

DATALYFT – SYSTEM AND METHOD FOR SHARING NETWORK DATA
BANDWIDTH WITH A SERVICE

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Description

Access network convergence is a key enabler to provide better user experience to end customers. Converging WiFi network access with public mobile networks will allow customer devices either to get network connectivity if one of the access networks gets disconnected or provide instant bandwidth boost to the end users. This idea proposes a platform that provides "Data sharing as a Service" by taking network access convergence to a notch above.

DataLyft is a data sharing service platform that is modeled as a ride sharing platforms. A Person sharing his/her/their bandwidth is considered a "Host" and a person requesting the bandwidth is a "Guest". A Host can enable data sharing through a DataLyft App deployed in his/her/their Smart Device or through a web-based application. An MNO or MSO can also act as a Host by sharing their public WiFi infrastructure to the Guests. A guest who requires bandwidth boost and in the proximity of the Host can initiate a multi-access session and securely share the host's bandwidth. A Host and Guest remain anonymous to each other, and DataLyft cloud/edge backend platform will orchestrate the data sharing session in a highly secure manner.

DataLyft platform has four main components:

1. DataLyft smartphone App
2. DataLyft Cloud/Edge backend
3. DataLyft smartphone/embedded device library
4. DataLyft upstream gateways

A user with smart phone or a provider with WiFi infrastructure can register with DataLyft backend platform either through phone or DataLyft web-based portal. A user can register multiple devices with DataLyft backend. At any point of time, a user device can only act either as a host or guest. A service provider with an existing WiFi infrastructure can register multiple WiFi Access Points with DataLyft and provide data sharing service to the DataLyft guests. DataLyft cloud backend identifies the best optimal Host for a given guest at any point of time based on the constraints and it also continually identify the next best possible alternatives in case the original Host stops sharing the data.

DataLyft UE library will have the ability to steer, switch and split the data between multiple access networks and achieve convergence between all available access networks. The ability to converge multiple accesses coupled with highly scalable and smart backend platform that identifies the most optimal hosts leads to seamless mobility and switch over between access networks.

Monetization of network bandwidth is one of the key objectives of DataLyft platform as it incentivizes the hosts to share their bandwidth. This idea also empowers end users to monetize their network data just like Ride Share Apps allowed individuals to earn while sharing the ride. A charging function within the backend will account for the data shared by the host and will award the host through a secure payment system.

Background

Even with the rollout of LTE Advanced & 5G networks, network connectivity is still a perennial issue. Besides the network connectivity, network bandwidth is still not able to keep up with the demand by the smart phone Apps. There's always a chance for a mobile user to be in a location where network connectivity is spotty and available network bandwidth doesn't not match the application bandwidth requirements. This idea provides an instant bandwidth boost to end users to give them better service experience.

Abstract

Network access convergence technologies created an opportunity to provide better user experience to end customers. A data sharing service platform built on converged access will allow a customer device to share network bandwidth among the end customers. This allows a true ubiquitous network connectivity and experience to end customers.

The background features a dark night city skyline with illuminated skyscrapers. Overlaid on this are several white, glowing network lines that connect various points across the scene, suggesting a data or communication network. The CableLabs logo is prominently displayed in the upper center, and the title 'DataLyft – A Data Share Platform' is centered below it.

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DataLyft – A Data Share Platform

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Idea

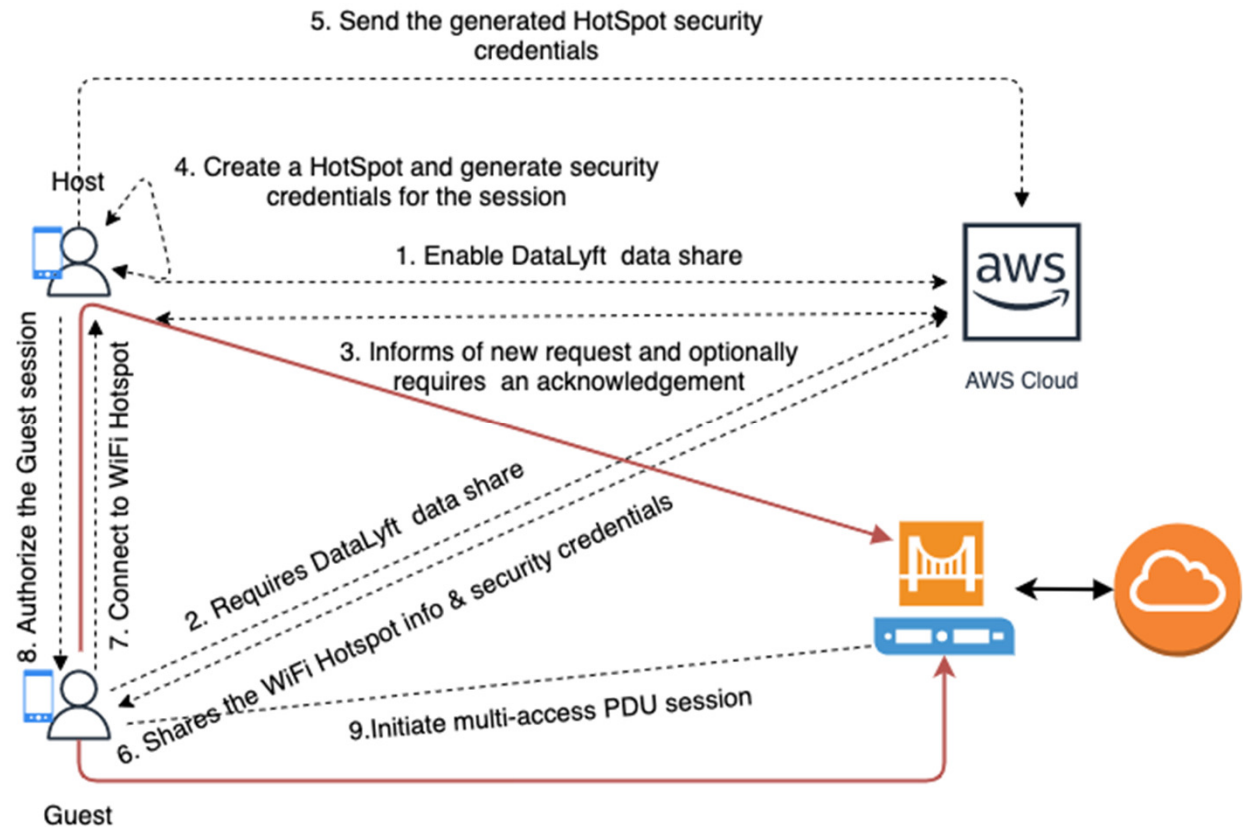
- Extend converged access solutions to provide instant, on-demand speed bump and create a framework to monetize bandwidth sharing just like ride sharing Apps.
- This idea relies on up-and-coming industry standards like ATSSS to split user across multiple available access connections and enable data sharing. DataLyft the platform consists of a smart App and cloud backend.
- Just like ride share Apps, end users registers with DataLyft platform to monetize their bandwidth. DataLyft App let hosts to share their bandwidth with others.
- DataLyft platform has the following components
 - DataLyft Cloud backend platform
 - DataLyft Smart App
 - DataLyft UE library
- DataLyft host can enable data sharing using the DataLyft App and once enabled, backend will use the host location to start sharing the data to nearby guests.
- Data Lyft integrated library in the UE OS provides APIs that third party Apps can use to generate a bandwidth boost request and APIs to start multi-access sessions once the hosts are identified. Bandwidth boost request contains location coordinates and expected bandwidth, estimated duration to DataLyft backend based on APP request.
- DataLyft library will start a Hot Spot after receiving a request and it will share the Hotspot network and security credentials with DataLyft Guest. Upon successful request, DataLyft guest UE will connect to secure Hot Spot and starts multi-access PDU session.

Use case Scenarios

- A person who's sitting in a Café decided to enable LyftData Share. And if there's a customer in his/her vicinity requires a speed boost, his/her UE requests for bandwidth sharing and LyftData will start data share.
- A consumer who's in a ride share car needs a speed boost and ride share host (driver) can share his/her bandwidth using LyftData share. Even one of the co-passengers can provide LyftData share.
- Even the venues like strip malls can provide bandwidth sharing and monetize their WiFi infrastructure with LyftData share.
- Even end customer can share their broadband data with LyftData share.

DataLyft Solution

- End user enables DataLyft data sharing and provides current location and network bandwidth info.
- Another user in the vicinity requests for speed bump.
- DataLyft informs the host of the incoming request.
- After the host acknowledges, backend sends the WiFi Hotspot network information and security credentials.
- DataLyft library within UE device will initiate device authorization with WiFi Hotspot.
- DataLyft starts a multi-access PDU session and starts bandwidth sharing.



Key Highlights

- A user can act as Host/Guest but cannot be in both the roles at the same time.
- Data sessions should be very dynamic and agile and session setup should be quick and simple.
- DataLyft should deploy QoS flow in the host UE to guarantee the bandwidth.
- DataLyft backend should continually identify hosts in the vicinity of the guest to swiftly switch networks if needed.
- DataLyft should rank the hosts based on the host network throughput, network performance metrics and user consistency with hosting.
- DataLyft App will provide tools for the Host to fine tune the sharing scheme.
- DataLyft platform will use ML/AI training to identify the user patterns and network patterns and it will predict the network conditions and optimize the bandwidth sharing and session establishment accordingly.
- DataLyft should also provide the host up to date earnings as well access network usage.

