

# **A Framework for Computing-Aware Traffic Steering (CATS)**

draft-ietf-cats-framework-02  
to  
draft-ietf-cats-framework-04

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# Agenda

- **Changes since Last IETF Meeting**
- **Next Step**

# Update summary from revision 02 to 03

Main update from 02-03:

- **Reorganized the order of terms:** to make the logic clear: Move CS-ID and other CIS-ID to the location just after Computing Service and CATS Service contact instance definition.
- **Updated definition of**
  - **Computing service:** deleting the "(without network service)". More discussion needed.
    - Regarding this, we need more discussion, because the definition in use case draft may not be precise enough now. So let's have discussion on this and update them together later. @'Yao Kehan'
  - **Service Contact instance:** the comment from Zongpeng
  - **CATS forwarder:** according to Zongpeng's comment.
- **Updated the abbreviation** of CATS Service Contact Instance ID to CSCI-ID.
  - Note: If you have other suggestion, please share to the list.

Computing Service: An offering is made available by a provider by orchestrating a set of computing resources.

CATS Service ID (CS-ID): An identifier representing a service, which the clients use to access it. See Section 3.2.

CATS Service Contact Instance ID (CSCI-ID): An identifier of a specific service contact instance. See Section 3.2.

CATS-Forwarder: A network entity that steers traffic specific to a service request towards a corresponding yet selected service contact instance according to provisioned forwarding decisions. These decisions are supplied by a C-PS, which may or may not be on the CATS-Forwarder.

# Update summary from revision 02 to 03

- **Updated section 3.4.1:** to clarify the relation between service sites, service instance and service contact instance.
- **Deleted service scheduling function:** in Centralized mode, cause this is not the key of CATS, no need to mention it.
- **Simplified the description of C-PS and service access processing:** according to Zongpeng, Vincent and Med's valuable input.
- **Updated service contact instance affiliation:** according to Zongpeng's comments.
- **Reworded the description of Privacy considerations:** according to zongpeng's comments.
- Other editorial modifications

## 3.4.1. Service Sites, Services Instances, and Service Contact Instances

As service instances are accessed via a service contact instance, a client will not see the service instances but only the service contact instance.

Service sites are locations that host resources (including computing resources) that are required to offer a service. As mentioned in Section 3.2, a compute service (e.g., for face recognition purposes or a game server) is uniquely identified by a CATS Service Identifier (CS-ID). The CS-ID does not need to be globally unique, though.

A single service can be represented and accessed via several contact instances that run in same or different regions of a network.

For example, in a Centralized design, both the computing related metrics from the C-SMAs and the network metrics are collected by a (logically) centralized path computation logic (e.g., a PCE). In this case, the CATS computation logic may process incoming service requests to compute and select paths to service contact instances. More generally, the paths might be computed before the service request comes. The outcomes of such a computation process can then be communicated to CATS traffic classifiers (C-TCs).

According to the method of distributing and collecting the computing related metrics, three deployment models can be considered for the deployment of the CATS framework:

# Update summary from revision 03 to 04

- **Update of C-PS:** Comments from Dirk: <https://mailarchive.ietf.org/arch/msg/cats/D5TX8rCfOn3mOSqkLid-paxZzU4/>

- Add metric definition:

Metric: An information that provides suitable input information to a selection mechanism to determine a CATS egress node.

- Delete path computing logic for C-PS

CATS Path Selector (C-PS): A functional entity that computes and selects paths towards service locations and instances and which accommodates the requirements of service requests. Such a path computation engine takes into account the service and network status information. See Section 3.4.4.

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- **Update of Hybrid mode:** Comments from Xinxin: <https://mailarchive.ietf.org/arch/msg/cats/sQxu5d355goklj47-A3kFVQIzpo/>

In the hybrid model, the metrics can be distributed to C-PSes in combination of distributed and centralized ways. The specific combination of metric distribution is an implementation choice, which is determined by the requirements of specific services.

# Comments to be addressed

- Issues in Github repo:  
<https://github.com/boucadair/CATS-framework/issues>
  - Luis
  - Huijuan
  - Changwang
  - Castern
  - Sharon
  - Zongpeng
- **Please be vocal on the mail list.** We need more reviews, and plan to have a stable revision by the end of 2024.

<input type="checkbox"/>	<input checked="" type="radio"/>	8 Open	<input checked="" type="checkbox"/>	44 Closed
<input type="checkbox"/>	<input checked="" type="radio"/>	Zongpeng: Some proposal for policy delivery		#99 opened 2 days ago by muzixing
<input type="checkbox"/>	<input checked="" type="radio"/>	Instance affinity comments from Castern and Sharon		#78 opened on Jul 9 by muzixing
<input type="checkbox"/>	<input checked="" type="radio"/>	Comments from Changwang LIN		#77 opened on Jul 9 by muzixing
<input type="checkbox"/>	<input checked="" type="radio"/>	Comments from Luis		#76 opened on Jul 9 by muzixing
<input type="checkbox"/>	<input checked="" type="radio"/>	Comments from Huijuan YAO		#75 opened on Jul 9 by muzixing
<input type="checkbox"/>	<input checked="" type="radio"/>	Editorial review of Figures 3 to 5		#67 opened on Mar 5 by luiscontreras
<input type="checkbox"/>	<input checked="" type="radio"/>	Encrypted service identifiers		#63 opened on Feb 7 by boucadair
<input type="checkbox"/>	<input checked="" type="radio"/>	Discuss more threats in the Security Section		#8 opened on Mar 3, 2023 by boucadair

# Next step

- **Addressed the rest Issues in Github repository**
- **Add text in the following sections to enhance the quality of the draft, aiming to have a stable revision by the end of 2024**
  - section 3.3: Framework Overview
  - Section 4.1: Provisioning of CATS Components
  - Section 4.5: Service Contact Instance Affinity
  - Section 5: Security Considerations
  - ...
- **Polish the draft and ask for WGLC in 2025H1**
- **Comments and contributions are welcome.**

# Open Discussion

- Encrypted traffic?
- Instance affinity?
- New use case/traffic pattern?



Thank you