



# Customer Communities Document

Internap Proprietary Information  
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## **Internap Customer Communities**

Internap Network Services enables its customers to proactively influence how the customer's routes are communicated to each Network Service Provider (NSP) connected at each of Internap's PNAPs. This control is accomplished through the use of BGP communities. The information below explains Internap's community implementation.

**Note: Providers change their published communities frequently. In all cases Internap will make a best effort to ensure the NSP adheres to the communities that call for a specific action by the NSP. In addition, be aware that using multiple communities on a single route announcement may result in unexpected traffic behavior, if those communities signal conflicting actions. Please speak with your Install Engineer or the Internap Network Operations Center (NOC) for assistance in using multiple communities or to confirm the communities supported by a given NSP. A matrix of provider Autonomous System Numbers (ASN) is included as Appendix A. All references to "Provider AS" can be substituted for the appropriate provider from this matrix.**

**Poison Provider Community: 64666:<Provider AS>**

The Poison Provider Community prevents the advertisement to a given PNAP provider or providers. This eliminates the NSP's ability to utilize the PNAP to reach the customer's prefix. Different combinations of providers can be excluded within a PNAP. For example, 64666:1239 and 64666:3561 will prevent the announcement to Sprint and CW. The announcement to the other PNAP providers will follow the standard PNAP settings.

**Provider Exclusive Community: 64667:<Provider AS>**

The Provider Exclusive Community communicates to the PNAP that this route should be advertised only to this specific provider or providers. When it is used, Internap will send the default number of AS preprends for that provider in this PNAP. For example, 64667:2914 and 64667:3561 will only allow this route to be advertised to Verio and CW.

**Note: The Provider Exclusive Community cannot be used in combination with any other community, with the exception of other Exclusive Communities.**

**Additional Prepend Community: 6504<1-3>:<Provider AS>**

The Additional Prepend Community will instruct the PNAP to add one, two or three additional PNAP ASes to the PNAP's existing prepend configuration. The first 16 bits of the community controls the number of additional preprends and can be 65041, 65042, or 65043. The second 16 bits of the community controls which provider this prepend change should be applied to, or 0 for all providers. Combinations of different communities can be used to control multiple providers.

For example, 65041:701 and 65043:1 will add an additional 1 prepend to UUNET and an additional 3 preprends to Genuity. If this PNAP were configured to prepend 4 times to Genuity by default, this would result in Internap's ASN being preprended 7 times to Genuity for this route announcement.

**No Prepend Community: 65040:<Provider AS or 0>**



The No Prepend Community 65040:0 can be used to remove all Internap prepends on all provider announcements or it can be used to just remove the Internap's AS prepends from a specific provider. For example, 65040:701 would remove all Internap ASN prepends from UUNET and prepends to other providers would not be impacted.

Combinations of different communities can be used to control multiple providers so the customer can build their own AS Path prepends hierarchy.

**Note: PNAPs have a default prepend hierarchy that may change at any time to provide optimal routing, please contact the Internap NOC before implementing a change to the default hierarchy.**

### **Peer Level Local Preference Community: 6502<0 or 8>:<Provider AS or 0>**

The Peer Level Local Preference Community will make a "best effort" to set local-preference on this route equal to the NSP's "Peer Level" Local Preference. "Peer Level" refers to the NSP's Local Preference value that is used at its peering points, typically lower than what is used for paying customers. This community may or may not behave as expected, depending on the specific community implementation of the provider. If a provider accepts a community to set local-preference to the "Peer Level", we will send that community to the provider. If they do not have this community, we will not send any community to influence local-preference, effectively setting this route to the default for this provider.

The only difference between the 65020 and 65028 communities is the AS prepend that will be applied to a given announcement. If the 65020 community is used, Internap's standard prepend hierarchy will be used for this announcement. If the 65028 community is used, Internap will not AS prepend on this announcement and the standard prepend hierarchy for this PNAP will be ignored.

For example, 65020:1 and 65028:1239 will attempt to set Peer level local-preference on Genuity and Sprint. Genuity might allow this and Internap will end up sending the 1:50 community, and since the 65020 community was used Internap will prepend at the standard level for Genuity in this PNAP. On the other hand, if Sprint does not accept a community to set a "Peer Level" local-preference, Internap will not send any communities to Sprint, setting this route to the default for Sprint. In this case the 65028 community was used and there will be no prepends applied to this announcement. In addition, 65020:0 and 65028:0 can be used to make this "best effort" across all providers. Combinations of different communities can be used to control multiple providers.

### **Middle Level Local Preference Community: 65027:<Provider AS or 0>**

The Middle Level Local Preference Community will attempt to set the local preference on a given provider link to their "Middle" local preference level. This will typically be a level above their "Peer Level", but below the highest setting that is offered. Depending on the provider's specific communities implementation, this may be equal to the "Customer Default" local preference.

As with the Peer Level Local Preference Community, the Middle Level Local Preference Community can be applied to a single provider or for all providers in the PNAP. For example, 65027:701 will set the Middle Level Local Preference Community for UUNET, while 65027:0 will set the Middle Level Local Preference Community on all providers in the PNAP.

### **High Level Local Preference Community: 65024:<Provider AS or 0>**

The High Level Local Preference Community will attempt to set the local preference on a given provider link to their "Customer High" local preference level. This will typically be a level above their "Peer Level" and "Middle Level", and is likely to be the highest allowable local preference. Depending on the provider's specific communities implementation, this may be equal to the "Customer Default" local preference.

As with the Peer and Middle Level Local Preference Communities, the High Level Local Preference Community can be applied to a single provider or for all providers in the PNAP. For example, 65024:3651 will set the High Level Local Preference Community for CW, while 65024:0 will set the High Level Local Preference Community on all providers in the PNAP.

### **Customer Back Up Link Community: 65025:<PNAP AS>**

Customers can use the Customer Back Up Link Community on multiple connections to the same PNAP in order to set the "Customer Low" local-preference within the PNAP. This is a method for the customer to influence what link is used as the secondary for data traveling from the PNAP towards the customer AS. This does not impact any local-preference settings with an Internap provider. The PNAP AS that is used in this community will be the same as the AS that is used for peering.

For example, 65025:10910 can be sent to the NYC PNAP to lower Internap's local-preference below our customer default. This local-preference level is still higher than any provider route announcement.



## **PNAP as Last Resort Community: 65026:<PNAP AS>**

The PNAP as Last Resort Community (aka do-not-use) should only be used if Internap is configured as backup to another provider for inbound traffic. This community can be used to lower Internap's local-preference on a customer's route announcement to a value that is below any provider local-preference. This means that Internap, and all other customers in that PNAP will not use this connection unless all other paths become unavailable. Since Internap will not be using this path, it will not be announced to any of Internap's upstream providers. The PNAP AS that is used in this community will be the same as the AS that is used for peering.

In certain situations a customer may have to also prepend their ASN 10x and use the provider peer level local-preference community (65020:0), described above, in order for traffic to fall back to the primary link.

For example, an SFJ PNAP customer who does not want to use their connection to Internap unless all of their other provider connections fail can send 65026:10911.

## **Provider No-Export: 64668:<Provider AS or 0>**

The Provider No-Export Community will add the well-known No-Export Community to the announcement of the customer's routes to the provider in question (or all providers in the case of 64668:0). If the provider honors this community, it will not export the customer's routes to any of its peers.

Routes with this community set will automatically get zero prepends and the default (currently middle) level local-preference provider community.

For example, 64668:701 will cause UUNET to not export the customer's routes beyond the 701 AS. All other providers will export the routes as usual.

**APPENDIX A**

**Continental U.S. PNAP Provider Autonomous System Numbers**

<b>PROVIDER</b>	<b>ASN</b>
UUNET	701
Sprint	1239
C&W	3561
Genuity	1
AT&T	7018
Qwest	209
Global Crossing	3549
Verio	2914
Level 3	3356

**London PNAP Provider Autonomous System Numbers**

<b>PROVIDER</b>	<b>ASN</b>
UUNET	702
C&W	3561
Genuity	7176

**Tokyo PNAP Provider Autonomous System Numbers**

<b>PROVIDER</b>	<b>ASN</b>
UUNET	703
Global Crossing	3549
C&W/IDC	4694
Verio/NTT	2914
IJ	2497
KDDI	2516