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European Patent Application EP 19 160 813.2
SERVICE CHAIN FAULT DETECTION METHOD AND APPARATUS
Huawei Technologies Co., Ltd.

On the communication pursuant to Art. 94(3) EPC dated 08.02.2023:

It is requested to proceed with the examination on the basis of new claims 1 to 23 replacing the claims on file, and the remaining documents as currently on file.

I. Amendments

Claim 1 has been amended to specify that the first fault tracing detection request packet is sent by a previous-hop service forwarding entity, SFE of the SFE on the service chain. Original disclosure can be found in e.g., par. [0019] of the original description.

Claim 12 has been amended similar to claim 1.

The remaining claims are unchanged.

Thus, all amendments meet the requirements of Art. 123(2) EPC.

II. Two-part form, Rule 43(1) EPC

In response to the request for two-part form in section 4.1 of Office Action 3, OA3, it is submitted that the subject matter of new claims 1 and 8 relates to a method whose method steps are interrelated with

each other, while the inventive step concerns changes in several of these interrelated method steps. Further, the subject matter of claim 12 and 19 relates to a complex apparatus of functionally inter-related parts, while the inventive step concerns changes in several of these parts of the apparatus. Therefore, the use of the two-part form is considered to be inappropriate, since it would give a distorted picture of the claimed invention and would lead to an artificial lack of clarity of the respective claim. Hence, it is requested to allow the one-part form in the present case.

III. Clarity

Under item 3.1 of OA3, the Examining Division raises a lack-of-clarity objection regarding the entity responsible for sending the *"first fault tracing detection request packet"*. Allegedly, the identity of this entity is not clear. Present claims 1 and 12 now state that the first fault tracing detection request packet is sent by a previous-hop SFE of the SFE on the service chain. Thus, the objection is overcome.

In response to the objection under item 3.2 of OA3, it is again submitted that independent claims 1, 8, 12 and 19 do not utilize the terms "fault tracing detection" or "initiating fault detection" individually, but rather define a "first fault tracing detection request packet" containing a path ID, a "first fault tracing detection response packet" containing the path ID and ID of the SF node, and a "second fault tracing detection response packet" containing the path ID and ID of the SFE. Additionally, these claims make reference to a "device for initiating fault detection" that is connectable to the SFE, and its relevant technical features. Consequently, the terms "fault tracing detection" and "initiating fault detection" do not create any lack of clarity concerning the subject matter of the aforementioned claims.

Under item 3.2.1 of OA3, the Examining Division argues that the nature of the fault remains unknown. The applicant respectfully disagrees that this causes a lack of clarity. The skilled person understands that the faults being detected are any kind of faults that might occur in the service chain during its operation. Any fault, may it be of any kind, if detected would lead to achieving the same technical effect if the claimed method is implemented.

The Examining Division under item 3.2.1 further objects that it is not clear how fault detection is achieved merely by requesting/sending/obtaining just ID's of one SF node and one SFE. The applicant respectfully disagrees. It is reiterated that the method of claim 8 interacts with the method of claim 1 and comprises steps of determining that forwarding between the SFE node and the SF node is normal and that the forwarding between the SFE and the device for initiating fault detection is normal. Thus, these

determinations in combination lead to the result that the forwarding between all devices (device for initiating fault detection, SFE node, and SF node) is normal.

Furthermore, it is understood that by repeating the same method for all the SF nodes and SFEs, fault/detecting can be achieved for the entire chain. The skilled person knows that the SF node in a service chain is responsible for processing the request and the SFE is responsible for forwarding the request to the next service function in the chain. If there is a fault in the service chain, it will be reflected in the SF node or SFE, and they will not be able to either process or forward the request. Thus, the claimed invention provides a way of determining service chain fault detection.

Under item 3.2.2 of OA3, the Examining Division raises concerns about the other SF nodes on the path. Although the claims describe obtaining the ID of only one SF node in the service chain, it is only for conciseness, and the method can be applied to all SF nodes in the chain by repeating the process for each node.

Furthermore, the Examining Division apparently considers that fault detection according to the independent claims is merely determining whether *"the ID of one SF node"* obtained in the *"fault tracing detection response packet"* is included in the memory of the SFE or not, and further that, at best, this is only one type of fault that is detected. The applicant respectfully disagrees with this interpretation. It is clear that to implement normal forwarding of the service packet, a detection device in the network detects whether the SFE and the SF node can forward the service packet and through the correct path. If a fault (any kind of fault) occurs, the normal forwarding of the service packet is affected. Using the path ID and the ID of the SFE, the fault can be traced. The applicant notes that any fault can be detected and traced through this technique.

Objections under item 3.3 of OA3 are expected to be overcome after the above explanation.

Therefore, all claims are clear and meet the requirements of Art. 84 EPC.

IV. Novelty and Inventive Step

The applicant hereby indicates their intention to rely on the arguments concerning novelty and inventive step that were presented in their previous response.

V. Conclusion

In view of the amendments made and the above explanations, it is believed that the application is now in a state acceptable for grant. Should the Examining Division,

nevertheless, still see deficiencies in the documents on file, it is kindly asked to give the applicant the opportunity to file further arguments and, if necessary, amendments. Minor issues could be discussed by telephone.

Only as a measure of precaution,

Oral Proceedings

are herewith requested. In this event, it is further requested that the Oral Proceedings be either held in Munich, or by videoconference.

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Dr. Matthias Hofmann

Enclosures:
New claims 1 to 23, clean copy
New claims 1 to 23, marked-up version