

A Sequence Number Extension for HTTP Datagrams



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Background



- 3GPP ATSSS - Study on access traffic steering, switching and splitting support in the 5G system architecture.
- Traffic splitting will be based on MP-QUIC and Masque.
- ATSSS endpoints should be able to support limited reordering to compensate for path delay differences.
- Reordering in the QUIC layer is either all or nothing.
- The ATSSS study proposes to extend HTTP datagrams with sequence numbers.

Datagrams with Numbers



- Increment sequence number for every transmitted datagram.

```
Sequence Number Datagram {  
    Context ID (i),  
    Sequence Number (8..64),  
    Payload (...)  
}
```

Registration



- Indicate support with HTTP header: **DG-Sequence: ?1**

- Register a sequence number space
- Indicate the size of the space (8, 16, 32 or 64).
- Indicate the format of the payload that follows a sequence number.

```
REGISTER_SEQUENCE_CONTEXT Capsule {
    Type (i) = REGISTER_SEQUENCE_CONTEXT,
    Length (i),
    Context ID (i),
    Payload Context ID (i),
    Representation (8)
}
```

- Map multiple contexts to a single sequence if multiple payload formats are used.

```
ADD_SEQUENCE_CONTEXT Capsule {
    Type (i) = ADD_SEQUENCE_CONTEXT,
    Length (i),
    Sequence Context ID (i),
    Context ID (i),
    Payload Context ID (i)
}
```

