

To make it easier to deploy OnGo networks using the CBRS SHNI, the OnGo Alliance (OnGoA) offers managed identifiers for use by OnGo networks.

Identifying Wireless Networks

Wireless networks need a way to identify themselves, so that devices can determine which networks they can connect to. In the 3GPP's Long Term Evolution (LTE) and 5G System (5GS), this is done using an identifier called the Public Land Mobile Network Identifiers (PLMN-ID). Devices have the PLMN-ID of their home network, their Home Network Identifier (HNI), stored in their SIM or eSIM. Devices connect to networks that are broadcasting the PLMN-ID that matches their HNI. The International Telecommunications Union (ITU) defines the rules for getting a PLMN-ID, and has delegated the management of them to various countries.

What is the CBRS SHNI?

The PLMN-ID system was designed to support large network operators, and there aren't a lot of PLMN-IDs available. Which means it doesn't work well for identifying small private networks. To address this problem, the organization that manages PLMN-IDs in the US has allocated a PLMN-ID for use by networks in the CBRS band – the CBRS Shared HNI (SHNI), with a value of 315-010.

Identifying CBRS SHNI Networks

The CBRS SHNI gives networks a PLMN-ID to use, but they still need some way to distinguish themselves from other networks using the CBRS SHNI. For OnGo Networks, we use a new identifier, the CBRS Network ID (CBRS NID) to uniquely identify an individual OnGo network that uses the CBRS SHNI. We use the existing Closed Subscriber Group (CSG) mechanism in LTE to handle this, providing the CBRS NID in place of the CSG Identifier.

Avoiding Identifier Collisions

LTE uses a number of identifiers to uniquely identify different elements of the network. When the identifier needs to be globally unique, they include the networks' PLMN-ID as a component of the identifier. Since we have multiple networks using the same PLMN-ID, we need to

make sure that two different network operators don't accidentally use the same identifiers. Such collisions can result in a poor user experience and poor network performance. To prevent this, the OnGo Alliance manages components of those identifiers. By removing the risk of collision, we make it a lot easier to deploy private OnGo networks.

Do I Need to Get Identifiers?

Yes, except if you have your own PLMN-ID, you are deploying a pure NHN.

OnGo Alliance Managed Identifiers

There are four identifiers that are managed by the OnGoA for LTE networks:

CBRS Network Identifier (CBRS-NID)

This 27-bit number is used to uniquely identify a network using the CBRS SHNI.

Mobility Management Entity Group Identifier (MMEGI)

This number is used in the Globally Unique Mobility Management Entity Identifier (GUMMEI), which handles mobility functions in an LTE network. It is also used in the Globally Unique Temporary Identifier (GUTI), which is used to identify a device in the network on a temporary basis. Most networks only need one MMEGI – if a network is large enough to need more than one MMEGI, they should probably get their own PLMN-ID.

eNodeB Identifier (eNB ID)

This number is used in the EUTRA Cell Global Identifier (ECGI), which uniquely identifies each eNodeB (base station) in a network. As a general rule, 1 eNodeB Identifier is needed per CBSD.

Tracking Area Code (TAC)

This code is part of the Tracking Area Identity (TAI), that identifies each tracking area in a network. Tracking areas are used by the network to monitor where devices are as they move around the network.

Many private OnGo networks will only need 1 TAC, and you get 6 TACs for each IMSI Block Number (IBN) you obtain (see below), but if you need more than that, you can get more managed TACs from the OnGo Alliance.

OnGo Managed Identifiers

What They Are
Why You Need Them
How to Get Them

IMSI Block Numbers (IBNs)

User devices also have an identifier that needs to be globally unique – their Individual Mobile Subscriber Identity (IMSI). This is the identifier stored on the SIM, and is used by the network to identify subscribers to their network. The IMSI includes the PLMN-ID of the network operator in them, which means we need to prevent collisions for networks using the CBRS SHNI. Rather than manage each IMSI, we've instead divided the 9-digit Mobile Subscriber Identification Number (MSIN) component of the IMSI into a 4-digit IMSI Block Number (IBN) and a 5-digit User Identification Number (UIN). Private OnGo network operators can obtain an IBN from the US IMSI Administrator, which will allow them to issue up to 100,000 IMSIs. If you need more than that, you can get additional IBNs.

IBNs and TACs

To make it easier for private OnGo network operators, we also use the IBN to generate a set of 6 TACs. The first TAC is the IBN itself, the second is the IBN + 10,000, the third is the IBN + 20,000, etc. up to IBN + 50,000. If you need more TACS than the initial 6, you can request additional managed TACs from the OnGo Alliance.

OnGo 5G Networks

5G OnGo deployments can use the CBRS SHNI just like an LTE network. As of Release 16 of the 3GPP specifications, the only managed identifiers you need are a CBRS-NID, and an IMSI Block Number. We are adding support for Release 15 5G NR networks, which will

require managing of some 5G-specific identifiers, the AMF Region + Set ID and gNB ID, that are analogous to LTE's MMEGI and eNB ID. They will be managed like their LTE counterparts.

Obtaining Managed Identifiers

To get OnGo Alliance managed identifiers, go to <https://ongoalliance.org/ongo-identifiers/>. The OnGo Alliance charges a small management fee in order to get identifiers, along with an annual renewal fee. We also provide a package discount on a basic set of identifiers – 1 CBRS NID, 1 MMEGI, and 100 eNB IDs.

To get an IBN from the US IMSI Administrator, go to <https://imsiadmin.com/imsi-form-g>. They also charge a small management fee.

Questions?

If you have any questions, please send them to us at shni@ongoalliance.org or visit our website at ongoalliance.org. We also periodically offer a webinar on identifier management. Recordings of the webinar can also be found on our website.

Combo Package
1x CBRS-NID
1x MMEGI
100x eNB ID
\$325 (New)
\$150 (Renewal)

Identifier	Assigned	Part Of	Identifies	Size	Fee (New)	Fee (Renewal)
CBRS-NID	OnGoA	–	Individual networks using CBRS SHNI	27 bits	\$40	\$15
MMEGI	OnGoA	GUMMEI GUTI	Mobility Management Entity in EPC End user devices/User equipment (temporary)	16 bits	\$125	\$50
eNB ID	OnGoA	ECGI	Individual eNBs	20 bits	\$2	\$1
TAC	OnGoA	TAI	Network tracking areas	16 bits	\$0	\$0
IBN	US IMSI Admin	IMSI	100,000 Subscribers + 6 TACs	4 digits	\$325	\$325

About the OnGo Alliance

The OnGo Alliance believes that 3GPP-based solutions in the 3.5 GHz band, utilizing shared spectrum, can enable both in-building and outdoor coverage and capacity expansion at massive scale. In order to maximize the full potential of spectrum sharing, the OnGo Alliance enables a robust ecosystem through the management of the OnGo brand, and the OnGo Certification Program. For more information, please visit www.ongoalliance.org and learn more about the expanded business opportunities OnGo is enabling.

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