

# **Bandwidth occupancy issue in draft-ietf-rmcat- coupled-cc**

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# Introduction

- Implemented Active FSE as defined in draft-ietf-rmcat-coupled-cc-07 in Omnet/INET
- Document does not consider application limited scenarios in case of Active FSE, but does for Passive FSE?
- Issues with multiple RTP flows with different priorities when application limited streams are present

# Active FSE Algorithm

- On CC update of flow f:

(a) It updates S\_CR.

$$S\_CR = S\_CR + CC\_R(f) - FSE\_R(f)$$

[...]

(c) It calculates the sending rates for all the flows in an FG and distributes them.

```
for all flows i in FG do
  FSE_R(i) = (P(i)*S_CR)/S_P
  send FSE_R(i) to the flow i
end for
```

# Active FSE Algorithm

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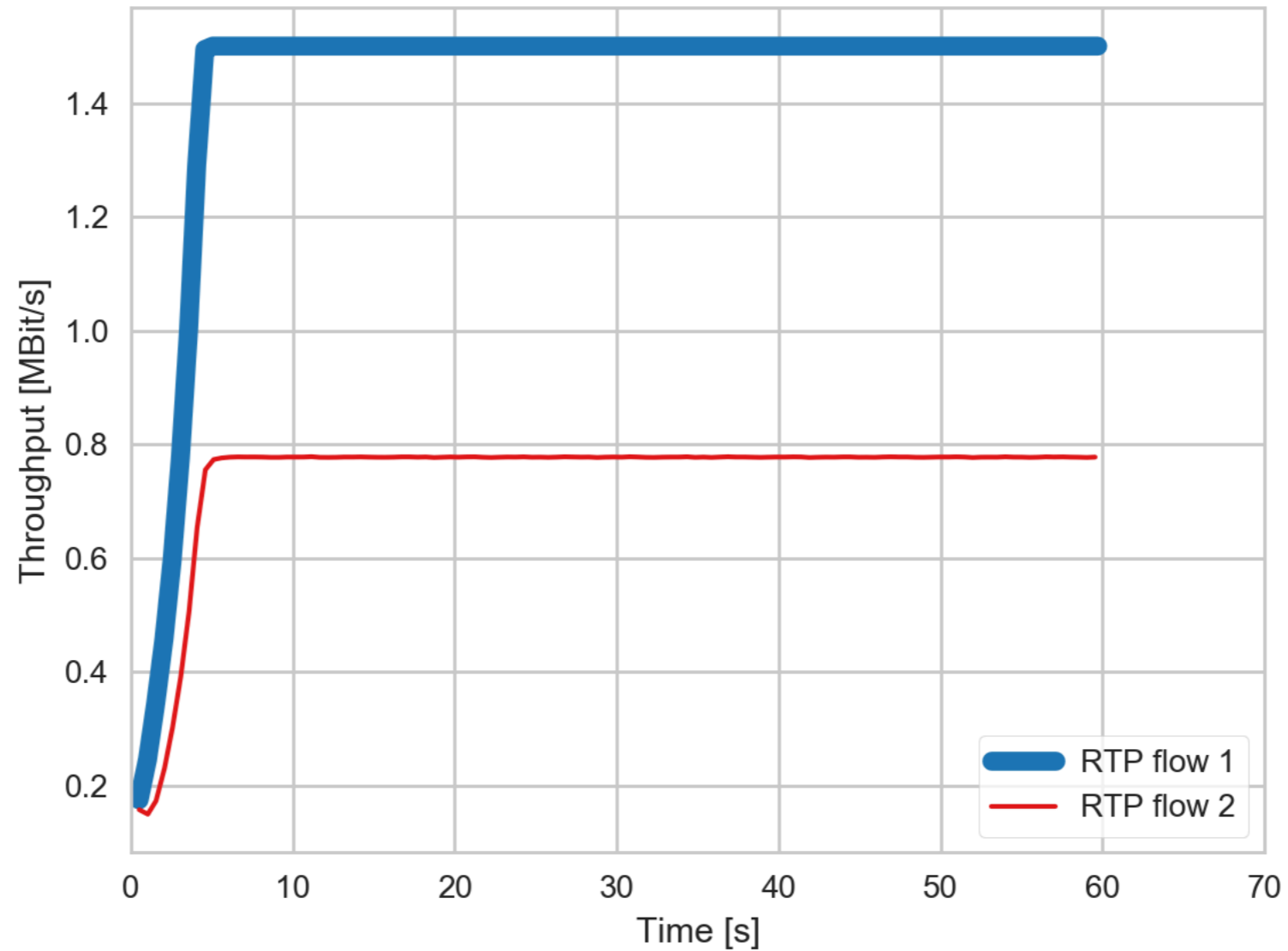
[...]

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for all flows i in FG do
  FSE_R(i) = (P(i)*S_CR)/S_P
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end for
```

What if this is bigger than  
RMAX?

# Example



$p_1 = 1.0$ ,  $p_2 = 0.5$  / BtlBdw: 4Mbps / RMAX = 1.5 Mbps

# Proposed fix

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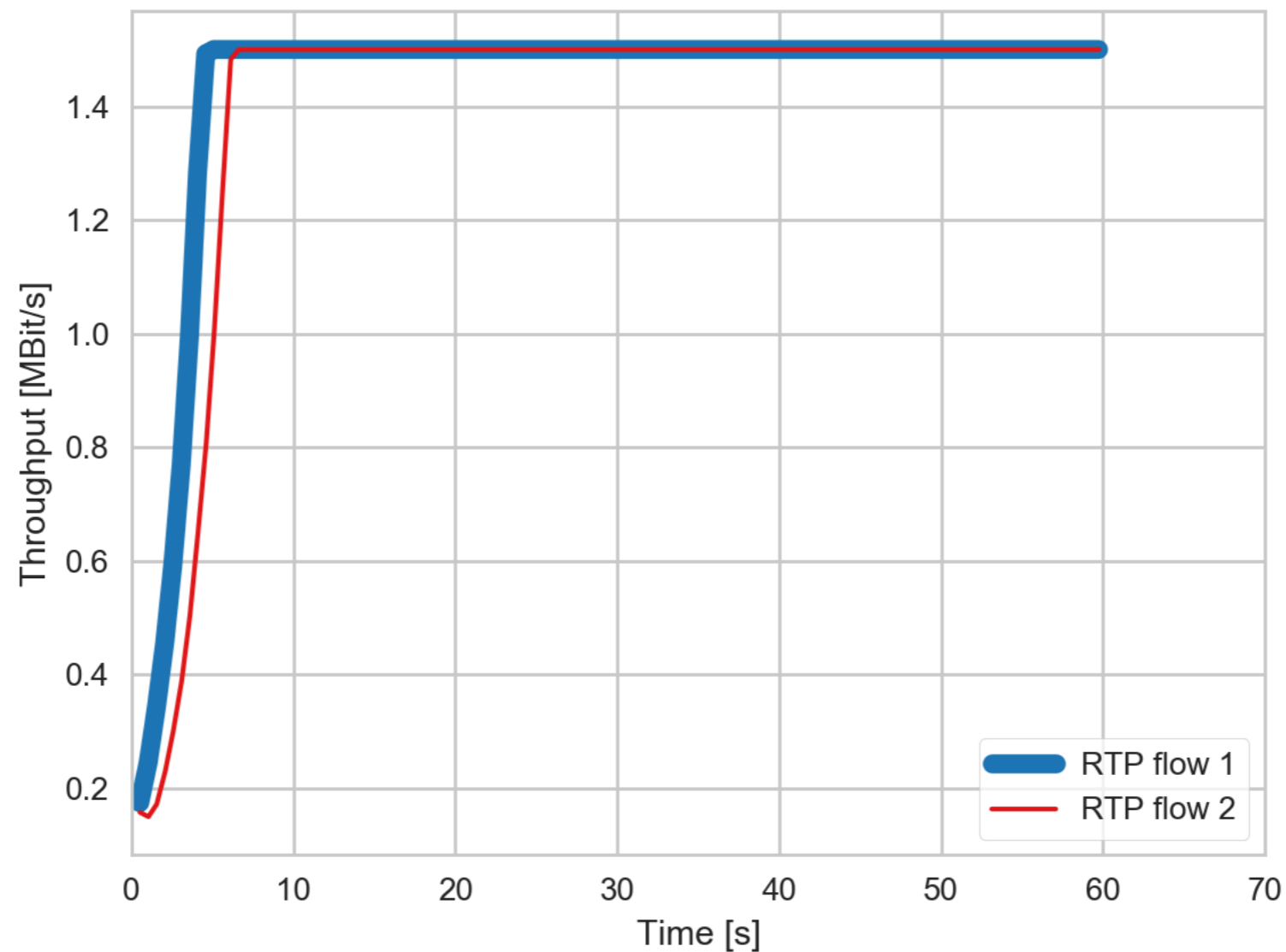
$$S\_CR = S\_CR + CC\_R(f) - FSE\_R(f)$$

[...]

(c) It calculates the sending rates for all the flows in an FG and distributes them.

```
TLO = 0
for all flows i in FG do
  FSE_R(i) = (P(i)*S_CR)/S_P + TLO
  TLO = 0
  if FSE_R(i) > RMAX(i)
    TLO = FSE_R(i) - RMAX(i)
    FSE_R(i) = RMAX(i)
  end if
  send FSE_R(i) to the flow i
end for
```

# Proposed fix



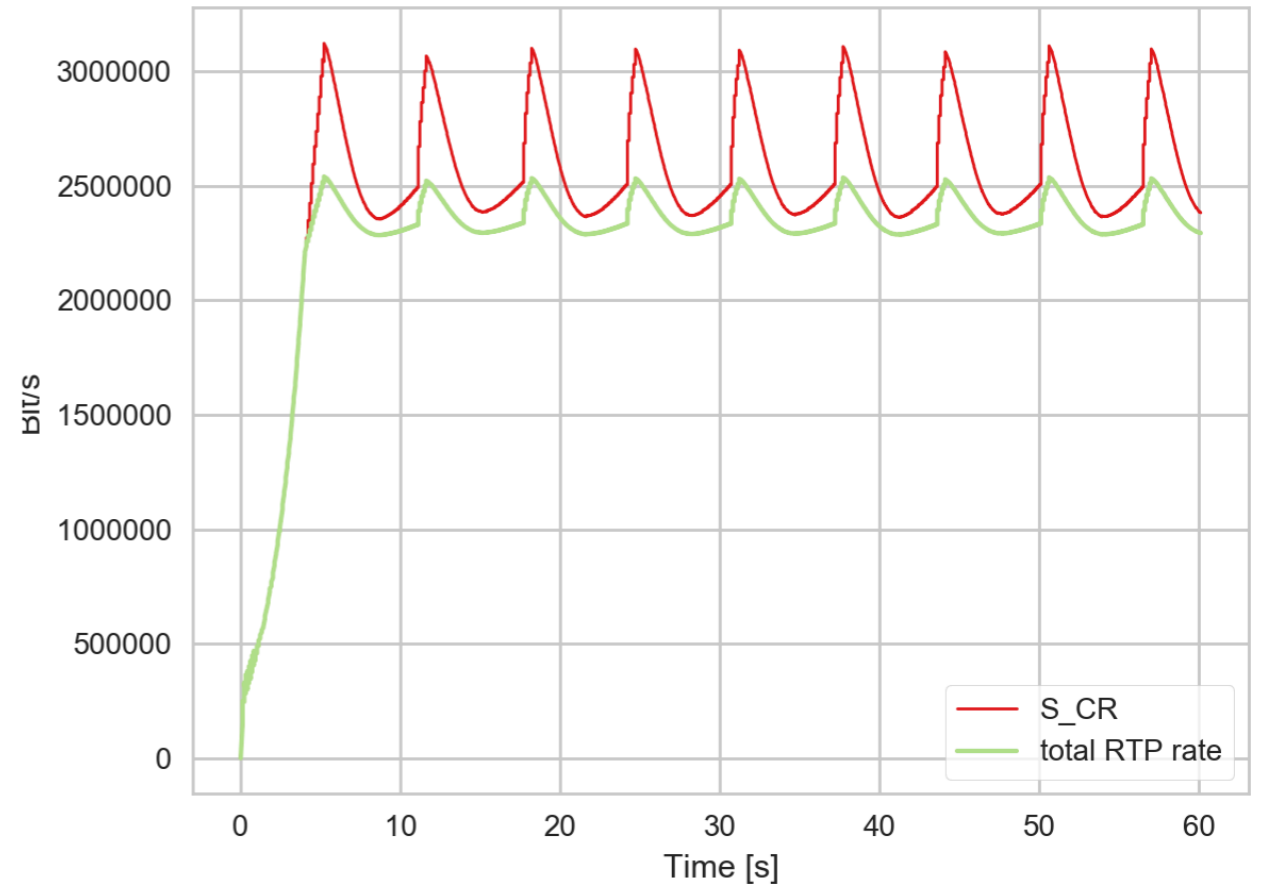
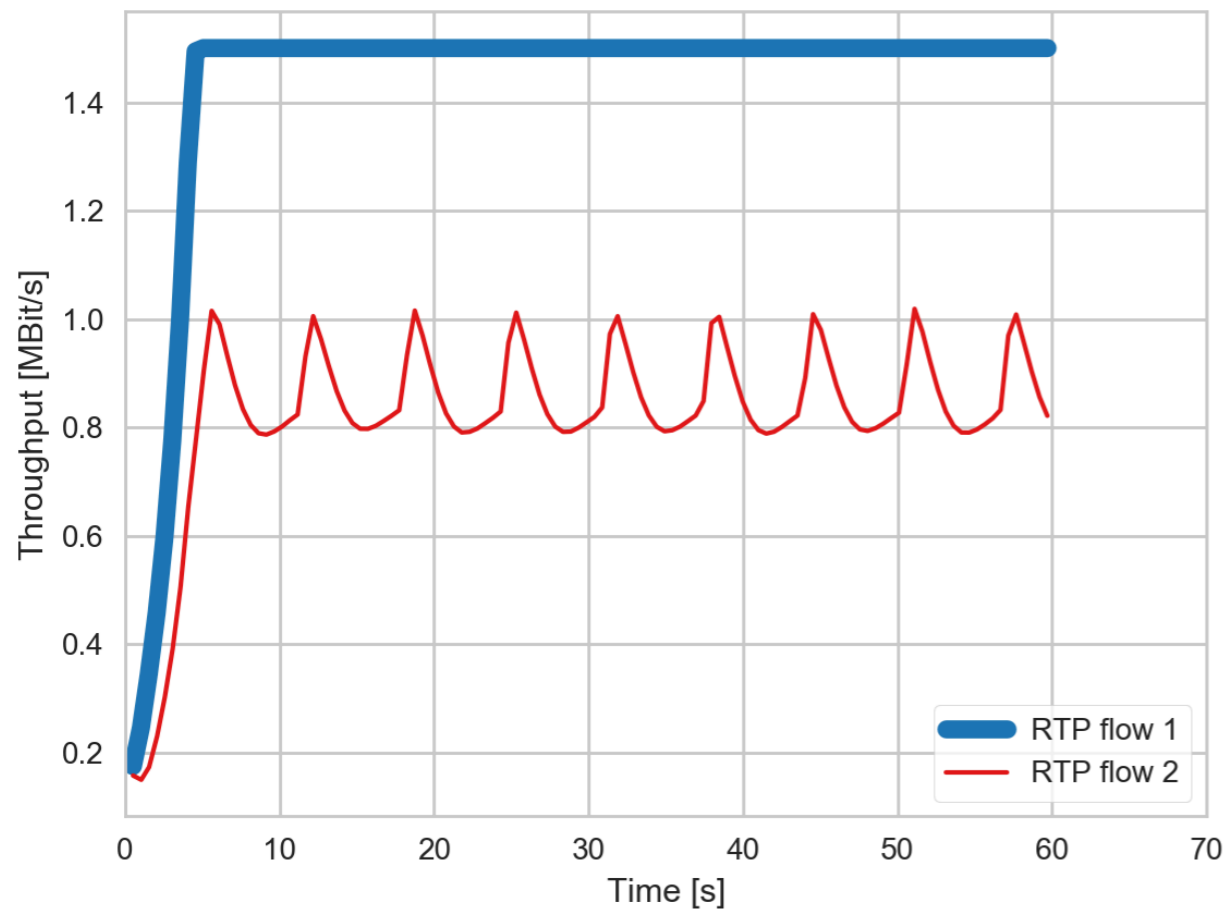
$p_1 = 1.0$ ,  $p_2 = 0.5$  / BtlBdw: 4Mbps / RMAX = 1.5 Mbps

# Questions

- Is this an issue we should address?
- How to get RMAX to the FSE? FSE REGISTER?
- What about low-quality media sources? CC-limited vs. media-source limited?



# Backup-Slides



```
for all flows i in FG do
  FSE_R(i) = max(P(i)*S_CR)/S_P, RMAX)
  send FSE_R(i) to the flow i
end for
```

$p_1 = 1.0$ ,  $p_2 = 0.5$  / BtIBdw: 2.5 Mbps / RMAX = 1.5 Mbps