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Service Routing in Multi-access Edge Computing  
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## Abstract

This document introduces a service routing mechanism in the scenario of Multi-access Edge Computing.

## Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [[RFC2119](#)].

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## [1.](#) Introduction

The operators are deploying Multi-access Edge Computing (MEC) to provide services with lower latency to their users. Comparing to accessing service in the cloud, the MECs can provide service much nearer to the users.

However, in the current architecture of Internet, we need to send a DNS request to get the IP address of the service firstly, and then access the service [[RFC1035](#)]. It is not the optimal solution in the MEC scenarios which are sensitive to the latency of service accessing. In this document, we introduce a mechanism that can access the service directly without the DNS procedure.

In the 5G architecture, a UE (User Equipment) need to connect to a UPF (User Plane Function) working as a gateway, and then access service via the destination IP address.

In the scenarios of MEC, the service may be accessed within the MEC, meanwhile the MEC also provides a UPF Function for the UEs. Therefore, in fact, the service access takes place in a limited domain [[RFC8799](#)]. In this limited domain, we can use a specific IP address to directly access the service.

## [2.](#) Proposed Mechanism Description

In the proposed mechanism, a UE should have a session with the UPF in the MEC. Also, the UE should be aware that it can access the service more quickly within the MEC if the service is available in the MEC. The proposed mechanism is described briefly as below.

Firstly, the UE send a normal DNS request if it wants to access a service, such as "www.local-weather.com". Meanwhile, it can make a destination IP address itself by hashing the URL, and try to establish a TCP connection directly.

Secondly, the UE may establish the connection successfully by using the specific IP address, and get access to the service bypassing the DNS procedure. If it fails, the UE can wait for the normal destination IP address received from the DNS procedure.

In this mechanism, the IP address can contain some information about the service, so we call it service routing in this document. The specific IP address is called the Service Routing IP address or the SR IP address.

### 3. SR IP Address

There are many options for the Service Routing IP address.

In the first option, we can assume that the UE can receive an MEC prefix for the service routing in the procedure of establishing the session between the UE and the UPF in the MEC. For example, an MEC prefix is 64 bits, and the hashed URL is also 64 bits. In the MEC, the server of the service should use the same hash algorithm to generate the SR IP address, and the 128 bits IPv6 address should be routed correctly within the MEC. Hence, the MEC works like a virtual network node containing services, with the MEC prefix as a Location, and the hashed URL as a Function.

In the second option, we can use a ULA IP address for the SR IP address [[RFC8799](#)]. The procedure is similar to the first option, but the SR IP address becomes the format of <MEC\_ULA\_Prefix: Hashed\_URL>. The MEC\_ULA\_Prefix contains a specific subnet-ID.

In the last option, we can use all the 128 bits as the Hashed\_URL. In this situation, the UE does not need to receive a specific prefix

in advanced, and all the services in different MECs have the same IP address for the same service to support this quick access.

#### 4. IANA Considerations

TBD.

#### 5. Security Considerations

TBD.

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#### 6. Acknowledgements

TBD.

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