

Cooperating Layered Architecture for SDN (CLAS)

<draft-contreras-sdnrg-layered-sdn-00>

Luis M. Contreras
Telefónica I+D

Carlos J. Bernardos
Universidad Carlos III de Madrid (UC3M)

Toronto, SDNRG WG, July 2014

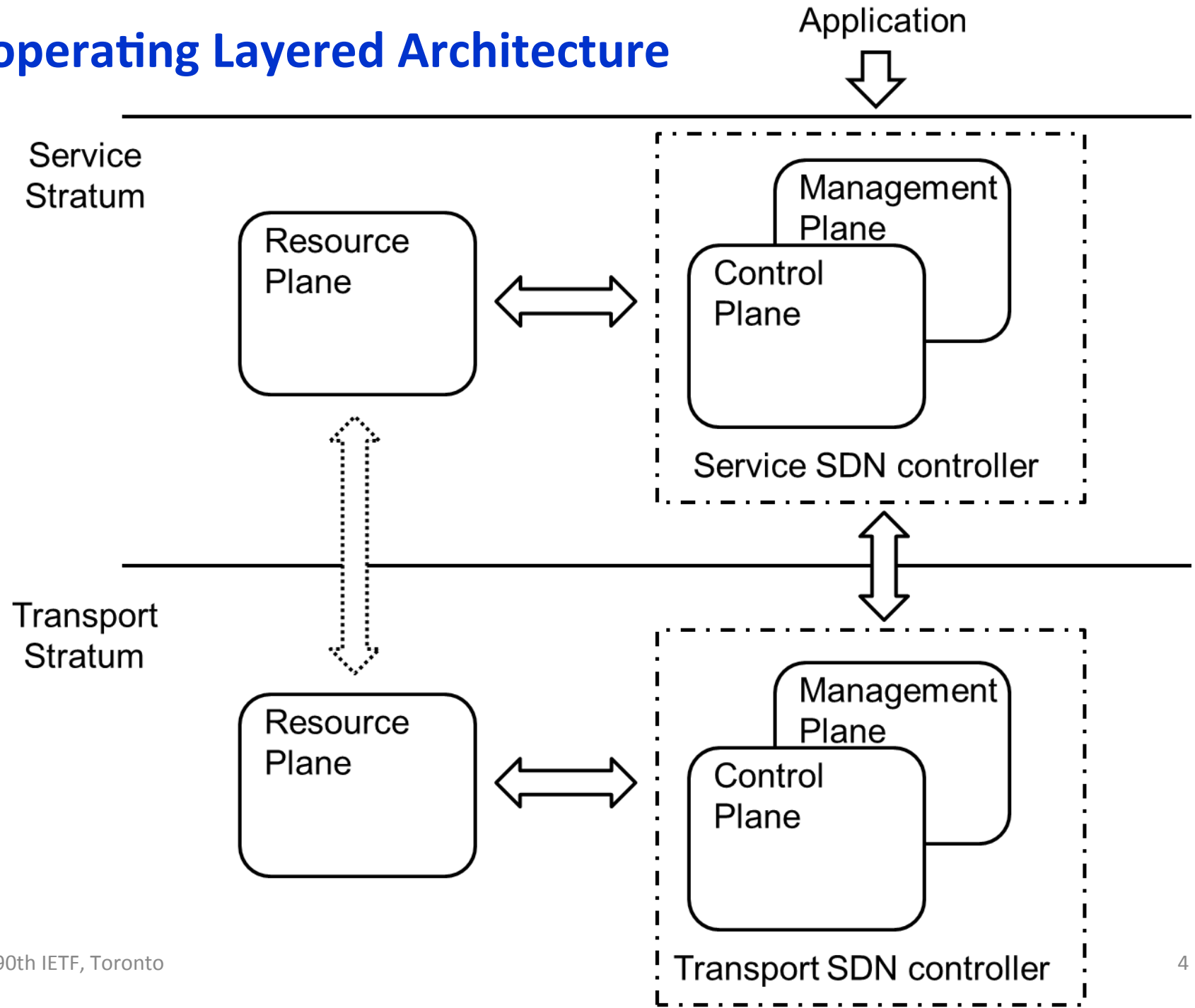
Rationale

- Existing proposals for SDN centralize control capabilities with very different objectives and purposes
- No separation between services and transport control
 - No clear responsibility for service provision and delivery
 - Complicated reutilization of components for delivering different services
 - Monolithic control architectures, driving to lock-in
 - Difficult interoperability, then difficult interchange of some modules by others
 - No clear business boundaries

Cooperating Layered Architecture for SDN

- Key concept: separation of the control functions associated to services from those associated to transport
 - Service control becomes independent from transport control
- Functional Strata
 - Service stratum: functions related to the provision of services (including capabilities exposed to external applications)
 - Transport stratum: functions related to the transfer of data between communication end-points
- Plane separation
 - Control plane: control of resources in each strata
 - Management plane: management of resources and control plane in each strata
 - Resource plane: resources required for a given service (can be or not the termination points of a transport function)
- Despite differentiation, tight cooperation is needed for an efficient service provision

Cooperating Layered Architecture

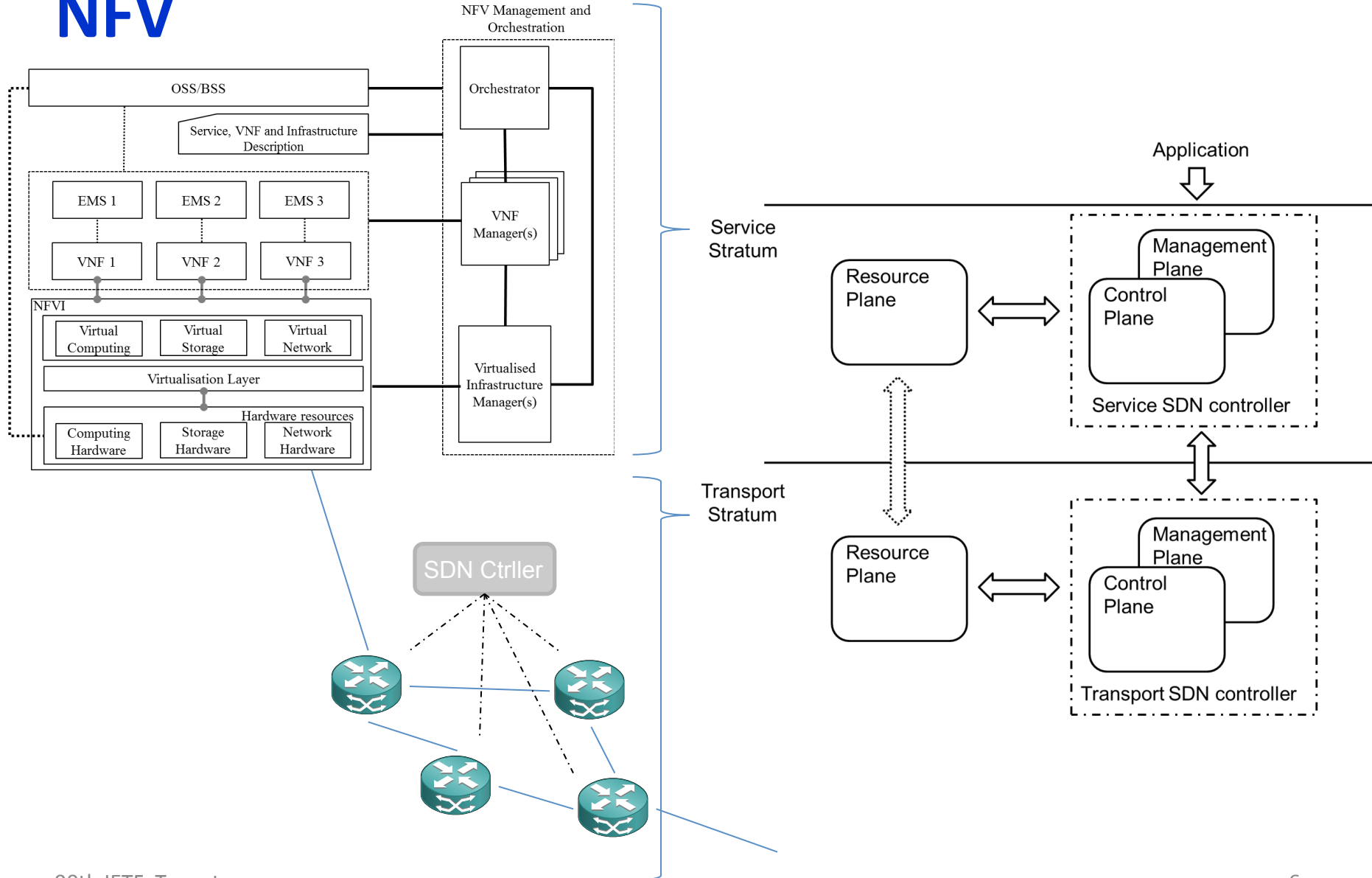


Deployment Scenarios

- Full SDN environment
 - Multiple Service Strata associated to a single Transport Stratum
 - Single Service Stratum associated to a multiple Transport Strata
 - (And 1:1 and N:N cases, of course)
- Hybrid environments
 - SDN-based Service Stratum associated to a legacy Transport stratum
 - Legacy Service Stratum associated to a SDN-based Transport stratum

Potential use cases / scenarios (for further study)

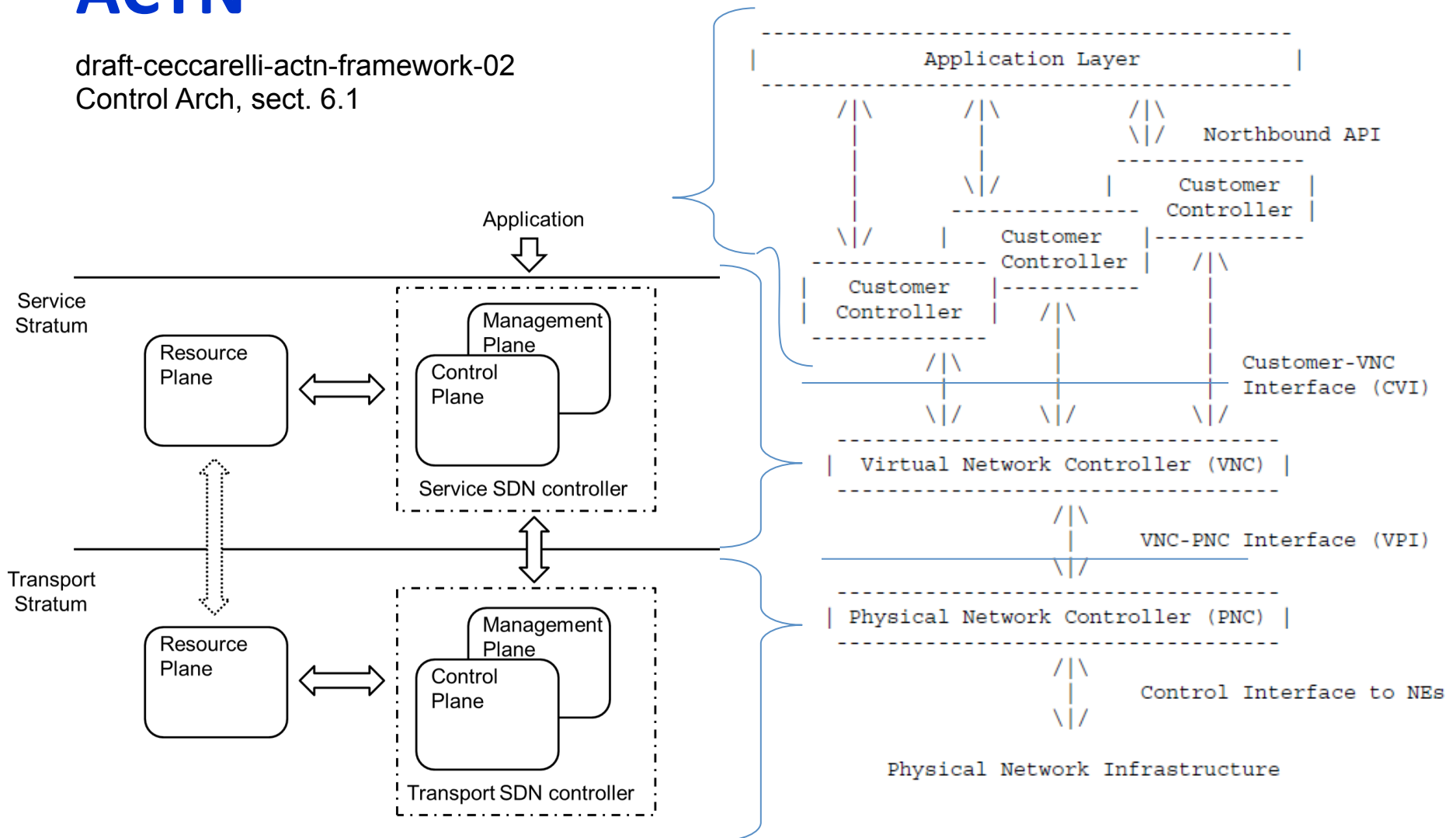
NFV



Potential use cases / scenarios (for further study)

ACTN

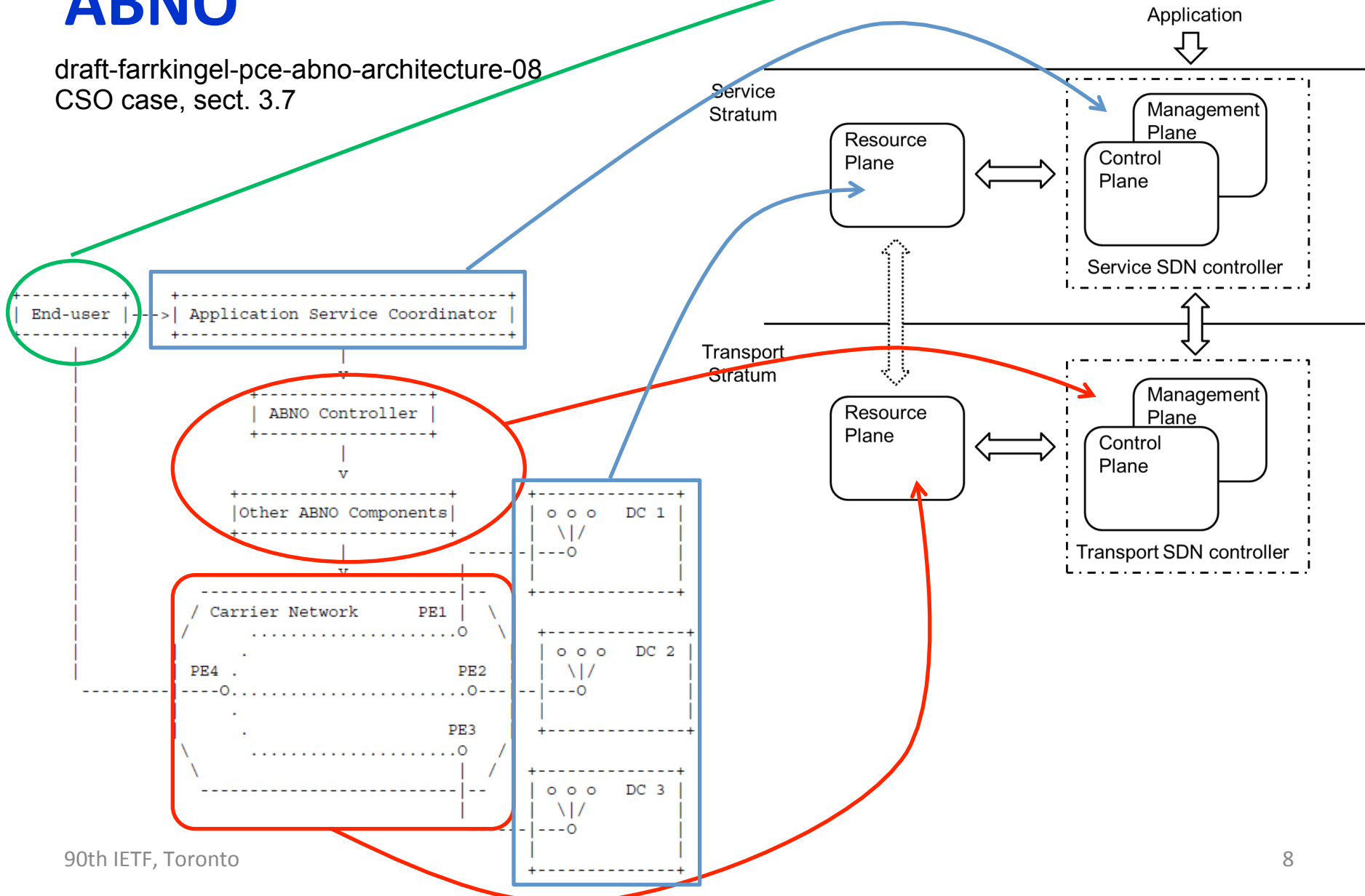
draft-ceccarelli-actn-framework-02
Control Arch, sect. 6.1



Potential use cases / scenarios (for further study)

ABNO

draft-farrkingel-pce-abno-architecture-08
CSO case, sect. 3.7



Next Steps

- After presenting CLAS to the community in IETF 90 we intend to work in the following areas:
 - Document a gap analysis
 - Define and document use cases
 - Describe requirements for interface definition between strata
 - Security (in the communication between strata)
 - Others(e.g., monitoring, inter-domain provision, SLA, etc)