



EVALUATING THE IMPACT OF UEFA CHAMPIONS LEAGUE MATCHES ON INTERNET TRAFFIC

***WEDNESDAY INTERNET TRAFFIC DURING UEFA CL MATCHES
(as seen at MINAP and NAMEX)***

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Special Projects
NAQUADRIA | PCIX



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- **Traffic data @ MINAP and NAMEX (IXPManager-based)**
- **Live sport streaming → football
focus on Wednesdays night football matches**
- **Analysis of traffic deviations during Wednesday UEFA
Champions League matches (*)**
- **UEFA CL Match streaming only on Amazon Prime Video**

(*) UEFA Champions League observed:

- **CL 2023–2024 Knockout Phase (Feb–May 2024)**
- **CL 2024–2025 League Phase (Set–Nov 2024)**



Where we retrieve traffic data



see <https://www.ixpmanager.org/community/user-list>

IT (MINAP, NAMEX)
IE (INEX)
GB (LONAP, NCL-IX)
SE (STHIX)
DE (BCIX, DO-IX, ...)
NL (DATAIX, FRYS-IX, ...)
RO (InterLAN)
GR (GR-IX)
HR (CIX)
[...]

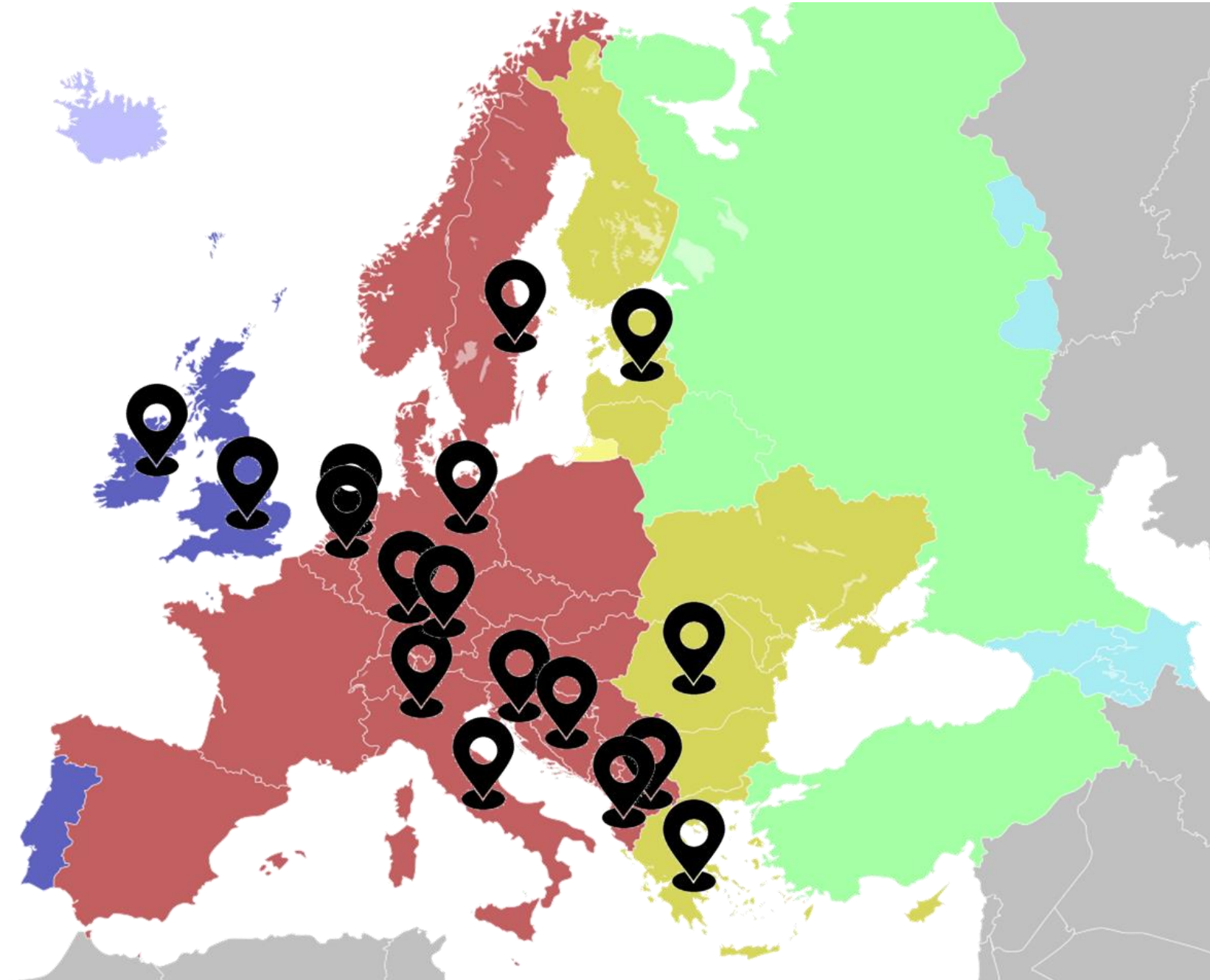


Image source: https://en.wikipedia.org/wiki/Central_European_Time#/media/File:Time_zones_of_the_Greater_Europe.svg



Which traffic data we collect



[https://ixp.example.com/grapher/{graph}\[?id=x\]\[&period=x\]\[&type=x\].....](https://ixp.example.com/grapher/{graph}[?id=x][&period=x][&type=x].....)

API access

current traffic
[bps]



```
{
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  "urls": {
    "png": "https://www.inex.ie/ixp/grapher/ixp?period=day&type=png&category=bits",
    "log": "https://www.inex.ie/ixp/grapher/ixp?period=day&type=log&category=bits",
    "json": "https://www.inex.ie/ixp/grapher/ixp?period=day&type=json&category=bits"
  },
  "base_url": "https://www.inex.ie/ixp/grapher/ixp",
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    "curin": 158715231920,
    "curout": 158713872624,
    "averagein": 125566129180.59367,
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    "maxin": 222438012592,
    "maxout": 222348641336
  },
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    "protocol": "all",
    "id": 1
  }
}
```

source: <https://docs.ixpmanager.org/grapher/api/>



Which traffic data we collect / 2



ISO 8601 timestamp
Mon to Sun week

10m «sampling»
144 samples / day
1008 samples / week
~ 53k samples / year

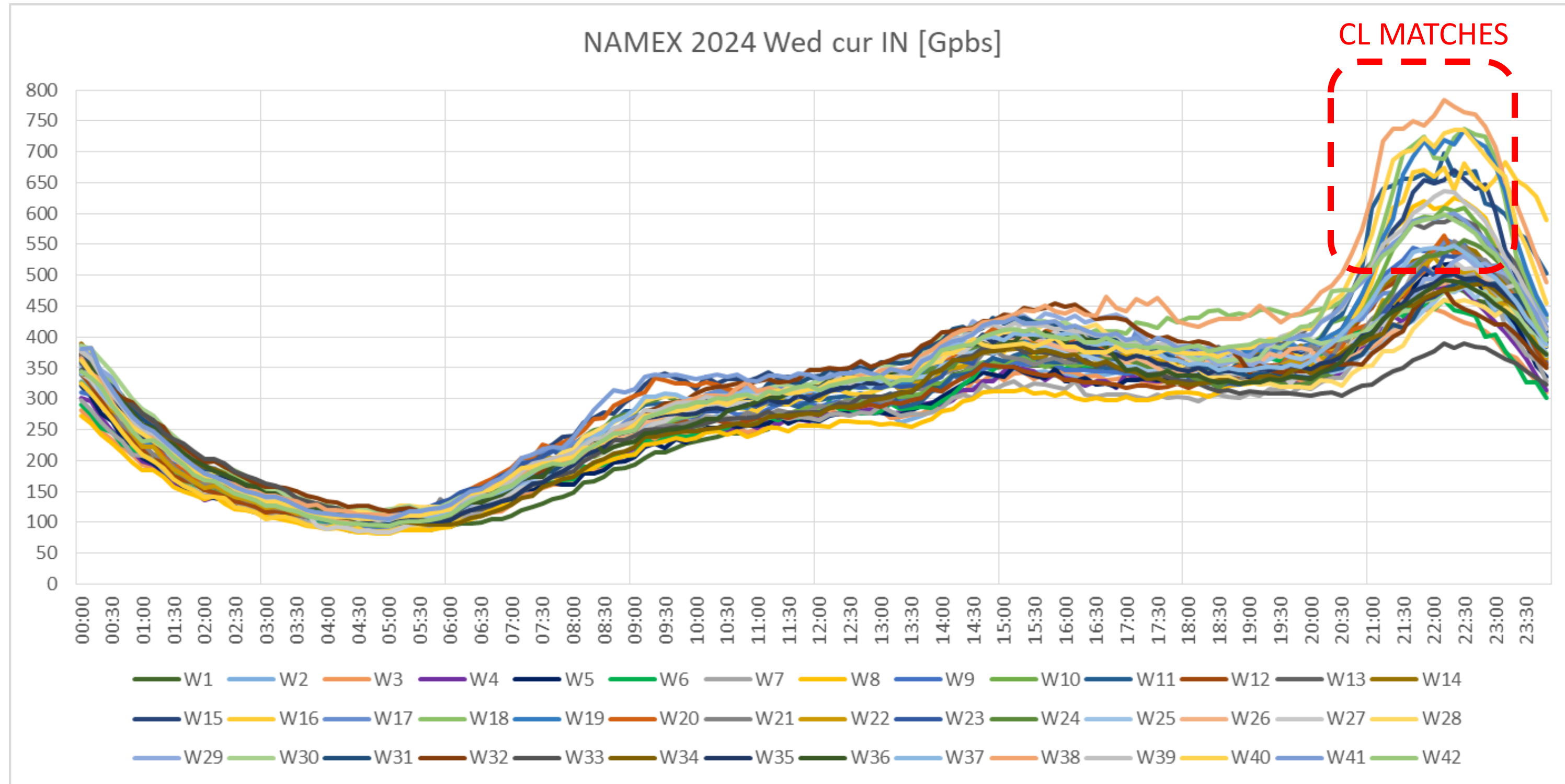
```
▼ statistics:  
  totalin:      18553775624851200  
  totalout:     18574859820993600  
  curin:        187859791184  
  curout:       188403157184  
  averagein:    155391755652.0201  
  averageout:   155368340209.32663  
  maxin:        358128403480  
  maxout:       355973849680  
  maxinat:      "2023-09-27T19:50:00.000000Z"  
  maxoutat:     "2023-09-27T19:50:00.000000Z"  
▼ params:  
  type:         "json"  
  category:     "bits"  
  period:       "day"  
  protocol:     "all"  
  id:           1
```

e.g CSV dataset record: **YYYYMMDDThhmmssZ,187859791184,188403157184[,...]**



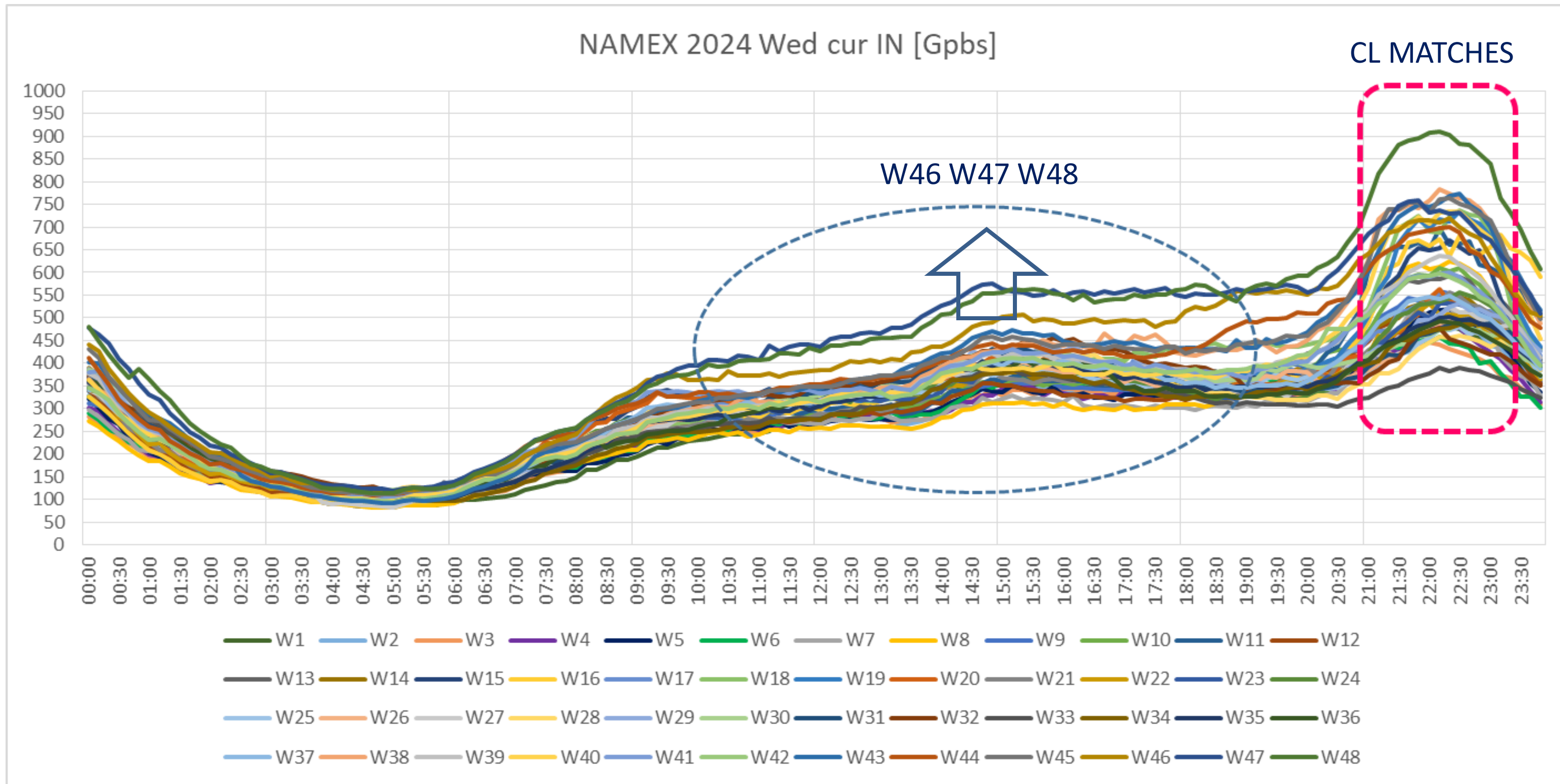
NAMEX YTD WEDNESDAY TRAFFIC

NAMEX Wednesdays 2024 W1-W42 [Gbps]



NAMEX YTD WEDNESDAY TRAFFIC

NAMEX Wednesdays 2024 W1-W48 [Gbps]



1st SET: UEFA CL 2023-2024

UEFA CHAMPIONS LEAGUE 2023-2024 – KNOCKOUT PHASE

W7 – Wed 14/02/2024 – Round of 16: leg 1 of 2: Lazio – Bayern

W8 – Wed 21/02/2024 – Round of 16: leg 1 of 2: Napoli – Barcelona

W10 – Wed 06/03/2024 – Round of 16: leg 2 of 2: Real Madrid – RB Leipzig

W11 – Wed 13/03/2024 – Round of 16: leg 2 of 2: Atletico Madrid – Inter

W15 – Wed 10/04/2024 – Quarter-final: leg 1 of 2 : PSG – Barcelona

W16 – Wed 17/04/2024 – Quarter-final: leg 2 of 2 : Manchester City – Real Madrid

W18 – Wed 01/05/2024 – Semi-final: leg 1 of 2 : Borussia Dortmund – PSG

W19 – Wed 08/05/2024 – Semi-final: leg 2 of 2 : Real Madrid – Bayern

No Italian teams qualified



2nd SET: UEFA CL 2024-2025

UEFA CHAMPIONS LEAGUE 2024-2025 – LEAGUE PHASE

W38 – Wed 18/09/2024	League Phase – Matchday 1 : Manchester City – Inter
W40 – Wed 02/10/2024	League Phase – Matchday 2 : RB Leipzig – Juventus
W43 – Wed 23/10/2024	League Phase – Matchday 3 : Young Boys – Inter
W45 – Wed 06/11/2024	League Phase – Matchday 4 : Inter – Arsenal
W48 – Wed 27/11/2024	League Phase – Matchday 5 : Aston Villa – Juventus



UEFA CL 2023-2024 metrics

TIPICAL MATCH TIMEFRAME : 9PM – 11PM (O.T. excluded)

**Introducing a new metric “prime time average” (~ 21:00 to ~ 23:30)
e.g.: NAMEX W10 to W19 (CL 2023-2024 part of KP)**

Week	95p [Gbps]	`PTA' [Gbps]	
W10	571,312	569,796	(Round of 16 – leg 2 of 2)
W11	649,821	648,477	(Round of 16 – leg 2 of 2)
W12	506,418	510,878	
W13	562,974	567,429	
W14	516,808	520,200	
W15	629,943	620,078	(Quarter-final – leg 1 of 2)
W16	654,434	646,142	(Quarter-final – leg 2 of 2)
W17	514,737	518,755	
W18	690,143	688,400	(Semi-final – leg 1 of 2)
W19	690,300	679,186	(Semi-final – leg 2 of 2)



UEFA CL 2024-2025 metrics

TIPICAL MATCH TIMEFRAME : 9PM – 11PM (O.T. excluded)

**Introducing a new metric “prime time average” (~ 21:00 to ~ 23:30)
e.g.: NAMEX W35 to W43 (CL 2024-2025 1st part of LP)**

Week	95p [Gbps]	'PTA' [Gbps]
W35	480,262	476,820
W36	459,046	464,691
W37	512,678	520,378
W38	740,499	740,179
W39	585,568	592,162
W40	698,786	699,520
W41	564,001	568,717
W42	559,916	563,758
W43	732,894	724,681
W44	649,214	659,368

(League Phase – Matchday 1)

(League Phase – Matchday 2)

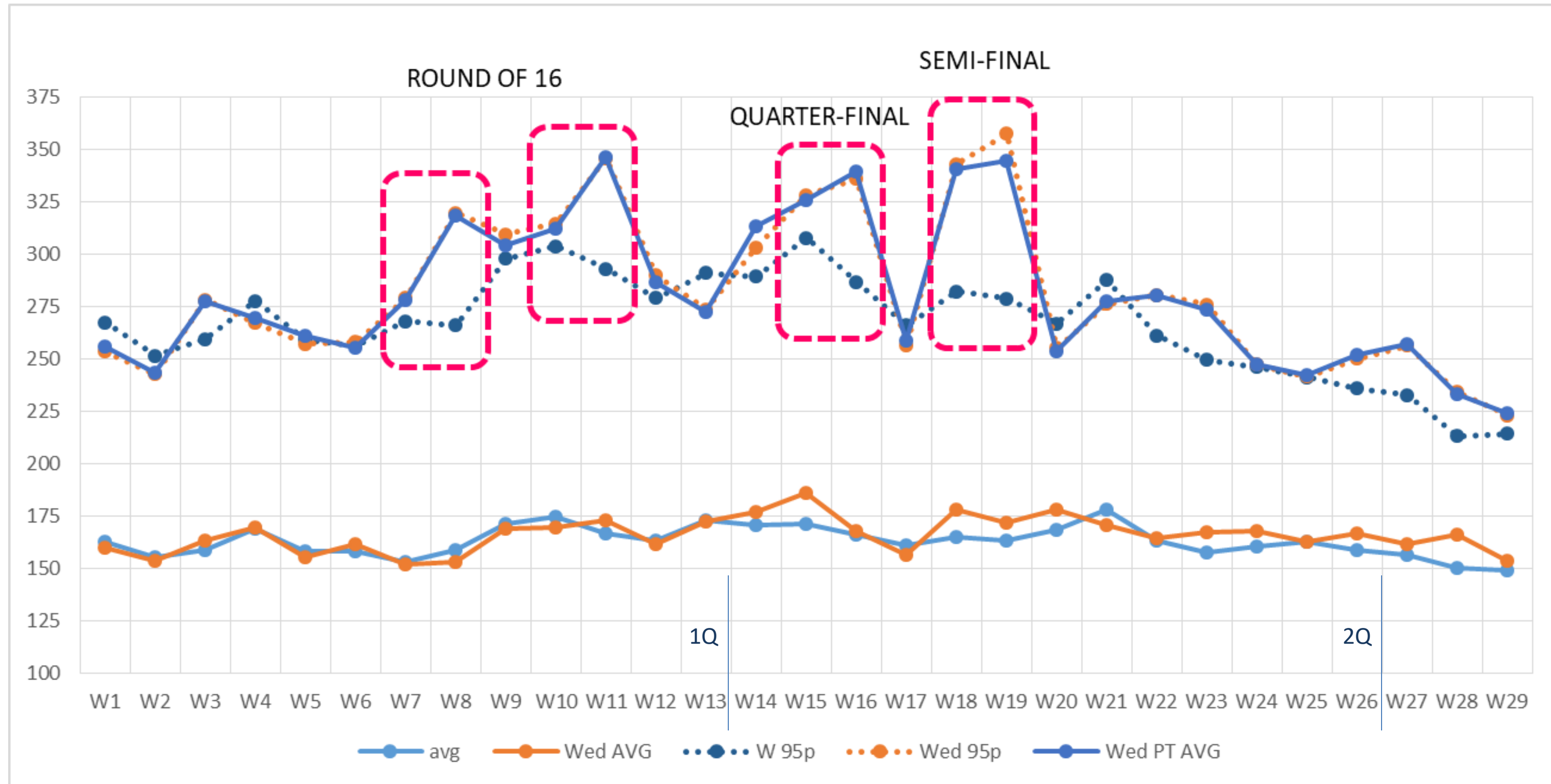
(League Phase – Matchday 3)



MINAP CL 2023-2024 KP

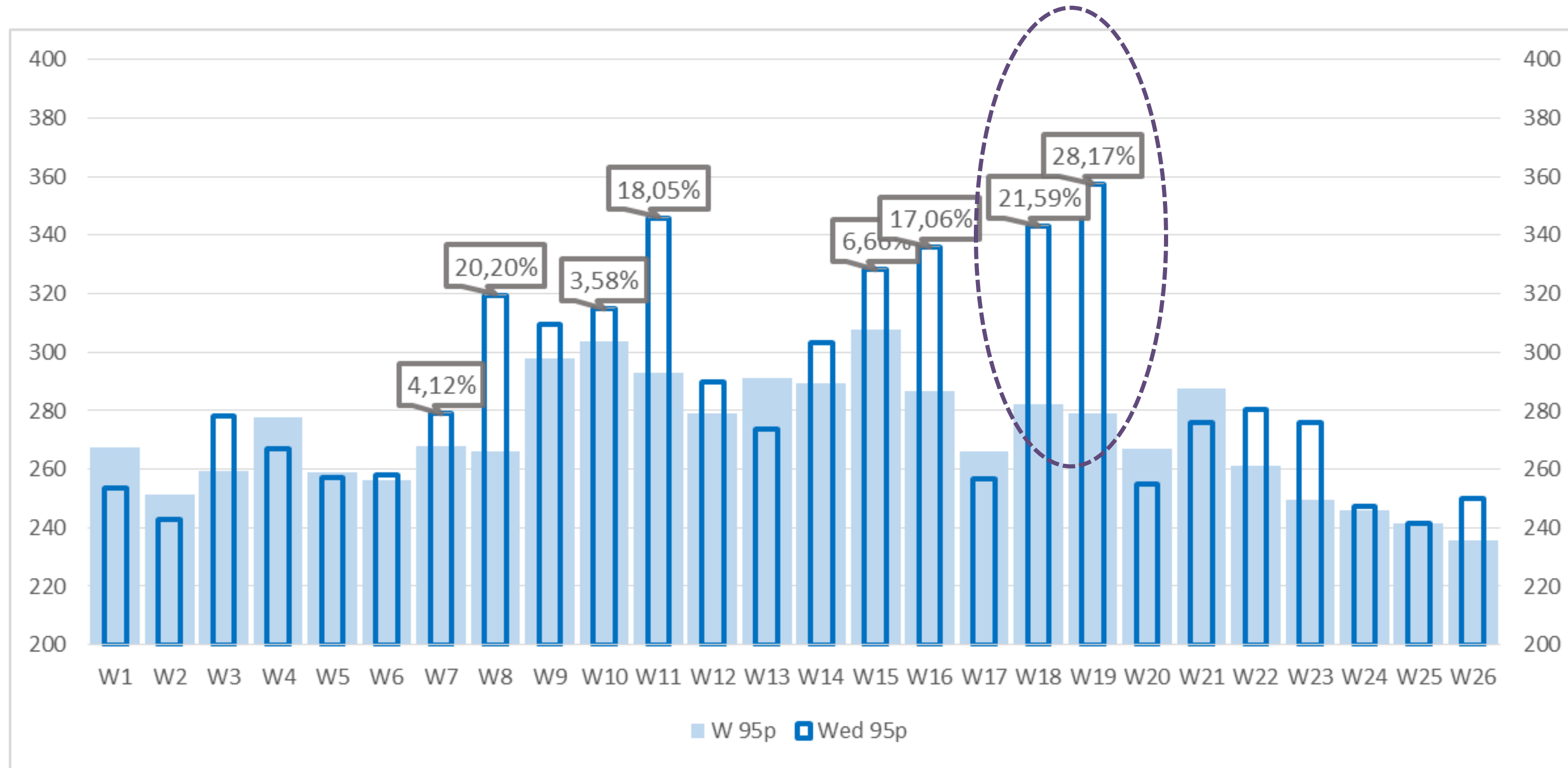
UEFA CL 2023-2024 Knockout Phase – Feb-May 2024

[Gbps]



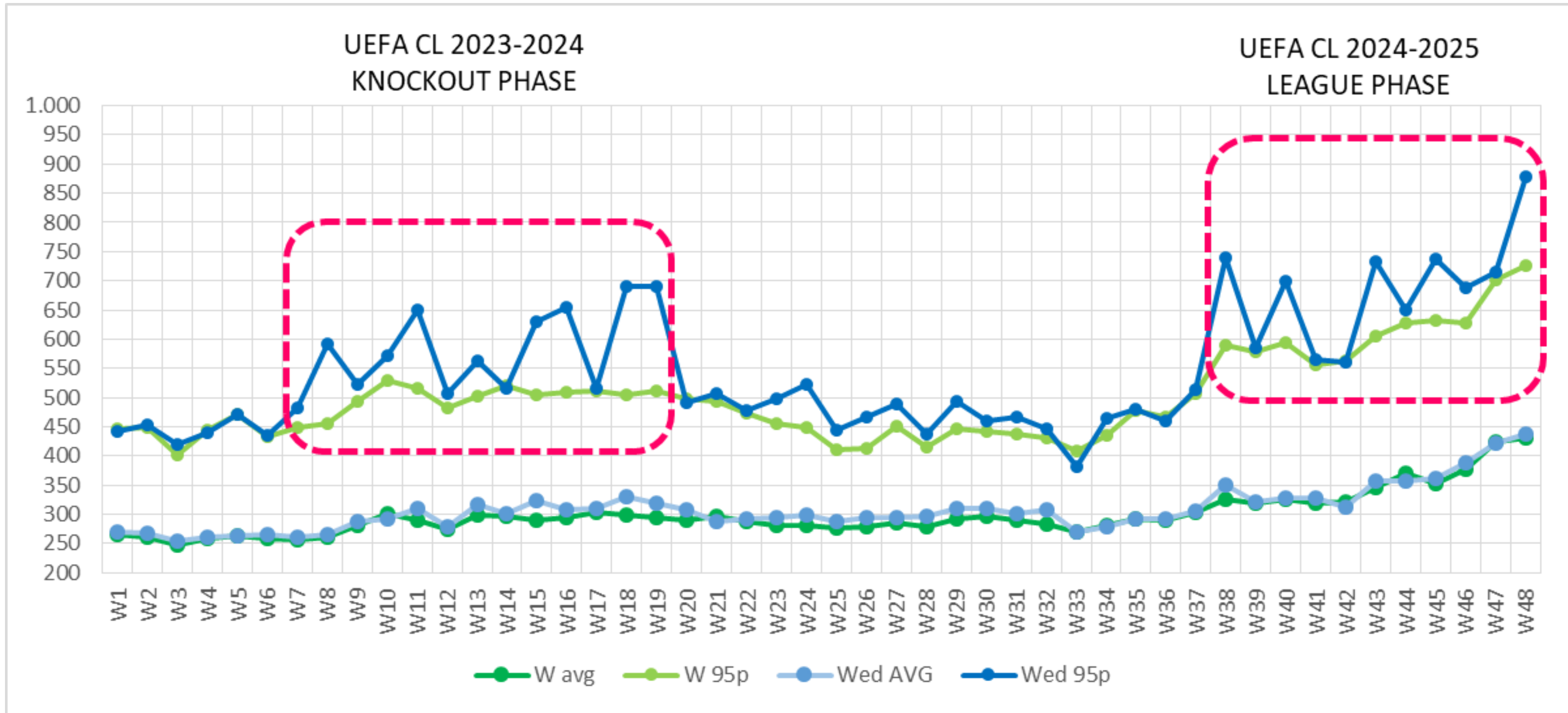
MINAP CL 2023-2024 KP

UEFA CL 2023-2024 Knockout Phase [Gbps]



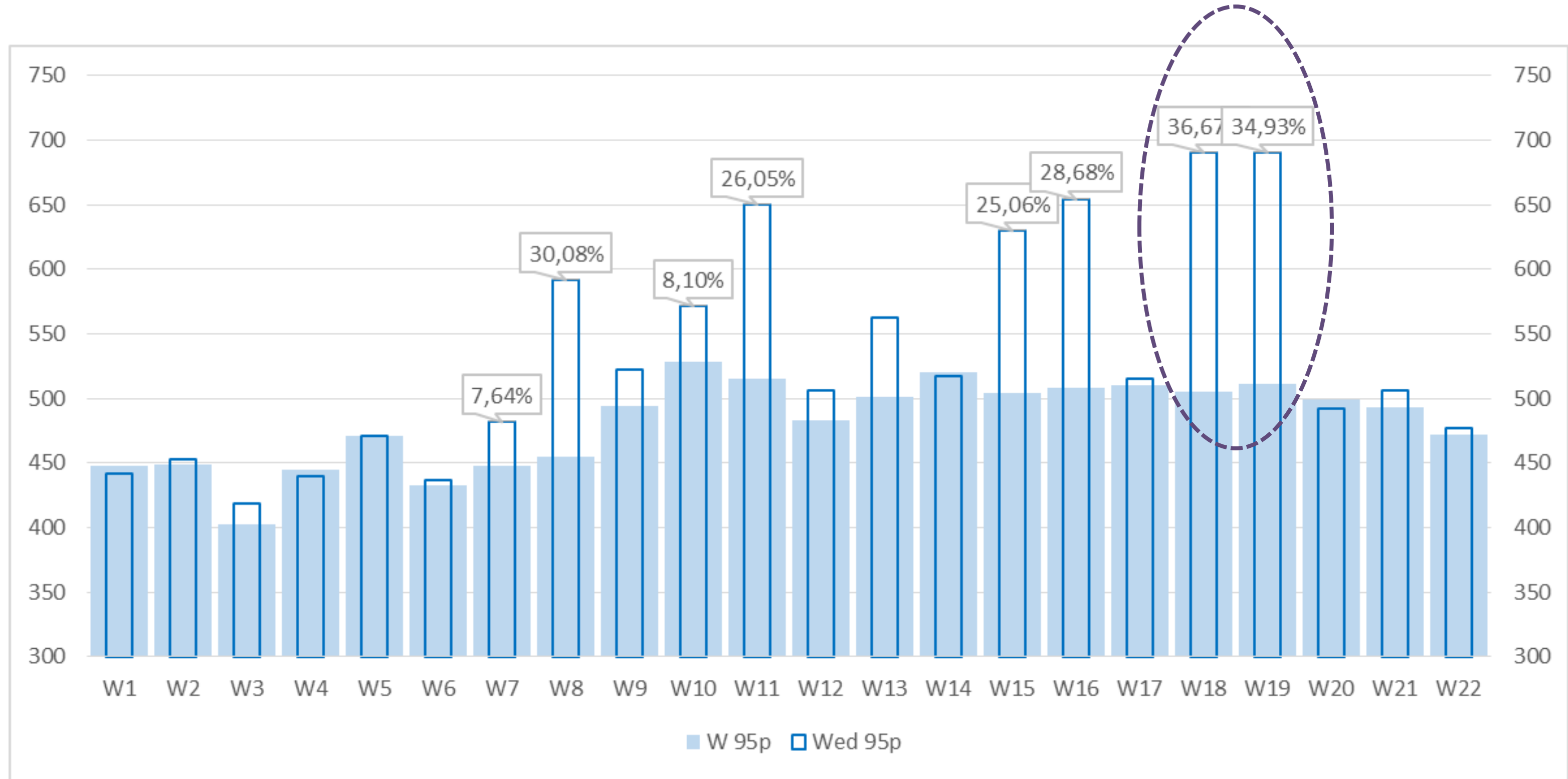
NAMEX YTD WEEK<>WED TRAFFIC

UEFA CL 2023-2024 KP | UEFA CL 2024-2025 LP [Gbps]



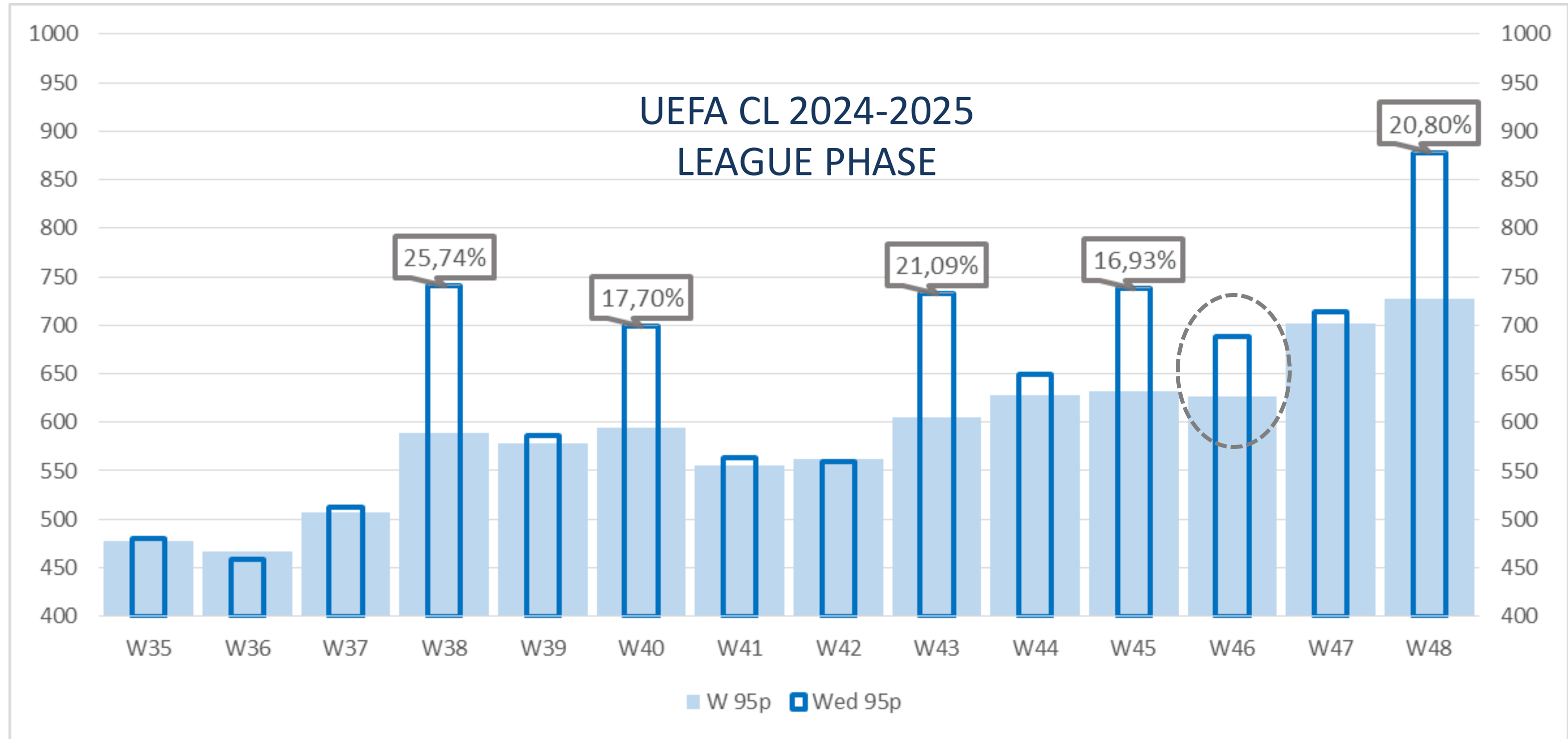
NAMEX 95p W <> Wed DEVIATIONS / 1

UEFA CL 2023-2024 KP – Feb-May 2024 [Gbps]



NAMEX 95p W <> Wed DEVIATIONS / 2

UEFA CL 2024-2025 LP – Sep-Nov 2024 [Gbps]



NAMEX 2024 ALL-TIME PEAKS

All-time traffic peak [progression]

"2024-03-13T21:05:00.000000Z", 696265840024	←	W11 Wed
"2024-04-17T21:00:00.000000Z", 702198482352	←	W16 Wed
"2024-05-01T20:20:00.000000Z", 737218269208	←	W18 Wed
"2024-09-18T20:05:00.000000Z", 781041256560	←	W38 Wed
"2024-11-25T21:10:00.000000Z", 800043455256	←	W48 Mon
"2024-11-27T21:00:00.000000Z", 905423312552	←	W48 Wed

5 on 6 all-time 2024 traffic peaks on Wednesday night during CL matches

Note on W19 (NAMEX):

"2024-05-08T20:25:00.000000Z", 733350129168

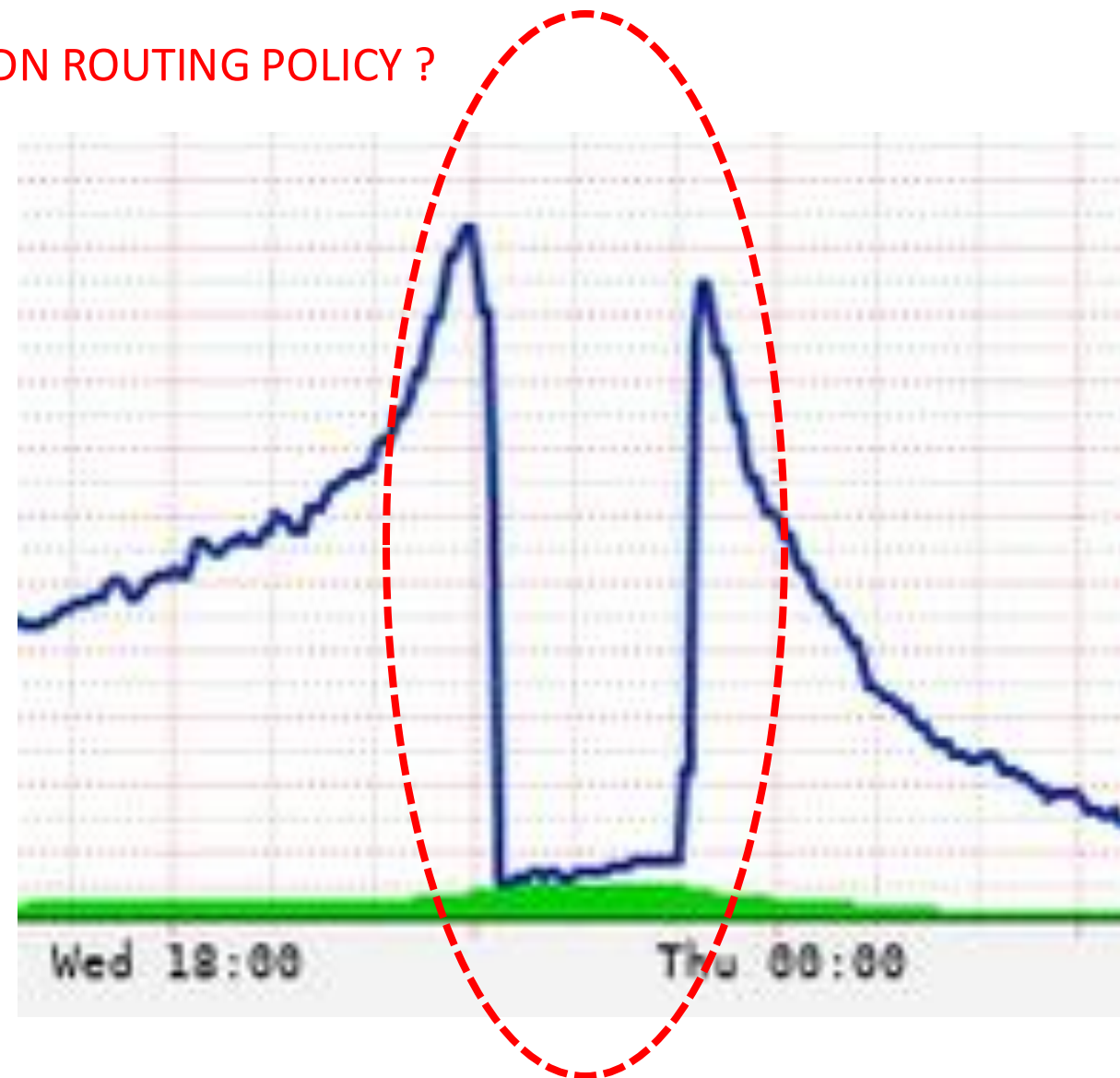
W19 → peak traffic night @ MINAP (and also @ MIX)



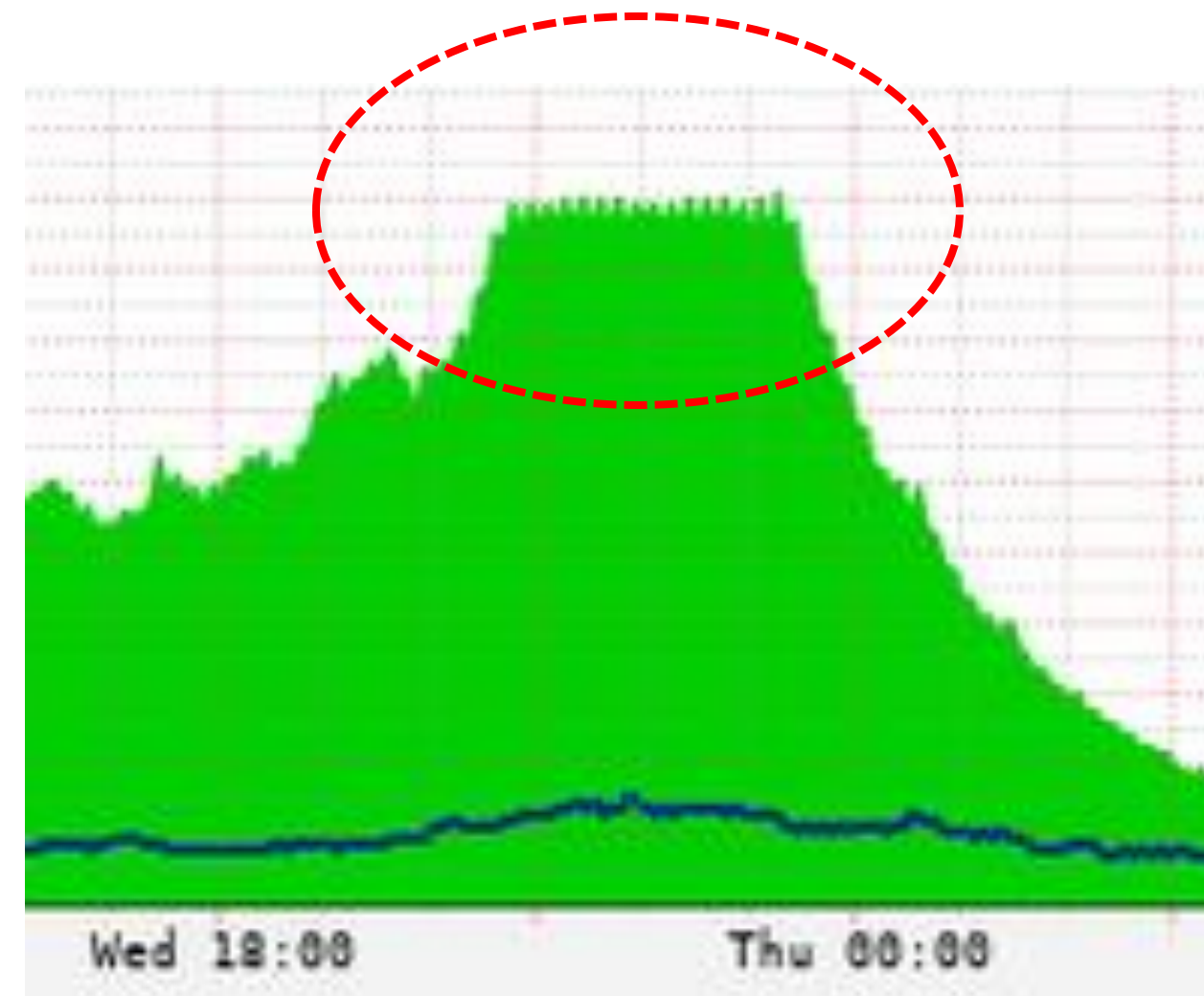
THINGS TO AVOID ?

A couple of issues faced during CL matches

CDN ROUTING POLICY ?



ISP - AVOID MAINTENANCE ?



Wednesdays are interesting days for live football streaming

- **NAMEX 2024 top 4 Wednesdays → CL LP 2024–2025 Matches**
- **NAMEX 2024 8 on 10 top Wed (growth trend, recent W46 W47)**
- **5 on 6 NAMEX 2024 “all-time” peaks on CL Wed nights**
- **CL edition 2023–2024 (quarter–final and semi–final) :
NAMEX deviations (Wed 95p <> Week 95p) ~ 25% to ~ 35% up**
- **Current CL edition 2024–2025:
NAMEX deviations (Wed 95p <> Week 95p) ~ 17% to ~ 25% up**



QUESTIONS?

COMMENTS? SUGGESTIONS?



THANK YOU FOR YOUR ATTENTION

Gianluca Sironi NAQUADRIA | PCIX

