

DE-CIX Looking Glas Update

es.NO^G



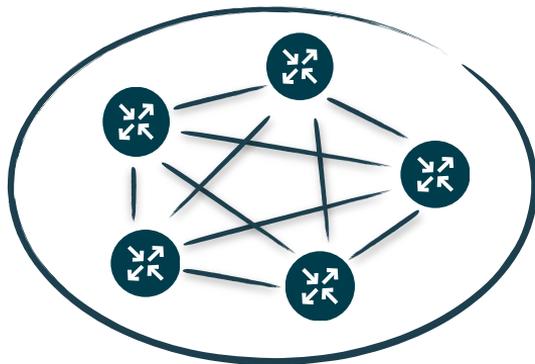
26.10.2018 - ESNOG Gore22 - València
Daniel Spierling

Where networks meet

www.de-cix.net

IXPs, interconnecting peering routers

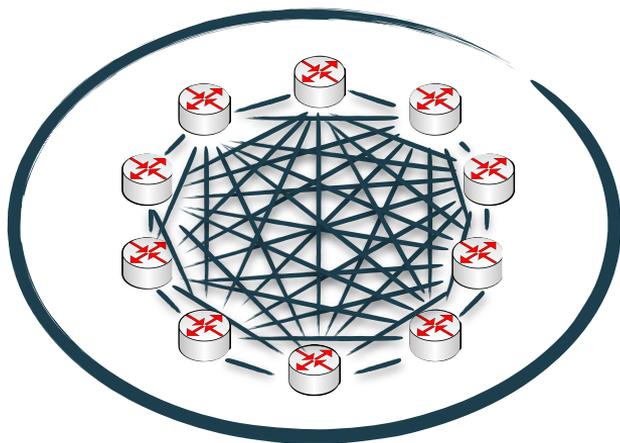
- BGP requires point to point / direct sessions in order to exchange information between two routers..
- therefore setting up peering (BGP) sessions is a very manual process
 - won't be an issue at small IXPs with e.g 5 peers



<https://goo.gl/images/dDYd3K>

IXPs, interconnecting peering routers

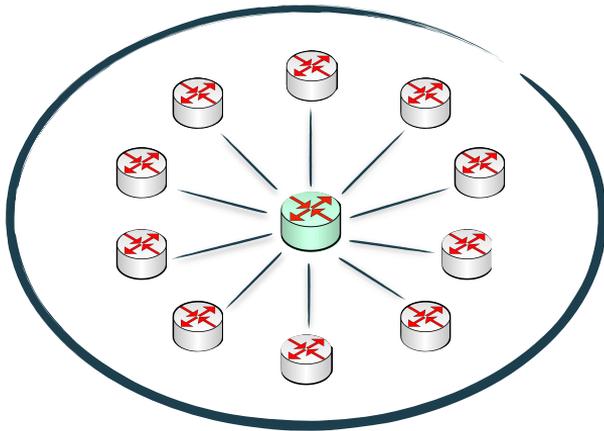
- the bigger an IXP gets, the more possible peers are available to exchange BGP information with..
- Full mesh of BGP sessions, does not scale!



<https://goo.gl/images/dDYd3K>

IXPs, interconnecting peering routers

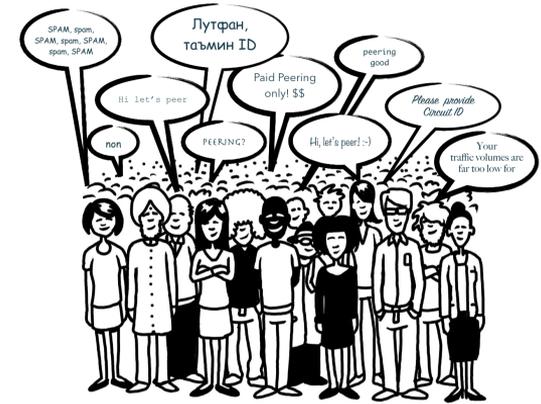
→ Introducing Routeservers into an IXP infrastructure, simplifies the exchange of BGP information between connected peers



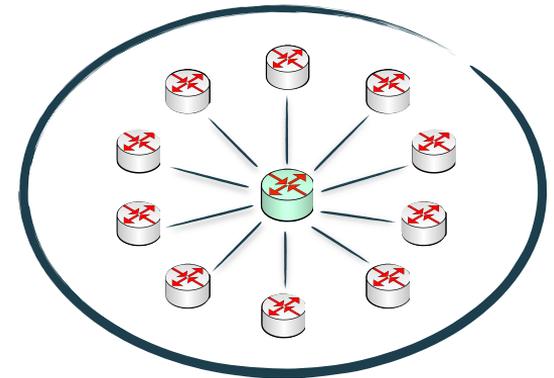
<https://goo.gl/images/dDYd3K>

Why using the route servers?

- to simplify the setup of peering / BGP sessions for as many peers as possible at a certain IXP
- with the large amount of connected networks at an IXP, managing all corresponding BGP sessions can be a full time job..
 - Changes will be required for every peer joining or leaving the IXP
- with only 2x BGP route server sessions new peers will get (inter-)connected with almost all other peers at the IXP



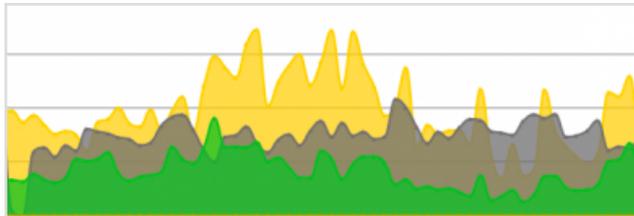
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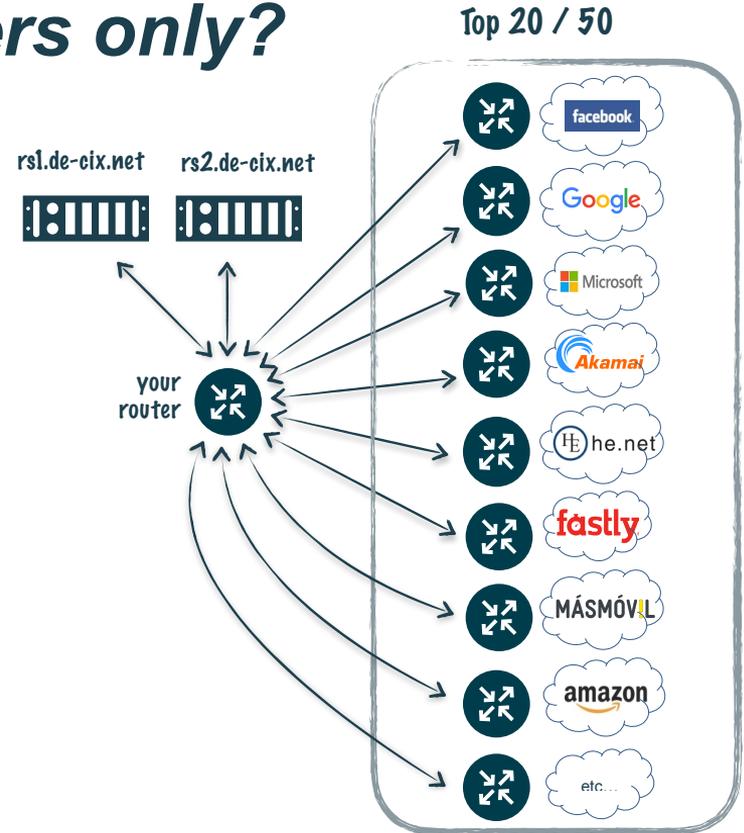
Why to not use the route servers only?

- manage the most important peers manually!
 - create redundancy
 - finer control / traffic engineering
 - in some cases you will receive more prefixes over a direct session vs. the routeservers

- let the routeservers handle the rest



use your NetFlow statistics or DE-CIX Service Insight System to further analyze your peering / traffic relations and discover any new important peers



DE-CIX Routeserver Looking Glas



DE-CIX Routeserver old LG Features

- BGP Summary
- CISCO shell emulation
- Select multiple rs*.fra.de-cix.net
 - Neighbor IP
 - ASN
 - Date/Time of last status change
 - Status
 - #PfxReceived (**Best**)

DE-CIX Frankfurt - BIRD Looking Glass

bgp summary prefix info neighbor info

Route Server

IPv4: rs1.fra.de-cix.net

```
> sh ip bgp summary
```

```
RS-Client peers: 912
```

Neighbor	AS	Date	Time	Status	PrfxRcvd(Best)/ErrCode
80.81.192.1	702	2017-03-08	05:23:06	down	Passive
80.81.192.2	12956	2017-03-24	00:06:42	up	4217(3910)
80.81.192.3	21473	2017-10-24	05:32:57	up	28(25)
80.81.192.4	8804	2017-10-15	21:59:16	up	23(12)
80.81.192.5	132203	2017-07-19	09:34:22	up	14(14)
80.81.192.6	8365	2017-03-08	05:25:01	up	0(0)
80.81.192.7	8767	2017-04-16	05:36:24	up	256(152)
80.81.192.8	2857	2017-07-11	22:46:56	up	17(0)
80.81.192.9	8928	2017-05-01	21:59:35	up	7172(2342)
80.81.192.10	13414	2017-04-12	14:24:11	up	86(59)
80.81.192.11	5413	2017-11-27	09:14:05	up	141(126)
80.81.192.12	6774	2017-12-10	09:03:53	up	430(391)
80.81.192.13	8218	2017-04-28	17:40:50	up	0(0)
80.81.192.14	4589	2017-03-08	05:23:06	down	Passive
80.81.192.15	12897	2017-12-12	01:03:22	up	27(15)
80.81.192.16	3292	2017-03-08	05:23:06	down	Passive
80.81.192.17	5605	2017-09-26	02:46:23	up	35(35)
80.81.192.18	8741	2017-10-13	20:42:43	up	2(2)
80.81.192.19	5466	2017-12-18	13:02:16	up	68(63)

<https://lg.de-cix.net/>

DE-CIX Routerserver old LG Features

→ Prefix Info (IP Address/Network)

→ List of routes for prefix:

- Next_hop (GW)
- ASN
- AS_PATH
- MED
- Local Pref
- Community

DE-CIX Frankfurt - BIRD Looking Glass

bgp summary prefix info neighbor info

Route Server Network prefix or IP address

IPv4: rs1.fra.de-cix.net Submit

```
> sh ip bgp 8.8.8.8
*** Note: the first route is the BEST ***
8.8.8.0/24      via 80.81.192.108 on bond0 [R192_108 2017-12-18 19:35:49] * (100) [AS151691]
    Type: BGP unicast univ
    BGP.origin: IGP
    BGP.as_path: 15169
    BGP.next_hop: 80.81.192.108
    BGP.med: 0
    BGP.local_pref: 100
    BGP.community: (65101,102) (65102,100) (65103,276) (65104,150)
                  via 80.81.193.108 on bond0 [R193_108 2017-12-18 20:00:43] (100) [AS151691]
    Type: BGP unicast univ
    BGP.origin: IGP
    BGP.as_path: 15169
    BGP.next_hop: 80.81.193.108
    BGP.med: 0
    BGP.local_pref: 100
    BGP.community: (65101,104) (65102,100) (65103,276) (65104,150)
bird>
```



DE-CIX Routerserver old LG Features

→ Neighbor Info (IP Address)

→ List of networks from peer:

- Network
- Next Hop
- Metric
- Local Pref
- Weight
- AS_PATH

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bgp summary | prefix info | **neighbor info**

Route Server: rs1.fra.de-cix.net | BGP neighbor IP address: | Submit

```
> sh ip bgp neighbor 80.81.192.42 route
BGP table
Status codes: * valid, > best
Origin codes: i - IGP, e - EGP, ? - incomplete

  Network          Next Hop        Metric LocPrf Weight Path
*> 212.110.96.0/19 80.81.192.42    100    100           8648 i
*> 92.42.192.0/21  80.81.192.42    100    100           8648 44298 i
*> 195.62.96.0/19  80.81.192.42    100    100           8648 i
*> 82.141.0.0/18   80.81.192.42    100    100           8648 i
*> 185.84.80.0/22 80.81.192.42    100    100           8648 i
*> 185.105.252.0/24 80.81.192.42    100    100           8648 i
*> 213.146.96.0/19 80.81.192.42    100    100           8648 i
```

DE-CIX Routerserver old LG

Pro

- Simple, intuitive interface
- Output is easy to parse
- Output looks „familiar“
- Input validation across the software chain
- Clean, minimal implementation

Con

- **No builtin rate limiting**
- **No builtin caching of requests**
- **No visibility of filtered prefixes**
- **No public API**
- **When was the last filter reload?**
- ...

NEW DE-CIX Looking Glas

→ LIVE DEMO:

→ <https://lg-beta.de-cix.net/>

→ still in beta status (ongoing bug fixes, stability improvements, etc..)

→ Open Source available via: <https://github.com/alice-lg/alice-lg>

→ you have questions on how to implement it for your operation? Let us know and perhaps we can help! :)



New Looking Glas

rs2.mad.de-cix.net (IPv4)

Filter by Neighbour, ASN or Description

Go to: **Established** Down

BGP SESSIONS ESTABLISHED

Neighbor	ASN	State	Uptime	Description	Received	Accepted	Filtered	Exported
185.1.68.33	2606	up	3 months	Wifiber, S.L.	3	3	0	62108
185.1.68.22	2635	up	14 days	Automattic, Inc.	14	14	0	62097
185.1.68.26	2906	up	3 months	Netflix Streaming Services	5	5	0	12498
185.1.68.17	5505	up	a month	VADAVO SOLUCIONES SL	34	32	2	62087
185.1.68.120	6661	up	4 days	Post Group Luxembourg	0	0	0	62111
185.1.68.47	6939	up	2 months	Hurricane Electric	57053	50215	6838	12319
185.1.68.81	7713	up	20 days	PT Telekomunikasi Indonesia	4598	3660	938	58517
185.1.68.16	8075	up	3 months	Microsoft Corporation	0	0	0	62111
185.1.68.28	8426	up	3 months	Claranet GmbH	0	0	0	0
185.1.68.114	8637	up	4 months	SpainWisp S.L.	162	160	2	61991

ROUTE SERVERS

DE-CIX Madrid

rs2.mad.de-cix.net (IPv4)
Bird 1.6.4

rs2.mad.de-cix.net (IPv6)
Bird 1.6.4

Last Reboot: **Wednesday, June 13, 2018 5:43 AM**

Last Reconfig: **Thursday, October 25, 2018 9:12 AM**

Daemon is up and running

Generated **3 minutes ago**.
Next refresh **just now**.



New Looking Glas

rs2.mad.de-cix.net (IPv4) » Mismenet Telecomunicaciones, S.L.

Filter by Network or Next-Hop

Go to: **Filtered** Accepted Not Exported

ROUTES FILTERED Showing all of 2 routes

Network	Next-Hop	AS Path	Local Pref.	MED	Origin
★ 185.154.252.0/23 IRRDB lookup: Unable to resolve prefix for origin AS	185.1.68.80	203936 203936 39328	100	0	IGP
★ 185.214.207.0/24 IRRDB lookup: Unable to resolve prefix for origin AS	185.1.68.80	203936 203936 29119 203603	100	0	IGP

ROUTES ACCEPTED Showing all of 35 routes

Network	Next-Hop	AS Path	Local Pref.	MED	Origin
185.113.236.0/24	185.1.68.80	203936 203936 203603 203603 203603	100	0	IGP
★ 185.118.188.0/24	185.1.68.80	203936 203936	100	0	IGP
★ 185.118.189.0/24	185.1.68.80	203936 203936	100	0	IGP

ROUTE SERVERS

DE-CIX Madrid

rs2.mad.de-cix.net (IPv4)
Bird 1.6.4

rs2.mad.de-cix.net (IPv6)
Bird 1.6.4

COMMUNITIES

Select communities

Last Reboot: **Wednesday, June 13, 2018 5:43 AM**

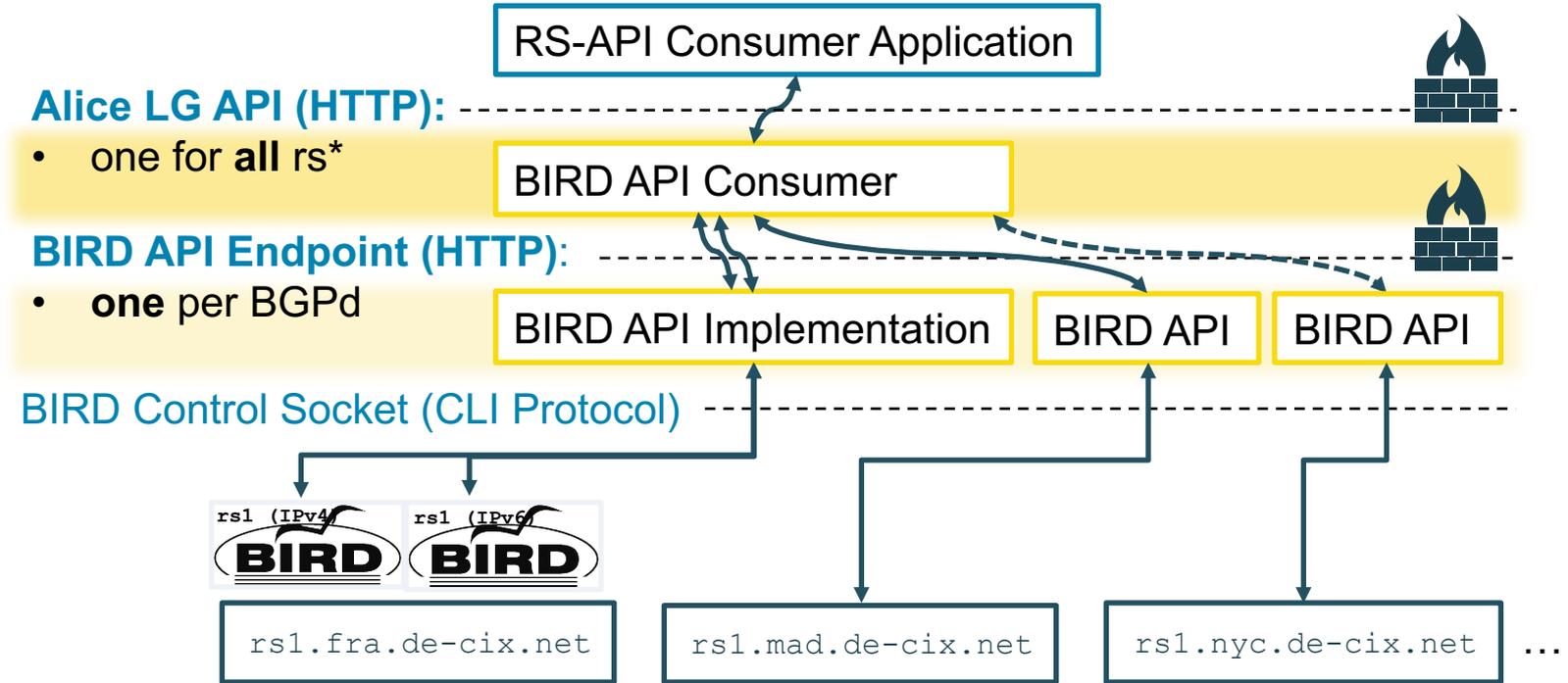
Last Reconfig: **Thursday, October 25, 2018 9:12 AM**

Daemon is up and running

Generated a few seconds ago.
Next refresh in 5 minutes.



Alice-LG: Top-Level Architecture



Questions?



A person is holding a globe of the Earth in front of a wall covered in newspaper clippings. The globe is the central focus, showing the continents of Africa and Asia. The person's hands are visible at the top and bottom of the globe. The background is a collage of various newspaper articles and photos, creating a textured, busy appearance.

Thank You for Your attention!



Where networks meet

www.de-cix.net



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