

SFC Service Function Path Optimization (Offloads)

draft-kumar-sfc-sfp-optimization-01

Surendra Kumar Joel Halpern

Jim Guichard **Ericsson**

Paul Quinn

Cisco Systems, Inc.

Core Argument

Optimize the Service Function Path

- Traffic need not traverse all the SFs, all the time
 - Higher latencies: network, SF processing, etc.
 - Wasted resources: network, memory, cpu, etc.
- Alter the SFP, in the data-plane and within policy
 - SFs control this, while being agnostic to SFP
 - SFP shortens while SFC remains un-altered!
- Use SFC Encapsulation to optimize the SFP

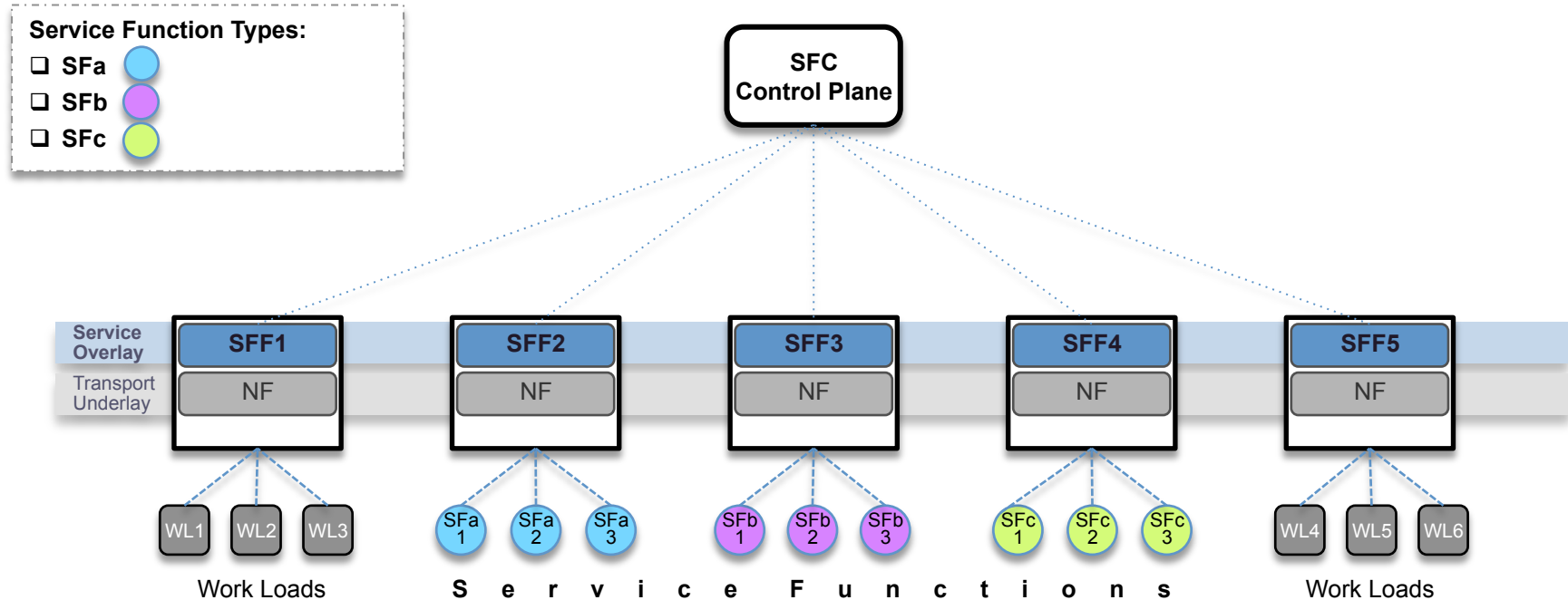
SFP Optimization Method

Simple Offloads in two stages

- Simple Offloads
 - ‘Offload’ directive (Yes or No) + ‘Action’ (Permit or Deny)
- Stage1: SF Offloads
 - SFs request SFFs to not steer further packets on a flow
- Stage2: SFF Offload propagation
 - SFFs propagate offload directives upstream to other SFFs

SFC Architecture

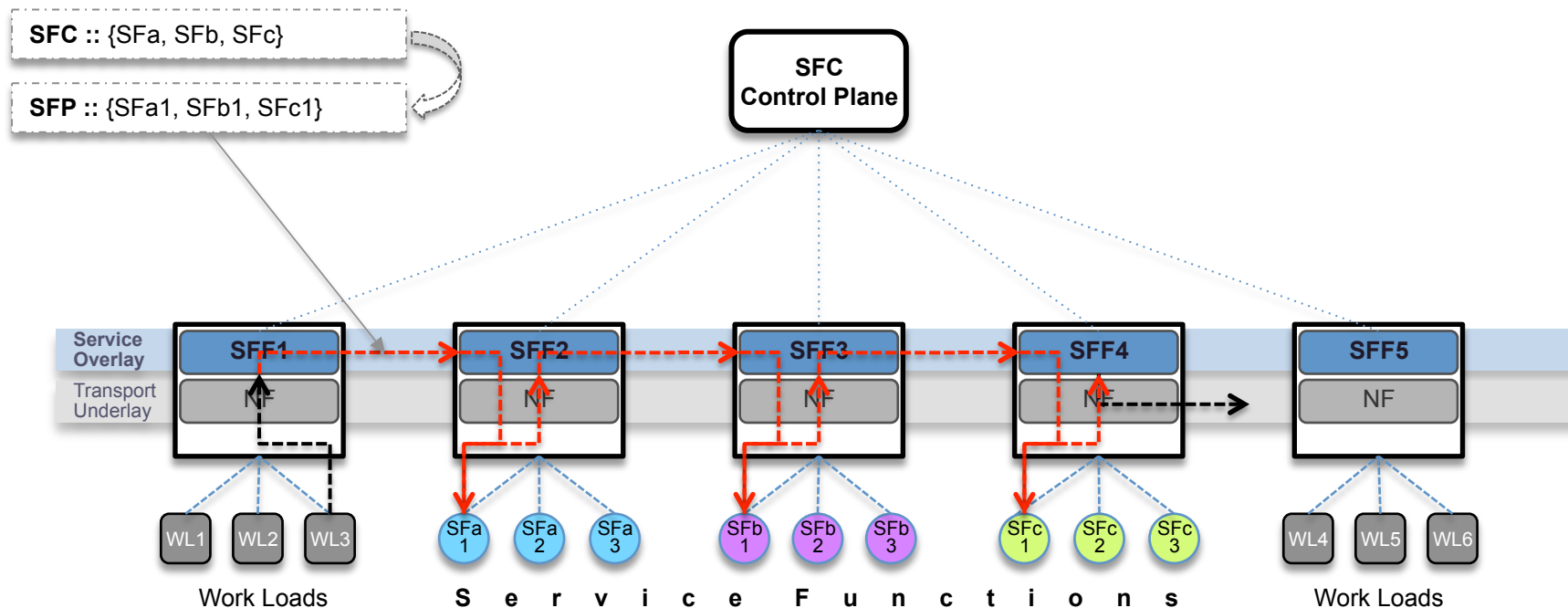
Example diagram with workloads and SFs



SFC Architecture

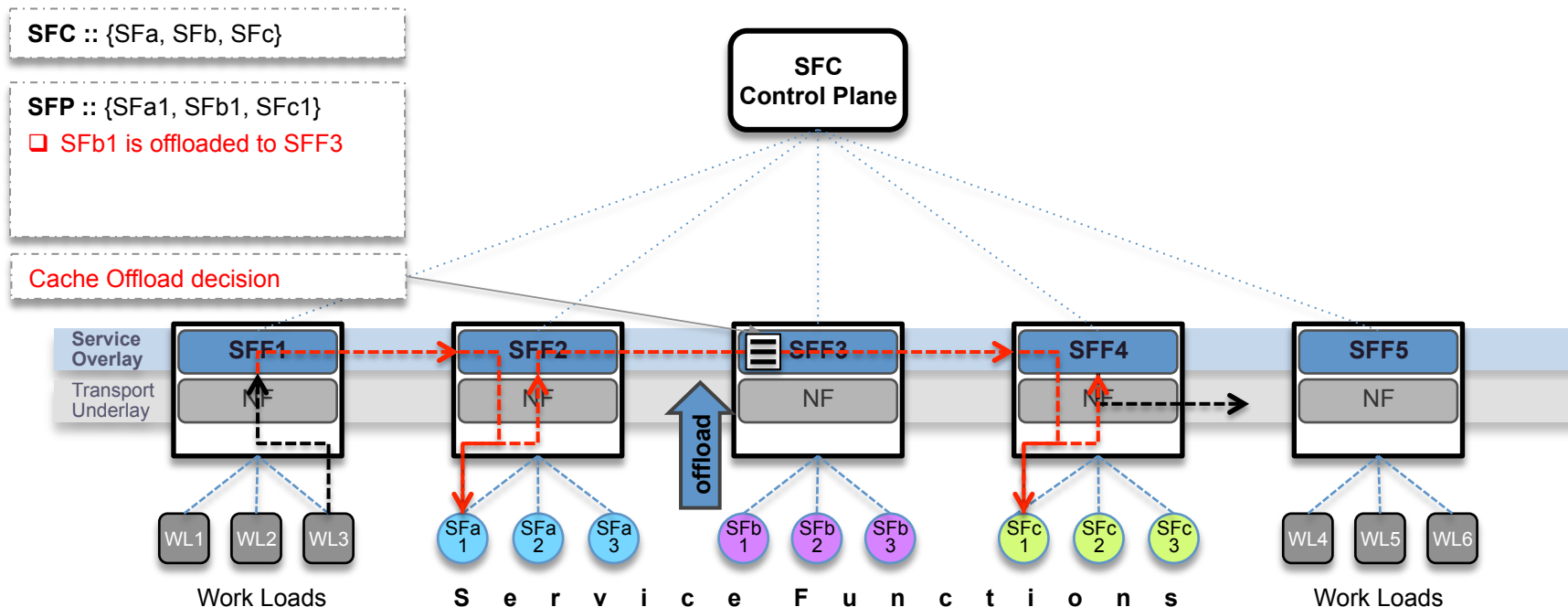
...2

Example diagram with workloads, SFs, SFC and SFP



Simple Offloads, Stage1

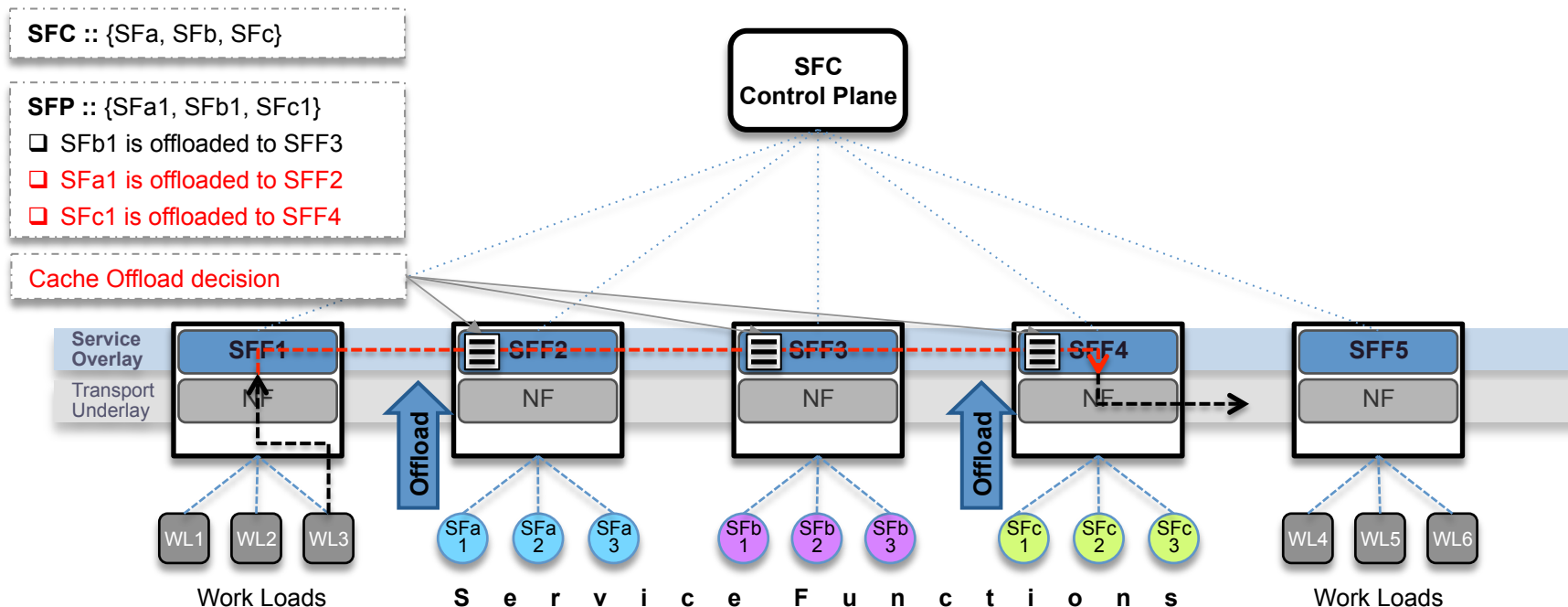
SFs offload service delivery to SFFs, at flow granularity



Simple Offloads, Stage1

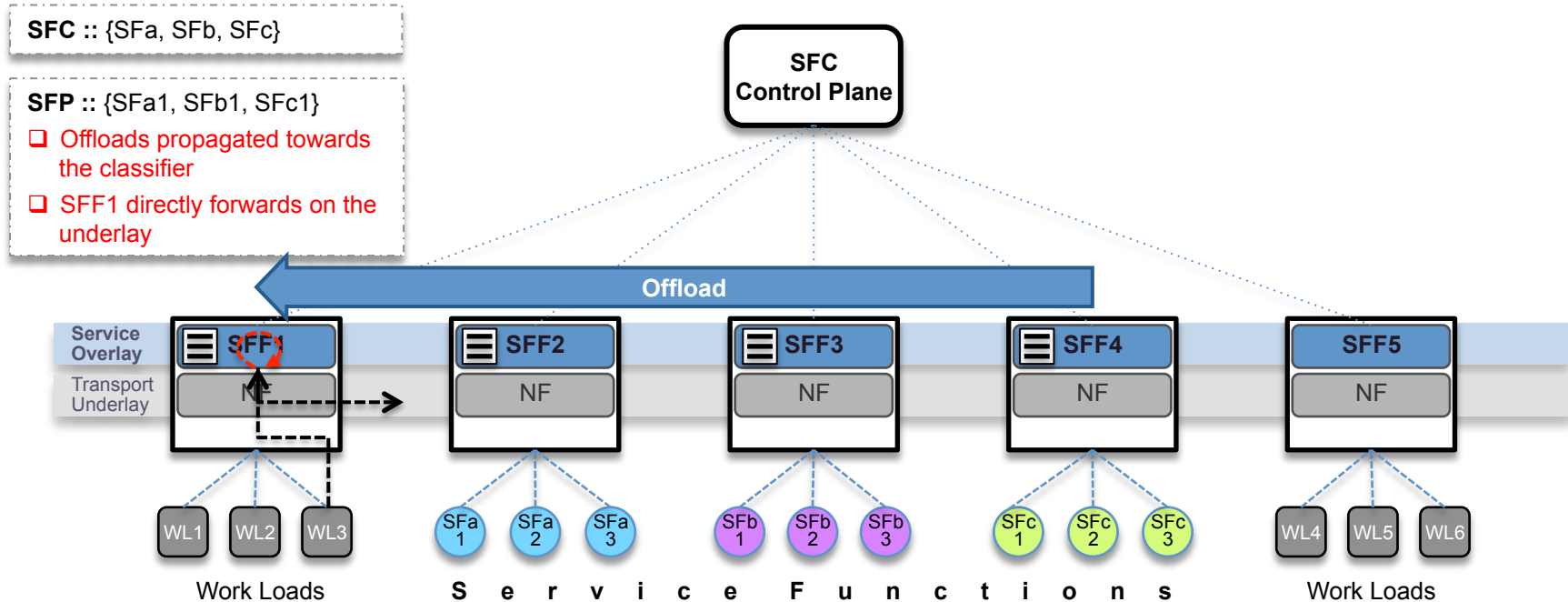
...2

SFs offload service delivery to SFFs, at flow granularity



Simple Offloads, Stage2

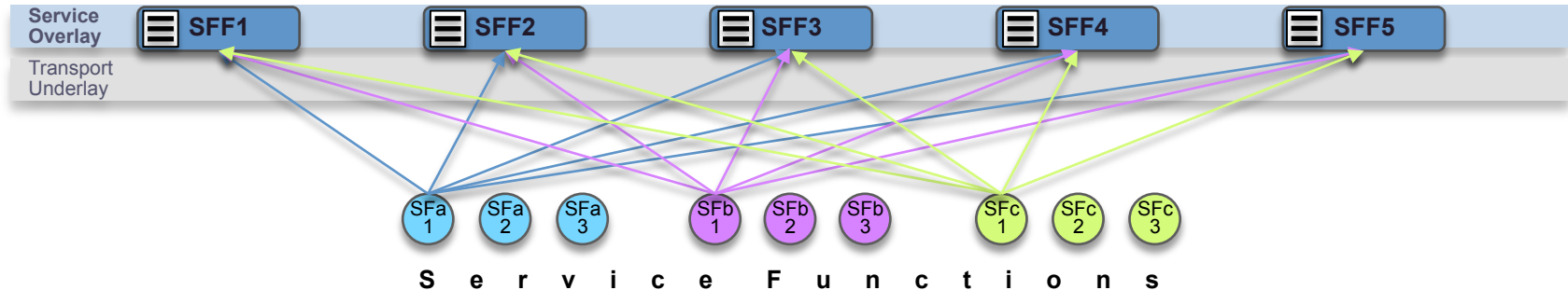
Optimum SFP



Simple Offloads, Key Benefit

Distributed SF delivery

Service overlay and SF sharing across SFFs & SFCs, leads to **distributed SF delivery** effect



Why not classify and bypass SFs, instead ?

Achieve similar effect through SFC Classifiers or Control Plane

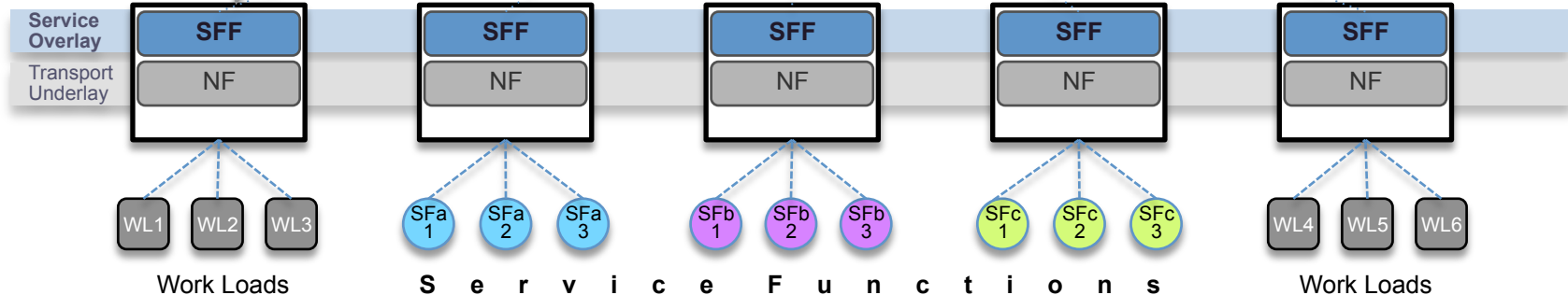
Classify & select appropriate chain @ SFF

- ☐ Static classification
- ☐ SF classification vs. SFF classification
- ☐ Classification overhead

SFC Control Plane

Use Control Plane

- ☐ Too slow
- ☐ Buffer or Drop traffic ?
- ☐ May be appropriate in some cases



What next ?

- Allocate necessary bits in SFC encapsulation
 - Just two for simple offloads
 - 1-bit: Offload, 1-bit: Action
 - Enables SFF & SF simple-offloads interoperability
- Reference this in the SFC architecture draft
- Adopt as a WG draft
- Please provide feedback/comments