




# IP Peering & Transit

SwiNOG-28 Presentation

INI-CWS-OTD

06-05-2015





# Agenda

1. Introduction OTT
2. General information and statistics related to AS3303
3. Swisscom Peering Policy
4. Swisscom IP Peering & Transit offers
  - a) Interconnect Peering
  - b) Paid Peering (PNI or Public WLAN)
  - c) IP Transit
  - d) Colocation & Peering (On-net Caching)
5. Swisscom Internet Backbone and Service Access Points
6. Prices and models
7. Feedback and questions



# OTT Portfolio (Big Picture)

A small but agile team in Swisscom. We manage different product groups: IP Peering & Transit, CDN, DCB (NATEL® Pay) and Value Added Services

## IP Peering & Transit -1-

Represent Swisscom's interests in the Internet ecosystem. Offer an attractive product portfolio taking into account needs and changing conditions, ensuring a fair and non-discriminatory treatment of all players.



## Content Delivery Network -2-

Deliver content from Swiss enterprises across the world, accelerate their websites and provide security from attacks in collaboration with Akamai.



## Direct Carrier Billing -3-

Payment services to internet partners. Enable end customers to pay online purchases (apps, game credits, music,...) in a simple way through their Swisscom mobile bill.



## Value-added Services -4-

New, future-oriented services such as pre-installed apps (on Android devices) or location and identity based services adding value for Over the Top providers.



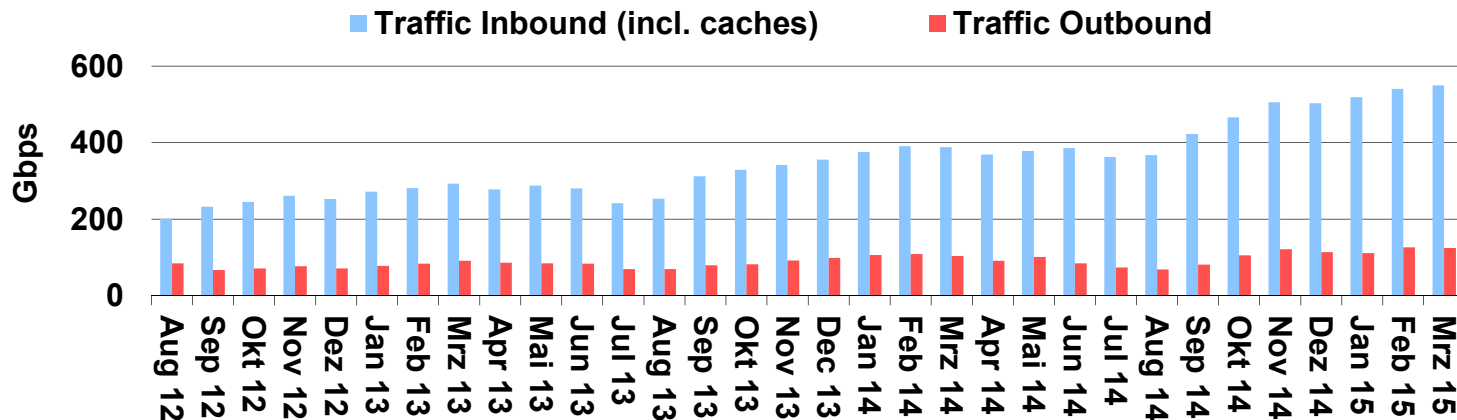
# Swisscom Internet Backbone

General information and statistics

## Overview

Swisscom AS: 3303 (IP-Plus) – Details: <http://as3303.peeringdb.com>

Present traffic levels: 550 Gbps Inbound / 125 Gbps Outbound



### Traffic evolution:

Bandwidth increase YoY: Inbound 40-50%; Outbound 15%.

5% of Inbound traffic is delivered to mobile access (increasing fast), rest fix

### Inbound traffic differentiation:

- 200 Gbps delivered from caches (Google, Akamai, Zattoo)
- 200 Gbps delivered through Peering
- 150 Gbps received via Transit (DTAG, France Telekom, Flag/Reliance Telecom)



# Swisscom Internet Backbone

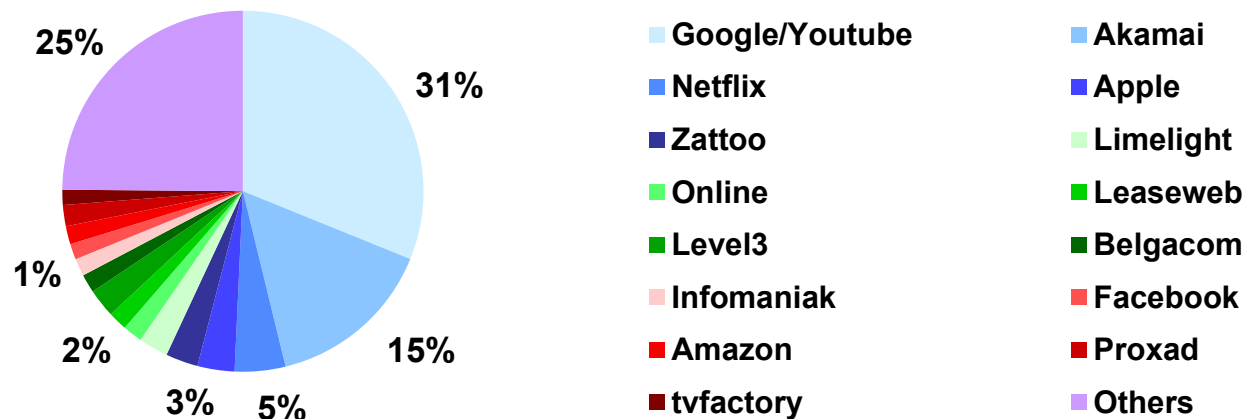
## General information and statistics

Swisscom  
AS 3303

- More than 300 Peering's worldwide
- 30 mainly national Transit Customers
- Upstream Providers: DTAG, France Telecom, Flag Telecom
- POPs in Europe, USA und Asia/Australia (business customer's traffic only)
- Proactively monitored and protected internet backbone, 7x24
- Supporting IPv4 as well as IPv6
- Independent control measures performed by CNLab (quality tests)
- Peering Policy: Free Peering only if policy conditions are met/respected.

Traffic Origin  
Sources

- Top 3 networks account for > 50% of traffic delivered to Swisscom eyeballs
- Remarkable: Netflix ranks 3<sup>rd</sup> just 5 months after introduction in CH





# Swisscom Peering Policy

Preconditions for Peering with Swisscom

V1.2 valid from 01.02.2015

## General requirements to establish an Interconnect Peering relationship with Swisscom (Schweiz) AG (AS3303)

- The parties agree to sign an Interconnect Peering Contract.
- Traffic is measured in both directions – in- and outbound - on a monthly P95 basis.
- The minimal required bandwidth for Interconnect Peering is 500 Mbps (in- or outbound) with a minimum access interface speed of 1 Gbps.
- The traffic ratio (inbound/outbound) should not exceed 2:1. Excess traffic will be billed according to the Interconnect Peering Contract.
- The parties agree to peer at two geographically dispersed locations at least.
- Potential peers must run an internet backbone with at least 50% of the capacity of the Swisscom backbone. With the application, a potential Customer shall provide a hard copy of its network, including a list of existing peering connections.
- Interconnect Peers must have a 24 x 7 NOC with trouble ticket processes in place.
- Swisscom provides basic paid peering offers to customers that do not fulfill the minimal requirements listed above.
- The details of the offers are described in the corresponding Service Descriptions.

# i Product Overview

## Product information

### Interconnect Peering (former FS Peering)

Connectivity to Swisscom. Ratio based PNI. Traffic is exchanged without charging as long as it stays within the mutually defined ratio (usually 2:1 reciprocal). For the exceeding traffic, a price/mbps applies. Preconditions: min bandwidth 500 mbps (In or Out), min. 2 geographically dispersed locations,...



### Paid Peering

Offer is designed for networks that don't match the conditions for IC-Peering but still want to connect directly to Swisscom. Usually PNI, alternatively also via public exchange (shared medium at Swiss-IX) Prices: OTC for port, MRC for the requested bandwidth profile, different models available (P95, Pmax, commit with burst etc.)



### Colocation & Peering (On-net caching)

Offer is designed to serve the needs of big content providers with much traffic for Swisscom eyeballs (Google, CDNs,..). Caches deployed in Swisscom network. Customer provides server components, Swisscom racks and power. Customised solutions. Requires peering in addition (to fill the caches)



### IP Transit

Apart from Peering, Swisscom also offers high quality IP Transit (world wide Internet connectivity). Prices: OTC for Port, MRC for requested bandwidth profile (different models available (P95, Pmax, commit with burst etc., symmetric and asymmetric models)





# Prices and models

General information, SC offers flexible solutions tailored to customer needs

## Interconnect Peering:

Price and conditions (e.g. exchange points, ratio etc.) are subject to negotiation and directly defined in the contract.

## Paid Peering :

Available profiles: 100 Mbps up to x Gbps

OTC: 1.5k CHF (1GE port), 10k CHF (10GE port); no OTC for peering over public WLAN

MRC: depending on bandwidth profile. Linear prices for small profiles < 1Gbps -> make peering more affordable for small peers

Minimum contract duration: 1 year, discount: 2 years 10%, 3 years 25%

## IP Transit

Available profiles: 100Mbps up to X Gbps - symmetric and asymmetric

OTC: 1.5k CHF (1GE port), 10k CHF (10GE port)

MRC: depending on bandwidth profile. Cheaper asymmetric profiles available

Minimum contract duration: 1 year, discount: 2 years 10%, 3 years 25%

## Colocation & Peering (On-net caching)

Individual customised offer, designed in close cooperation with the customer



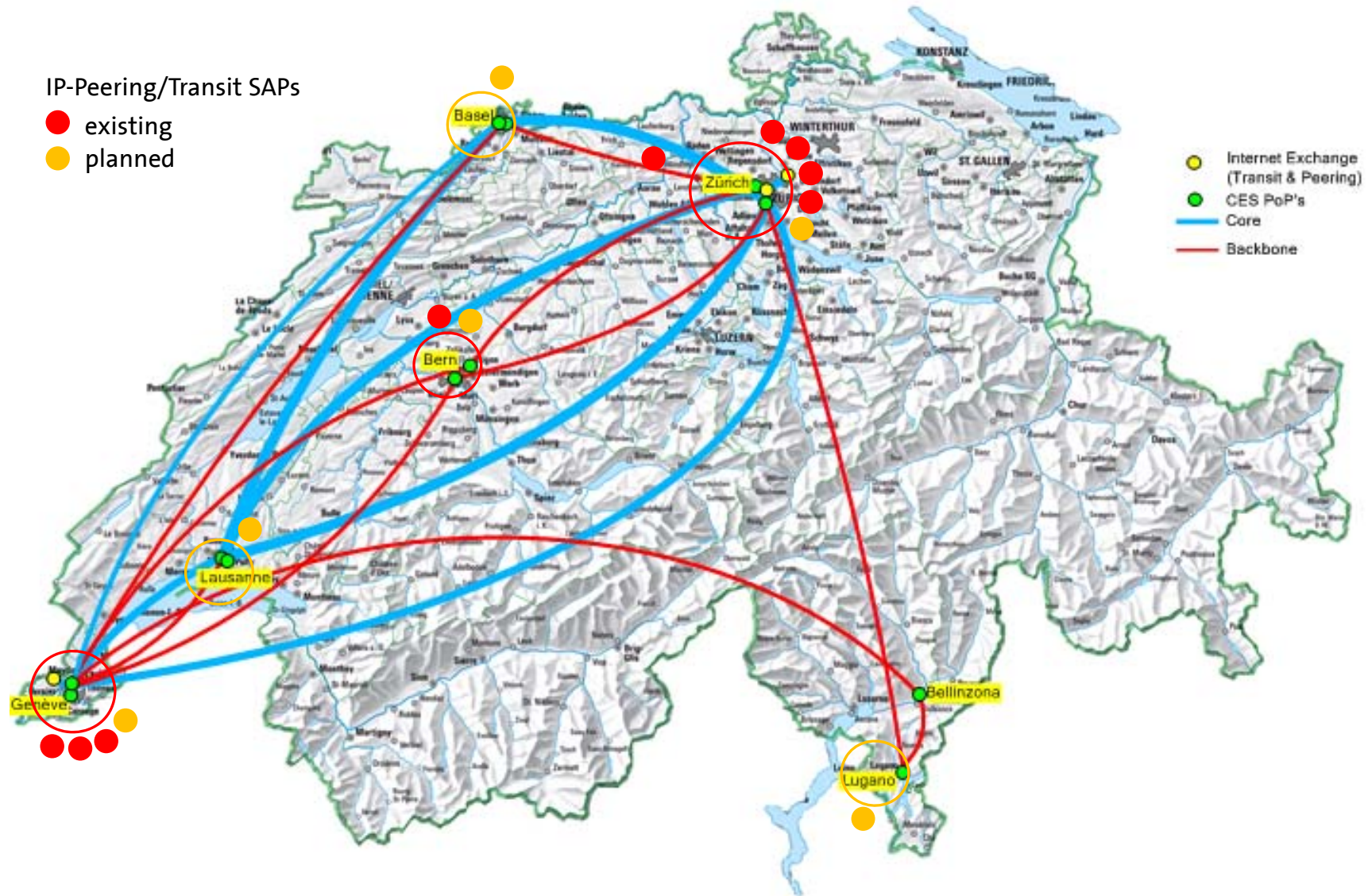


# Swisscom Internet Backbone und SAPs

Switzerland

IP-Peering/Transit SAPs

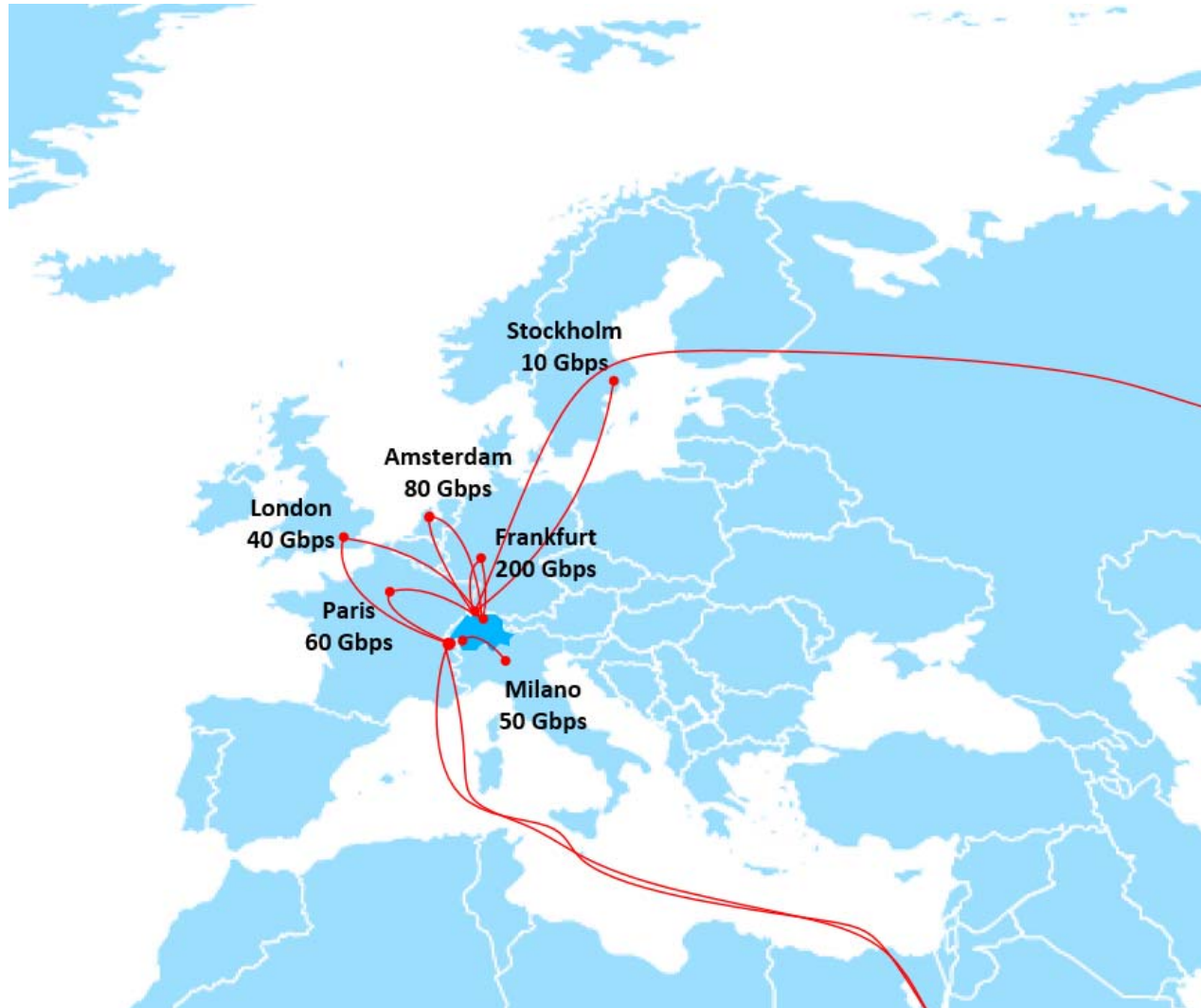
- existing
- planned





# Swisscom Internet Backbone und SAPs

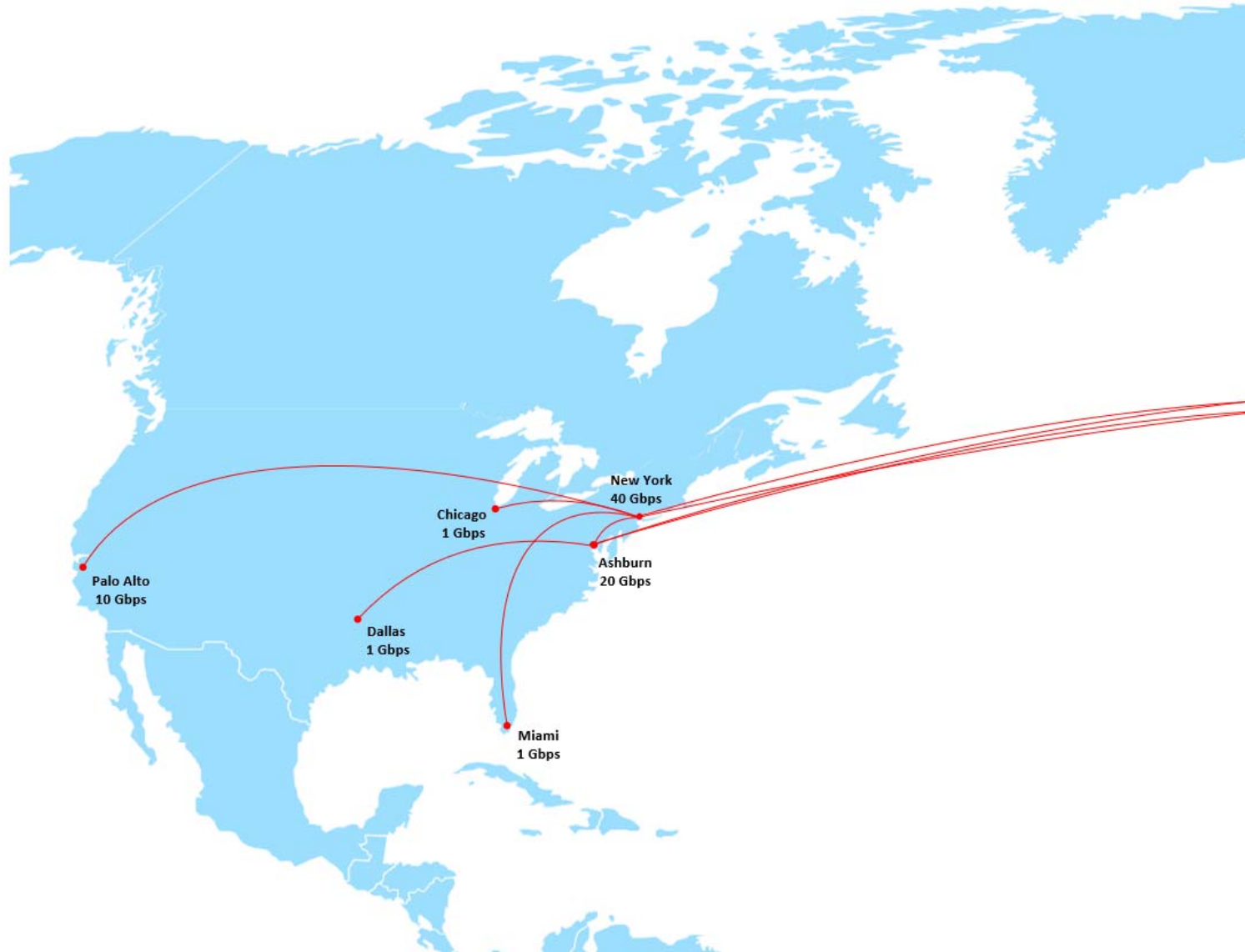
European connectivity





# Swisscom Internet Backbone und SAPs

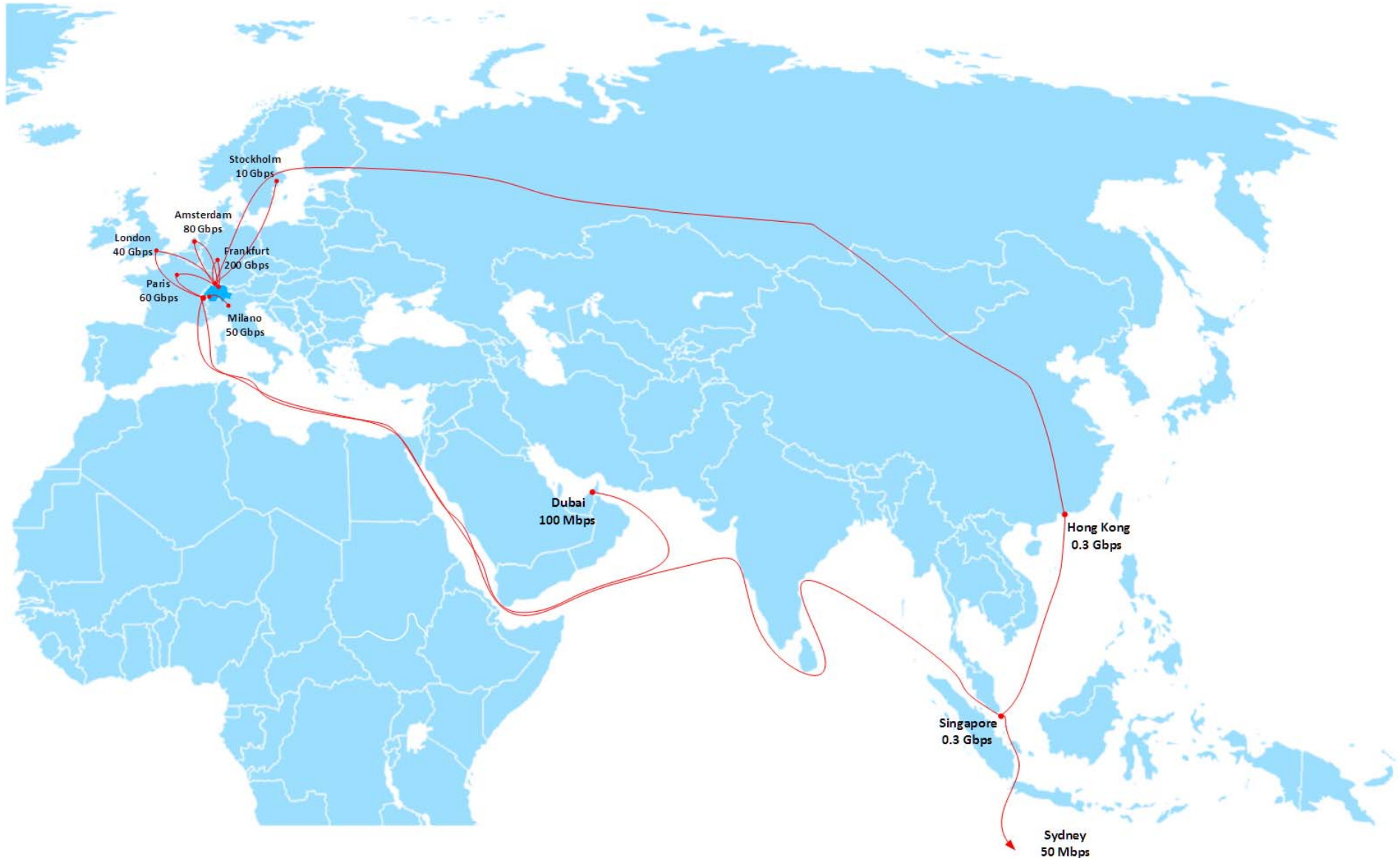
Atlantic connectivity





# Swisscom Internet Backbone und SAPs

Asian connectivity – dedicated bandwidth for business customers (ENT)





# IP-Peering/Transit Exchange Points

## National

Location/IXP	Room	Street	Place	1 GE	10GE
Equinix Zurich (ZH1)	4.OG R01	Hardstrasse 235	8005 Zürich	X	X
Equinix Zurich (ZH2)	3.OG R02	Josefstrasse 225	8005 Zürich	X	X
InterXion Zurich	Room 010.2	Sägereistrasse 29	8152 Glattbrugg	X	X
CERN Geneva (CIXP)	Bât. 513	IT Department	1211 Genève	X	X
Equinix Geneva (GV1)	SFM-1 B17	Rue de la Confédération 6	1204 Genève	X	X
Equinix Geneva (GV2)	GV2::22100	Route du Bois des frères, 46	1219 Genève	X	X
colozueri.ch	EG, Rack C03	Badenerstrasse 569	8048 Zürich	X	X
colobern.ch		Chutzenstrasse 24	3007 Bern	X	X
Safehost	No. S800	Chemin du Pré-Fleuri 20	1228 Plan-les-Ouates	X	-
Green Datacenter AG	A-0-014	Industriestrasse 33	5242 Lupfig	X	X
Telehouse Metro PoPs	Zürich-Enge, Zürich-Herdern, Basel-Grosspeter, Lausanne-Savoie, Genève-Montbrillant, Lugano-Cinque-Vie, Bern-Wankdorf			X	X



The Service Access Point (SAP) is the interface of the Swisscom-Router/Switch. The connection between customer router and Swisscom router (cross-connect) must be ordered by the customer.



# IP-Peering/Transit Exchange Points

## International

7

City/IXP	Telehouse	Room/Rack	Street	Place	1 GE	10GE
Amsterdam/Am s-IX	SARA	S150	Science Park 121	1098XG Amsterdam	X	x
Frankfurt	BICS c/o I.T.E.N.O.S. + Equinix	B1.05	Kleyerstrasse 90	60311 Frankfurt	X	X
Frankfurt/DE-CIX	InterXion	FRA1 R4.1	Hanauer Landstrasse 302	60314 Frankfurt	X	X
London/LINX	Telehouse North	TFM3	20 Coriander Av.	London E14 2AA	X	X
Paris/SFINX+France-IX	Telehouse 2	22G3	137bis Bd. Voltaire	75011 Paris	X	X
Milano/MIX-IT	BICS c/o Enter	Pal.D, ala 2, PT Rack P3	Via Caldera 21	20153 Milano	X	X
New York/NYIIX	BICS c/o TelX	suite 307	111, 8th Ave.	10011 New York City NY	X	(X)
Equinix Ashburn	Equinix IBX DC2	cage 1060, cabinet 0215	21715 Filigree Ct	20147 Ashburn Loudoun, VA	X	(X)
USA Sonstige	Equinix Palo Alto, Chicago, Dallas, Miami				-	-

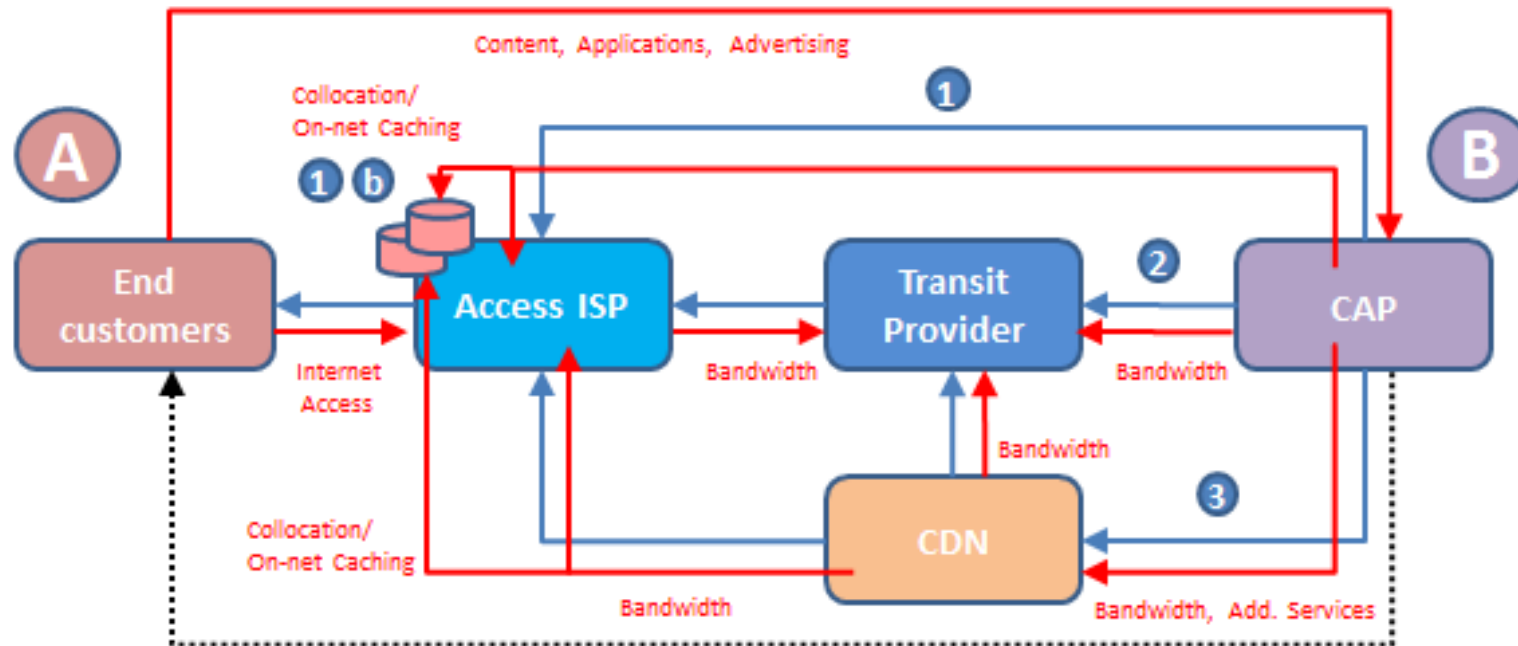
Thank you

Feedback – Questions ?



# Backup – Internet business model

## Overview



### Legend:

.....➔ Demand stimulation

➔ Traffic Flows

➔ Money Flow

CDN Content Delivery Network

CAP Content Application Provider

### Options for traffic delivery A to B:

1 IP Peering (incl. variation 1b «caches»)

2 IP Transit

3 Via Content Delivery Network (CDN)