

## BGP Communities

For Init7 customers

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## **AS13030 BGP Communities**

Init7 / AS13030 allows customers to modify various attributes of their announced prefixes within the AS13030 backbone. Customers can blackhole a net or a single IPv4/IPv6 address.. Additionally they can prepend or not announce certain prefixes regionally, at specific IXP's or to private peers. It is also possible to change the local-pref, in case a customer wants to direct his inbound traffic over one specific BGP session with Init7 (only if there is more than one session with AS13030).

This documentation is valid for IPv4 as well as for IPv6.

### **1 General Rules**

The following inbound rules apply to every Init7 customer BGP session:

- Prefixes longer than /24 (IPv4) respectively /48 (IPv6) are not permitted (except for blackholing purposes)

Advertisements tagged with our own "internal use only" communities (`_13030:.*_`)

will be denied

- RFC1918 and other reserved networks and subnets are not permitted
- Not-announce and prepend actions as described below apply to non-customer peer announcements
- MED's (Multi Exit Discriminator) will be overwritten, except if otherwise agreed
- The standard local-pref for customers is 300

## 1.1 Verification

To check announcements we provide a looking-glass tool on our website to see what our customers' prefixes look like within AS13030.

<http://www.init7.net/looking-glass/>

## 1.2 Blackhole

Init7 offers BGP customers the opportunity to manage a null route for their hosts/subnets in the event of a DDoS attack; thus preventing the customer from being overwhelmed with malicious traffic and them giving the flexibility to take the necessary counter-measures without contacting the Init7 NOC.

### 1.2.1 Concept

Traffic destined for a prefix tagged with this community will be discarded at ingress to the AS13030 network. This prefix can either be a host route or a more-specific netblock from a registered prefix that already belongs to the customer and is allowed within the inbound prefix-list.

BGP Community	Description
65000:666	Blackhole Community

### 1.2.2 Example I

The example below illustrates the use of this community.

A customer with ASN 1234 sends Init7 a route tagged with community **"65000:666"**

This route will be marked as blackholed and all traffic destined for this route will be discarded on every edge router within the AS13030 backbone.

The output below shows that r1.as13030.net is receiving a 2.2.2.2/32 prefix from AS1234 (customer) tagged with the community 65000:666. When received, the communities "65000:666" and "no-export" are set and the next-hop will be changed to the IP 6.6.6.6 which is NULL-routed and hence dropped on every Init7 edge router.

```
r1.as13030.net#sh ip bgp neigh 1.1.1.2 received-routes detail
1 Prefix: 2.2.2.2/32, Status: BE, Age: 1d0h0m0s NEXT_HOP:
1.1.1.2, Learned from Peer: 1.1.1.2 (1234)
AS_PATH: 1234
```

<b>COMMUNITIES: 65000:666</b>				
r1.as13030.net#sh ip bgp routes detail 2.2.2.2				
1	Prefix: 2.2.2.2/32, Status: BE, Age: 1d0h0m0s			
NEXT_HOP: 6.6.6.6, Learned from Peer: 1.1.1.2 (1234)				
AS_PATH: 1234				
<b>COMMUNITIES: 65000:666 no-export</b>				
r1.as13030.net#sh ip route <b>2.2.2.2</b>				
	Destination	Gateway	Port	Cost
1	2.2.2.2/32	<b>DIRECT</b>	<b>drop</b>	<b>20/0</b>

## 1.3 Not-Announce & Prepend

Any allowed prefix announced with those communities will either not be announced or prepended towards the respective eBGP peer of AS13030. This can either be regionally, by IXP (internet exchange point), our transit or a private peer.

### 1.3.1 Concept

All communities that control route propagation are in the format 6500X:Y, where X stands for the action and Y for the location/peer variable.

### 1.3.2 Action

Value X	Community	Description
1	65001:y	prepend once
2	65002:y	prepend twice
3	65003:y	prepend three times
9	65009:y	not announce

### 1.3.3 Location / IXP / Peer

Value Y	Community	Location / Peer
<b>Continental</b>		
1	6500x:1	Europe
2	6500x:2	USA / Canada
3	6500x:3	South America
4	6500x:4	Asia
5	6500x:5	Africa
6	6500x:6	Australia / New Zealand
<b>Transit</b>		
7	6500x:7	Transit
10	6500x:10	TeliaSonera (AS1299)
11	6500x:11	Deutsche Telekom (AS3320)

<b>IXP's (Internet exchange points)</b>		
4001	6500x:4001	SwissIX
4004	6500x:4004	DE-CIX (FRA-1 Interxion)
4005	6500x:4005	DE-CIX (FRA-2 Ancotel)
4006	6500x:4006	LINX Juniper LAN
4007	6500x:4007	LINX Extreme LAN
4008	6500x:4008	AMS-IX (AMS-1 SARA)
4009	6500x:4009	Equinix Paris
4010	6500x:4010	Espanix
4011	6500x:4011	AMS-IX (AMS-2 NIKHEF)
4014	6500x:4014	Kleyrex
4015	6500x:4015	DIX
4016	6500x:4016	CIXP
4018	6500x:4018	LIX
4020	6500x:4020	VIX
4021	6500x:4021	LONAP
4022	6500x:4022	BCIX
4201	6500x:4201	Any2 Los Angeles
4204	6500x:4204	NYIIX
4205	6500x:4205	NOTA
4206	6500x:4206	Equinix NYC (former PAIX NYC)
4210	6500x:4210	DE-CIX New York
4211	6500x:4211	FL-IX
4212	6500x:4212	DE-CIX Madrid
<b>Peers</b>		
8001	6500x:8001	Switch (AS559)
8002	6500x:8002	UPC (AS6830)
8005	6500x:8005	Solnet (AS9044)
8006	6500x:8006	Finecom (AS15600)
8007	6500x:8007	ATOM86 (AS8455)
8008	6500x:8008	Leaseweb (AS16265)
8009	6500x:8009	Microsoft (AS8075)
8010	6500x:8010	IPTP (AS41095)
8011	6500x:8011	Swisscom (AS3303)
8012	6500x:8012	Vodafone GlobalNet (ex. C&W / AS1273)
8014	6500x:8014	Talktalk (AS13285)

8015	6500x:8015	Sunrise (AS6730)
8016	6500x:8016	PCCW (AS3491)
8019	6500x:8019	Planet.nl (AS8737)
8021	6500x:8021	Portugal Telecom (AS8657)
8022	6500x:8022	ROMTelecom S.A. (AS9050)
8023	6500x:8023	Limelight Networks (AS22822)
8024	6500x:8024	Easynet (AS4589)
8025	6500x:8025	Core-Backbone (AS33891)
8026	6500x:8026	Google (AS15169)
8027	6500x:8027	BHARTI Airtel Ltd. (AS9498)
8029	6500x:8029	Netstream (AS15517)
8030	6500x:8030	Etisalat (AS8966)
8031	6500x:8031	Datahop (AS6908)
8033	6500x:8033	BICS (AS6774)
8034	6500x:8034	Mobile TeleSystems OJSC (AS8359)
8035	6500x:8035	IP-Max SA (AS25091)
8037	6500x:8037	Highwinds (AS12989)
8038	6500x:8038	Rostelecom (AS12389)
8039	6500x:8039	Prolocation (AS41887)
8040	6500x:8040	Netia (AS12741)
8041	6500x:8041	VTX (AS12350)
8043	6500x:8043	Apple Inc (AS714)
8044	6500x:8044	NetCologne (AS8422)
8046	6500x:8046	Amazon (AS16509)
8047	6500x:8047	Online.net (AS12876)
8048	6500x:8048	BT (AS2856)
8050	6500x:8050	Telefonica Germany (AS13184)
8051	6500x:8051	hetzner.de (AS24940)
8052	6500x:8052	A1 Telecom Austria (AS8447)
8053	6500x:8053	METANET GmbH (AS21069)
8054	6500x:8054	Amazon AWS (AS7224)
8055	6500x:8055	Zattoo (AS8302)
8056	6500x:8056	Facebook (AS32934)
8057	6500x:8057	Twitch (AS46489)
8058	6500x:8058	LWLcom GmbH (AS50629)
8059	6500x:8059	Apple Austin (AS6185)



8060	6500x:8060	netplus.ch (AS15547)
8061	6500x:8061	Cyberlink (AS15623)
8062	6500x:8062	SysEleven (AS25291)

### 1.3.4 Example II

The example below illustrates the use of these communities. A customer with ASN 1234 sends Init7 a route tagged with communities **"65001:2 65003:4001 65002:8004 65009:7"**

When that route is propagated across Init7 peering connections:

- Every peer in the USA and Canada will see an AS path of: "13030 13030 1234"
- All peers at SwissIX will see an AS path of: 13030 13030 13030 13030 1234"
- Solnet (AS9044) will see an AS path of: "13030 13030 13030 1234"
- Our Transit will not see the route at all
- All other peers will see the normal AS path of: "13030 1234"

### 1.4 Local-pref

The local-pref communities are used in case a customer has more than one BGP session with Init7 and wants to prefer his inbound traffic over one specific session, thus creating a backup path. By setting the local-pref lower than the standard for customers (300) on one path, all traffic to the customer will flow over the path with the higher local-pref. The following local-pref settings are available and can be controlled with the following communities:

<b>BGP Community</b>	<b>Description</b>
65000:280	set local-pref to 280 (lowest)
65000:290	set local-pref to 290 (lower than standard)

## 1.4.1 Example III

This example below illustrates the use of local-pref communities. A customer with ASN 1234 sends Init7 a route tagged with community "**65000:290**"

The local-pref on this route will be set to 290, therefore all traffic to the customer will flow over the second session with the higher local-pref (300)

From the output below you can see that r1.as13030.net learns the route 2.2.2.0/24 over two different customer BGP sessions (1.1.1.2 and 1.1.1.5 with AS1234). On the first session the prefix is announced without any communities and on the second one with community 65000:290 for which r1.as13030.net sets the local-pref to 290. As mentioned, it prefers the path with the highest local-pref (300) and marks it as best (BE). The path over 1.1.1.5 will now only be used as backup and won't see any traffic towards the customer unless the first one goes down.

```
r1.as13030.net#sh ip bgp routes detail 2.2.2.0
1   Prefix: 2.2.2.0/24, Status: BE, Age: 1d0h0m0s
NEXT_HOP: 1.1.1.2, Metric: 0, Learned from Peer: 1.1.1.2 (1234)
LOCAL_PREF: 300
AS_PATH: 1234
COMMUNITIES:
2   Prefix: 2.2.2.0/24, Status: E, Age: 1d0h0m0s
NEXT_HOP: 1.1.1.5, Metric: 0, Learned from Peer: 1.1.1.5 (1234)
LOCAL_PREF: 290
AS_PATH: 1234
COMMUNITIES: 65000:290
```

## 2 Informative Communities

Init7 / AS13030 tagged incoming routes with several communities; the lists below explain them.

### 2.1 Tagging by Country

<b>BGP Community</b>	<b>Country</b>
13030:511xx	CH / Switzerland
13030:512xx	DE / Germany
13030:513xx	FR / France
13030:514xx	ES / Spain
13030:515xx	NL / The Netherlands
13030:516xx	DK / Denmark
13030:517xx	UK / United Kingdom
13030:518xx	PL / Poland
13030:519xx	US / United States
13030:520xx	CA / Canada
13030:521xx	BE / Belgium
13030:522xx	AT / Austria
13030:523xx	RU / Russia
13030:524xx	CZ / Czech Republic

## 2.2 Tagging by Pop

### 2.2.1 Switzerland

<b>BGP Community</b>	<b>Pop</b>	<b>Bezeichnung</b>
13030:51101	ZRH-1	Equinix Zurich 1
13030:51102	ZRH-2	Equinix Zurich 2
13030:51104	ZRH-4	ICT Center
13030:51105	ZLZ-1	Layer One Letzigraben / green.ch
13030:51107	GLB-1	Interxion Glattbrugg
13030:51108	BRN-1	VTL Wavenet Limited
13030:51112	ZRH-10	Airport Zurich
13030:51113	WIN-1	Stadtwerk Winterthur
13030:51114	WIN-4	Init7 (Switzerland) AG Winterthur
13030:51116	BSL-1	IWB Basel
13030:51117	GVA-1	Equinix Geneva
13030:51118	ZUG-2	Init7 (Switzerland) AG Zug
13030:51121	BSL-2	Quickline Business AG
13030:51124	WIL-1	Online Consulting AG Wil
13030:51125	GVA-3	CERN Geneva
13030:51127	QLS-1	Brainserve Crissier
13030:51128	ZRH-6	e-Shelter Ruemlang
13030:51129	ZRH-8	green.ch Lupfig
13030:51130	BSL-3	ColoBâle AG Pratteln
13030:51131	WIN-6	Data:Hub Winterthur
13030:51132	EPE-1	Zayo (Ex-Viatel) Ependes
13030:51133	OLT-1	Zayo (Ex-Viatel) Olten
13030:51134	WIN-7	AXA Winterthur
13030:51135	WIN-8	Technopark Winterthur
13030:51136	STG-2	Init7 (Switzerland) AG St. Gallen
13030:51137	GLB-3	Interxion Glattbrugg
13030:51138	WIL-2	Init7 (Switzerland) AG Wil SG
13030:51139	ZRH-9	Init7 (Switzerland) AG Zurich Herdern

## 2.2.2 Germany

BGP Community	Pop	Bezeichnung
13030:51202	FRA-2	Equinix Frankfurt
13030:51203	FRA-3	InterXion Frankfurt 3
13030:51212	DUS-1	InterXion Dusseldorf
13030:51214	BER-1	IPB Berlin

## 2.2.3 France

BGP Community	Pop	Bezeichnung
13030:51301	PAR-1	Telehouse Voltaire Paris
13030:51302	MRS-1	Viatel Neuf NetCentre Marseille

## 2.2.4 Spain

BGP Community	Pop	Bezeichnung
13030:51401	MAD-1	Terremark Madrid
13030:51403	MAD-3	InterXion Madrid

## 2.2.5 The Netherlands

BGP Community	Pop	Bezeichnung
13030:51501	AMS-1	SARA Amsterdam
13030:51502	AMS-2	NIKHEF Amsterdam

## 2.2.6 Denmark

BGP Community	Pop	Bezeichnung
13030:51601	CPH-2	InterXion Copenhagen

## 2.2.7 United Kingdom

BGP Community	Pop	Bezeichnung
13030:51701	LON-1	Telehouse North London
13030:51702	LON-2	Telehouse East London

## 2.2.8 Poland

BGP Community	Pop	Bezeichnung
13030:51801	WAW-1	PLIX Warsaw

## 2.2.9 United States

BGP Community	Pop	Bezeichnung
13030:51901	MIA-1	Terremark Miami
13030:51902	LAX-1	CoreSite Los Angeles
13030:51904	NYC-2	Telehouse New York
13030:51905	NYC-3	165 Halsey Street

## 2.2.10 Austria

BGP Community	Pop	Bezeichnung
13030:52201	VIE-1	InterXion Vienna

## 2.3 Tagging by IXP

BGP Community	IXPs Region
13030:4000 – 13030:4199	Europe
13030:4200 – 13030:4399	USA / Canada
13030:4400 – 13030:4499	South America
13030:4500 – 13030:4599	Asia
13030:4600 – 13030:4699	Africa
13030:4700 – 13030:4799	Australia / New Zealand

A list of all existing IXP's can be found on page 6.