A-CORD Requirements

- **DRAFT**

A-CORD platform will be tested to support the reference platform for Multi-Access-CORD. Multi-Access CORD is being planned for possible deployment by end of 2017.

the main use case for multi-Access cord that we are planning to POC is around AR/VR acceleration, where end users will enjoy smaller, lower power, lower compute gadgets while the acceleration and service augmentation will be supported by the Multi-Access edge CORD .

The programmable and embedded data collectors are considered at the infrastructure level to support various policy and optimization practices.

Therefore, we have proposed the terminology of Software define collectors here known as "SD-Collectors". Later we have described the details of SD-Collector interfaces, APIs, protocol options, and programmability aspects.

Another terminology that we have adapted from ONAP is called LOOPs. We have introduced the principals of loops as capabilities for closed feed back with the higher up applications and software entities. We have described the assumption around Loop 0 through loop 4. Each loop is intended to support different layers that are specific to delay and performance characteristics.

Examples of Loop-4 usage:

- Big data analytics
- Historical Trend Analytics
- Predictive Analytics

Typically, Loop-4 can be modeled for big data lakes and hadoop for longer term cycles like hours and days

Loop-3

Examples of Loop-3 usage:

- Operational optimization such as resource allocation based on load and congestion (adding new servers or VMs)
- QOE dashboard that is used for customer service experience monitoring
- Service experience dash board for application benchmarking and practices
- Load and congestion control that are at non-real time boundaries

loop-3 applications expect delay boundaries of minutes and hours

Loop -2

- Disaster recovery
- control of near and real time functions
- control of policy dynamics for load balancing
- Scale-up and scale out the infrastructure resources (resource optimization)
  The granularity of loop-3 is secs and few minutes

Loop -1

- near-real time SDN-Control functions (Configuration) dynamics) such as forwarding rule dynamics, programmability of data collectors, and configuration of network entities
- distributed meta data capture for purpose of AI and machine learning Cross layer optimization
- Real time Policy control

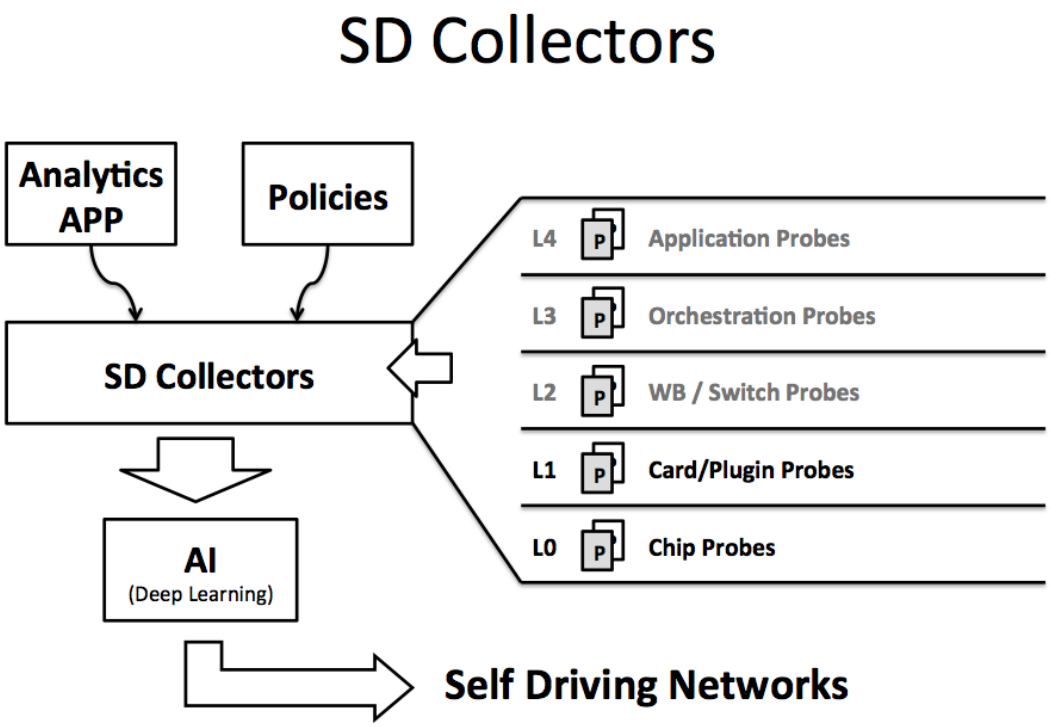
The granularity of loop-1 is 100s of millisecond to seconds

Loop-0

- Real time SDN control such as ONOS responsible for forwarding plane, data plane programmability. etc
- Acceleration as a service for AR/VR
- RF sharing (CBRS services)
- Antenna sharing . Frequency selection
- Slicing control and optimization of traffic load
- Carrier aggregation

The granularity of loop-0 is sub 100s millisecond

Overview



Goals

Background and strategic fit

Assumptions

A-CORD Mission as a platform

#	Title	User Story	Importance	Notes
1		Application are demanding real time deep observability from L0 and L1 for real time control functions such as managing a dandified 5G network		
2		Deep observability at loop 2 includes ability to establish data collection interface with servers, switches, and VNFs.		
3		From Loop 0, 1, 2, 3 one should be able to drive self-driving networks.		

A-CORD “SD-Collector” and features

#	Title	User Story	Importance	Notes
1		It is assumed that a physical and virtual network elements (VNFs, OS, HW, SW, access, etc.) will be associated with embedded or external data collectors that may or may not adhere to standard interfaces.		
2		Deep observability at loop 2 includes ability to establish data collection interface with servers, switches, and VNFs.		

A-CORD Platform Function

A-CORD mission is to provide the core and interface functionalities to enable deep learning analytics through AI, and distributed analytic engines.

A-CORD platforms will spin-up data collectors, dynamically associates data collectors with Virtual probes, coordinates among data collectors and maintains the health and availability of data collectors

#	Title	User Story	Importance	Notes
1		Provides functionalities and open interfaces for Loop 0 and Loop 1 (see ONAP for Loop 2, and Loop3)		
2		Provides the engine for “software defined collectors” (SD-Collector) (see definition of SD-Collector at link: TBD)		
3		Provides real time programmable interfaces to influence dynamic probes		

A-CORD South Bound Functions

#	Title	User Story	Importance	Notes
1		Manage data collector graphs and relationships		
2		Discover and or on-board “ Data Collectors”		
3		Establish relationship between data collectors function (A,B, C, Triggers, atomic resets, etc.		
4		Spin-up and down loops between data collectors and control analytics (Loops 0,1, ..)		

A-CORD North Bound Functions

#	Title	User Story	Importance	Notes
1		Process policies from control applications compile into data collectors		
2		Manage NB Transport Analytics bus		
3		Manage applications and APIs interfaces		

User interaction and design

Below is a list internal notes to be addressed at the next meeting

(Notes)	Outcome

Larry's guidance:

- Collector Framework , a clearing house/ plugin framework (describe collector's hierarchy)
- Calix involvement (contact Sashin: ask Bill)
- Mahir: Definition of collectors, loops, collector interfaces, links , etc
- Links to Slacks, emails, for discussion
- Intersection with openconfig / gRPC
- Standardization around collectors
- David Bainbridge: Data Format , Adaptive drivers , Describe data formats instead of APIs
- How and what you process (Data producer and data consumer)
- Device specific abstraction

A-CORD Platform requirements;

- **A-CORD Mission as a platform**
  - Application are demanding real time deep observability from L0 and L1 for real time control functions such as managing a dandified 5G network
  - Deep observability can be managed adaptively at loop 0 (chip or hardware level interconnects) as well as observability at Loop 1 which is at plug-ins such as smart NICs, smart SFPs, etc..
  - Deep observability at loop 2 includes ability to establish data collection interface with servers, switches, and VNFs.
  - From Loop 0, 1, 2, 3 one should be able to drive self-driving networks.
- **A-CORD “SD-Collector” and features**
  - It is assumed that a physical and virtual network elements (VNFs, OS, HW, SW, access, etc) will be associated with embedded or external data collectors that may or may not adhere to standard interfaces. For A_CORD, ability to
- **A-CORD Platform Function**

A-CORD mission is to provide the core and interface functionalities to enable deep learning analytics through AI, and distributed analytic engines

A-CORD platforms will spin-up data collectors, dynamically associates data collectors with Virtual probes, coordinates among data collectors and maintains the health and availability of data collectors

A-CORD platform provides the following capabilities and functions

1- Provides functionalities and open interfaces for Loop 0 and Loop 1 (see ONAP for Loop 2, and Loop3)

2- Provides the engine for “software defined collectors” (SD-Collector) (see definition of SD-Collector at link: TBD)

3- Provides real time programmable interfaces to influence dynamic vProbes

A-CORD SB Functions:

1- Manage data collector graphs and relationships

2- Discover and or on-board “ Data Collectors”

3- Establish relationship between data collectors function (A,B, C, Triggers, atomic resets, etc.

4- Spin-up and down loops between data collectors and control analytics (Loops 0,1, ..)

A-CORD NB Functions:

1- Process policies from control applications compile into data collectors

2- Manage NB Transport Analytics bus

3- Manage applications and APIs interfaces