyzes the intercepted request in order to validate it, i.e. to determine whether the request is to be fulfilled.” *Id.*, 9:12-14. Step 304 includes determining whether non-premium services may be fulfilled from among the resources not pre-reserved for premium services. *Id.*, 9:39-56. “In step 306, if the RAN controller 210 determined in step 304 that the request is to be fulfilled, then the RAN controller 210 passes the request for being processed further in the CN part 204 of the telecommunications network.” *Id.*, 11:37-40. The ’338 Patent acknowledges that step 306 “is known in the prior art.” *Id.*, 11:39-40; EX1003, ¶24.

## **B. ’338 Patent Prosecution History**

On December 17, 2015, the PCT application that led to the ’338 Patent was filed as a national stage entry in the U.S. EX1002, 291. Between May 2019 and July 2021, the Patent Office issued a series of rejections which resulted in a number of amendments to the originally pending claims. *Id.*, 240-243; 231-238; 206-214; 186-193; 170-180; 159-161; 142-153; 125-135. On July 7, 2021, the Examiner issued an Advisory Action indicating that the proposed amendments do not place the application in condition for allowance. *Id.*, 120.

On July 12, 2021, apparently in response to these remarks, Applicant filed a



second RCE amending claim 1 as follows:

the node, that the identified service is not an emergency service;  
determining, by the node, whether the connection setup request  
is to be fulfilled based at least on information **comprising  
available resources in the network access point (NAP)  
serving the UE that are not reserved for premium services, a  
determination being a positive determination if, at the NAP  
serving the UE, there is sufficient unused resource capacity  
that is not reserved for the connection setup requests for the  
one or more premium services** ~~regarding resource use within  
a network access point (NAP) serving the UE;~~

*Id.*, 99-112. On July 19, 2021, the Examiner initiated an interview. *Id.*, 90. On August 13, 2021, the Office Action issued a Notice of Allowance, which amended claims 1, 9, and 10 to address various formalities and canceled claim 11. *Id.*, 79-89. In the Notice of Allowance, the Examiner stated that the “instant invention is directed towards supporting premium services in a wireless telecommunication network by blocking non-premium traffic and giving preference to premium traffic depending on available capacity.” *Id.*, 87. The Examiner also stated that “[t]he cited prior art discloses access class barring which is used to give priority to a particular

class of traffic, however, the instant claims distinguishes.” *Id.* Notably, the cited prior art did not include Petitioner’s primary reference, *Ostrup*, which discloses the concepts that the Examiner referenced in the Notice of Allowance. EX1002.

### **C. Level of Ordinary Skill in the Art**

As of the earliest claimed priority date, a person of ordinary skill in the art (“POSITA”) would be a person with a B.S. degree in electrical engineering or similar discipline, with at least two to three years of telecommunications industry or research experience. EX1003, ¶29. The POSITA would also have had knowledge of the LTE standard, its specifications, and the principles underlying its technical teachings. *Id.* More education may substitute for industry experience and vice versa. *Id.*

## **VI. PRIOR ART SUMMARY**

### **A. *Ostrup* (EX1004)**

Like the ’338 Patent, *Ostrup* discloses establishing connection requests in a telecommunications network. EX1004, [00031]-[00034]. *Ostrup* describes a solution for establishing connections for wireless terminals to a base station for privileged sessions in a cell of a cellular network. *Id.*, [00026]. New resources of the base station are pre-reserved for privileged sessions as soon as it is detected that resources have been seized for a privileged session connection, to compensate for the seized resources in a dynamic manner. *Id.*, [00027].

*Ostrup*'s process for pre-reserving resources in a base station is shown in colored annotated Figure 1, which is reproduced below:

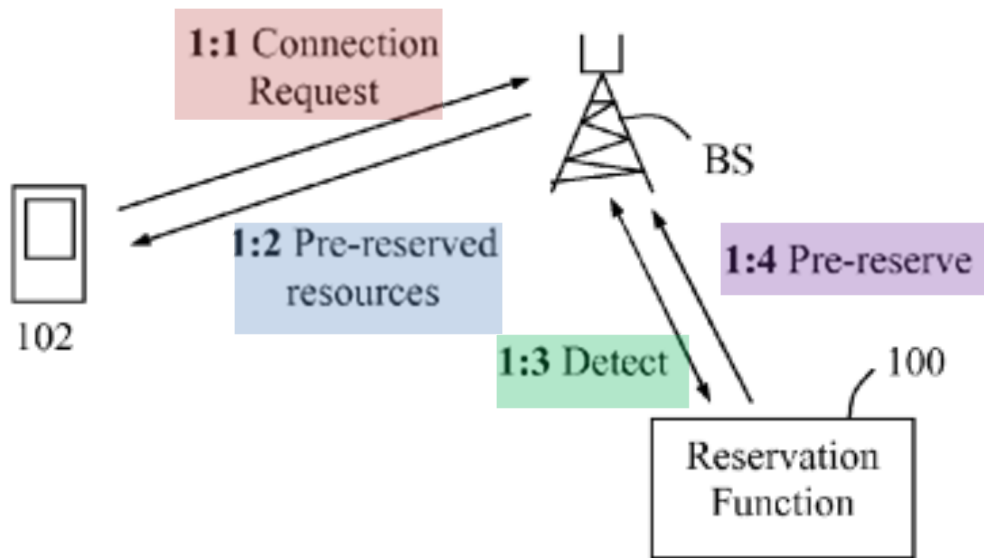


Fig. 1

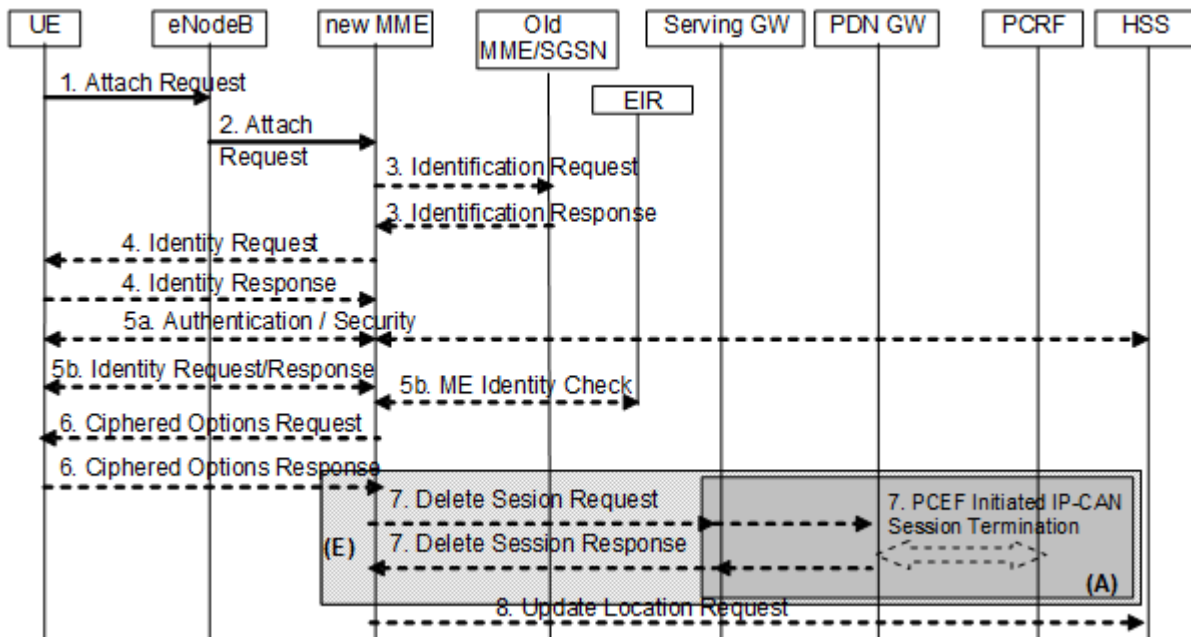
As shown above, *Ostrup* discloses a first action 1.1, where “a wireless terminal 102 makes a connection request for an emergency call, as an example of a privileged session.” *Id.*, [00032]. “In a next action 1:2, the base station BS seizes resources needed for the emergency call from the resources being pre-reserved for privileged sessions, and establishes the connection with the terminal 102 using the seized resources.” *Id.*, [00033]. In a following action 1:3, the reservation function 100 detects “that a connection for the emergency call is established for a terminal 102 using the seized pre-reserved resources, i.e. as described for action 1:2 above.” *Id.*, [00034]. And in a further action 1:4, “the reservation function 100 pre-reserves

new resources for the first base station exclusively for privileged sessions in response to the detecting of action 1:3, to compensate for the resources now occupied by the established privileged session connection.” *Id.*, [00036].

**B. 23.401 (EX1005)**

23.401 “defines the Stage 2 service description for the Evolved 3GPP Packet Switched Domain - also known as the Evolved Packet System (EPS) in this document.” EX1005, 11. Section 5.3.2 of 23.401 provides a detailed description of an attach procedure. *Id.*, 91. The attach procedure may be used when “[a] UE/user needs to register with the network to receive services that require registration.” *Id.*

Figure 5.3.2.1-1, which is reproduced in part below, illustrates this attach procedure:



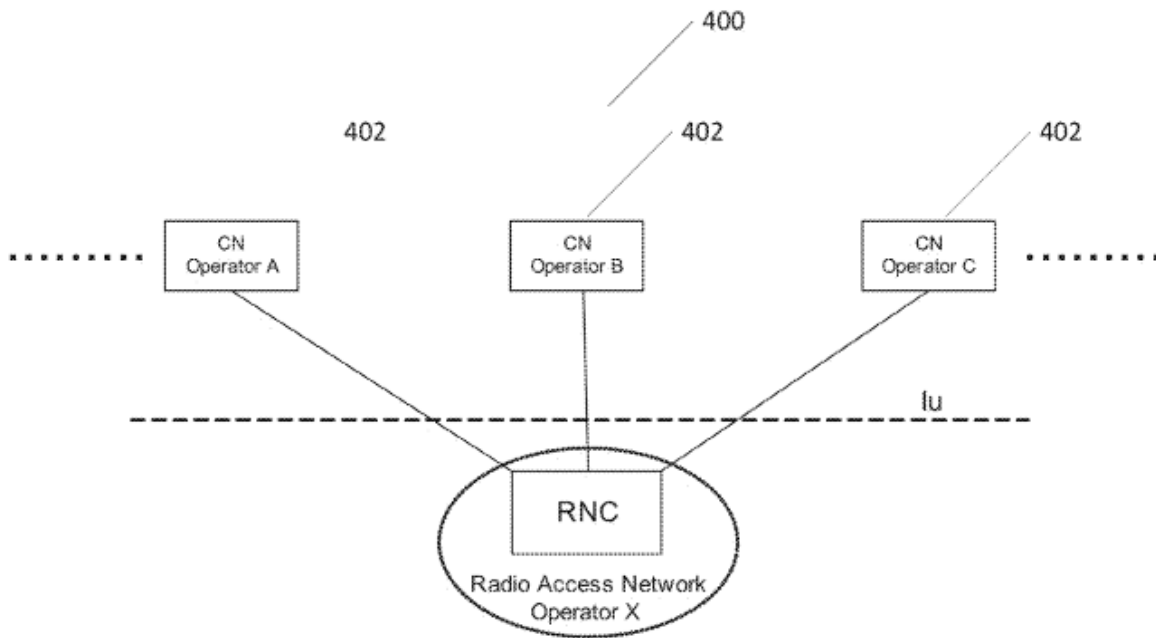
*Id.*, 93. As shown in step 1, “[t]he UE initiates the Attach procedure by the

transmission, to the eNodeB, of an Attach Request [. . .] message together with RRC parameters indicating the Selected Network and the old GUMMEI.” *Id.*, 94. The old GUMMEI is the old Globally Unique MME Identifier. *Id.*, 15.

In step 2, “[t]he eNodeB derives the new MME from the RRC parameters carrying the old GUMMEI and the indicated Selected Network.” *Id.*, 94. “The eNodeB forwards the Attach Request message to the new MME contained in a S1-MME control message (Initial UE message) together with the Selected Network, CSG access mode, CSG ID, L-GW address, and TAI+ECGI of the cell from where it received the message to the new MME.” *Id.*, 94-95.

**C. *Ahmad* (EX1006)**

*Ahmad* is directed to flexible network sharing. EX1006, Title. FIG. 4 of *Ahmad* depicts a diagram illustrating an example Multi-Operator Core Network (MOCN) in which multiple Core Network (CN) nodes are connected to a single Radio Network Controller (RNC):



EX1006, Fig. 4, [0021], [0094]. *Ahmad* describes how, in certain embodiments, a base station (eNodeB) may replace the RNC. *Id.*, [0097]; EX1003, ¶47. *Ahmad* further explains that the resources at the base station may be shared by core network operators. EX1004, [0094]; EX1003, ¶47.

*Ahmad* describes how an eNodeB hosting operator may allow its resources to be used by other operators. EX1006, [0110]; EX1003, ¶48. *Ahmad* further describes how the hosting operator may use network sharing agreements to allocate its resources to the hosted operators. EX1006, [0112]; EX1003, ¶48. *Ahmad* also explains that there may be different types of sharing agreements. *Id.*, [0112]; EX1003, ¶49.

In addition to allocating eNodeB resources based on network sharing

agreements, *Ahmad* describes allocating resource capacity based on priorities. EX1006, [0190]; EX1003, ¶50.

## VII. CLAIM CONSTRUCTION

Petitioner identifies the following terms for construction:

**A. “intercepting [. . .] a connection setup request” (claims 1, 9, 11, and 14)**

“Intercepting [. . .] a connection setup request” as recited by independent claims 1, 9, 11, and 14 should be construed to at least include “receiving a connection setup request for processing before sending it towards its intended destination.” EX1003, ¶35. This is consistent with the claim language and the ’338 Patent specification. *Id.* For example, claims 1 and 9 recite “intercepting, **by a node**, a connection setup request from a user equipment (UE) **to a control node** of a radio access network (RAN) part of the telecommunications network.” EX1001, claims 1 and 9.<sup>2</sup> Accordingly, the claimed “node” receives a connection setup request that is intended for a control node. *Id.* And after “intercepting” the request, the claims require the node to perform several determining steps on the request before “passing . . . the connection setup request **for further processing** within the telecommunications network” if there is a positive determination. *Id.*, claims 1 and 9. “Intercepting” is recited in independent claims 11 and 14 in a similar manner. *Id.*

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<sup>2</sup> All emphasis is added unless otherwise stated.

This interpretation is also consistent with the '338 Patent specification. EX1001; EX1003, ¶36. The specification never explicitly defines “intercepting.” *Id.* But the specification confirms that the node intercepts connection setup requests from UEs that are destined elsewhere. EX1001, 2:24-28 (“The method includes intercepting a connection setup request from (i.e., sent by) a user equipment (UE) to (i.e., destined for) a control node of a RAN part of the telecommunications network.”). In addition, with respect to Figure 2, the '338 Patent describes a RAN controller 210 as intercepting connection setup requests. *Id.*, 8:25-35. And while this description does not elaborate on the meaning of “intercepting,” the figure suggests that the RAN controller 210 receives the connection setup request for processing before sending it towards its intended destination. *Id.*, Fig. 2; EX1003, ¶36. Notably, the specification also states that the RAN controller 210 “may be viewed as a logical entity” and that, while various elements are shown in Figure 2, their functionality “could be implemented in lesser number of individual elements . . .” EX1001, 8:25-26, 8:45-48. This suggests that the functionality of the RAN controller 210 could be implemented in the eNB, particularly given that the claim limitation requires intercepting a connection setup request “*from a user equipment (UE)*” and given that the eNB receives the connection request from the UE. EX001, claims 1, 9, 11, and 14; EX1003, ¶36.



With respect to Figure 3, the specification states that “[t]he method 300 may begin with step 302, where the RAN controller 210 *intercepts a connection request from the UE 206, via the NAP serving the UE (i.e., in this example—the eNB 212)*, to the control node of the RAN part of the telecommunications network (the control node being in this example the MME 214).” EX1001, 8:63-9:1. Given the description discussed above that the RAN controller 210 may be a logical entity whose functionality could be implemented in other network elements, and given the description with respect to Figure 3 that the RAN controller 210 intercepts a connection request from the UE *via the eNB* (which receives the request from the UE), it is consistent to interpret the claimed “intercepting” a connection request as at least including “receiving a connection setup request for processing before sending it towards its intended destination.” EX1003, ¶37.

This claim construction is also consistent with a dictionary definition of the term at the time of the application that resulted in the ’338 Patent. *Id.*, ¶38. For example, the Oxford American Dictionary includes a definition of “interception” as “an act or instance of receiving electronic transmissions before they reach the intended recipient.” EX1009, 4.

## **VIII. ASSERTED GROUNDS**

### **A. Ground 1: *Ostrup* in view of 23.401**

#### **1. Rationale and Motivation to Combine**

A POSITA would have been motivated to combine *Ostrup* with 23.401, at least because *Ostrup* is intended to be implemented with well-known LTE technology described by 23.401. EX1004, [0031]; EX1003, ¶51. For example, the POSITA would have been motivated to extend *Ostrup*'s prioritized communication sessions to existing LTE systems, including the ability to enable access to a cellular network for privileged or prioritized communication sessions, at least because *Ostrup* expressly teaches the POSITA to implement his techniques using LTE. EX1004, [00031]; EX1003, ¶51. *Ostrup* further describes the use of an ARP parameter for indicating a privileged session and notes that this parameter is typically used in LTE standards, among others. EX1004, [00035]; EX1003, ¶51.

A POSITA looking to implement the teachings of *Ostrup* would have needed to use various LTE specifications and references, including references like 23.401, to implement an LTE-compliant system that utilized *Ostrup*'s teachings. EX1003, ¶52. For example, a POSITA would have looked to 23.401 to understand the technical principles underlying LTE attach procedures. *Id.*, ¶52. A POSITA would have recognized that they must rely upon the teachings and principles of 23.401 to ensure that the combined system would have interoperability among LTE equipment manufactured by various vendors. *Id.*

A POSITA would have been motivated to follow standard connection establishment procedures as taught by 23.401 to implement the actions of *Ostrup*'s

Figure 2. *Id.* For example, *Ostrup*'s Figure 2 suggests that if the connection request is not privileged, the connection should be established using unreserved resources. EX1004, [00042]. A POSITA would have looked to 23.401 for direction on how to establish that connection since 23.401 describes the principles underlying the LTE attach procedure, including how "[t]he UE initiates the Attach procedure by the transmission, to the eNodeB, of an Attach Request [. . .] message together with RRC parameters indicating the Selected Network and the old GUMMEI." EX1005, ¶94; EX1003, ¶53. 23.401 would have provided the POSITA with the insight on how to utilize the attach procedure in the eNB. EX1003, ¶53.

The POSITA would have been further motivated to combine *Ostrup* and 23.401 because the Attach Request described in 23.401 is consistent with the connection request described in *Ostrup*. EX1003, ¶54. For example, both *Ostrup*'s connection request and 23.401's Attach Request are used to establish connections in emergency situations. *Ostrup* describes how "a wireless terminal 102 makes a connection request for an emergency call" (EX1004, [0032]), and 23.401 describes how "[t]he E-UTRAN Initial Attach procedure is used for Emergency Attach by UEs that need to perform emergency services but cannot gain normal services from the network." EX1005, 91. As another example, both *Ostrup*'s connection request and 23.401's Attach Request describe an association with RRC parameters. *Ostrup* describes how "the connection request may be a Radio Resource Control (RRC)

message called ‘RRC connection request’ or similar, depending on the standard used” (EX1004, [0032]), and 23.401 describes how “[t]he UE initiates the Attach procedure by the transmission, to the eNodeB, of an Attach Request [. . .] message together with RRC parameters.” EX1005, 94. Accordingly, the Attach Request described in 23.401 is consistent with the connection request described in *Ostrup*. EX1003, ¶54.

Finally, the ’338 Patent itself shows how the POSITA would have been motivated to look to relevant cellular standards, such as 23.401. EX1003, ¶55. The patent uses multiple LTE specifications and references to both describe and implement an LTE-compliant system that utilizes the patent’s alleged invention. For example, the ’338 Patent relied on the general architecture of LTE, noting that the upper branch in FIG. 1, reproduced below, represents an LTE system:

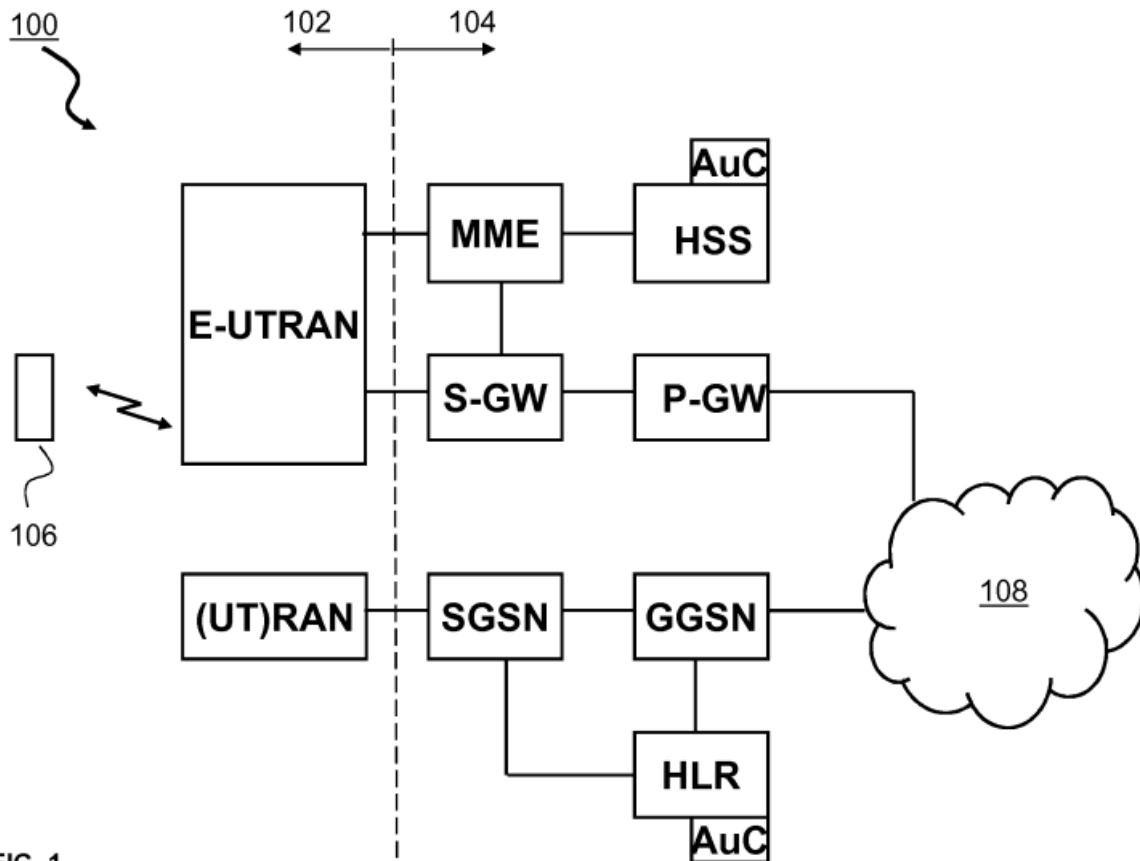


FIG. 1

EX1001, 7:45-48, Fig. 1. In fact, the '338 Patent specifically cites to 23.401 as providing further information of the general architecture of an EPS network. *Id.*, 7:59-61.

## 2. Reasonable Expectation of Success

The POSITA would have understood that combining *Ostrup* and 23.401 could be accomplished with a reasonable expectation of success at least because LTE technology was well-known and well-understood at the time, including the LTE attach procedures. EX1003, ¶57. This would have had the predictable result of

implementing a wireless telecommunications infrastructure that reserved resources for connection requests. *Id.*

The POSITA would have had a reasonable expectation of success, as the combination of references discussed above would have merely involved following the instructions of each reference to allocate resources in an LTE-compliant system. *Id.*, ¶58. *Ostrup* specifically explains that its techniques are applicable to an LTE system, and it would have taken no more than ordinary skill to successfully create an LTE system according to the attach procedure described in 23.401. EX1004, [00031], [00035]; EX1003, ¶58.

### 3. Claim 1

#### i. 1[p]<sup>3</sup>

Whether or not the preamble is limiting, *Ostrup* discloses it. *Ostrup* discloses a “[m]ethod and apparatus for enabling privileged access in a cellular network.” EX1004, Title. *Ostrup* describes its solution as “enabl[ing] establishment of connections for wireless terminals to a base station for privileged sessions in a cell of a cellular network.” *Id.*, [00026]; EX1003, ¶59.

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<sup>3</sup> The claim identifiers herein correspond to those in the EX1010 claim listing.

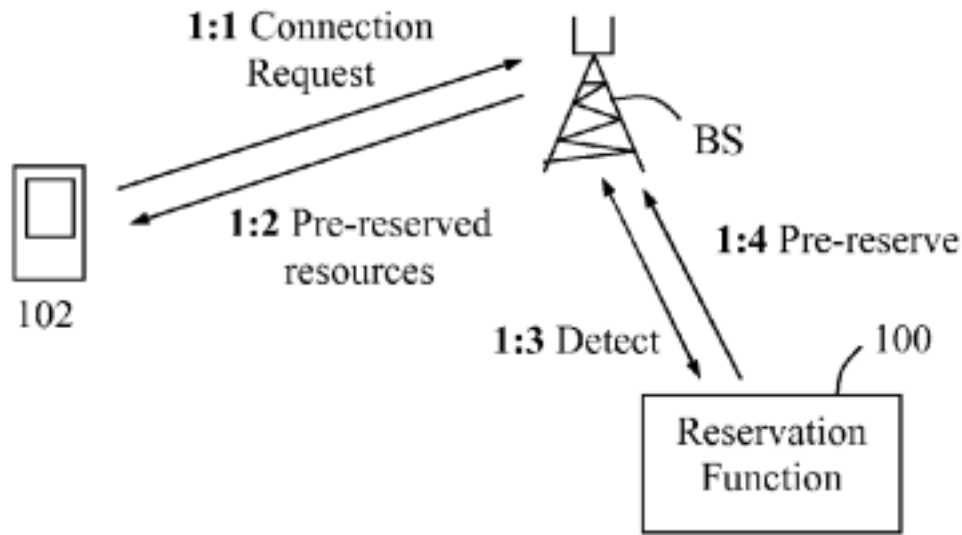


Fig. 1

The base station of Fig. 1 “provides connections with wireless terminals in a cell, e.g. according to any current communication standard such as the Global System for Mobile communication (GSM), Universal Mobile Telecommunications System (UMTS), Long Term Evolution (LTE), etc.” EX1004, [00031]. As such, the base station of *Ostrup* “assists in handling of connection setup requests in a telecommunications network,” as claimed. EX1003, ¶60-63.

**ii. 1[a]**

*Ostrup* in view of 23.401 discloses and renders obvious this limitation. As described above with respect to 1[p], Fig. 1 of *Ostrup* discloses a “base station [that] receives a connection request from a wireless terminal.” Section VIII.A.3.i; EX1004, [0042]. *Ostrup*’s base station corresponds to the claimed “node,” *Ostrup*’s connection request corresponds to the claimed “connection setup request,” and

*Ostrup*'s wireless terminal corresponds to the claimed "user equipment (UE)." EX1003, ¶64. As described above in Section VIII.A.1, the Attach Request described in 23.401 is consistent with the connection request described in *Ostrup*. Section VIII.A.1; EX1003, ¶64.

*Ostrup*'s action 200 of receiving a connection request from a terminal, as illustrated in annotated Fig. 2 below, is consistent with the construction described in Section VII.A of "intercepting a connection request" to at least include receiving a connection setup request for processing before sending it towards its intended destination. Section VII.A; EX1003, ¶65. As is seen in action 200 below, *Ostrup*'s base station receives a connection request from a terminal. EX1004, Fig. 2, [00042]. It then processes the request to "determine[]whether the received connection request refers to a privileged session or not" at step 202. *Id.* Thus, the connection request is received "for processing." Moreover, as discussed above in Section VII.A, the '338 Patent states that its RAN controller 210 (described as performing the intercepting step) "may be viewed as a logical entity" and that the functionality "could be implemented in lesser number of individual elements . . . .," suggesting that the intercepting functionality could be implemented in the eNB. EX1001, 8:25-26, 8:45-48.



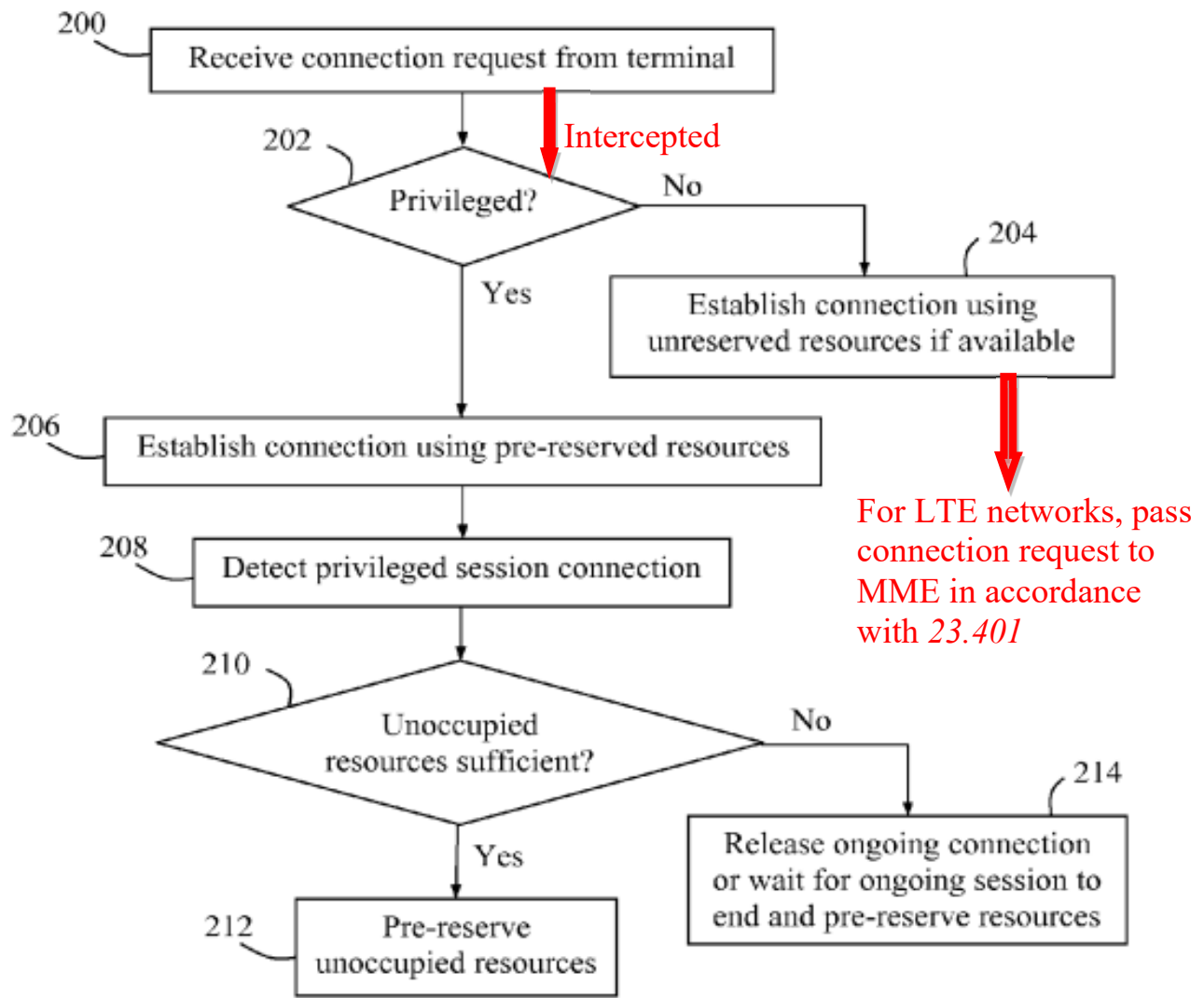


Fig. 2

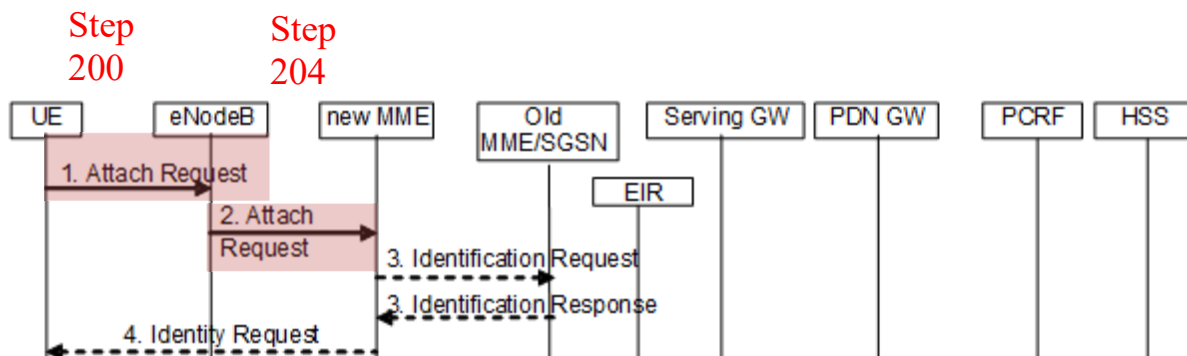
EX1004, Fig. 2 (annotations added).

When implemented in an LTE network, as is contemplated by *Ostrup*, the connection request is intended for an MME, which reads on the claimed “control node of a radio access network (RAN) part of the telecommunications network.”

EX1003, ¶66. A POSITA would have been motivated to combine *Ostrup* with

23.401 to implement *Ostrup*'s teachings in an LTE network. Section VIII.A.1; EX1004, [00031]; EX1003, ¶66. A POSITA would have understood in light of 23.401 that the request from the UE received at action 200 in *Ostrup* is directed to the MME of the LTE core network and is ultimately passed to the MME in the connection process (e.g., action 204). EX1003, ¶66.

23.401 describes an LTE attach procedure in Section 5.3.2. EX1005, 91-102. Fig. 5.3.2.1-1 (partially reproduced and annotated below) illustrates the attach procedure. *Id.*, 93. When implementing *Ostrup*'s connection request in accordance with an LTE attach procedure, 23.401's UE and eNodeB correspond to *Ostrup*'s terminal and base station, respectively. EX1003, ¶67. And *Ostrup*'s actions 200 and 204, as illustrated above in *Ostrup*'s Fig. 2, correspond to steps 1 and 2 of the LTE attach procedure as illustrated below in color annotated Fig. 5.3.2.1-1 of 23.401.



EX1005, 91-95; EX1003, ¶67.

As shown in step 1 of Figure 1 (corresponding to action 200 of *Ostrup*'s Figure 2), “[t]he UE initiates the Attach procedure by the transmission, to the

eNodeB, of an Attach Request [. . .] message together with RRC parameters indicating the Selected Network and the old GUMMEI.” EX1005, 94. The attach request is ultimately intended for the “new MME.” EX1003, ¶68. The old GUMMEI is the old Globally Unique MME Identifier. EX1005, 15. In step 2 (corresponding to action 204 of *Ostrup* Figure 2), “[t]he eNodeB derives the new MME from the RRC parameters carrying the old GUMMEI and the indicated Selected Network.” *Id.*, 94; EX1003, ¶68. “The eNodeB forwards the Attach Request message to the new MME contained in a S1-MME control message (Initial UE message) together with the Selected Network, CSG access mode, CSG ID, L-GW address, and TAI+ECGI of the cell from where it received the message to the new MME.” EX1005, 94-95.

When combining *Ostrup* and 23.401, a POSITA would have thus understood that *Ostrup*’s base station, when implemented in an LTE network, would behave in accordance with the eNodeB described in 23.401 and would therefore “intercept[], by a node (*e.g.*, BS/eNodeB), a connection setup request (*e.g.*, connection request/attach request) from a user equipment (UE) to a control node (*e.g.*, MME) of a radio access network (RAN) part of the telecommunications network,” as claimed. EX1003, ¶69. Accordingly, *Ostrup* in view of 23.401 discloses and renders this limitation obvious. *Id.*

iii. 1[b]

*Ostrup* discloses this limitation. *Ostrup* describes how the connection request, which is sent from the wireless terminal to the base station as shown above at action 200 of Fig. 2, may include information that identifies a type of session (a privileged or non-privileged session). EX1004, [00042] (“In a first shown action 200, the base station receives a connection request from a wireless terminal, corresponding to action 1:1 above. The *base station then determines whether the received connection request refers to a privileged session or not in a following action 202.*”).

*Ostrup*’s determination of a privileged or non-privileged session corresponds to the claimed identification of a service for which the connection setup is requested. EX1003, ¶71. For example, both *Ostrup* and the ’338 Patent describe sessions and services, respectively, as communication sessions or calls. EX1004, [0003]; EX1001, 3:56-64. *Ostrup* describes how “the term ‘privileged session’ will be used to represent *any call or other communication session* that is deemed to be of higher importance or priority over other non-privileged calls and sessions of no particular importance or priority, referred to as ‘non-privileged sessions’ which thus have no precedence over any other sessions.” EX1004, [0003]. Similarly, the ’338 Patent describes calls as an example of its services. EX1001, 3:56-64 (“A method of this embodiment may also, optionally, include the step of confirming that the identified service is not one of one or more additional predefined services, such as e.g.

emergency calls. Such a further embodiment may be advantageous in that it would still allow the requests for some additional predefined services such as emergency calls to go through as long as requests for premium services can go through.”).

Accordingly, *Ostrup* discloses identifying, by the node, from the connection setup request, a service for which the connection setup is requested. EX1003, ¶72.

**iv. 1[c]**

*Ostrup* discloses this limitation. As described above in the discussion of limitation 1[b], *Ostrup* discloses identifying a type of session for which the connection setup is requested. When identifying the type of session for which the connection setup is requested, *Ostrup* determines whether or not the requested session is an emergency service. *Ostrup* states that “[t]he base station then determines whether the received connection request refers to a privileged session or not.” EX1004, [00042].

*Ostrup* identifies an emergency call “as an example of a privileged session” and describes how the requested session may be identified as an emergency session:

“A first action 1.1 illustrates that a wireless terminal 102 makes a connection request for an emergency call, as an example of a privileged session. . . . Further, the base station may identify the requested session as being privileged by checking whether an information element in the request called ‘EstablishmentCause’ indicates a privileged session, e.g.

‘EstablishmentCause=emergency’, or similar. The session may also be identified as privileged by a number being called such as an emergency number, e.g. 112 or 911, or by priority information received from a core network, e.g., a parameter called ‘Allocation Retention Priority, ARP.’.”

*Id.*, [0032]; *see also id.*, [0001], [0003]-[0004]. *Ostrup* also states that a session “is deemed privileged if it is directed to a privileged or prioritized number, such as an emergency number, or it if involves a party being classified as privileged and having priority over others, such as persons working for public safety, medical service, law enforcement, military service, etc.” *Id.*, [00030].

*Ostrup* further describes this limitation with respect to action 202 of Figure 2 (color annotated below):

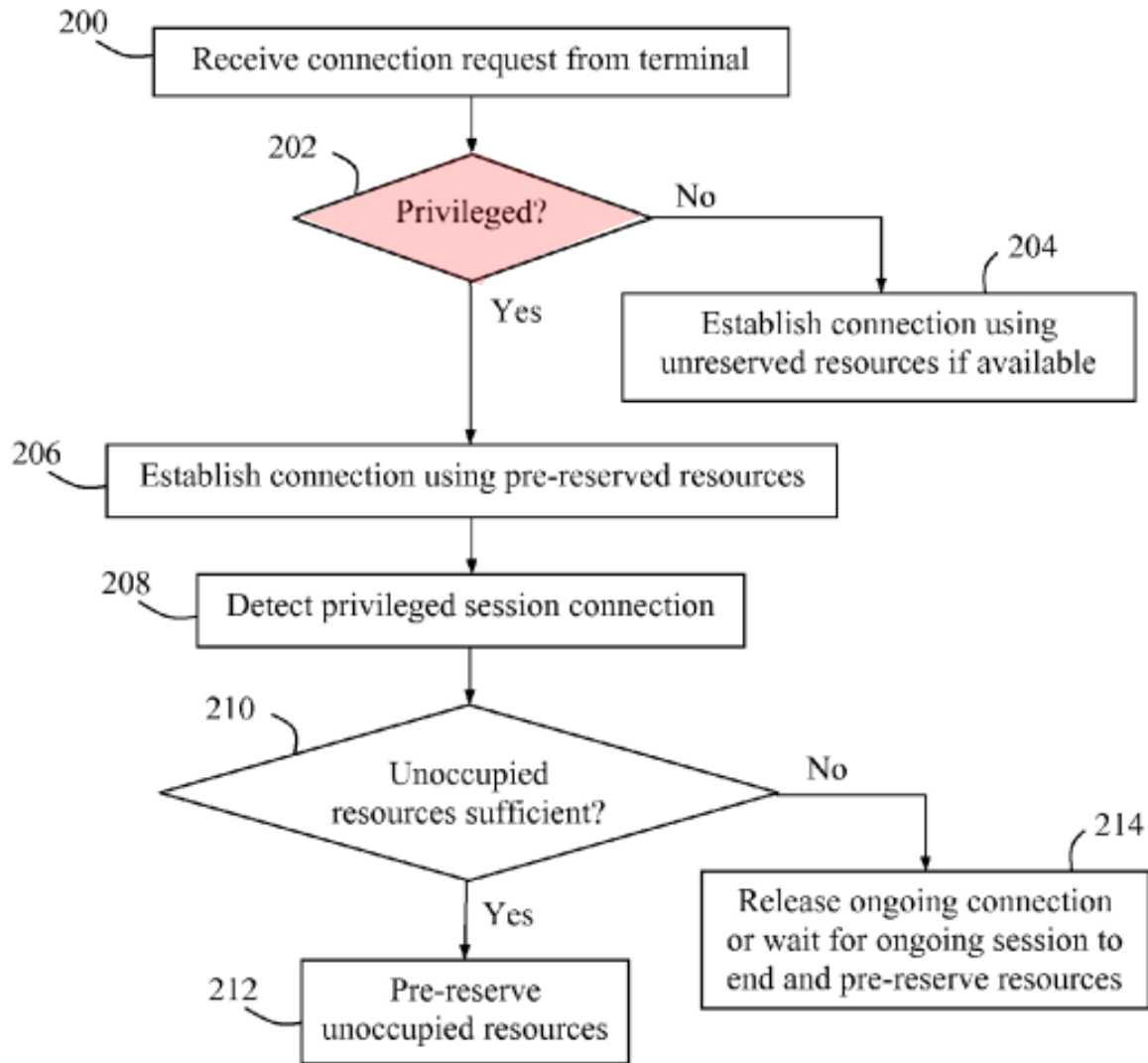


Fig. 2

*Id.*; Fig. 2. Action 202 is a decision step determining whether or not the received connection request refers to a privileged session. *Id.*, [00032], [00042]. As noted above, *Ostrup* describes an emergency call or a request for emergency service as a privileged session. *Ostrup* discloses that if the base station determines that the connection request does not refer to a privileged session, then the process continues

to action 204 where “the base station can establish a connection for the terminal in a further action 204 by using unreserved resources, provided that such resources are currently available for the base station.” *Id.*, [00042]. Thus, because *Ostrup* describes a scenario where its base station determines that the connection request is not one for a privileged session and because *Ostrup* describes an emergency service as a privileged session, *Ostrup* discloses determining, by the node, that the identified service is not an emergency service. EX1003, ¶77.

v. 1[d]

*Ostrup* discloses this limitation. After determining that the identified service is not a privileged/emergency service at action 202 (*e.g.*, as discussed above with respect to limitation 1[c]), *Ostrup* discloses that the base station “can establish a connection for the terminal in a further action 204 by ***using unreserved resources, provided that such resources are currently available for the base station.***” EX1004, [00042]. Accordingly, once the base station determines the requested service is not one for a privileged or emergency service, it makes a determination at action 204 of whether to fulfill the connection request using ***unreserved resources***, *i.e.*, it does so “***provided that*** such resources are currently available.” *Id.*

*Ostrup* describes its reserved resources as those “pre-reserved for at least one privileged session connection,” suggesting that unreserved resources are those not reserved for privileged services. *Id.*, [00041]; EX1003, ¶79.



*Ostrup* describes its “privileged sessions” in a similar manner to the ’338 Patent’s description of the claimed “premium services.” EX1003, ¶80. *Ostrup* states that “privileged session” represents “any call or other communication session that is deemed to be of higher importance or priority over other non-privileged calls and sessions of no particular importance or priority, referred to as ‘non-privileged sessions’ which thus have no precedence over any other sessions.” EX1004, [0003]. *Ostrup* further states that “a session with a wireless terminal is deemed privileged if it is directed to a privileged or prioritized number, such as an emergency number, or if it involves a party being classified as privileged and having priority over others, such as persons working for public safety, medical service, law enforcement, military service, etc.” *Id.*, [00030]. Similarly, the ’338 Patent states that “premium services” are desired to “receive greater attention and effort from the network than non-premium services.” EX1001, 1:46-52. The patent also suggests that “premium services” may be allotted certain resources or resource capacity by a network operator in accordance with an agreement. *Id.*, 3:12-25. The ’338 Patent also describes “premium services” as predefined services. *Id.*, 9:44-45.

Additionally, the ’338 Patent and *Ostrup* each provides an example of a privileged session and a predefined service, respectively, as being an emergency call. For example, the ’338 Patent states that “the step of confirming that the identified service is not one of one or more additional *predefined services, such as e.g.*

*emergency calls.*” *Id.*, 3:59-60. And *Ostrup* explains how “[s]ome typical examples of *such privileged sessions are emergency calls* [. . . .]” EX1004, [0003]. *Ostrup*’s privileged sessions, therefore, read on the claimed “premium services.” EX1003, ¶81.

Moreover, the ‘338 Patent discloses that the unreserved resources are available resources “within a network access point (NAP) serving the UE.” EX1001, 2:34. *Ostrup*’s base station corresponds to the claimed “NAP” at least because it is the point at which the UEs access the network. EX1004, [00026] (“Briefly described, a solution is provided to enable establishment of connections for wireless terminals to a base station for privileged sessions in a cell of a cellular network.”). This is also consistent with the ’338 Patent, which states that the NAP “could be e.g., an eNB in an LTE network.” EX1001, 2:34-36; EX1003, ¶82.

*Ostrup* discloses that its resources can be in the NAP/base station serving the UE. EX1004, [00029], [00042]. With respect to action 204, *Ostrup* states that the base station establishes a connection provided that unreserved resources are currently available “for the base station.” *Id.*, [00042]. When discussing its “resources,” *Ostrup* identifies “radio interface bandwidth, transport network bandwidth, hardware equipment in the base station, communication channels, and a Radio Access Bearer (RAB) elements” as examples of resources. *Id.*, [00029]. A POSITA would have understood that at least these examples of resources would be

considered resources “in the base station” since these types of resources would be used by the base station to establish communication sessions. EX1003, ¶83. Moreover, when describing its resources that may be reserved and/or available, *Ostrup* repeatedly refers to them as resources “in” the base station. *Id.*; EX1004, [0010], [0012], [0017], [0054].

In addition and as discussed above in Section VII.A and in the discussion of limitation 1[a], the ’338 Patent describes the claimed node as a “logical entity” and that the functionality “could be implemented in lesser number of individual elements . . . .” EX1001, 8:25-26, 8:45-48; Sections VII.A, VIII.A.3.ii. It is thus consistent for the node functionality of claim 1 to be implemented by *Ostrup*’s base station while the claimed resources in a NAP serving the UE to be resources of the base station. EX1003, ¶84.

Accordingly, through its determination of whether to fulfill the connection request for the non-privileged/non-emergency session based on the availability of resources not reserved for a privileged session, *Ostrup* discloses determining, by the node, whether the connection request is to be fulfilled based at least on information comprising available resources in a NAP serving the UE that are not reserved for premium services. EX1003, ¶85.

**vi. 1[e]**

*Ostrup* discloses this limitation. As discussed above for limitation 1[d],

*Ostrup* establishes the connection for the non-privileged/non-emergency connection request “by using ***unreserved resources, provided that such resources are currently available for the base station.***” EX1004, [00042]. *Ostrup*’s “unreserved resources” are resources not reserved for connection setup requests for premium services. EX1003, ¶86; EX1004, [00042], (“The base station then determines whether the received connection ***request refers to a privileged session or not*** in a following action 202. ***If not, the base station can establish a connection for the terminal in a further action 204 by using unreserved resources . . .***”). A POSITA would have understood that if there are resources that are “currently available” at action 204, then there is sufficient unused resource capacity from among the unreserved resources to complete the connection setup request. EX1003, ¶86. And as discussed above with respect to limitation 1[d], the unreserved resources in *Ostrup* are resources at the NAP serving the UE. *Id.*

The claim limitation “a determination being a positive determination” refers to the step “determining . . . whether the connection setup is to be fulfilled” of limitation 1[d]. Section VIII.A.3.v; EX1003, ¶87. *Ostrup*’s determination that unreserved resources are currently available for the base station is a positive determination by the base station to fulfill the connection setup request as described with respect to limitation 1[d]. EX1004, [00042] (“If not, ***the base station can establish a connection for the terminal in a further action 204 by using unreserved***

*resources, provided that such resources are currently available for the base station.”).*

Accordingly, *Ostrup* discloses a determination being a positive determination if, at the NAP serving the UE (base station), there is sufficient unreserved resource capacity (unreserved resources) not reserved for the connection setup requests for the one or more premium services (privileged sessions). EX1003, ¶88.

**vii. 1[f]**

*Ostrup* in view of 23.401 renders obvious this limitation. As explained above for limitation 1[e], *Ostrup* discloses a determination being a positive determination if, at the base station/NAP serving the UE, there is sufficient unreserved resource capacity not reserved for the connection setup requests for the one or more premium services. Section VIII.A.3.vi.

With respect to Figure 2 below, *Ostrup* discloses that “the base station can establish a connection for the terminal in a further action 204 by using unreserved resources, ***provided that*** such resources are currently available for the base station.” EX1004, [00042]. *Ostrup*’s “provided that” language suggests that the connection would be made only if the resources are available (and thus would not be made if the resources are not available). EX1003, ¶90. As such, *Ostrup*’s “provided that such resources are currently available” language corresponds to the claimed “only upon positive determination” language. *Id.*

Because the solution of *Ostrup* is directed to enabling privileged access in a cellular network, *Ostrup* stated that it is “not necessary to describe [action 204] in more detail” in the reference. EX1004, [00042]. But a POSITA implementing *Ostrup* in an LTE network would have understood that *Ostrup*’s establishing of a connection for the terminal in action 204 would have involved passing the connection request for further processing. EX1003, ¶91.

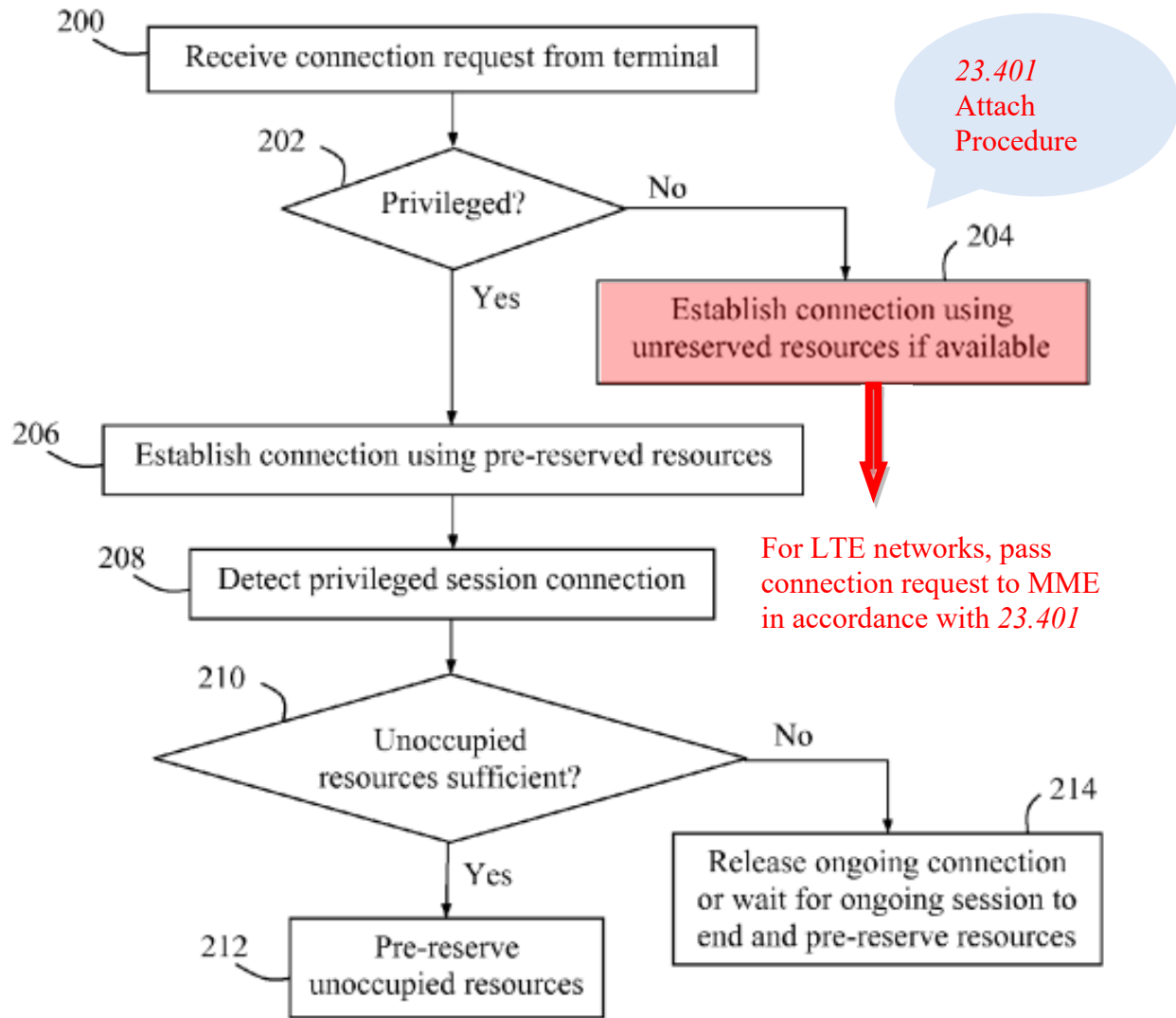
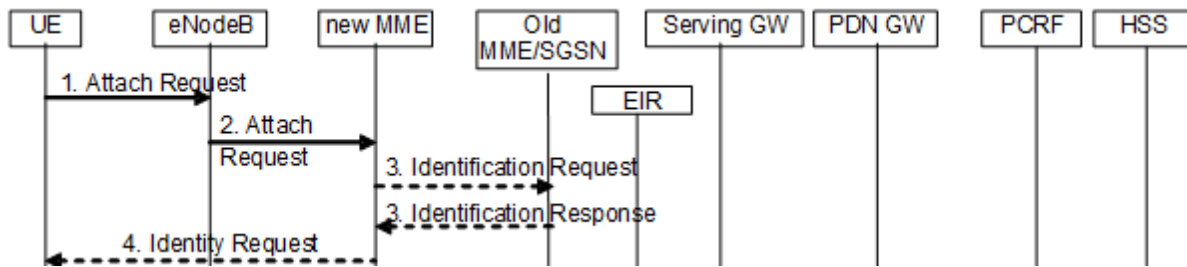


Fig. 2

EX1004, Fig. 2 (color annotated).

As described with respect to limitation 1[a], 23.401 explains how a connection request is passed on for further processing in an LTE network. Section VIII.A.3.ii; EX1003, ¶92. Fig. 5.3.2.1-1 of 23.401 illustrates an Attach Request message being sent from the UE to an MME via an eNodeB:



EX1005, 91-95. 23.401 further explains that the “eNodeB forwards the Attach Request message to new MME . . . .” *Id.*, 94-95.

Accordingly, *Ostrup* in view of 23.401 discloses passing, by the node, the connection setup request for further processing within the LTE network provided that the unreserved resources are currently available. EX1003, ¶94.

#### 4. Claim 8

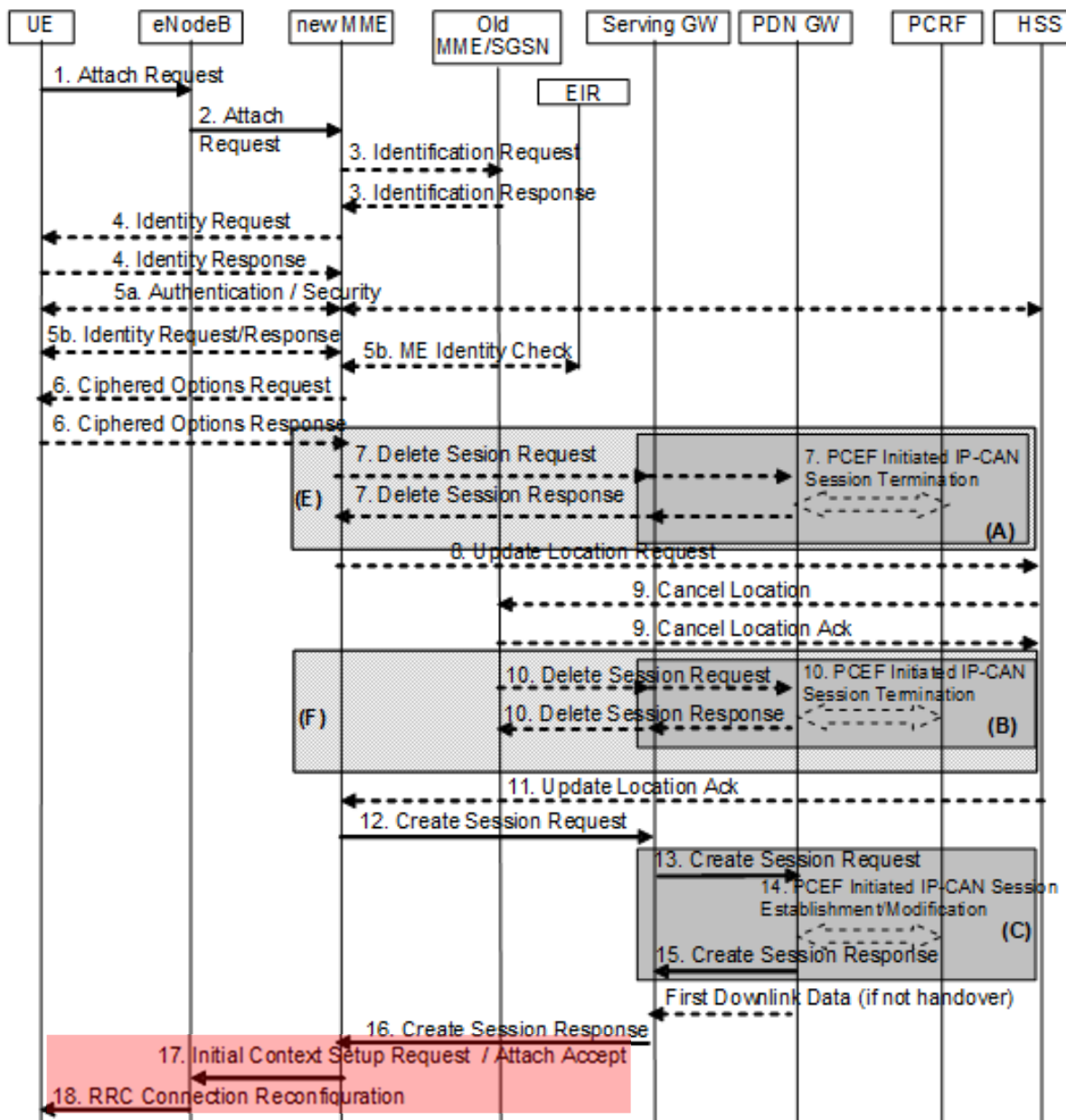
*Ostrup* discloses this limitation. The '338 Patent describes that an indication to the UE of whether the connection setup request was determined to be fulfilled may be implicit in that the requested connection will be established. EX1001, 11:53-58 (“When the request was determined to be fulfilled, such indication may be implicit in that the requested connection will be established.”); EX1003, ¶95.

Similarly, *Ostrup* explains how the base station can establish a connection for the terminal if unreserved resources are currently available for the base station: “If not, the base station can establish a connection for the terminal in a further action 204 by using unreserved resources, provided that such resources are currently available for the base station.” EX1004, [00042].



Accordingly, through the base station establishing the connection with the terminal, *Ostrup* discloses that the base station provides an indication to the terminal of whether the connection setup request was determined to be fulfilled. EX1003, ¶97.

The combination of *Ostrup* and 23.401 also renders obvious this limitation. *Id.* As described with respect to Fig. 5.3.2.1-1 (annotated and reproduced below), 23.401 states that at step 17, “[t]he new MME sends an Attach Accept [. . .] message to the eNodeB.” EX1005, 100. And at step 18, “the Attach Accept message will be sent along to the UE.” *Id.*, 101. This is an indication to the UE that the connection request was determined to be fulfilled. EX1003, ¶98.



EX1005, 94.

Thus, when *Ostrup* is implemented in an LTE network in accordance with 23.401, the UE is provided an indication of whether the connection setup request was determined to be fulfilled. *Id.*, 99.

## 5. Claim 9

**i. 9[p]**

Claim 9 is a “computer program product” claim that recites identical steps to those of claim 1. Section VIII.3. Like claim 1, each of the steps of claim 9 are performed by a node. *Id.* As discussed with respect to these steps in claim 1, it would have been obvious for the base station in the combination of *Ostrup* and 23.401 to perform these steps. *Id.*; EX1003, ¶100.

To the extent the preamble of claim 9 is limiting, the combination of *Ostrup* and 23.401 renders it obvious. *Id.* First, when implementing *Ostrup* in an LTE network, it would have been obvious for the base station to include a computer program product, stored on a computer-readable non-transitory storage medium, comprising software code portions configured to, when executed in a computer, carry out the steps of the claims. EX1003, ¶101. A POSITA would have understood that typical implementations of base stations, such as those used for LTE, relied on and were controlled by processors executing a set of instructions (software code portions), and that the instructions were part of a program (computer program product). *Id.* A POSITA would have further understood that the program resided in a memory of a computer such as in a Random Access Memory (RAM) (non-transitory storage medium) and were accessible by the processor (computer-readable). *Id.* The sophistication of protocols, such as those used for LTE, requires the flexibility of software for practical implementation. *Id.*

Indeed, *Ostrup* discloses a reservation function 400 associated with its base station such that it may be “integrated in the base station.” EX1004, [00031]. *Ostrup* describes that its reservation function may be configured to perform the actions of Figures 1-3. *Id.*, [00047].

*Ostrup* describes the reservation function 400 as including program modules of a respective computer program comprising code means which, when run by a processor “P” causes the function to perform the described actions. *Id.*, [00050]. *Ostrup* discloses that the computer program may be carried by a computer program product in the form of a memory “M” connected to the processor “P” and that the computer program product or memory M comprises computer readable medium on which the computer program is stored. *Id.*, [00051]. *Ostrup* thus discloses its base station as including a computer program product, stored on a computer-readable non-transitory storage medium, comprising software code portions configured to, when executed in a computer, carry out its functionality. EX1003, ¶103.

Therefore, *Ostrup* in view of 23.401 renders obvious the computer program product recited in 9[p] to perform the steps of the claim. *Id.*

**ii. 9[a]**

*See* limitation 1[a] above.

**iii. 9[b]**

*See* limitation 1[b] above.

**iv. 9[c]**

*See* limitation 1[c] above.

**v. 9[d]**

*See* limitation 1[d] above.

**vi. 9[e]**

*See* limitation 1[e] above.

**vii. 9[f].**

*See* limitation 1[f] above.

**6. Claim 10**

**i. 10[p]**

Claim 10 is a “data structure” claim. To the extent the preamble of claim 10 is limiting, the combination of *Ostrup* and 23.401 renders it obvious. EX1003, ¶111. The preamble requires the data structure to be stored in a non-transitory computer-readable storage medium of a node. As is the case in the application of *Ostrup* and 23.401 to claims 1 and 9 discussed above, the base station in the combination of *Ostrup* and 23.401 satisfies the node of claim 10. Sections VIII.A.3, VIII.A.5; EX1003, ¶111. And as described in limitation 9[p] above, *Ostrup* discloses its base station as including a computer-readable non-transitory storage medium. Section VIII.A.5.i; EX1003, ¶103.

When implementing *Ostrup* in an LTE network, it would have been obvious for the base station to include a data structure stored in the non-transitory computer-

readable storage medium. EX1003, ¶112-13. The '338 Patent contemplates that the data structure could be stored in a database form. EX1001, 4:16-18. A POSITA would have understood that *Ostrup*'s memory M comprising a non-transitory computer-readable medium would have included a data structure for storing, retrieving, and organizing data utilized by the base station, including by the processor(s) that control the operation of the base station. EX1003, ¶114. Such data structures would have been essential at least to the operation of the software programs of the base station. *Id.* *Ostrup* thus discloses its base station as including a non-transitory computer-readable storage medium that stores a data structure. *Id.* Therefore, *Ostrup* in view of 23.401 renders obvious the data structure recited in 10[p].

**ii. 10[a]**

*Ostrup* discloses this limitation. *Ostrup* discloses that the reservation function (disclosed as potentially being integrated in its base station) is “adapted to detect that resources, which have been pre-reserved in the first base station exclusively for privileged sessions, are used for establishing a connection for a privileged session for a wireless terminal.” EX1004, [00011]. *Ostrup* also discloses that its reservation function is “adapted to pre-reserve new resources in BS exclusively for privileged sessions in response to said detecting, to compensate for the resources occupied by the established privileged session connection, such that an amount of resources

sufficient for enabling at least one subsequent privileged session connection remains pre-reserved in BS.” *Id.*, [00048]. *Ostrup*’s base station thus detects an amount of resources for the base station that have been pre-reserved for establishing privileged session connections. *Id.*

In order to be able to detect an amount of resources that have been reserved for establishing privileged session connections, a POSITA would have understood that *Ostrup*’s base station includes a data structure (as discussed above with respect to 10[p]) that includes an indication of a resource capacity of a NAP reserved for connection setup requests for one or more premium services as claimed. Section VIII.A.6.i; EX1003, ¶114. And as explained above with respect to limitation 1[d], *Ostrup*’s privileged sessions represent “one or more premium services.” Section VIII.A.3.v; EX1003, ¶114.

**iii. 10[b]**

*Ostrup* discloses this limitation. *Ostrup* discloses that the reservation function (disclosed as potentially being integrated in its base station) is “adapted to detect that resources, which have been pre-reserved in the first base station exclusively for privileged sessions, are used for establishing a connection for a privileged session for a wireless terminal.” EX1004, [00011]. *Ostrup* also discloses that its reservation function is “adapted to pre-reserve new resources in BS [base station] exclusively for privileged sessions in response to said detecting, to compensate for the resources

occupied by the established privileged session connection, such that an amount of resources sufficient for enabling at least one subsequent privileged session connection remains pre-reserved in BS.” *Id.*, [00048].

In order to pre-reserve new resources such that an amount of resources sufficient for enabling at least one subsequent privileged session connection to remain pre-reserved, a POSITA would have understood that *Ostrup*'s base station includes a data structure (as discussed above with respect to 10[p]) that includes an indication of an amount of resources currently used by the NAP for the one or more premium services. Section VIII.A.6.iii; EX1003, ¶118. This is particularly true given that *Ostrup*'s base station must (according to *Ostrup*) compensate for resources occupied by established privileged sessions to maintain adequate capacity of pre-reserved resources as required. EX1004, [00048]; EX1003, ¶118.

**iv. 10[c]**

*Ostrup* in view of 23.401 renders obvious this limitation. EX1003, ¶119. *Ostrup* describes that “resources are pre-reserved for at least one more privileged session connection even when all resources are currently used in the cell, by releasing an ongoing connection with relatively low activity such as when no or little data has been transmitted lately.” EX1004, [00028]. Thus, *Ostrup* discloses an ability by its base station to realize that all of its resources are being used at some time. EX1003, ¶119. A POSITA would have understood that the ability of the base



station to recognize when all of its resources used also represents an ability of the base station to determine the amount of resources being used at any time, especially considering that resources are typically limited in supply at each base station. EX1003, ¶119; EX1004, [00029] (“All these resources and others are typically in limited supply at each base station of a cellular network.”).

In addition, as discussed above with respect to limitation 10[b], a POSITA would have understood that *Ostrup's* base station includes a data structure that includes an indication of an amount of resources currently used by the NAP for the one or more premium services. Section VIII.6.iii; EX1003, ¶120.

Thus, given the base station’s awareness of the total amount of its resources and that all such resources are being used and given the base station’s awareness of the amount of resources currently used for one or more premium services, it would be obvious to a POSITA for *Ostrup's* base station to include a data structure (as discussed above with respect to 10[p]) that includes an indication of an amount of resources currently used by the NAP for services that do not belong to the one or more premium services. Section VIII.A.6.i; EX1003, ¶121.

**v. 10[d]**

*See* limitation 1[d] above, which describes how *Ostrup* discloses the node determining whether the connection setup request is to be fulfilled based at least on information comprising available resources in a NAP serving the UE that are not

reserved for premium services. Section VIII.A.3.v.

And as discussed above with respect to 10[p], the combination of *Ostrup* and 23.401 renders obvious the claimed data structure. Section VIII.A.6.i; EX1003, ¶123. *Ostrup* discloses its reservation function 400 integrated in the base station and as including program modules of a respective computer program comprising code means which, when run by a processor causes a function to perform the described actions. EX1004, [00031], [00050]. It would thus have been obvious for the data structure rendered obvious by the combination of *Ostrup* and 23.401 to be used by the base station to perform the claimed actions, including the determining step of this limitation. EX1003, ¶122.

**vi. 10[e]**

*See* limitation 1[e] above.

**vii. 10[f]**

*See* limitation 1[f] above. And as discussed above with respect to limitations 10[p] and 10[d], it would have been obvious for the data structure rendered obvious by the combination of *Ostrup* and 23.401 to be used by the base station to perform the claimed actions, including the passing step of this limitation. EX1003, ¶125.

**7. Claim 11**

**i. 11[p]**

To the extent limitation 11[p] is limiting, *Ostrup* discloses it. As described

above with respect to limitation 1[a], *Ostrup*'s base station corresponds to the claimed "node." Section VIII.A.3.ii; EX1003, ¶126.

**ii. 11[a]**

The combination of *Ostrup* and 23.401 renders obvious this limitation. When implementing *Ostrup* in an LTE network in accordance with 23.401, it would have been obvious for the base station to include a computer readable storage medium having software (computer readable program) code embodied therewith, as described above in limitation 9[p]. Section VIII.A.5.i. As would have been well known and obvious to a POSITA, typical implementations of base stations, such as those used for LTE, relied on and were controlled by processors executing a set of instructions that were part of a program (computer readable program code). EX1003, ¶127-28.

Therefore, *Ostrup* in view of 23.401 renders obvious limitation 11[a].

**iii. 11[b]**

*Ostrup* in view of 23.401 renders obvious this limitation. First, when implementing *Ostrup* in an LTE network, it would have been obvious for the base station to include a processor coupled to computer readable storage medium, wherein responsive to executing the computer readable program code, the processor is configured to perform the executable operations of the claim. EX1003, ¶130. As would have been well-known and obvious to a POSITA, typical implementations of

base stations, such as those used for LTE, relied on and were controlled by processors executing a set of instructions (executable operations) that were part of a program (computer readable program code). *Id.* A POSITA would have understood that the program resided in a memory of the computer (*e.g.*, a RAM) and were accessible by the processor (computer readable storage medium). Indeed, the sophistication of protocols, such as those used for LTE, requires the flexibility of software executed by processors for practical implementation. *Id.*

In addition, as noted above with respect to limitation 11[a], *Ostrup* discloses its base station with a reservation function including program modules of a respective computer program comprising code means which, when run by a processor “P” causes the function to perform the described actions. Section VIII.A.7.ii; EX1004, [00050]. *Ostrup* discloses that the computer program may be carried by a computer program product in the form of a memory “M” connected to the processor “P” and that the computer program product or memory M comprises computer readable medium on which the computer program is stored. EX1004, [00051]. *Ostrup* thus discloses a processor coupled to computer readable storage medium, wherein responsive to executing the computer readable program code, the processor is configured to perform executed operations, including those operations of claim 11 listed below. EX1003, ¶131.

iv. 11[c]

*See* limitations 11[b] and 1[a] above.

**v. 11[d]**

*See* limitations 11[b] and 1[b] above.

**vi. 11[e]**

*See* limitations 11[b] and 1[c] above.

**vii. 11[f]**

*See* limitations 11[b] and 1[d] above.

**viii. 11[g]**

*See* limitations 11[b] and 1[e] above.

**ix. 11[h]**

*See* limitations 11[b] and 1[f] above.

**8. Claim 13**

**i. 13[p]**

Claim 11 has been shown to be obvious over *Ostrup* and 23.401. Section VIII.A.3 above.

**ii. 13[a]**

*See* limitations 10[p], 11[p], and 11[a] above, which recite a node with a data structure stored in a computer-readable storage medium.

**iii. 13[b]**

*See* limitation 10[a] above. Claim 13 depends from claim 11. To the extent the “one or more premium services” are services additional to the “one or more

premium services” introduced in claim 11, an indication of resource capacity reserved for requests for one or more additional premium services would have been obvious given *Ostrup*’s disclosure of various types of privileged sessions as discussed with respect to optional limitation 7[b]. EX1003, ¶140.

**iv. 13[c]**

*See* limitation 10[b] above.

**v. 13[d]**

*See* limitation 10[c] above.

**vi. 13[e]**

*Ostrup* discloses this limitation, which requires the information regarding resource use within the NAP recited in limitation 11[f]<sup>4</sup> to comprise at least a portion of information stored on the computer-readable storage medium. As explained above with respect to limitation 13[a] (referencing limitations 10[p] and 11[a]), *Ostrup* in view of 23.401 renders obvious a computer readable medium storing a data structure. As discussed above with respect to limitations 10[d] and 11[f], *Ostrup* in view of 23.401 renders obvious the computer readable medium and data structure storing the

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<sup>4</sup> Limitation 11[f] specifically recites “information comprising available resources in the [NAP] serving the UE that are not reserved for premium services.” This is the only “information” in claims 11 or 13 to which limitation 13[e] could refer.

information comprising available resources in the NAP serving the UE that are not reserved for premium services (*i.e.*, the information regarding resource use within the NAP).

**9. Claim 14**

**i. 14[p]**

To the extent preamble 14[p] is limiting, the combination of *Ostrup* and 23.401 discloses and renders it obvious. A POSITA would have understood that implementing *Ostrup* in an LTE network would include a system. EX1003, ¶144. Moreover, a POSITA would have understood that Fig. 1 of *Ostrup*, which includes a wireless terminal, a base station, and a reservation function, illustrates a system:

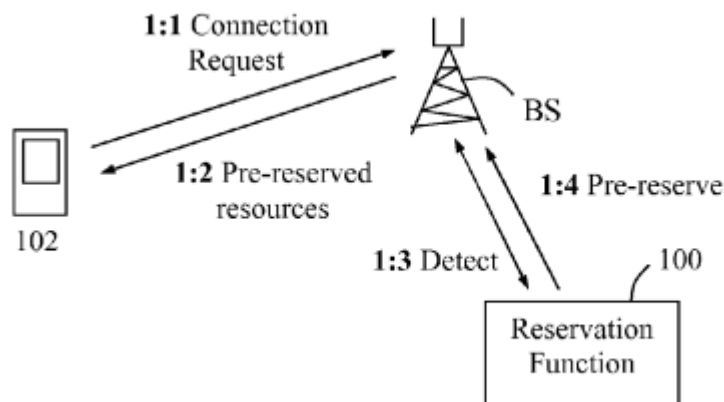


Fig. 1

EX1004, Fig. 1; EX1003, ¶144. This is consistent with the use of the term “system” in the ‘338 Patent, which states that aspects of the present invention may take the form of an embodiment combining software and hardware aspects “that may all generally be referred to herein as a ‘circuit,’ ‘module’ or ‘*system*.’” EX1001, 4:55-

60; EX1003, ¶145. *Ostrup*'s embodiment of Fig. 1 combines software and hardware aspects, which the '338 Patent describes as a system. EX1003, ¶145.

**ii. 14[a]**

*See* limitations 11[p] and 11[p].

**iii. 14[b]**

*See* limitation 11[a] above.

**iv. 14[c]**

*See* limitation 11[b] above.

**v. 14[d]**

*See* limitation 11[c] above.

**vi. 14[e]**

*See* limitation 11[d] above.

**vii. 14[f]**

*See* limitation 11[e] above.

**viii. 14[g]**

*See* limitation 11[f] above.

**ix. 14[h]**

*See* limitation 11[g] above.

**x. 14[i]**

*See* limitation 11[h] above.

**xi. 14[j]**



See limitation 10[p] above.

**xii. 14[k]**

See limitation 10[a] above.

**i. 14[l]**

See limitation 10[b] above.

**ii. 14[m]**

See limitation 10[c] above.

**B. Ground 2: *Ostrup* in view of 23.401 and *Ahmad***

**1. Rationale and Motivation to Combine**

As discussed above in Ground 1, a POSITA would have been motivated to combine *Ostrup* with 23.401. Section VIII.A. A POSITA would have been motivated to further combine these references with *Ahmad*. EX1003, ¶159.

*Ostrup* relates to “enabling privileged access in a cellular network.” EX1004, Title. *Ostrup* describes how resources of the base station are pre-reserved for privileged sessions. *Id.*, [00027]. A POSITA would have understood that, at least in some network configurations that involve multiple parties (*e.g.*, hosting and hosted network operators), for a network operator to reserve resources at a base station, there would be a need for an agreement to govern the issues, circumstances, and implications of this reservation. EX1003, ¶160. In order to implement *Ostrup* in an LTE network in view of 23.401, a POSITA would have looked to other references

with respect to such agreements. *Id.*

*Ahmad* is directed to “[f]lexible network sharing” and describes sharing of network resources under a sharing contract. EX1006, Title, Abstract. *Ahmad* explains how a hosting operator can allocate network resources to one or more hosted network operators based on a shared network agreement. *Id.*, [0112]; EX1003, ¶161. The agreement of *Ahmad* would also necessarily include a reservation of the agreed upon resource allocation by the hosting operator, so as not to violate the agreement. EX1006, [0142]; EX1003, ¶161.

*Ahmad* thus provides an example of an agreement for allocation of resources that would have been beneficial to a POSITA when looking to implement *Ostrup*’s reservation of resources in a cellular network given the need for a network resource agreement to govern issues, circumstances, and implications concerning the resource reservation, such as the amount of resources that need to be reserved and reservation timing. EX1003, ¶162. Such an agreement would, for example, identify the quantity and capacity of resources that are reserved. EX1003, ¶162; EX1006, [0123], [0166].

Further, similar to how *Ostrup* describes prioritizing reserved resources for privileged sessions, *Ahmad* describes distributing resource capacity based on priorities. EX1006, [0190]; EX1003, ¶163. As applied to *Ostrup*, *Ahmad* describes for a POSITA how to govern the reservation of the predefined resource capacity for connection setup requests for one or more premium services (*i.e.*, “resource

capacity”) available to particular priority levels using network resource sharing agreements. EX1003, ¶163. And like *Ostrup*, *Ahmad* explains how the sharing of resources may take place in a base station used in LTE networks, such as between operators with respect to an eNB. EX1006, [0096], [0047]; EX1003, ¶164).

A POSITA therefore would have been motivated to combine *Ahmad* with *Ostrup* and 23.401 when seeking details as to how the network operator in *Ostrup* would implement its resource reservation functionality in an LTE network, such as by using network resource sharing agreements as described by *Ahmad* in flexible network sharing scenarios. EX1003, ¶165.

## **2. Reasonable Expectation of Success**

As discussed above in Ground 1, a POSITA would have had a reasonable expectation of success in combining *Ostrup* with 23.401. Section VIII.A. A POSITA would have had a reasonable expectation of success when combining these references with *Ahmad*. EX1003, ¶166. For instance, similar to how *Ostrup* describes reserving resources in a cellular network, *Ahmad* describes distributing resource capacity based on priorities. EX1006, [0190]; EX1003, ¶163. As applied to *Ostrup*, *Ahmad* teaches the POSITA to govern the reservation of the predefined resource capacity for connection setup requests for one or more premium services (*i.e.*, “resource capacity”) available to particular priority levels using network sharing agreements. EX1003, ¶166.

As an example, a POSITA would have modified *Ostrup* to establish a network sharing agreement, as described in *Ahmad*, that indicates the amount of resources to be reserved by the resource owner, as described in *Ostrup*. EX1004, [0002], [0006], [00030], [00033]; EX1006, [00112]-[0114]; EX1003, ¶167.

As another example, a POSITA would have referred to a network sharing agreement, as described in *Ahmad*, when deciding whether a received connection request refers to a privileged session or not. EX1004, [0002], [0006], [00042]; EX1006, [0112]-[0114]; EX1003, ¶168.

A POSITA would have had a reasonable expectation of success in making these combinations, because these example embodiments merely implement a network sharing agreement as taught by *Ahmad* in *Ostrup*'s resource reservation functionality which would benefit from an agreement to govern the details of the resource reservation process in flexible network sharing scenarios. EX1003, ¶169.

### **3. Claim 2**

*Ostrup* in view of 23.401 and *Ahmad* renders obvious this limitation. Claim 1 has been shown to be obvious over *Ostrup* and *Ahmad*. Section VIII.A.3. And as described above with respect to limitations 1[d] and 1[e], *Ostrup* discloses determining whether a connection setup request is to be fulfilled based on information comprising available resources in a NAT not reserved for premium services. Sections VIII.A.3.v and VIII.A.3.vi. *Ostrup* describes using unreserved

resources provided that such resources are currently available for the base station.

*Id.*

*Ostrup* describes how network operators control the supply of resources in an access network:

“the number of simultaneous communication sessions with terminals in a specific area of a cell being served by a base station, is limited due to a ***limited supply of communication resources*** in the network. These restrictions primarily refer to bandwidth allocated for radio communication in the cell but may also pertain to various equipment available in the base station for providing the radio communication. ***Network operators typically control the radio communication in their cells by allocating a certain amount of bandwidth to individual cells.***”

EX1004, [0002].

*Ostrup* also describes how “each resource may logically be controlled by a ‘resource owner’ or the like.” *Id.*, [00030]. *Ostrup* further describes how certain parties have priority over other parties. *Id.* (“a session with a wireless terminal is deemed privileged [. . .] if it involves a party being classified as privileged and having priority over others, such as persons working for public safety, medical service, law enforcement, military service, etc.,” *id.*, [0030], [00039].

It would have been obvious to the POSITA that the reservation of resources

disclosed by *Ostrup* would have been based on agreements with one or more service providers. EX1003, ¶173. For example, the network operator of the network implementing *Ostrup*'s resource reservation functionality would be a service provider given the operator's provision of network services. *Id.*

In addition, the privileged or priority parties providing public safety, medical, law enforcement, or military services as described by *Ostrup* would also be service providers. *Id.*, ¶174. In order to implement the resource reservation functionality of *Ostrup*, it would have been obvious to have a resource reservation agreement between or among the network operator (a type of service provider) and the providers of the privileged or priority services benefitting from the reservation of resources (a type of service provider). *Id.*

Similarly, *Ahmad* describes a relationship between a hosting RAN operator (a type of service provider) and one or more hosted network providers that provide services to subscribers (a type of service provider). EX1006, [0110] ("As used in this disclosure, **a network operator may also be** referred to as a RAN operator, a hosting operator, or **a hosting RAN operator.**"); *id.*, [0166] ("For example, a hosted operator may be allocated two million APN-AMBR of 54 MBps non-GBR for an APN that may correspond to an **on-demand movie service**. The **hosted operator may then serve two million subscribers**, assuming each subscriber may have one PDN connection to that site at a time."). Since the hosting RAN operator provides services

(e.g., network resources) to the hosted network providers, and the hosted network providers provide services (e.g., on-demand movie services) to subscribers, both the hosting RAN operator and the hosted network providers are service providers. EX1003, ¶175. *Ahmad*'s characterization of the hosted operator serving on-demand movie service subscribers is similar to the '338 Patent's characterization of service providers as Over-The-Top (OTT) service providers. EX1001, 9:51-56, 10:15-17; EX1003, ¶175.

*Ahmad* further describes sharing agreements and policies for network RAN resources. EX1006, [0112]. *Ahmad* also explains how a sharing agreement for resource allocation between a hosting operator and a hosted operator may take place. *Id.*; EX1003, ¶176.

Thus, in light of *Ahmad*'s teachings of agreements for resource sharing between a network RAN operator and a hosted operator that serves subscribers, it would have been obvious to have agreements in place for the reservation of resources between *Ostrup*'s network operator and its providers of priority or privileged services. EX1003, ¶177. Such agreements would be based on network resource capacity and would govern the policies and issues surrounding *Ostrup*'s resource reservation functionality for its priority service providers. *Id.* The motivation to combine *Ahmad* with *Ostrup* and 23.401 is further discussed above in Section VIII.B.1.

Given the obviousness of an agreement with one or more service providers for *Ostrup*'s reservation of resources, it would have been obvious that when *Ostrup* determines whether to fulfill a connection request using unreserved resources provided that they are currently available at the base station (*e.g.*, as described above with respect to limitations 1[d] and 1[e]), this determination is further based on one or more agreements with one or more service providers regarding resource capacity in an access network part of the telecommunications network. EX1003, ¶178. These agreements, for example, would identify the quantity and capacity of resources that are reserved and, as a result, which are not reserved. *Id.* Moreover, given that the base station is a NAP, resource capacity in the base station is resource capacity in an access network part of the telecommunications network. *Id.*

Thus, *Ostrup* in view of 23.401 and *Ahmad* renders obvious a determination of whether the connection setup request is to be fulfilled further based on one or more agreements with one or more service providers regarding resource capacity in an access network part of the telecommunications network. *Id.*, ¶179.

#### **4. Claim 3**

*Ostrup* in view of 23.401 and *Ahmad* renders obvious this limitation. Claim 2 has been shown to be obvious over *Ostrup*, 23.401, and *Ahmad*. Section VIII.B.3. And as explained for claim 2 above, it would have been obvious to the POSITA that the reservation of network resources disclosed by *Ostrup* would have been based on



agreements with one or more service providers. *Ahmad* specifically describes sharing agreements and policies for network RAN resources between service providers to manage resource capacity. Section VIII.B.3; EX1003, ¶180; EX1006, [0012], [0123], [0142], [0166]. And as discussed above with respect to limitation 10[a], *Ostrup*'s base station includes an indication of a resource capacity of a NAP reserved for connection setup requests for one or more premium services. VIII.A.6.ii.

Thus, it would have been obvious for the agreements upon which *Ostrup*'s reservation of resources would be based would comprise reservation, at the NAP serving the UE, of a predefined resource capacity for connection setup requests for one or more premium services. EX1003, ¶181; Section VIII.B.1.

## **5. Claim 4**

*Ostrup* in view of 23.401 and *Ahmad* renders obvious this limitation. As explained for claim 2 above, it would have been obvious to a POSITA that the reservation of network resources disclosed by *Ostrup* would have been based on agreements with one or more service providers. Section VIII.B.3. And as explained for claim 3 above, it would have been obvious for the agreements upon which *Ostrup*'s reservation of resources would be based would comprise reservation, at the NAP serving the UE, of a predefined resource capacity for connection setup requests for one or more premium services. Section VIII.B.4.

Claim 4 recites that the predefined resource capacity is set as a percentage of total resource capacity of the NAP. *Ostrup* discloses that if additional privileged session connections are established by using pre-reserved resources, *Ostrup*'s resource reservation functionality can "ensure that there are always enough resources pre-reserved and readily available for at least one more privileged session connection until all resources are exhausted in the cell." EX1004, [00027]. All resources corresponds to the claimed "total resource capacity." EX1003, ¶183.

*Ahmad* explains how network resource sharing agreements can be based on a fixed percentage allocation of network resources. EX1006, [0119] ("The sharing contract may define a fixed percentage allocation of network resources that may not be modified without a change in the contract."). *Ahmad* also states that "[a] number of metrics may be used individually or in any combination to express the network capacity and the network slice allocation to hosted operators. One metric may be a number of GBR bearers that may be available, or a percentage of the total GBR bearers that may be available for each defined GBR data rate, QC1, and ARP (downlink, uplink)." EX1006, [0166]. Given the disclosure of network resource agreements governing sharing of resources between service providers based on percentage allocation of resources and given *Ostrup*'s accounting for both pre-reserved resources and total resource capacity of the cell, it would have been obvious to a POSITA for the reservation of predefined resource capacity for connection setup

requests for one or more premium services in the agreements with one or more service providers to be set as a percentage of total resource capacity at the NAP. EX1003, ¶184; Section VIII.B.1. Setting the reserved resource capacity as a percentage of the total resource capacity allows the network operator to share resources with multiple service providers according to the same allocation. EX1003, ¶184; EX1006, [0140] (“When resource sharing is dedicated and allocated, different network nodes, e.g., RAN nodes, may need to be informed about the resource sharing percentage or appropriation between different operators so that RAN resources may be shared according to the same allocation.”). Setting the reserved resource capacity as a percentage of the total resource capacity also ensures that the resources in the base station are utilized effectively for serving sessions in the cell. EX1003, ¶184; EX1004, [00012]. Setting the reserved resource capacity as a percentage of the total capacity also ensures relative consistency over time of the reservations, even as use dynamically changes. EX1003, ¶184.

## **6. Claim 5**

*Ostrup* in view of 23.401 and *Ahmad* renders obvious this limitation. As explained for claim 2 above, it would have been obvious to the POSITA that the reservation of network resources disclosed by *Ostrup* would have been based on agreements with one or more service providers. Section VIII.B.3. And as explained for claim 3 above, it would have been obvious for the agreements upon which

*Ostrup*'s reservation of resources would be based would comprise reservation, at the NAP serving the UE, of a predefined resource capacity for connection setup requests for one or more premium services. Section VIII.B.4. *Ostrup* discloses that if additional privileged session connections are established by using pre-reserved resources, *Ostrup*'s resource reservation functionality can "ensure that there are always enough resources pre-reserved and readily available for at least one more privileged session connection until all resources are exhausted in the cell." EX1004, [00027]. All resources corresponds to the claimed "total resource capacity." EX1003, ¶185. Moreover, *Ahmad* discloses how network resource allocation may be expressed as a predefined amount. *See, e.g.*, EX1006, [0166] ("A number of metrics may be used individually or in any combination to express the network capacity and the network slice allocation to hosted operators. One metric may be a number of GBR bearers that may be available, or a percentage of the total GBR bearers that may be available for each defined GBR [guaranteed bit rate] data rate, QC1, and ARP (downlink, uplink).").

It would have been well understood by the POSITA that the amount of pre-reserved resources for privileged sessions is less than the total resource capacity of the base station. EX1003, ¶186. For example, leaving some resource capacity of the base station unreserved and available for non-privileged sessions would be beneficial to avoid wasting resources since it is unlikely that all of the base station's

resource capacity will be used for privileged sessions at the same time. *Id.* Moreover, *Ostrup* itself discloses reserving resources for privileged sessions less than the total resource capacity. For example, *Ostrup* discloses that if a connection request is not for a privileged session, then the base station can establish a connection by using “unreserved resources.” EX1004, [00042]. If the resources reserved for privileged sessions amounted to the total resource capacity of the base station, then there would not be any unreserved resources to be available. EX1003, ¶186.<sup>5</sup>

Accordingly, *Ostrup* in view of 23.401 and *Ahmad* renders obvious that the reserved predefined resource capacity is set as a predefined amount of the total resource capacity and is less than the total resource capacity of the NAP.

## 7. Claim 6

*Ostrup* in view of 23.401 and *Ahmad* renders obvious this limitation. As explained for claim 2 above, it would have been obvious to the POSITA that the reservation of network resources disclosed by *Ostrup* would have been based on agreements with one or more service providers. Section VIII.B.3. And as explained

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<sup>5</sup> While *Ostrup* states that the connection using unreserved resources is established provided that unreserved resources are currently available, a POSITA would have understood based on *Ostrup* that unreserved or “free” resources would not be available due to “congestion in the cell.” EX1004, [00036]; EX1003, ¶fn 5.

for claim 3 above, it would have been obvious for the agreements upon which *Ostrup*'s reservation of resources would be based would comprise reservation, at the NAP serving the UE, of a predefined resource capacity for connection setup requests for one or more premium services. Section VIII.B.4.

*Ostrup* further explains how “new resources are pre-reserved in the base station for privileged sessions as soon as it is detected that resources have been seized for a privileged session connection, to compensate for the seized resources in a dynamic manner.” EX1004, [00012]. *Ostrup* describes a scenario where the reservation of resources is delayed until enough resources become available. *Id.*, [00036]. Thus, *Ostrup* discloses that the pre-reserved resource capacity reserved for privileged sessions may be dynamically adjusted based on current use and current availability of resources. EX1003, ¶189.

Moreover, *Ahmad* further describes how the allocation of network resources can be dynamically adjusted in accordance with network sharing agreements among service providers. EX1006, [0113] (“Dynamic sharing may be a type of network sharing agreement in which the allocation of network resources may be changed or switched using manual or automatic OAM procedures between the hosting operator and the hosted operator.”) *Ahmad* explains how this type of dynamic sharing can occur within a specific time frame, such as “a few minutes to a few hours.” *Id.* Notably, the '338 Patent describes how “the amount of resources reserved for the

premium services could be dynamically adjusted based on a schedule (i.e. adjusted depending on the time of the day, day in the week, etc.).” EX1001, 10:20-23; EX1003, ¶190.

Thus, given *Ostrup*’s disclosure of dynamically adjusting the reserved resource capacity and given *Ahmad*’s disclosure of agreements for dynamically adjusting the shared and reserved resources among service providers, it would have been obvious to a POSITA to dynamically adjust the predefined reserved resource capacity in *Ostrup*. Dynamically adjusting the reserved resource capacity is beneficial in situations where limited resources may be available at the base station, as described in *Ostrup*. EX1003, ¶191; EX1004, [00036]. Dynamically adjusting the reserved predefined resource capacity is also beneficial in that it allows flexibility “to accommodate the capacity needs” of service providers “on a real-time basis.” EX1006, [0005].

## **8. Claim 7**

### **i. 7[a]**

*Ostrup* in view of 23.401 and *Ahmad* renders obvious this limitation, which requires determining that the identified service is not one of “the” one or more premium services for which predefined resource capacity was reserved in the agreement. As explained for claim 3 above, it would have been obvious that the agreements upon which *Ostrup*’s reservation of resources would be based would

comprise reservation, at the NAP serving the UE, of a predefined resource capacity for connection setup requests for one or more premium services. Section VIII.B.4.

As described above with respect to limitation 1[c], *Ostrup* discloses that the base station determines that the identified session is not a privileged session, and therefore could not be an emergency service. Section VIII.A.3.iv. *Ostrup* distinguishes between “privileged sessions” and “non-privileged sessions.” EX1004, [0003].

Similarly, the '338 Patent distinguishes between “premium services” and “non-premium services.” EX1001, 1:50-54. As such, *Ostrup*’s “privileged sessions” correspond to the claimed “premium services.” EX1003, ¶194.

Accordingly, given that it would have been obvious for an agreement to include a reservation of a predefined resource capacity for connection setup requests for *Ostrup*'s privileged sessions, and given *Ostrup*’s disclosure of determining that the identified service is not one of the one or more privileged sessions, *Ostrup* in view of 23.401 and *Ahmad* renders obvious this limitation. EX1003, ¶195.

**ii. 7[b]**

This claim feature is optional and therefore does not carry patentable weight. *In re Johnston*, 435 F.3d 1381, 1384 (Fed. Cir. 2006) (“As a matter of linguistic precision, optional elements do not narrow the claim because they can always be omitted.”). In the event this optional claim feature is considered limiting, *Ostrup*



discloses that the identified service is not one of one or more additional premium services. As explained with respect to limitation 7[a] above, *Ostrup* discloses determining that the identified service is not one of the one or more premium services for which predefined resource capacity was reserved in the agreement. Section VIII.B.8.i.; EX1003, ¶196. This optional limitation recites determining that the identified service is not one of one or more additional premium services.

*Ostrup* provides several examples of types of privileged sessions, such as communication sessions from or to parties of particular priority such as persons working for public safety, medical service, law enforcement, and military service. EX1004, [0003], [00030] (“Moreover, a session with a wireless terminal is deemed privileged . . . if it involves a party being classified as privileged and having priority over others, such as persons working for public safety, medical service, law enforcement, military service, etc.”); *id.*, [0030], [00039].

*Ostrup* further explains that “[t]he session may also be identified as privileged by [. . .] priority information received from a core network, e.g. a parameter called “Allocation Retention Priority, ARP”. Section VIII.A.3.iii; EX1004, [00013].

Given *Ostrup*’s disclosure of various types of privileged sessions to which its functionality could apply, it would have been obvious to a POSITA to utilize an agreement for reservation of predefined resource capacity for one or more privileged session types while also determining that an identified service is not one of one or

more other privileged session types or premium services. Any one of *Ostrup*'s privileged session types may refer to the "premium services" of claim 3 and other types of privileged sessions disclosed by *Ostrup* could be the "additional premium services" of optional limitation 7[b]. EX1003, ¶199.

## IX. CONCLUSION

Petitioner respectfully requests institution of IPR and cancelation of claims 1-11 and 13-14 of the '338 Patent as unpatentable.

Respectfully submitted,

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**CERTIFICATE OF SERVICE**

The undersigned hereby certifies on this 1st day of December, 2023, that true and correct copies of the foregoing PETITION FOR INTER PARTES REVIEW OF U.S. PATENT NO. 11,259,338, Exhibits 1001-1010, and Petitioner's power of attorney were served in their entirety on the following parties via FedEx Express® or Express Mail:

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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 13,875 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 in 14-point Times New Roman.

Respectfully submitted,

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