

Metadata Considerations

draft-rijsman-sfc-metadata-considerations-00

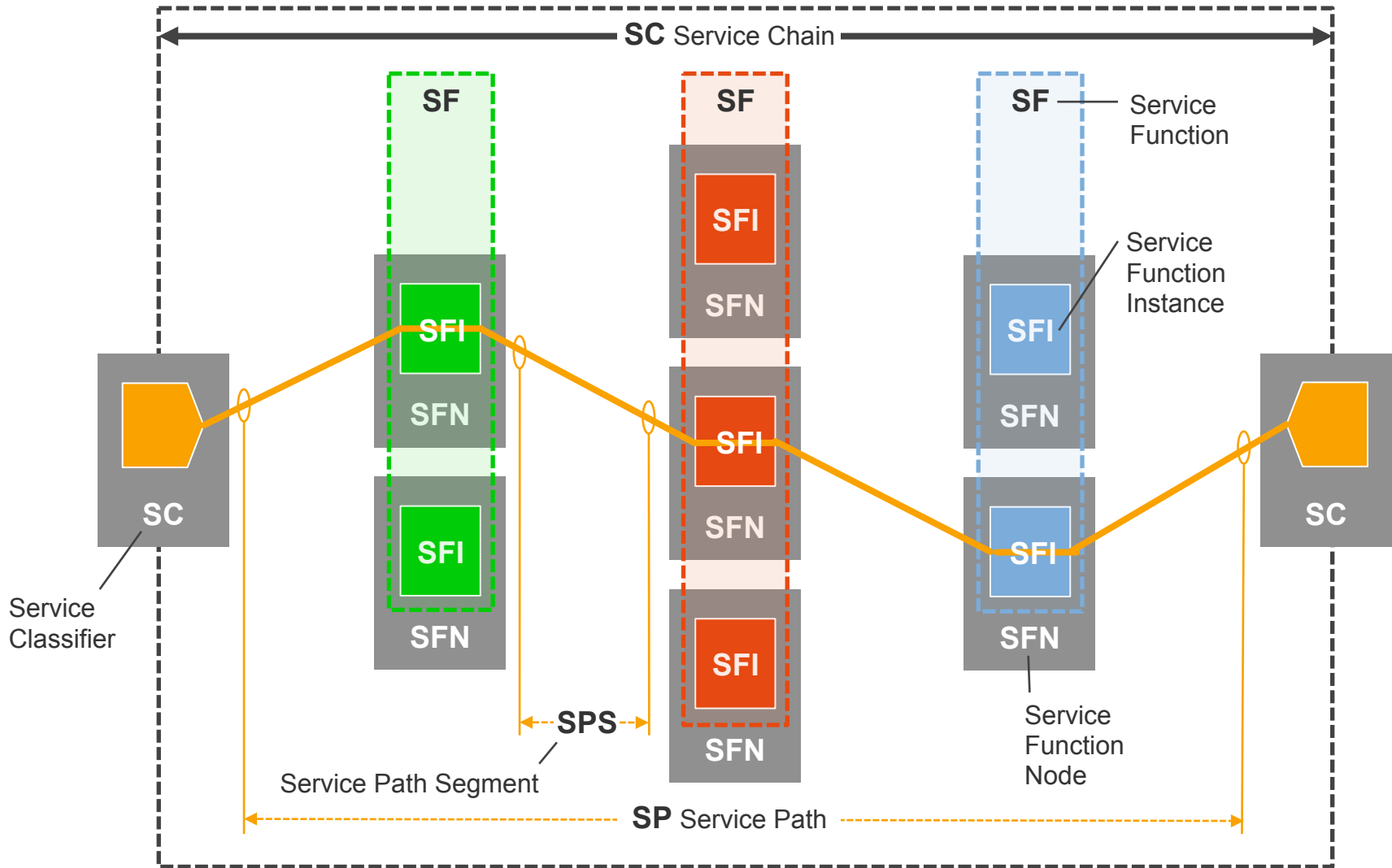
Service Function Chaining Working Group
IETF 89 - London - March 2014

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SERVICE FUNCTION CHAINING ABSTRACTIONS

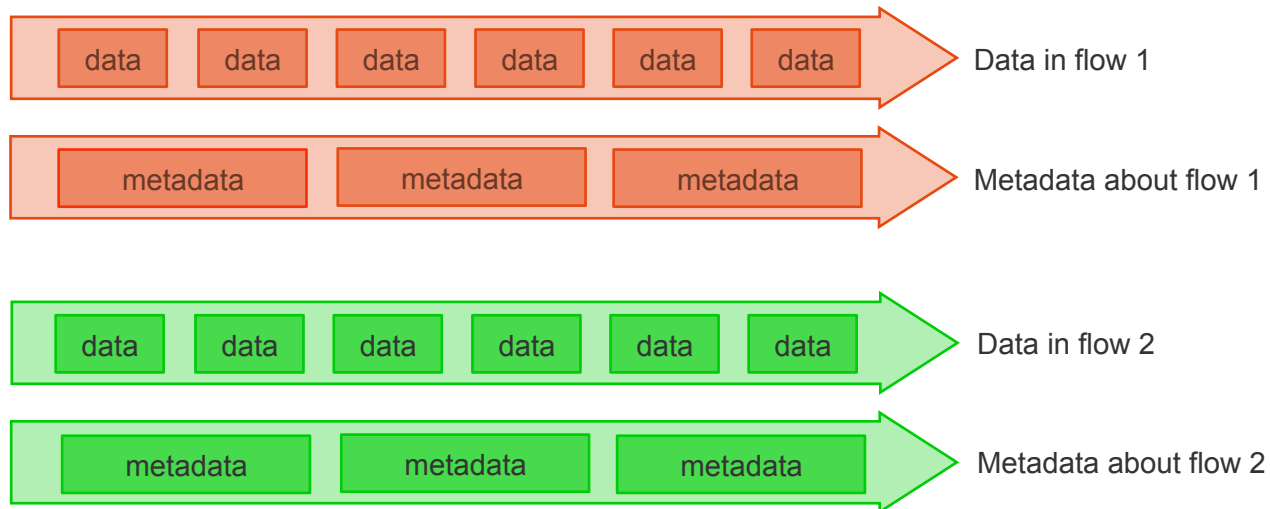
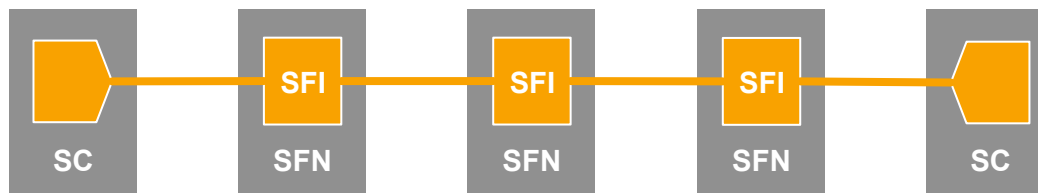
IETF SERVICE FUNCTION CHAINING (SFC) WORKGROUP



WHAT IS METADATA?

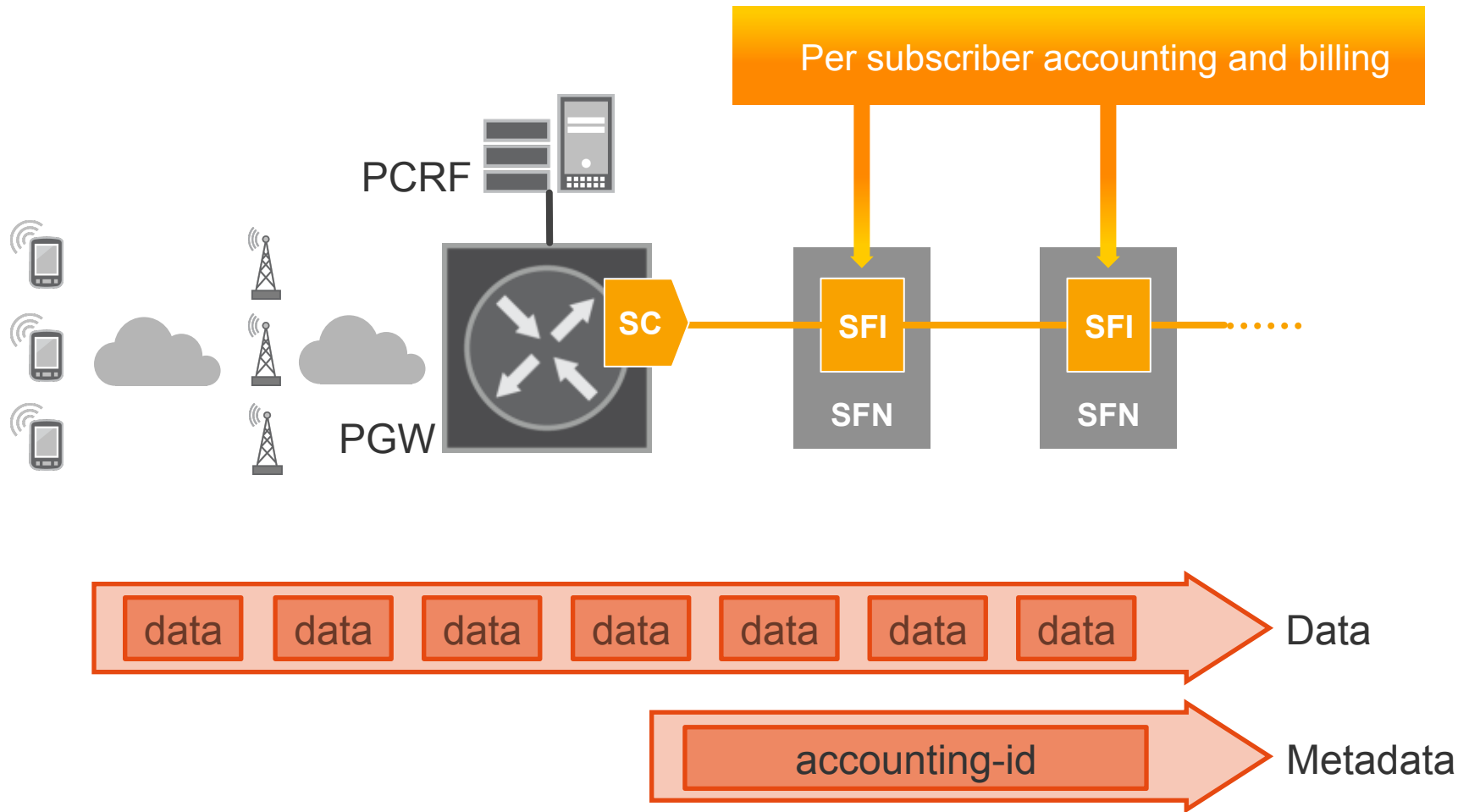


Metadata is "data about data"



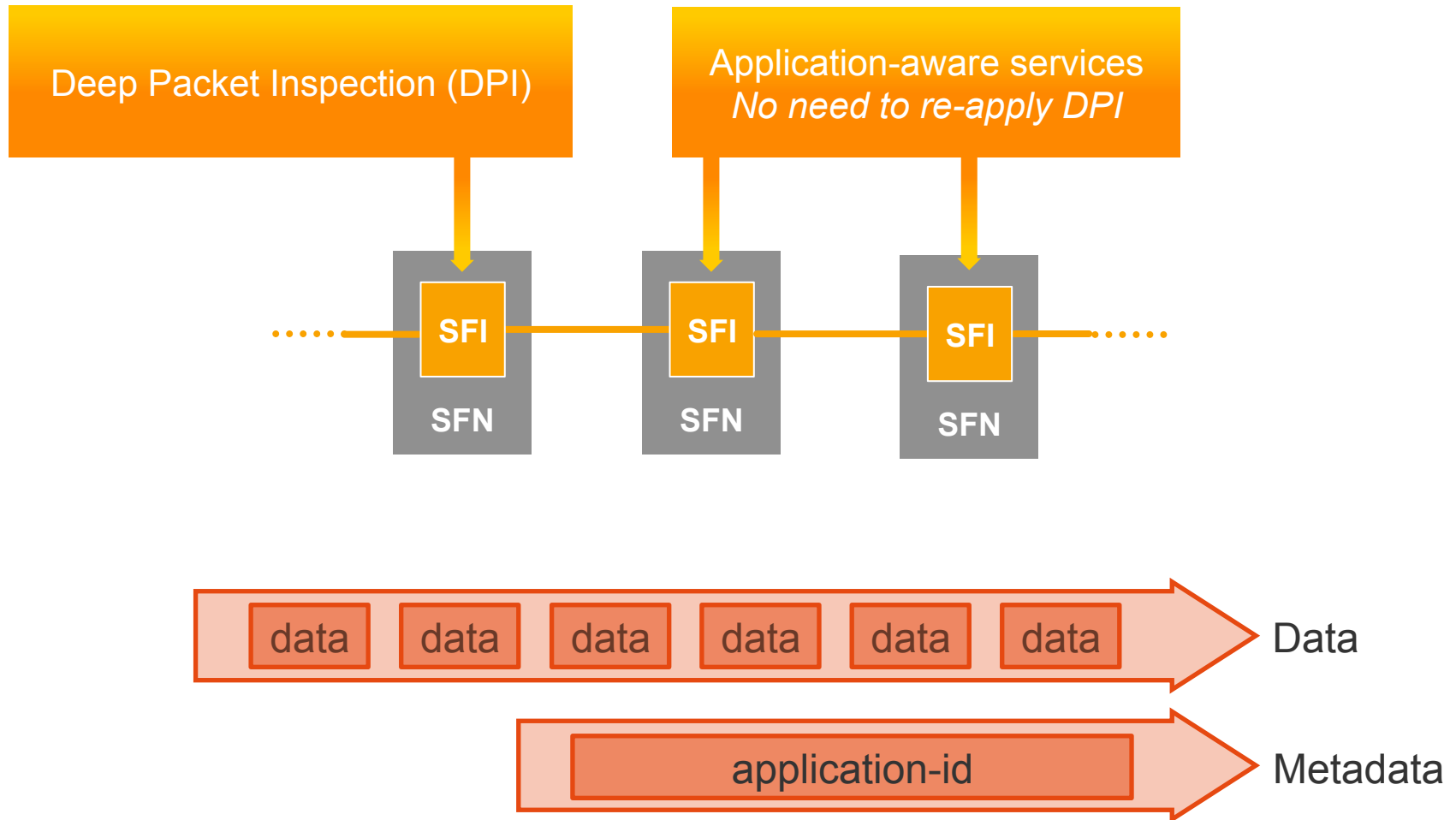
METADATA USE CASE 1: SUBSCRIBER-AWARENESS

CONTEXTUAL INFORMATION WHICH IS NOT LOCALLY AVAILABLE



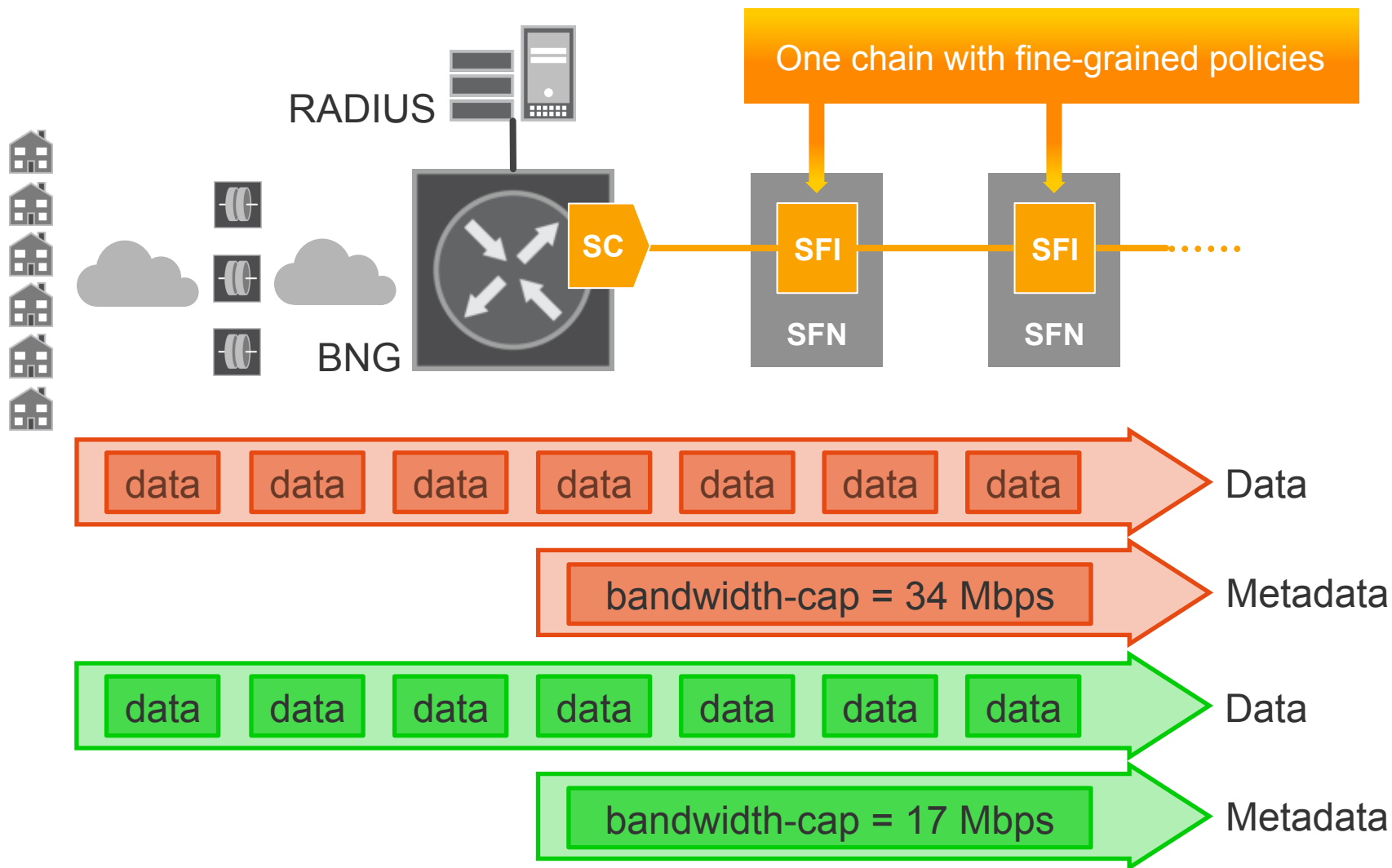
METADATA USE CASE 2: APPLICATION-AWARENESS

AVOID REPETITION OF EXPENSIVE OPERATION (E.G. DPI)



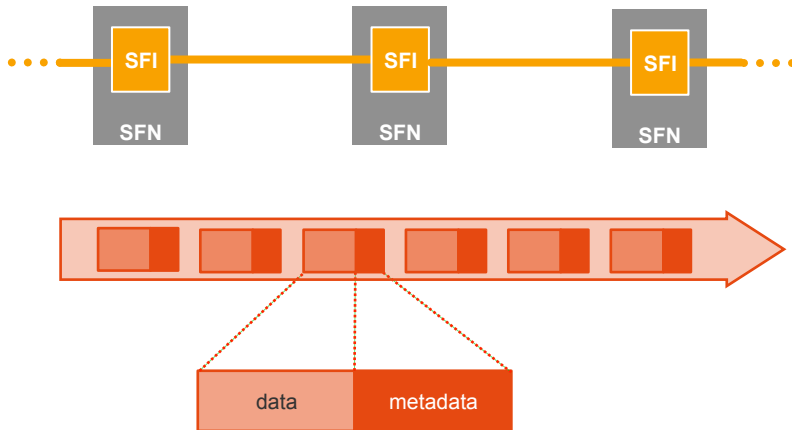
METADATA USE CASE 3: FINE-GRAINED POLICIES

SUPPORT FINE-GRAINED POLICIES WITHOUT NEEDING MANY CHAINS

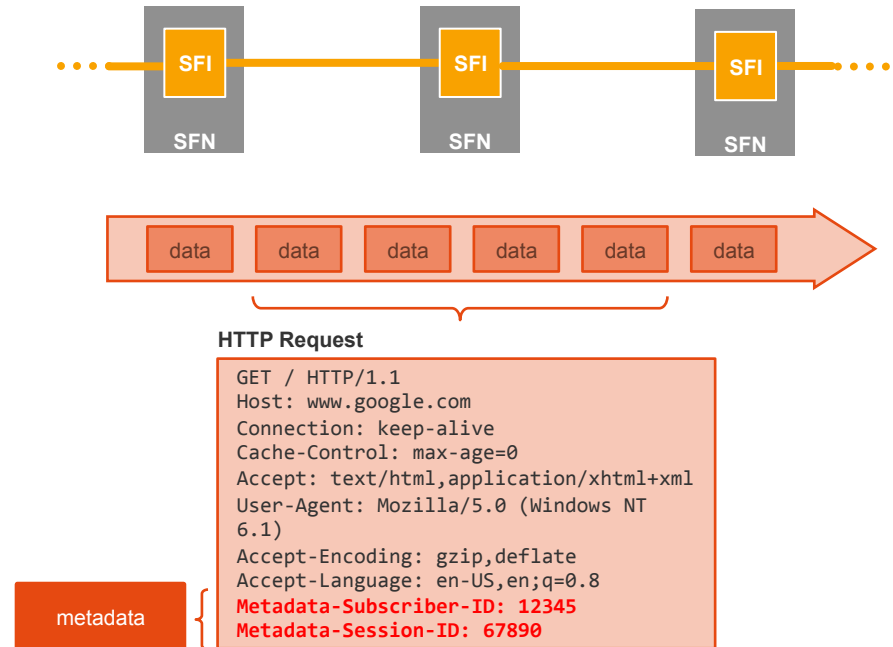


METADATA SIGNALING - ARCHITECTURAL OPTIONS

Option 1: In-band marking Attach metadata to each packet

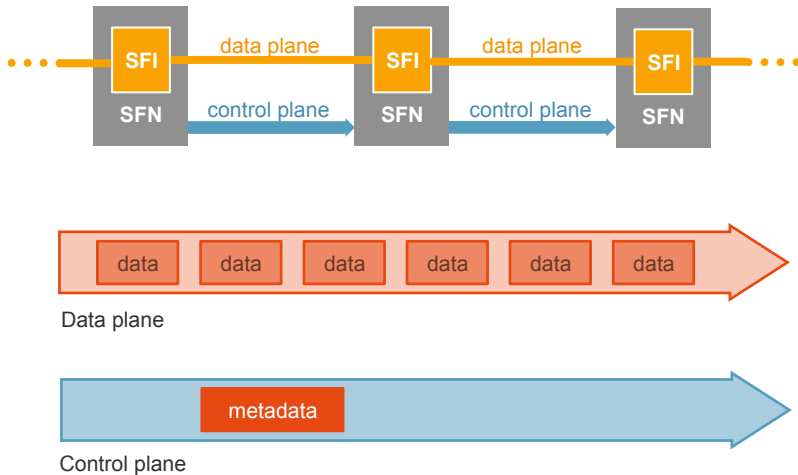


Option 2: Application Layer Headers E.g. HTTP extension headers

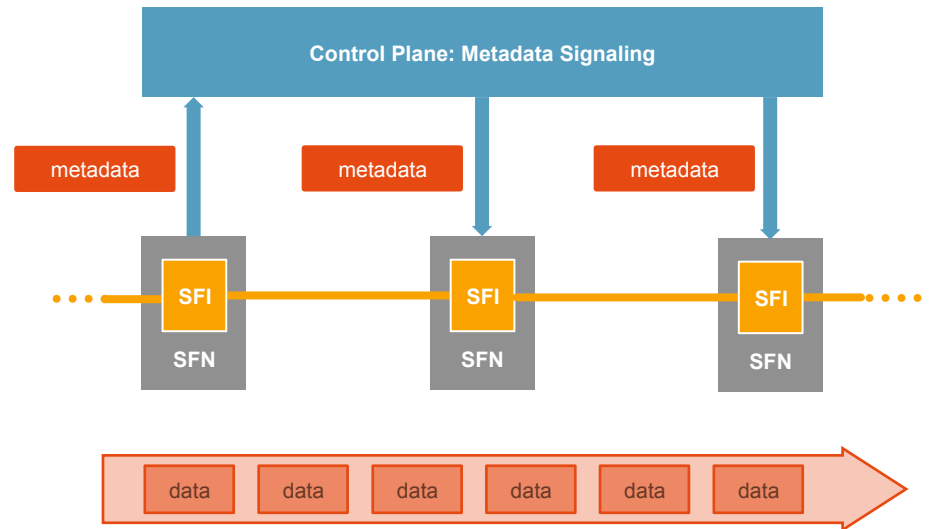


METADATA SIGNALING - ARCHITECTURAL OPTIONS

Option 3: Congruent Out-of-Band Signaling

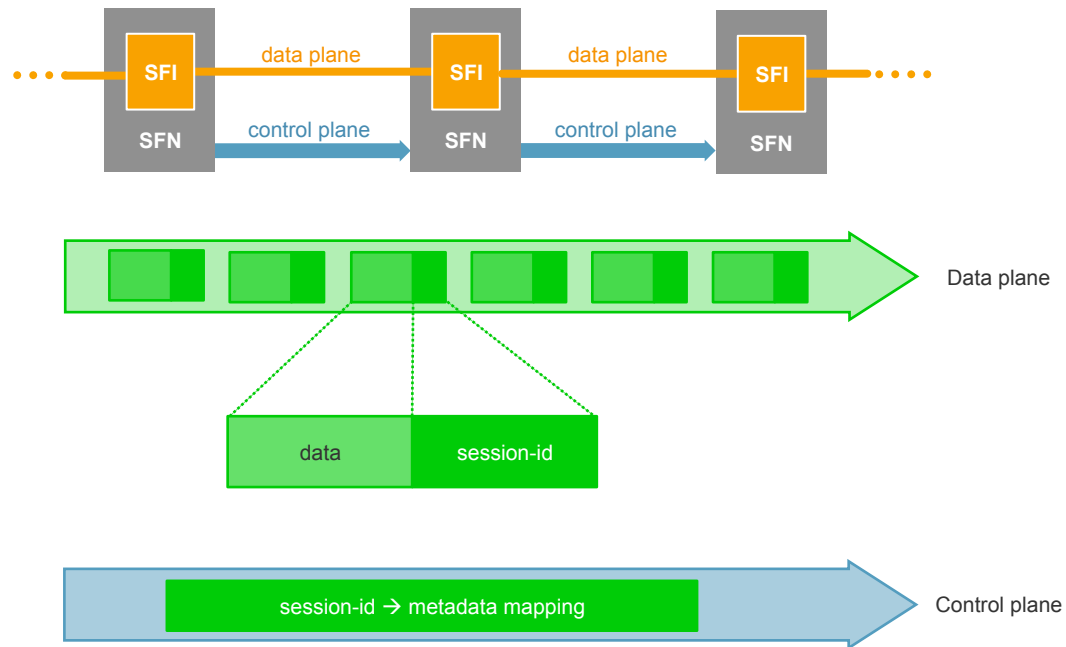


Option 4: Non-Congruent Out-of-Band Signaling



METADATA SIGNALING - ARCHITECTURAL OPTIONS

Option 5: Hybrid: In-Band Session-ID + Out-of-Band Signaling



METADATA CHALLENGES

- Support for metadata-unaware service function
- Preserving metadata through metadata-unaware service functions
- Metadata encoding (fixed length versus TLV)
- Availability and performance of the control plane
- Synchronization between the control plane and the data plane
- Distributing metadata only to interested service functions
- Associating data plane flow with control plane signaling
- Layering considerations (separate path layer and service layer)
- Load balancing and symmetry
- High availability
- Geographic dispersion
- Multiple sources of metadata
- Extensibility

CONCLUSIONS

- **Need standardization for multi-vendor interoperability**
- **Multiple approaches**
 - In-band marking
 - Out-of-band signaling (congruent or non-congruent)
 - Hybrid approach
- **Many challenges with each approach**
- **No single approach is obvious winner**
 - Different approaches for different use cases?
 - Hybrid approach good match for mobile and fixed broadband
- **Keep service path signaling and metadata signaling separate**
 - Separate layers, separate headers, separate protocols
 - Don't need to be standardized at the same time