

# CHANGE REQUEST

LoRaWAN  
Backend  
Interfaces

**Version**

1.0

**CR**

**rev**

**CR Title:**

Fix the length of NwkId for Type 3 and Type 4 NetIDs

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**Work Item  
Ref:**

**Date:**

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**Category:**

F

*Use one of the following categories:*

**F** (correction)

**A** (corresponds to a correction in an earlier release)

**B** (addition of feature)

**C** (functional modification of feature)

**D** (editorial modification / clarification)

**Reason for  
change:**

It was discovered that the NetID allocation spreadsheet has been out of synch with the Backend Interfaces specification with respect to the length of NwkId for Type 3 and Type 4 NetIDs. The two needed to be aligned. Since a number of networks have already been deployed according to the details in the spreadsheet, it was decided to synch the Backend spec with the spreadsheet.

**Summary of  
change:**

Adjust the NwkID length for Type 3 and Type 4 NetIDs in the spec according to the allocation spreadsheet ([https://members.lora-alliance.org/higherlogic/ws/groups/technical/documents/network262/document?document\\_id=3303](https://members.lora-alliance.org/higherlogic/ws/groups/technical/documents/network262/document?document_id=3303)).

**Clauses  
affected:**

***Other  
deliverables  
affected:***

***Other  
comment:***

Copy of the allocation spreadsheet shared as a reference:

Assigned to:		24bit NetID			32bit DevAddr		
Type	Type (3 bits)	RFU	ID	Type prefix binary value	Number of NwkID bits	Number of NwkAddr bits	
Sponsor members	0	000	000000000000000 (15 bits)	xxxxxx (6 bits)	0 (1 bit)	6	25
Reserved	1	001	000000000000000 (15 bits)	xxxxxx (6 bits)	10 (2 bits)	6	24
Reserved	2	010	000000000000 (12 bits)	xxxxxxxx (9 bits)	110 (3 bits)	9	20
Contributor members	3	011	<none>	xxxxxxxxxxxxxxxxxxxxxx (21 bits)	1110 (4 bits)	11	17
Reserved	4	100	<none>	xxxxxxxxxxxxxxxxxxxxxx (21 bits)	11110 (5 bits)	12	15
Reserved	5	101	<none>	xxxxxxxxxxxxxxxxxxxxxx (21 bits)	111110 (6 bits)	13	13
Adopter/Institutional	6	110	<none>	xxxxxxxxxxxxxxxxxxxxxx (21 bits)	1111110 (7 bits)	15	10
Reserved	7	111	<none>	xxxxxxxxxxxxxxxxxxxxxx (21 bits)	11111110 (8 bits)	17	7
Note1: RFU bits can be arbitrarily assigned for Type 0 NetID with ID=0 and ID=1 as described in LoRaWAN 1.1 spec.				Note3: NwkID of a DevAddr is the designated number of LSB of the associated NetID			
Note2: According to the current NetID allocation policy, Adopter members that intend to upgrade to Contributor/Sponsor level within a year are allocated provisional NetIDs according to their target membership level.				Note4: Type 1-7 DevAddrs do not follow the DevAddr format specified in LoRaWAN 1.0.x specs. Assignee of Type 1-7 NetIDs shall follow the DevAddr format specified here even when they are using LoRaWAN 1.0.x implementations.			
				Example:			
				Assigned Type 3 NetID: 6291457 decimal, 0x600001 hexadecimal			
				DevAddrs assigned based on this NetID shall have —			
				4bit prefix value: 4'b1110			
				11bit NwkID value: 11'b00000000001			
				17bit NwkAddr: value assigned by the operator			

\*\*\*\*\* Start of Change 1 \*\*\*\*\*

## 14 DevAddr Assignment

NetID is a 24bit network identifier assigned to LoRaWAN networks by the LoRa Alliance. Values 0x000000 and 0x000001 are reserved for experimental networks and networks that are not using roaming. These values can be used by any network without getting permission from the LoRa Alliance. LoRaWAN networks that use roaming need to obtain a unique NetID value assigned by the LoRa Alliance.

3 bits	21-N bits	N bits
Type	RFU	ID

Figure 1 NetID format

Figure 1 illustrates the format of the NetID which is composed of the following fields:

**Type:** The 3 MSB (Most Significant Bits) of the NetID indicates the NetID Type (0 through 7).

**ID:** Variable length LSB (Least Significant Bits) of NetID as assigned by the LoRa Alliance. Length of the ID field depends on the Type of the NetID.

**RFU:** If there are any unused bits in the NetID after the Type and ID fields are consumed, they are marked as RFU and set to zero. These RFU bits are placed in between the Type and ID bits, if those fields do not already consume the 24 bits of the NetID.

Table 1 provides the details on the Type field setting, number of RFU bits, and length of the ID field for each NetID Type.

NetID Type	24bit NetID		
	Type field setting (3 MSB)	Number of RFU bits	ID field
0	000	15	6 LSB
1	001	15	6 LSB
2	010	12	9 LSB
3	011	0	21LSB
4	100	0	21LSB
5	101	0	21LSB
6	110	0	21LSB
7	111	0	21LSB

Table 1 NetID Types

For example, the NetID value 0x000003 is a Type 0 NetID with ID=3, and value 0x6000FF is a Type 3 NetID with ID=255.

L bits	M bits	N bits
Type Prefix	NwkID	NwkAddr

Figure 2 DevAddr format

DevAddr is an End-Device identifier assigned by the LoRaWAN network. Figure 2 illustrates the format of the DevAddr which is composed of the following fields:

Type Prefix: Variable length MSB that indicates the NetID Type of the assigning network.

NwkID: Variable length bits that follow the Type Prefix field. They are used for identifying the network. The value of NwkID is set to the predefined number of LSB of ID field of the NetID.

NwkAddr: Variable length LSB that is assigned to the End-Device by the network.

Table 2 provides the details on the length and setting of Type Prefix field, size of NwkID and NwkAddr fields for each Type of NetID. The NS shall use the parameters defined in this table when assigning a DevAddr to its End-Devices based on its NetID.

NetID Type	32bit DevAddr			
	Type Prefix Length (MSB)	Type Prefix Value (binary)	Number of NwkID bits	Number of NwkAddr bits
0	1	0	6	25
1	2	10	6	24
2	3	110	9	20
3	4	1110	<del>110</del>	<del>178</del>
4	5	11110	<del>124</del>	<del>156</del>
5	6	111110	13	13
6	7	1111110	15	10
7	8	11111110	17	7

Table 2 DevAddr format based on the NetID Type

When number of NwkID bits is less than the number of bits in the ID field of the NetID (as in Types 3 through 7), that means multiple NetIDs are likely to map to the same NwkID value. Section 11.3 Passive Roaming describes how the fNS tries multiple NSs to find the sNS of the End-Device.

