

# CLONE: An NDN Architecture for Content Distribution at Remote Tourist Sites – a TCP/IP and NDN Comparison

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## Background/Motivation:

- Improve QoE of end-users at remote tourist sites
- Enhance Discover Places application's performance
- Examine the advantages of NDN
- Utilize cloudlets at the edge over NDN (CLONE)
- Compare CLONE vs TCP/IP

## Approach Used:

- Real-network environment (Iris testbed)
- Integration of Iris with NDN
- Integration of Discover Places with NFD
- Xiaomi Redmi 5 end-user running Discover Places
- End-user requests NDN-chunks sequentially

659K /dp/data/3 howth\_gun.m4a  
segmented & named in 8K-chunks



	CLONE Over 4G	TCP/IP Over 4G	CLONE Over Wi-Fi	TCP/IP Over Wi-Fi
start-up time ( $\bar{x}$ )	619.37	525.76	698.19	340.35
start-up time (sd)	22.02	98.35	122.91	136.37
download time ( $\bar{x}$ )	513.62	400.86	547.79	221.53
download time (sd)	19.14	90.36	15.33	131.41

## Conclusions:

- 2G experiments concluded to 100% failure
- TCP/IP performs better than CLONE
- CLONE's performance is more consistent to TCP/IP

## Future Work:

- Investigation of flow-control protocols in NDN
- Experimentation with multiple end-users
- Experimentation with different content sizes
- Experimentation with multipath forwarding in NDN