

CCI.ID.1 Backgrounder

A persistent communications identity, separate from the route used to reach it

Color Communication Infrastructure - September 30, 2026

Summary

CCI.ID.1 is a persistent communications identity designed to supersede the telephone number as the canonical identity that people and organizations use to call, message and reach one another. It separates the public communications identity from the route used to reach it. The identity is designed to remain constant while the device, network, application or authorized endpoint behind it changes. CCI.ID.1 works with existing telecommunications infrastructure rather than replacing it.

This backgrounder explains the architecture, sets out what has been demonstrated, and states plainly what has not yet been done.

1. The problem

The telephone number performs two roles at once. It is the public identifier people give one another, and it is a structured address within national and international numbering plans, used directly or through lookup in routing communications.

When telephone numbering took shape, those roles coincided: a number corresponded to a line, and a line to a place. Communications now take place across mobile networks, messaging applications, video services and communications platforms. Many of these services continue to use the telephone number as a common identifier, even where it is not the means by which the communication is carried.

As a result, a public communications identity remains bound to a structure designed for addressing and routing. Where identity and route are combined, a change of route can mean a change of identity.

2. The proposition

CCI.ID.1 makes the public communications identity persistent and allows the authorized route behind it to change.

The identity stays the same. The route can change.

3. The architecture: four functions

CCI separates four functions that the telephone number has historically combined or left implicit.

Function	Question it answers	Role
Identity	Who is being reached?	Defined within the CCI framework
Authority	Who controls that identity?	Defined within the CCI framework
Resolution	Which authorized endpoints currently serve it?	Defined within the CCI framework; operation may be geographically distributed or federated
Transport	What carries the communication?	Participating communications systems, according to their role

CCI defines the common identity, authority and resolution framework. Participating communications systems provide transport and service delivery according to their role. Because the identity is not bound to the route, the route can change without the identity changing.

4. Persistence

A CCI.ID.1 identity is designed to remain constant when its holder changes handset, network, communications application or other authorized endpoint. Endpoints are authorized independently of the identity itself: adding, removing or replacing an endpoint does not create a new identity.

The same principle applies to organizations. An organization can, for example, give its customer-service function a persistent communications identity that stays the same when the people or systems serving it change. Control of an identity can be reassigned without changing the identity.

5. One authoritative global namespace

Telephone numbering is organized hierarchically, through international country codes and national numbering plans. Each CCI.ID.1 identity instead belongs to one authoritative global namespace. The identity itself contains no country code and requires no national numbering allocation, so it is not tied to the country or provider through which it is first

used.

One namespace does not mean one central database. The namespace is a matter of logical authority: there is one authoritative record for each identity. Physical operation is a separate question. Resolution may be geographically distributed or federated, while remaining subject to a common CCI trust, authority and resolution framework.

How that framework is governed is addressed in the separate Governance and Authority Q&A.

6. Representations: how an identity is shared

CCI.ID.1 is the canonical communications identity: the authoritative identity to which every other reference resolves.

- **Color.** Color is designed to provide a deterministic visual representation of a CCI.ID.1 identity, so that a given identity always corresponds to the same Color.
- **Textual and spoken representations.** CCI is designed to support memorable textual and spoken forms, allowing an identity to be written, spoken and shared in a human-usable form. These are being defined in the CCI.ID.1 Specification and are not claimed as implemented.

Each representation is a way of referring to the same underlying identity. None is a separate identity, and none carries authority of its own. A communications identity must not depend on color perception.

7. Trust and verification

CCI.ID.1 separates possession of a device from authority over the communications identity. Holding a handset, or displaying an identifier, is not by itself sufficient to establish control of an identity.

The architecture is designed to support verification that a presented identity is controlled by the party presenting it. This provides a foundation for stronger communications identity assurance and improved resistance to impersonation. CCI does not claim that the architecture eliminates spam, fraud, spoofing or impersonation.

8. Interoperability and transition

CCI.ID.1 does not require telephone numbering to be withdrawn before it can operate. CCI Gateway is the controlled interoperability and migration boundary between CCI-native identity and existing numbered communications, including SMS and telephone numbers issued under E.164, the ITU-T international public telecommunication numbering plan. Ingress from numbered networks and bidirectional interoperability with existing SMS services have been demonstrated.

During transition, telephone numbers may continue to operate as public identifiers and as routing inputs. As CCI-native adoption develops, the architecture is designed so that the telephone number is no longer required to serve as the canonical communications identity. No timetable for the withdrawal of telephone numbering is proposed. CCI.ID.1 is designed to supersede the telephone number as an identity; it does not replace telecommunications networks.

9. What has been demonstrated

CCI has completed private technical acceptance testing across the core identity, authority, resolution and communications architecture, in an engineering reference environment. Testing has demonstrated:

Demonstrated in the engineering reference environment

native identity-to-identity communication in voice, messaging and video

two-way communication to a target holding no E.164 endpoint

identity persistence across replacement of an endpoint

endpoint authorization, concurrent multi-endpoint service and selective withdrawal

bidirectional interoperability with existing SMS services through CCI Gateway

ingress from existing numbered networks

CCI.ID.1 resolution

native browser termination

identities for organizations and persistent organizational roles

reassignment of control without changing the communications identity

Designed, not yet demonstrated: persistence across a change of handset or network; verification that a presented identity is controlled by the presenting party; Color as a deterministic visual representation; textual and spoken representations; federated cross-zone resolution; and registration or association of an identity through authorized registrars during device setup, service activation or account onboarding.

Status. “Demonstrated” means shown in private technical acceptance testing in CCI’s engineering reference environment. No capability currently holds Verified status. The current implementation is not a production telecommunications service. Nothing in this document indicates production deployment, carrier certification, regulatory approval or operation at scale. The registry function is not open.

10. What remains

Subsequent stages, to be undertaken through evaluation and deployment:

- production hardening and production security
- certification
- scaling
- institutional integration
- expanded interoperability
- multi-endpoint session provenance
- operator-grade emergency communications integration

11. Who CCI is for

CCI is infrastructure, not a consumer communications application. It is designed for integration by device manufacturers and operating-system providers, network providers, and communications platforms and service providers. Participants retain their own devices, networks, applications, interfaces, brands, services and customer relationships. CCI supplies the common identity, authority and resolution framework beneath them.

Those same participant types may also be authorized as identity registrars, so that a CCI.ID.1 identity can be registered, or an existing one associated, during device setup, service activation or account onboarding. Registrar authority is granted separately from integration rights. No registrar has been appointed and no application route is open; terms are not yet determined. The identity does not belong to the registrar that registered it: it stays with its holder through any later change of registrar.

12. Evaluation

Controlled evaluation will be available to qualifying device manufacturers, operating-system providers, network providers and communications platforms. Evaluation provides access to technical documentation, the reference architecture, controlled testing and supporting evidence for independent assessment of CCI.ID.1.

About Color Communication Infrastructure

Color Communication Infrastructure (CCI) develops infrastructure for persistent communications identity. CCI.ID.1 is its first communications identity specification. Color Communication Infrastructure is operated by Arrowmane Limited, registered in England and Wales.

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