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Middle Eastern Internet Trends: 2011

James Cowie, CTO

3 October 2011

MENOG 9 - Muscat

Ibn Khaldun
(أبو زيد عبد الرحمن بن محمد بن خلدون الحضرمي)

- Born Tunis, 1332 AD/732 AH
- His “Introduction to History” (Muqaddimah) lays out the laws that govern the transformation of human societies
- Would he recognize the Internet’s impact in today’s Middle East as a new form of ’Asabiya (عصبية social cohesion)?
- We live in interesting times. Ibn Khaldun would be fascinated by the impact of the Internet on the cycles of history playing out.

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About this presentation

- This presentation uses objective data gathered from the public Internet:
  - BGP route updates from hundreds of peers worldwide
  - Traceroute data from many key vantage points
- The interpretation of these data rely on feedback and context from regional operators and regulators.
- Your comments and corrections are critically important to this project!

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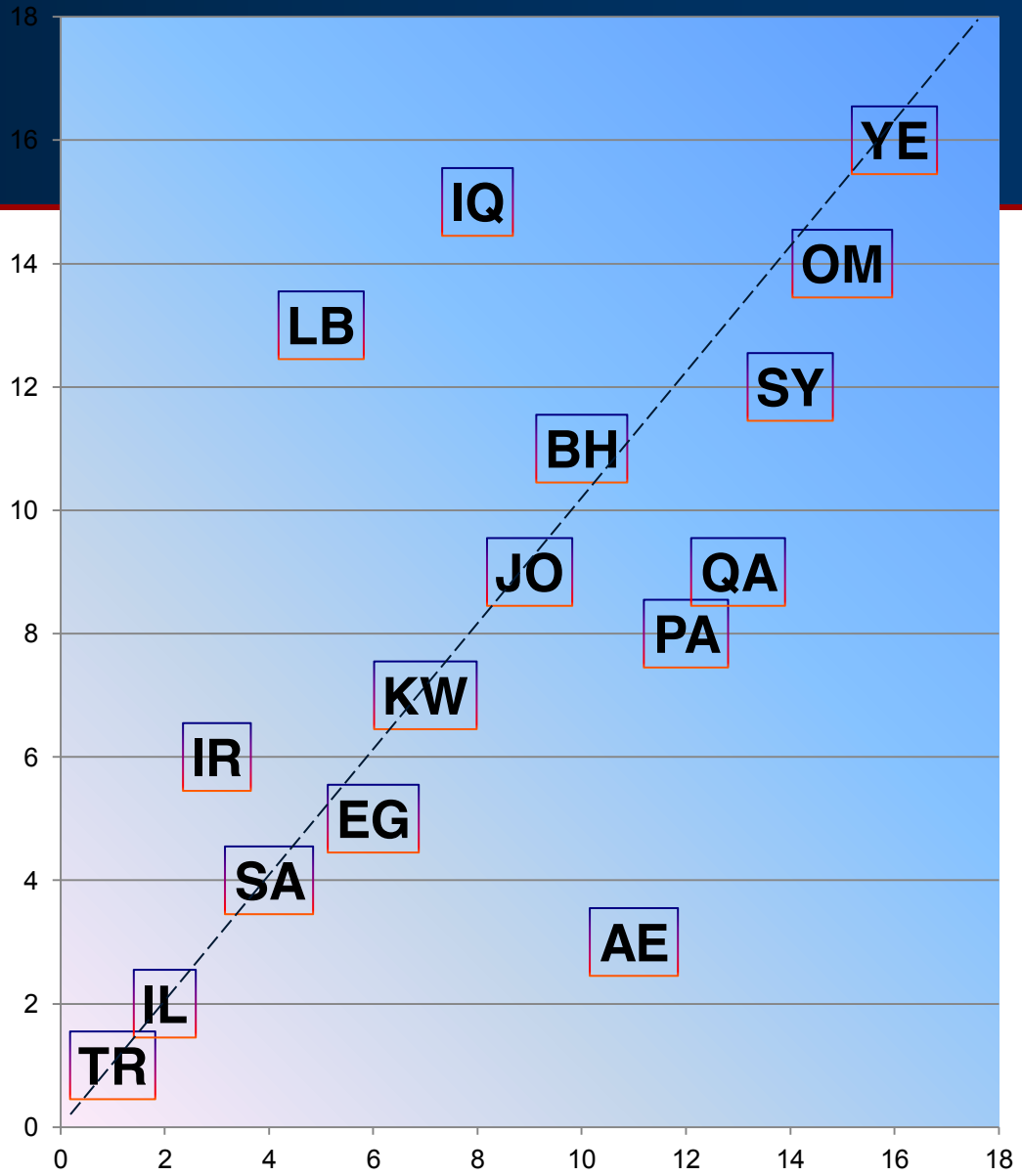
2011 Regional Trends

Origination Rank Versus Market Size Rank

X-axis: Rank of Number of ASNs Observed Originating Prefixes in National Market

Y-Axis: Rank of Market Size (Renesys Market Intelligence Customer Base Score, Oct 2010).

- **UAE has "too few" originating ASNs**
- **Lebanon and Iraq have "too little" market size for their ASN complexity**



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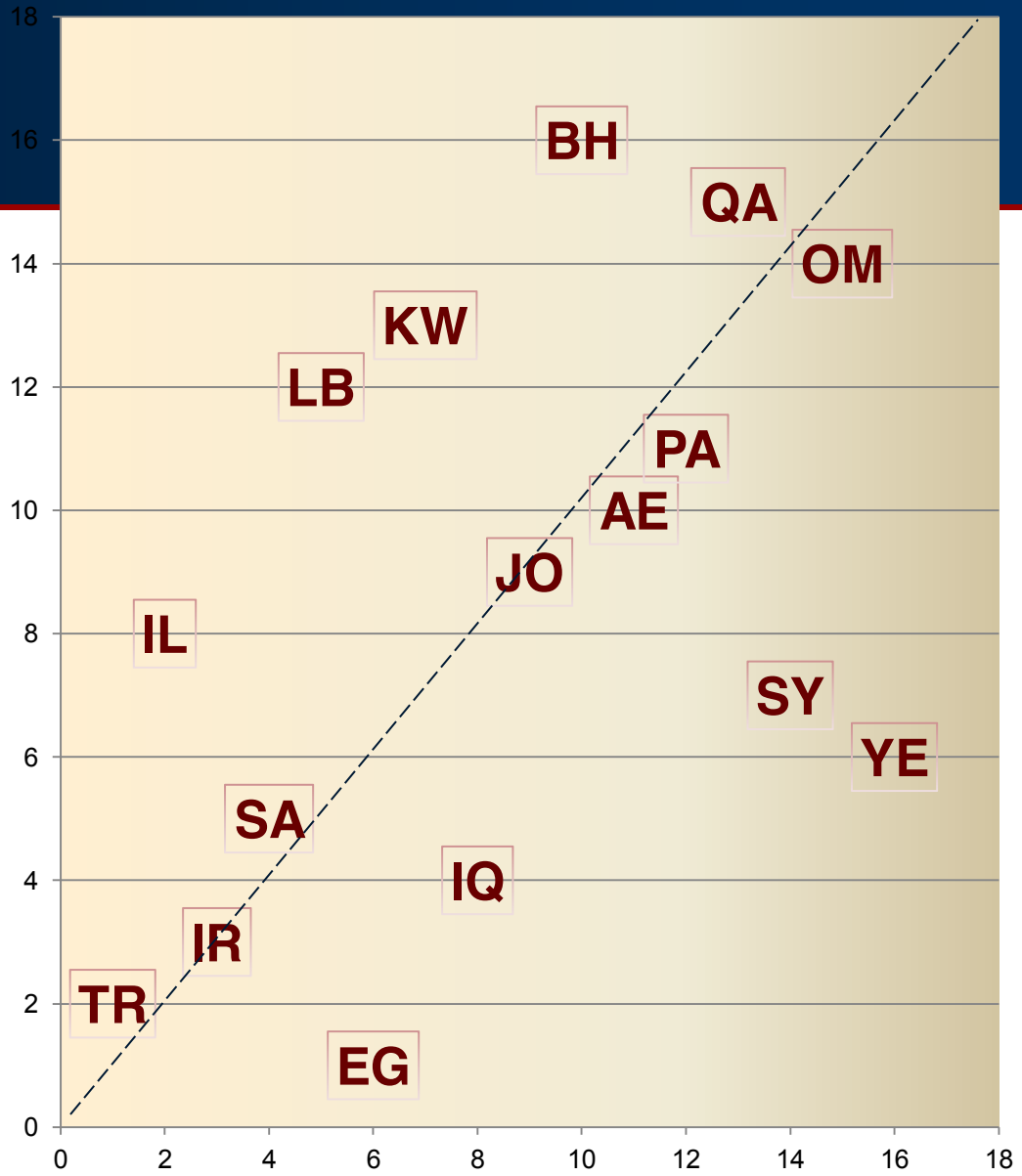
Market Size Rank Versus Population Rank

X-axis: Rank of Number of ASNs Observed Originating Prefixes in National Market

Y-axis: 2005 Population Rank

- **Israel, Lebanon, Kuwait, Bahrain have large markets proportionate to their population**
- **Egypt, Iraq, Syria, Yemen have less Internet than expected for their size**



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Top 30 Retail

renesys | market intelligence

Dashboard | New | Internet Index | Provider Report | Network Watch | Market Watch

Middle East Internet Index Ratings

Customer Base: Retail — Middle East

	1		012 Smile Communications Main	9116
Mobile Provider	2		Emirates Telecommunications Corporation	5384
SA	3		SaudiNet	25019
IL	4		Bezeqint Internet Backbone	8551
IR	5		Information Technology Company (ITC)	12880
Mobile Provider SA	6	↑ 1	Etihad Etisalat Company (Mobily)	35819
Mobile Provider AE	7	↓ 1	Emirates Integrated Telecommunications Company PJSC ...	15802
Mobile Provider EG	8		ETISALAT MISR	36992
SA	9		Ettihad Etisalat	34400
EG	10		TE	8452
EG	11	↑ 1	Link Egypt (Link.NET)	24863
IL	12	↓ 1	013 NetVision Ltd.	1680
Mobile Provider KW	13	↑ 6	MTC GPRS	42961
KW	14	↑ 3	QualityNet General Trading & Contracting Co.	9155
IR	15		Aria Rasana Tadbir	31549
SY	16	↓ 2	Syrian Telecommunications Establishment	29386
EG	17	↓ 4	RAYA Telecom	24835
Mobile Provider SY	18		Syrian Telecommunications Establishment	29256
KW	19	↑ 1	KEMS	6412
Mobile Provider QA	20	↓ 4	Qatar Telecom (Qtel) Q.S.C.	8781
PS	21	↑ 1	PALTEL	12975
IL	22	↓ 1	Euronet Digital Communications, (1992) LTD, Israel	5486
Mobile Provider IL	23		Cellcom Israel Ltd.	9117
TR	24	↑ 1	Turk Telekomunikasyon Anonim Sirketi	6755
JO	25	↑ 2	Jordan Telecom	8697
OM	26	↑ 2	OmanTel NAP	28885
IL	27	↑ 2	Partner Communications Ltd.	12400
Mobile Provider KW	28	↓ 4	WATANIYA TELECOM	29357
KW	29	↑ 2	Fast Telecommunications Company W.L.L.	21050
SA	30	↑ 2	Etihad Atheeb Telecom Company	47794

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2011 Per-Country Transit Maps with year-on-year changes

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Per-Country Internet Transit Maps

- **Red boxes** are international providers
- **Blue boxes** are domestic providers

- Domestic providers with international connectivity are larger or smaller according to their relative importance
- Approximate percentages of national market are indicated on **transit edges**; may not sum to 100% because traffic is peered away

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Yemen (#14)

- 1 originating Autonomous System (no change)
- Yemen Net (AS12486) originates 28 prefixes
  - Terrestrial fiber transit from Mobily/Bayanat, Saudi Telecom
  - FLAG Falcon transit from internationals:
  - PCCW, Orange, Tata, Flag
- SMW2 used to land here .. SMW3 does not, IMEWE will not
- **No significant changes since 2010**

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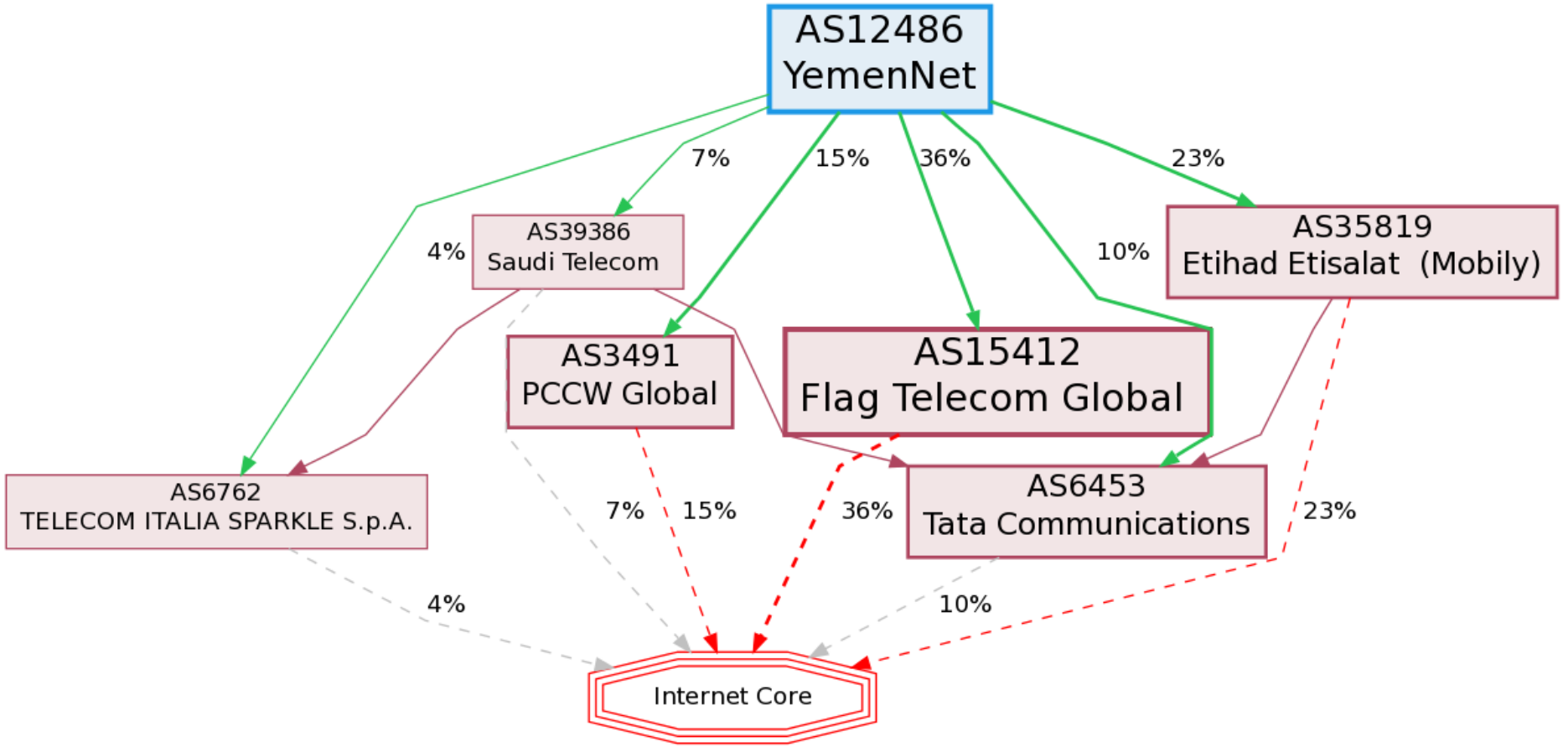
Yemen Connectivity



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Syria (#13)

- 4 originating ASNs (**-1**)
- Syrian Telecom (AS29256, AS29386)
- Majority transit via submarine cable (Deutsche Telecom, PCCW, Tata); minority via Turk Telekom
- Since 2010:
  - Increase via **PCCW**, reduction through **Deutsche Telekom**; reduction of transit through **Turk Telekom** perhaps due to conflict
  - Independent university connection AS39154 via **DANTE** AS21320 disappeared on 4 Aug 2011

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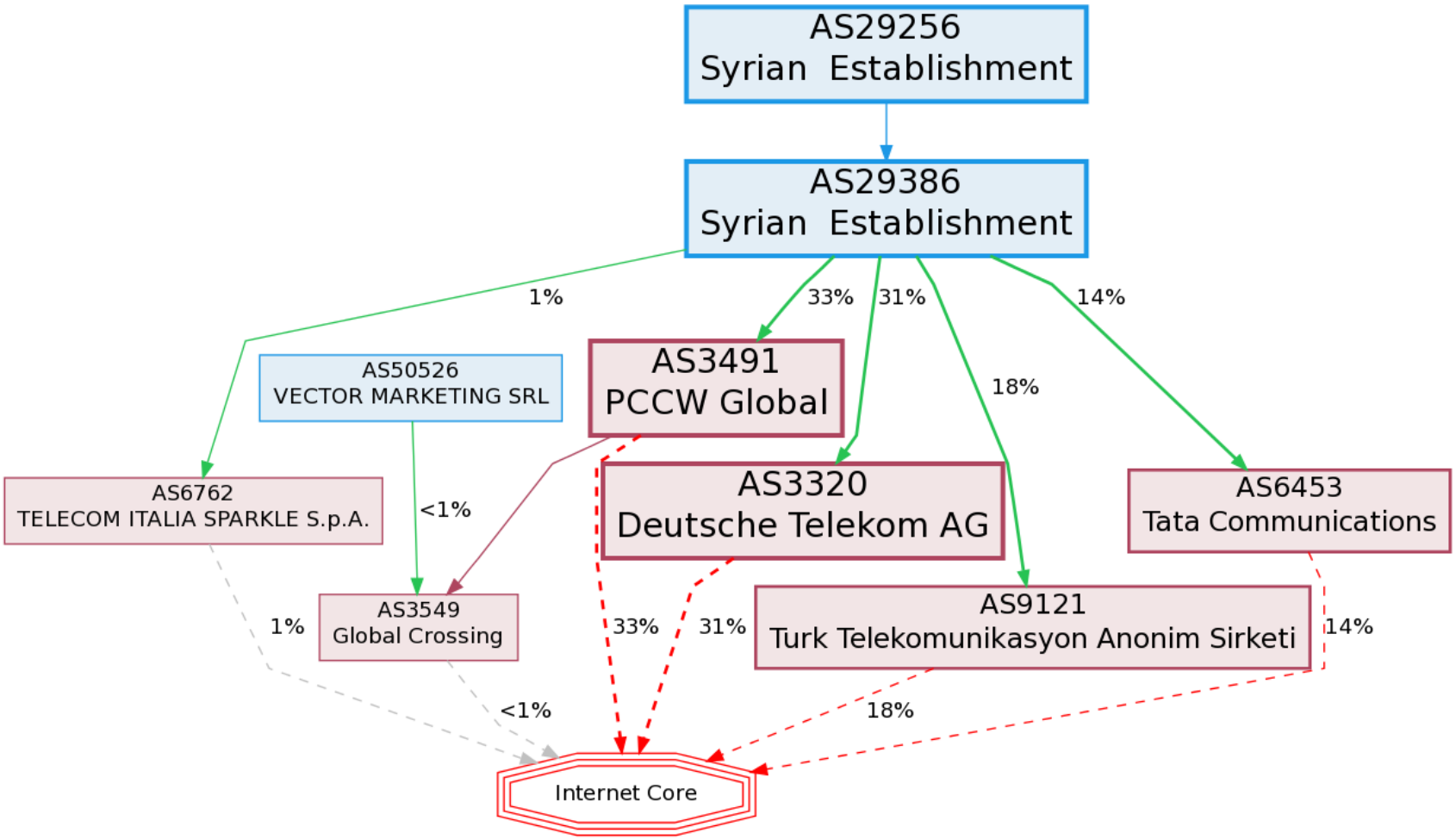
Syria Connectivity



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Oman (#12)

- 5 originating ASNs (no change)
- OmanTel (AS15679, AS8529, AS28885)
  - Omani Qatari Tel (AS50010) and ITA (AS15679) downstream
- International transit evenly balanced across PCCW, Telecom Italia, Bharti Airtel, KPN, FLAG (FLAG Falcon, SMW3)
- A few changes since 2010 in transit selection across these cables
- We watch for the impacts of EPEG (Europe-Persia Express Gateway) project in 2012! OmanTel should become a visible transit provider to its neighbors.

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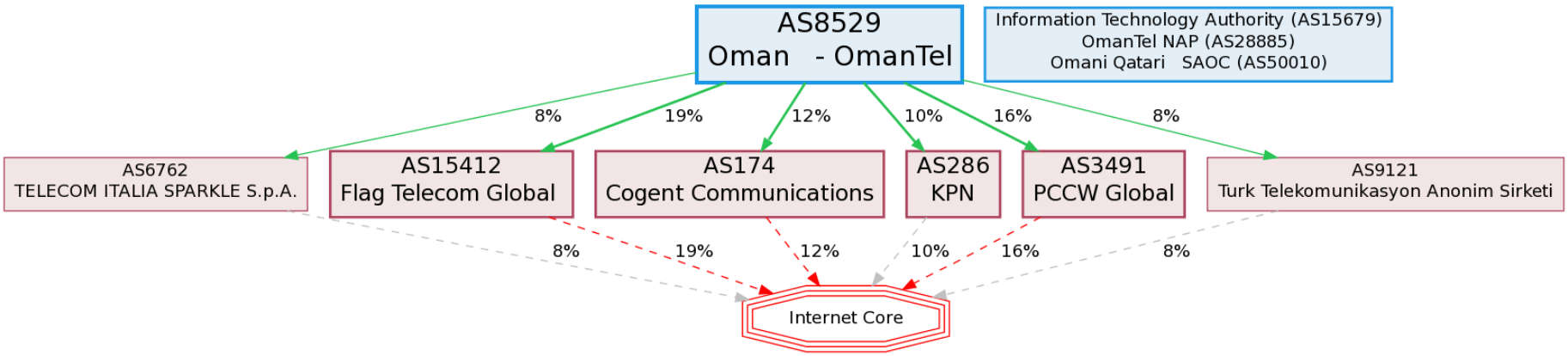
Oman Connectivity



- ✓Additional transit from Turk Telekom since July 2010
- ✓Additional transit from Cogent since 5 July 2011
- ✓Direct transit from Flag since 19 July 2011
- ✓Dropped Global Crossing, Singapore Stixlite

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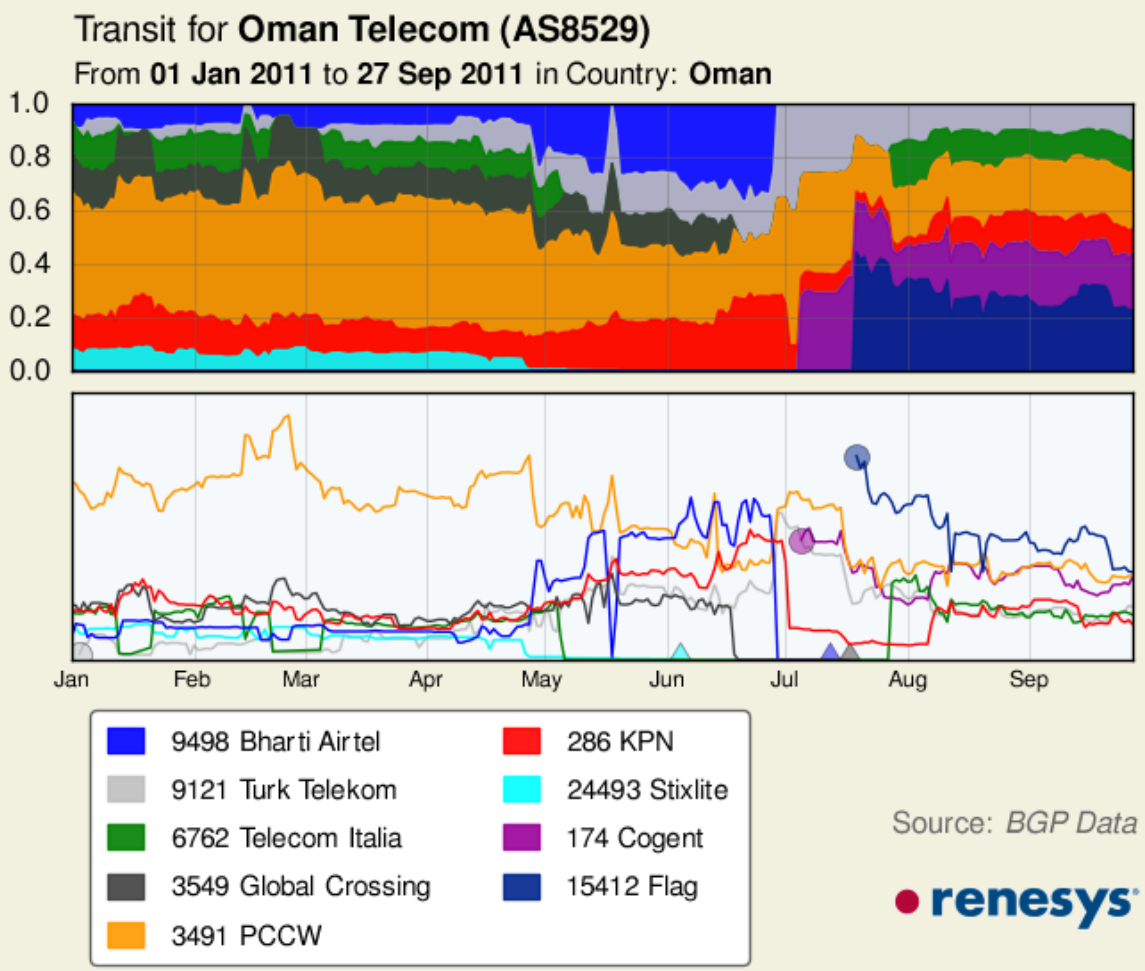
OmanTel's transit market choices

- July/August transit shifts clearly evident
- **Flag**, **Cogent**, **Turk Telekom** gain
- KPN, PCCW, **GBLX**, **Bharti**, **Singapore** lose



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Qatar (#11)

- 8 originating ASNs (**-1**)
- Q-Tel (AS8781, AS42298)
  - Submarine cable transit balanced across Tata, HE, AT&T, Flag, NTT, L3, Stixlite Singapore
- Some providers (Qatar Foundation for Education, Science, and Community, AS29384) have **direct international transit** (eg., FLAG) and appear to be reselling it to downstream customers
- Since 2010, virtually unchanged structurally; some shift by Qtel from Tata to FLAG transit

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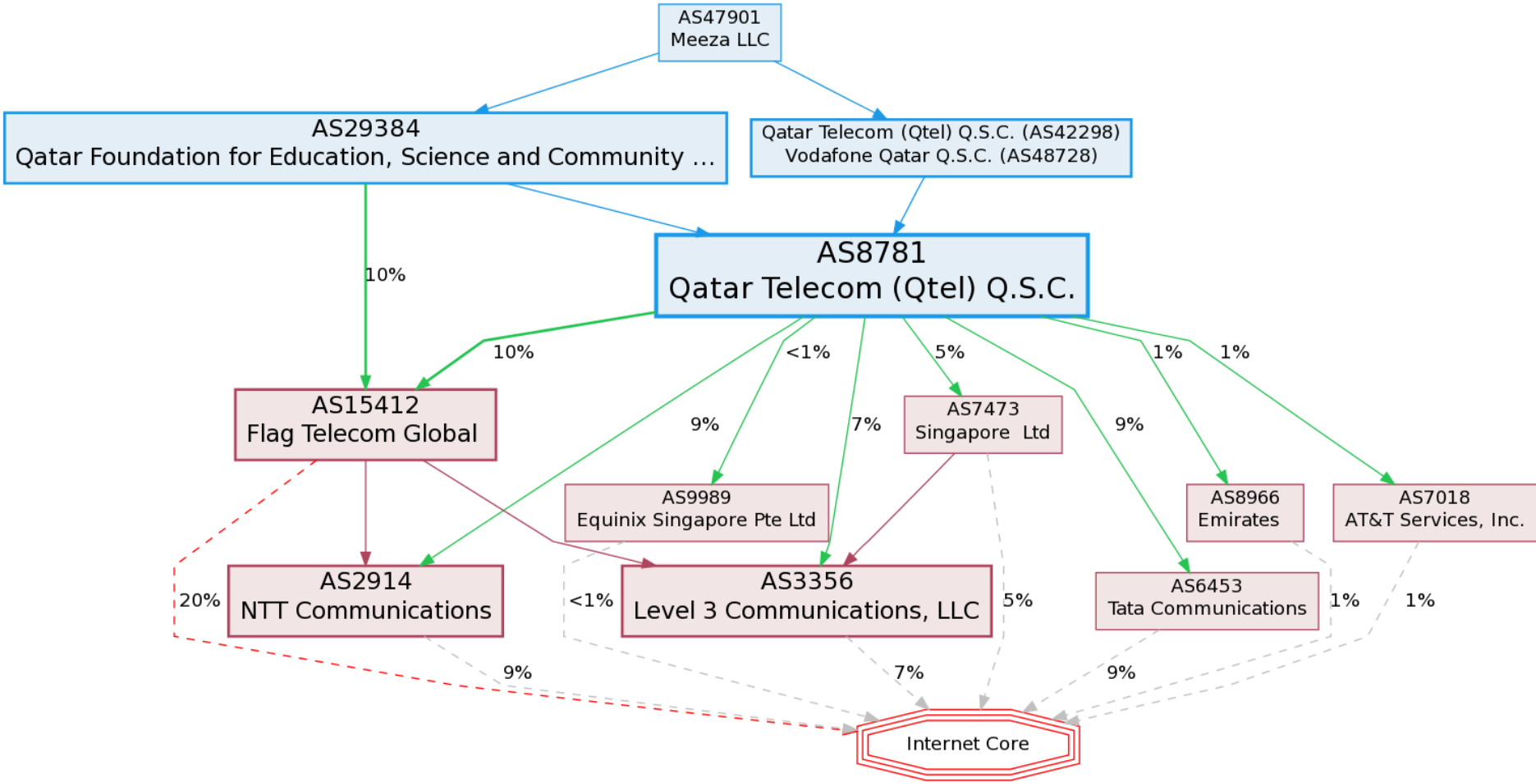
Qatar Connectivity



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UAE (#10)

- 23 originating ASNs (**-1**)
- Emirates (AS5384,AS8966,etc)
  - Rich international transit (Flag, VZ, Singtel, Glbx, TI, Transworld, L3, Telia, ….) via submarine cables
  - Limited evidence of downstream ASNs, multihoming
  - Limited direct development of international transit
  - Surprisingly rich satellite connectivity still in place
  - Geographically favorable conditions, high international connectivity, but **very low market diversity (few ASNs participating)**

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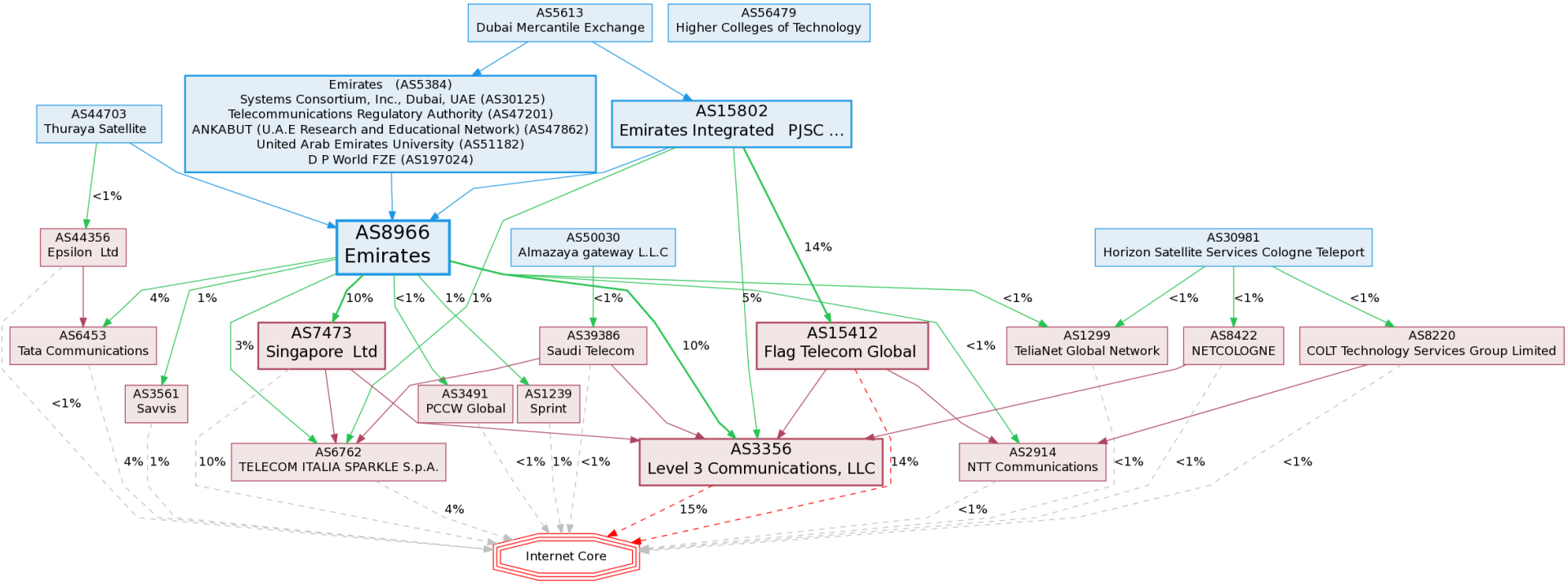
UAE Connectivity



- ✓ Basically unchanged since 2010

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Iraq (#9, tie with BH,PS)

- 27 originating ASNs (+1)
- Kurdish northern regions have geographic edge
- Terrestrial connectivity to Jordan, new cable landings at Basra coming soon
- **IQ Networks** has grown substantially, switched from Iran DCI+Rostelecom to Turkish Tellcom (Superonline) in July 2011
- **Al-Sard** buying Azeri transit from Delta over Iranian physical paths
- Still a lot of satellite connectivity in evidence

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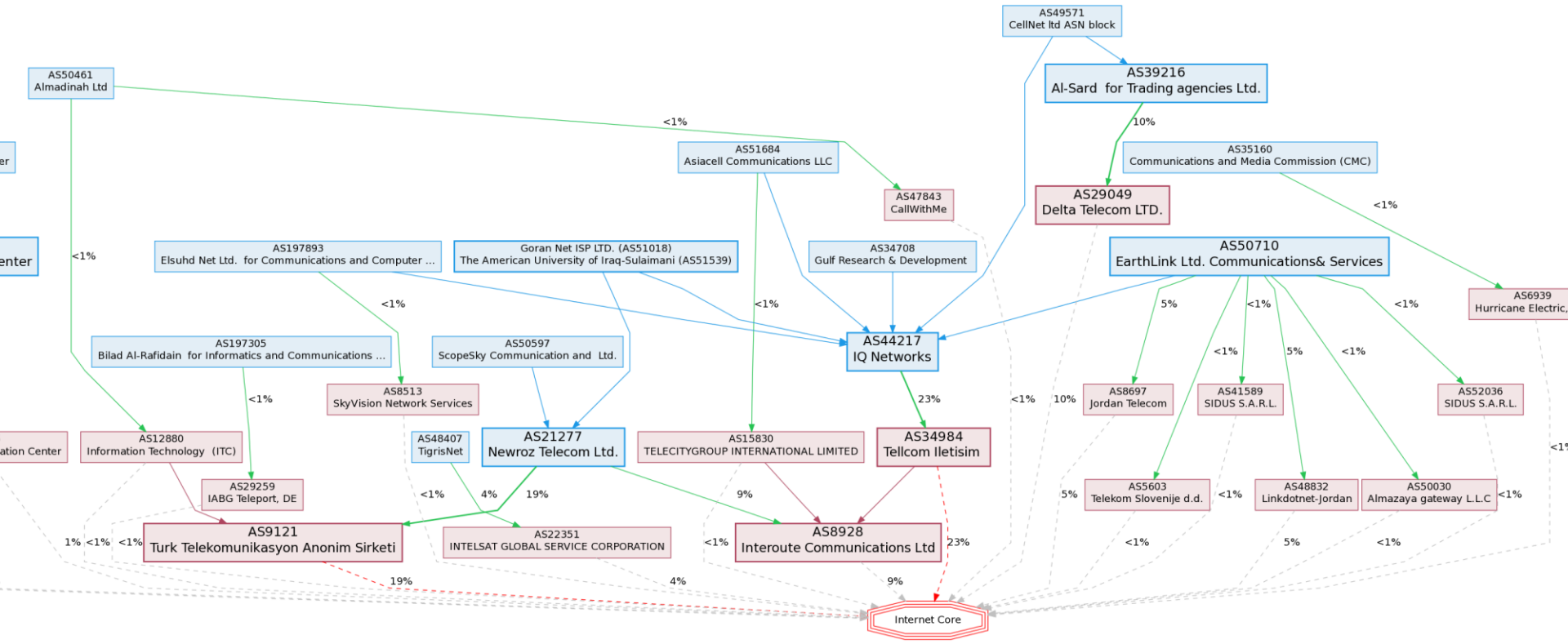
Iraq Connectivity



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Palestinian Territories (#9, tie with IQ,BH)

- 27 originating ASNs (**+10**)
- PalTel (AS12975) balanced among Telecom Italia, Deutsche Telecom, and Israeli Bezeqint
  - **Significantly** increased Level3 in May 2011
  - Strong AS-level growth rate despite economic chaos
  - Note increasing use of 4-byte AS numbers
  - **Fewer international connections to providers other than through Paltel (some exceptions: Wataniya, Coolnet/Alami)**

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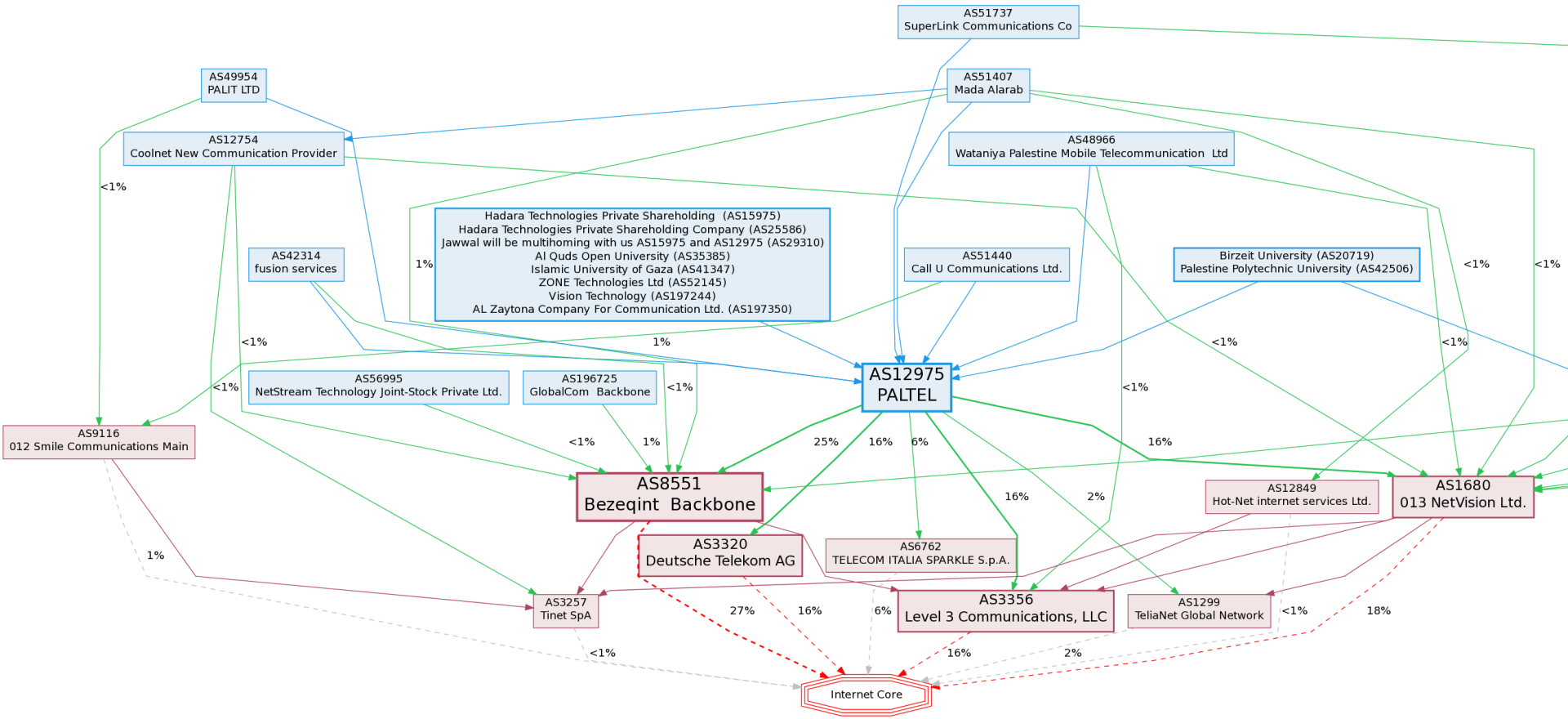
Palestinian Territories Connectivity



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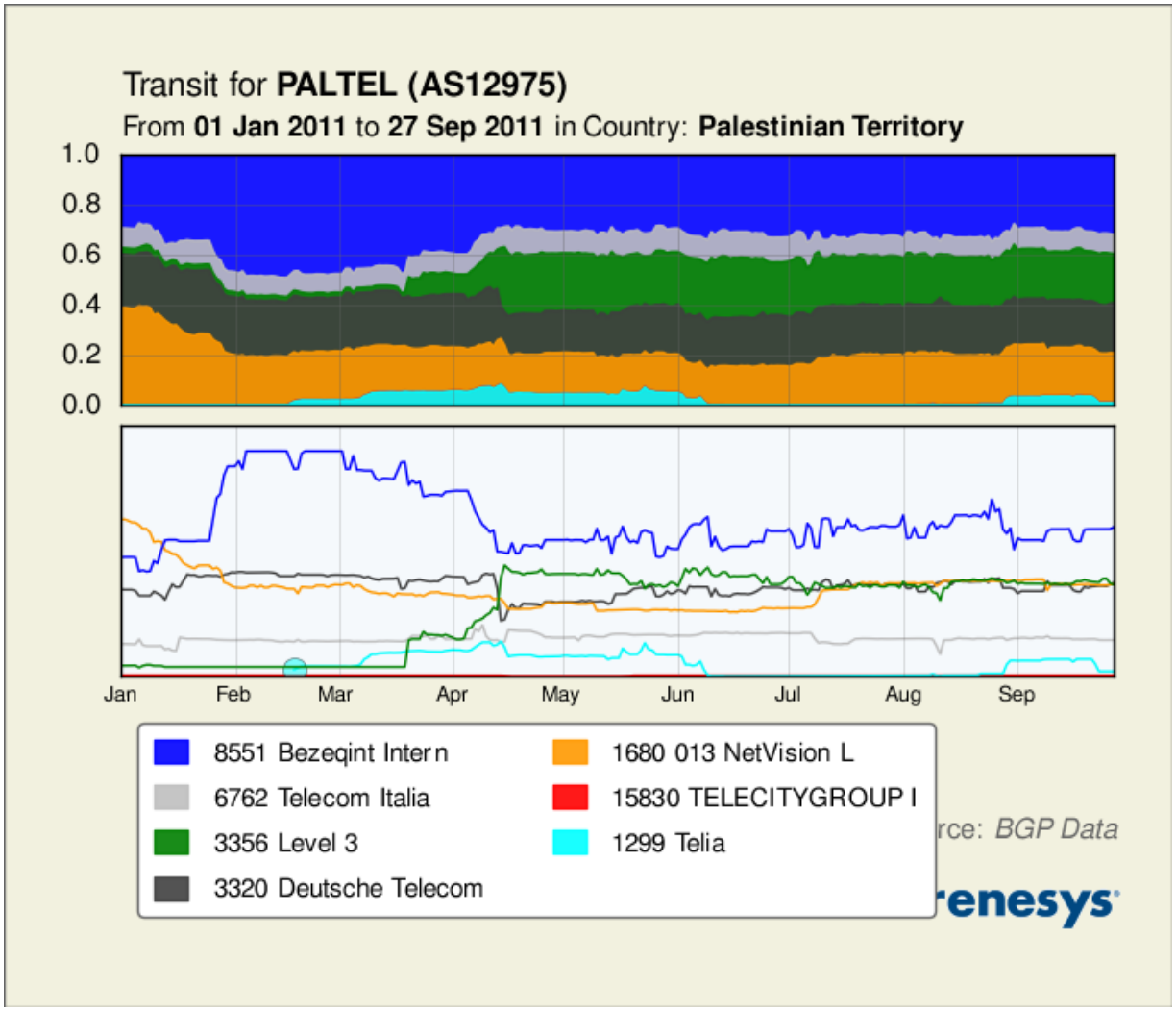
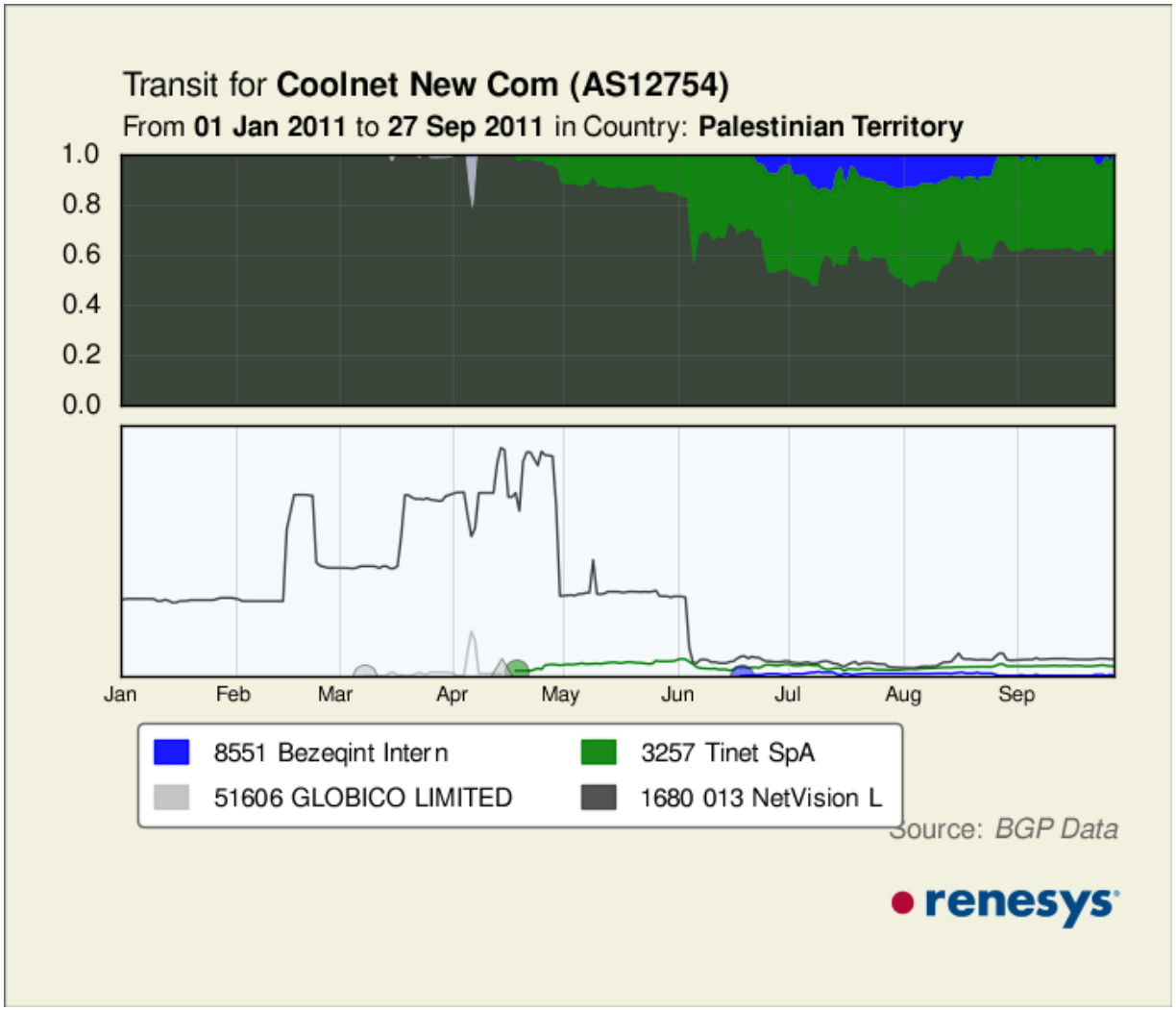
Paltel increasing direct int'l connectivity

- **Level3** increases in March 2011
- **Telia** making contribution
- Reductions in **Bezeqint** and NetVision



CoolNet (Alami) accesses TINet transit

- **TINet** appears in April 2011, increases to est. 40% total transit



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Bahrain (#9, tie with IQ, PS)

- 27 originating ASNs (+4)
- FLAG, FOG, GCCIA dark fiber to SA
- FLAG, Tata, and Saudi Telecom provide international connectivity; GBI landing 2011, Tata new landing 2011 to be managed by BIX
- Batelco (AS5416): No ASN downstreams
- Zain, Mena, Lightspeed, 2Connect, Nuetel, Kalaam, etc. have international connectivity, directly or via BIX (AS35019): **increasingly competitive market**

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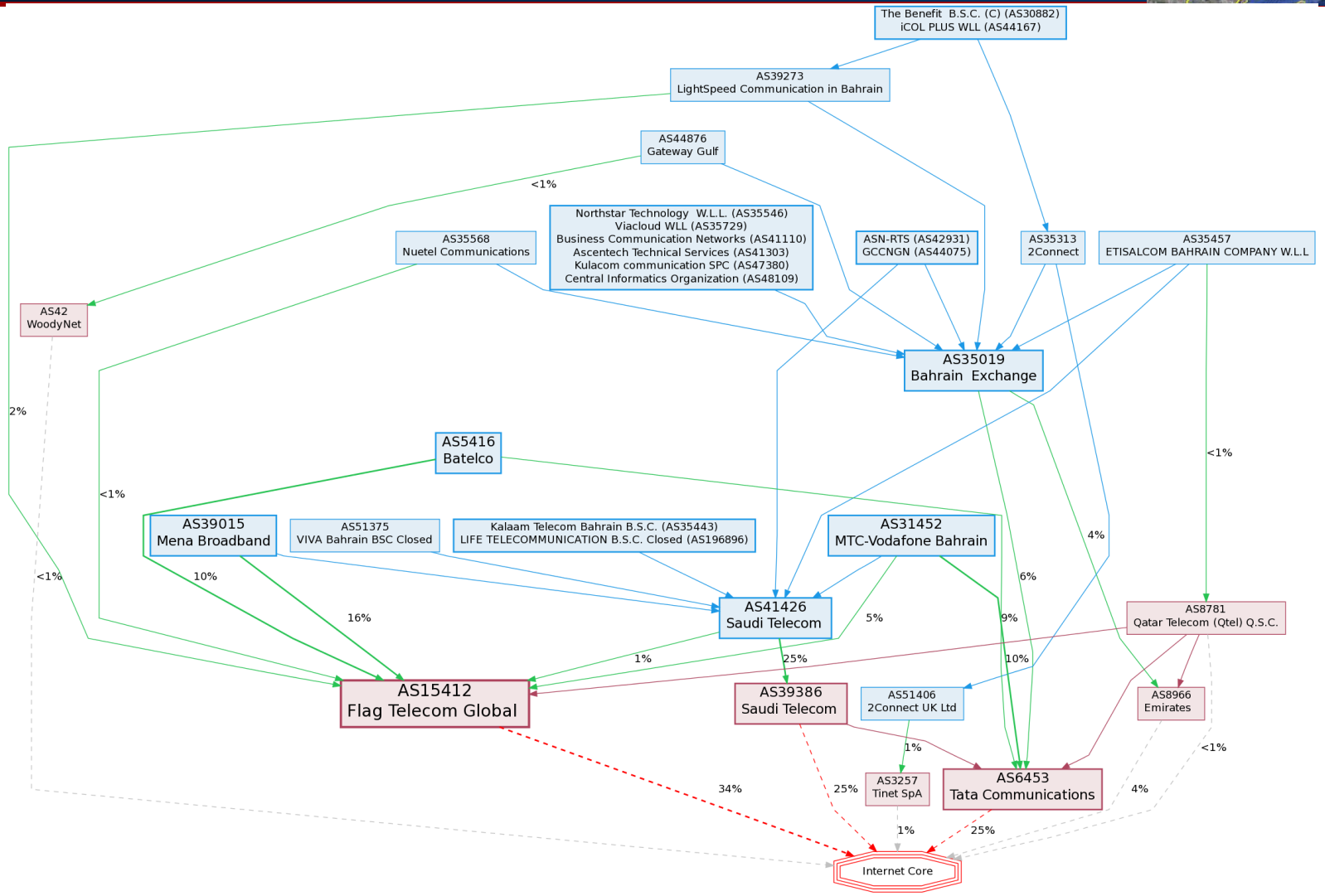
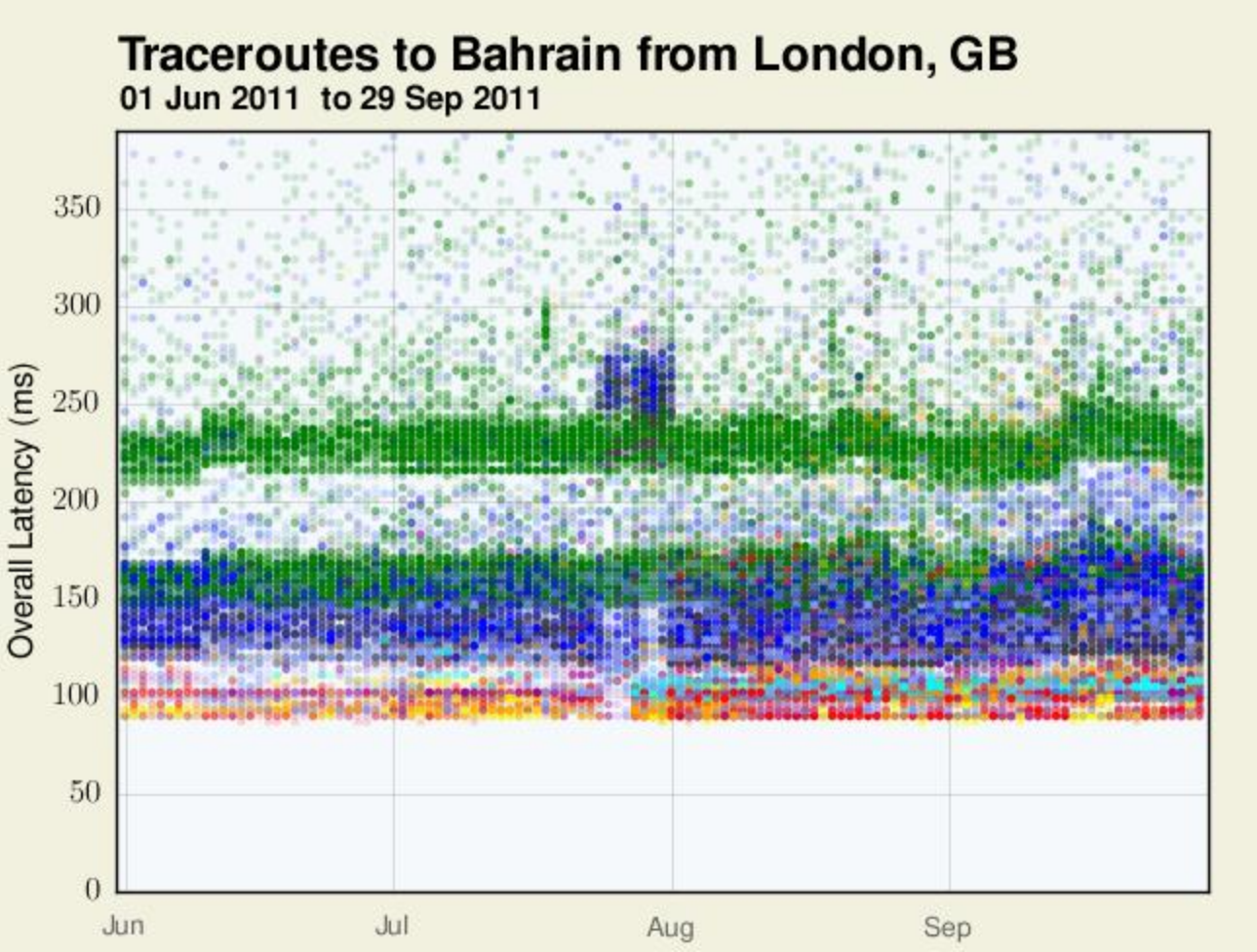
Bahrain Connectivity



Bahrain measured latencies from London

Latencies by inbound provider handoff:

- **FLAG-Batelco**
- **Tata-Batelco**
- **STC-Viva (41426)**
- **STC-Viva (51375)**
- **Level3-Viva**
- **LINX-2Connect (via Tata)**



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Jordan (#8)

- 28 originating ASNs (**+2**)
- Jordan Orange Telecom (AS8697,AS8376)
  - International transit from Orange on FLAG, with additional diversity from Saudi Telecom, Level3, Tinet
  - Syrian situation has created delays in establishing terrestrial connectivity from Jordan to Turkey via JADI
- **Mobily** began serving XOL on 10 Apr 2011, XOL customer Linkdotnet on 23 May 2011
- **Tinet** still doing well against Orange as key provider
- **Vtel** still not visibly capitalizing on its FLAG landing station at Aqaba, has strategy to establish direct int'l connectivity but **no visible success** in the routing table

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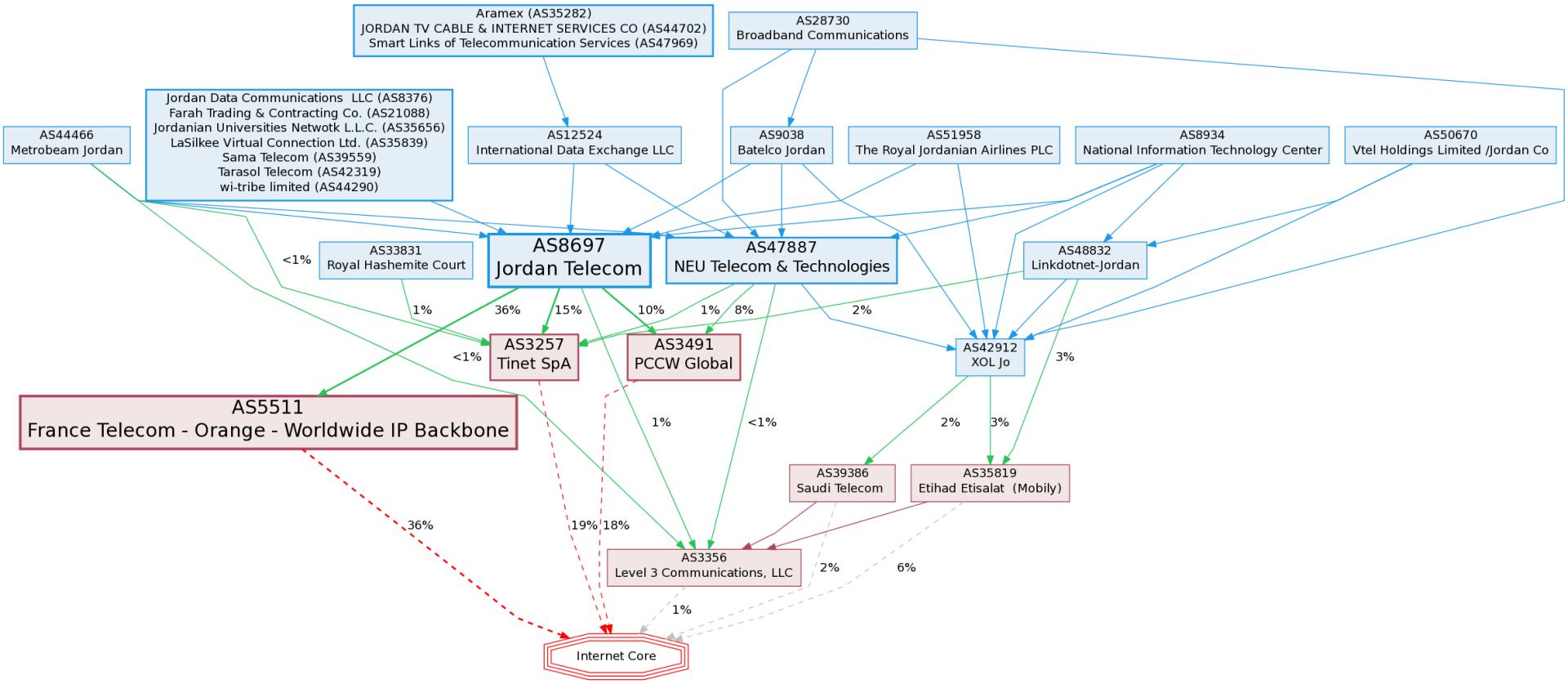
Jordan Connectivity



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Egypt (#6)

- 55 originating ASNs (**+3**)
- Telecom Egypt, Link Egypt, Etisalat Misr, Raya Telecom all provide international access
- Telecom Italia provides significant transit, as do Tata, Flag, Level3, others
- Crossing point for international cables creates incredible opportunity, significant hazards
- Market growth stagnant, waiting for clarity

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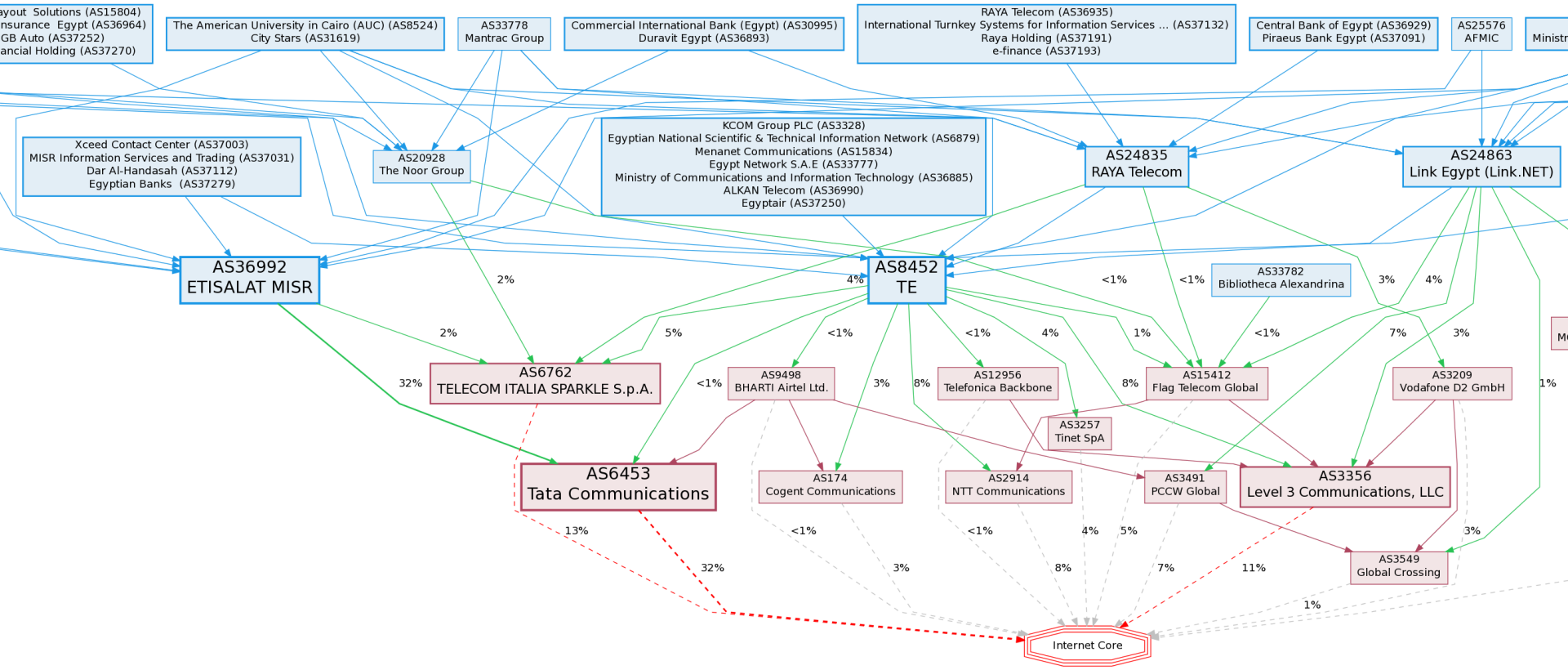
Egypt Connectivity (Excerpt)



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Kuwait (#7)

- 52 originating ASNs (**+6**)
- Diverse providers: QualityNet, Fast, Gulfnet Kuwait, KEMS, Wataniya Telecom, MTC, Kuwaiti Telecom, …..
- Very deep field of ASNs, from many sectors, richly multihomed
- Wide array of international carriers available over FALCON cable
- **Very little structural change evident since 2010.**

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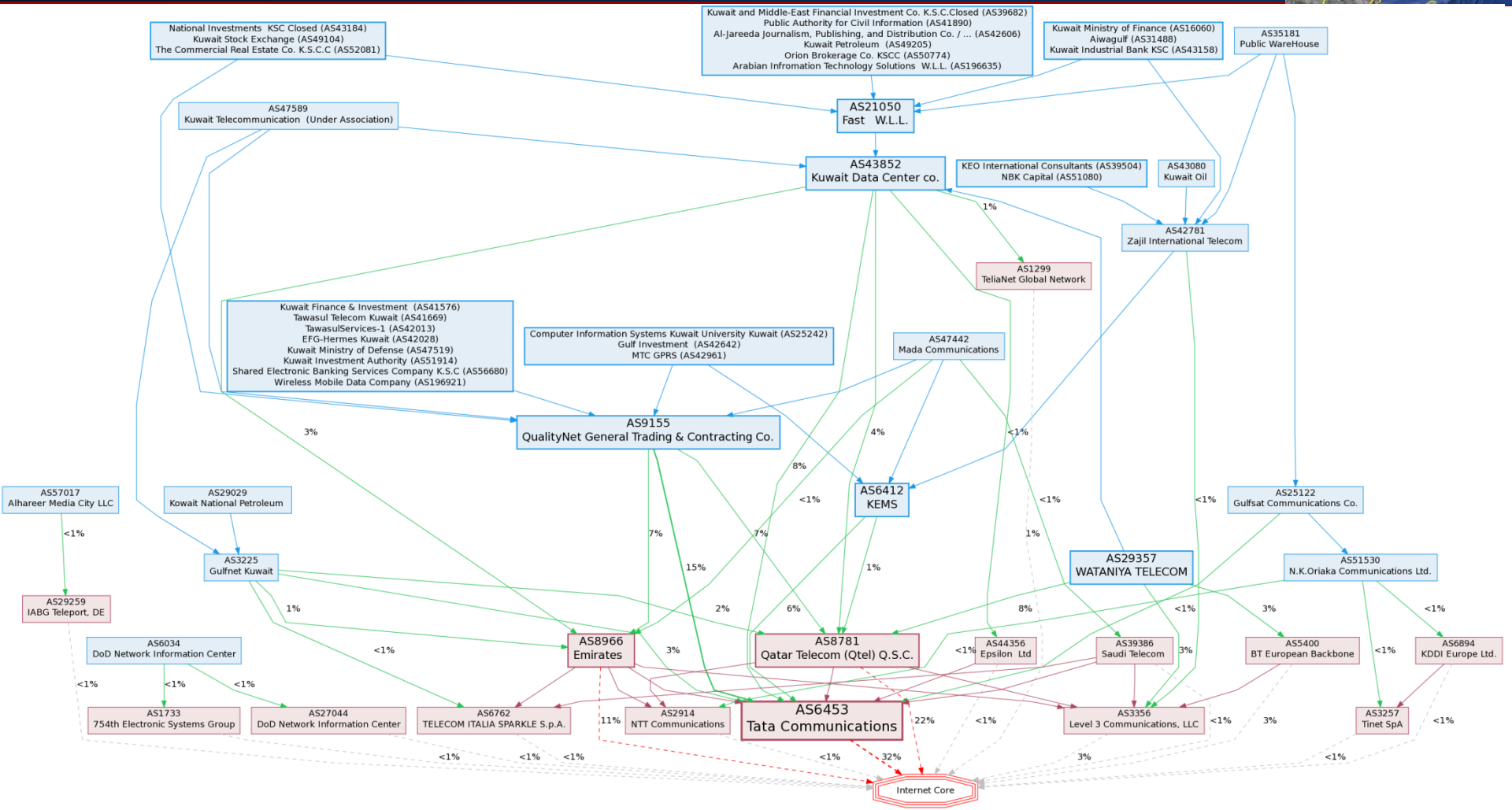
Kuwait Connectivity



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Lebanon (#5)

- 62 originating ASNs (**+8**), Liban Telecom/Ogero
- Deep set of secondary providers rely on satellite connectivity in response to limited cable landing opportunities
- Horizon Cologne, Telekom Austria VSAT, SatGate Lithuania, InSat Gmbh, New Skies,…
- IMEWE landed but there's **no evidence of use**
- Disagreements between Ogero and Ministry
- Market otherwise static in 2010, waiting……

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IMEWE Benefits to Flow in LB at last?

- New pricing leaked to al-Mustaqbal suggests that Ogero service may begin in September

8 المستقبل الاقتصادي ٨

AL - MUSTAQBAL - Sunday 21 August 2011

المستقبل - الأحد ٢١ آب ٢٠١١ - ٢١ رمضان ١٤٣٢ هـ

صحناوي يرفع الى الحكومة مشروع مرسوم خفض تعرفة خدمات DSL
بلا جدوى اقتصادية ومقارنة مالية ومن دون علم «المال» و«الهيئة الناظمة»

هيثم الطبش

أرسل وزير الاتصالات نقولا صحناوي إلى مجلس الوزراء قبيل يومين مشروع مرسوم يتعلق بخفض تعرفة ورسوم خدمات المزة العريضة بتقنية DSL وخدمات خطوط الانترنت والخطوط التأجيرية المحلية والدولية E1.

وعلمت المستقبل» ان صحناوي سبق وأرسل المشروع الى مجلس شورى الدولة طالبا الرأي القانوني بشأن مدى مطابقته وملاءمته للقوانين المرعية الاجراء، ولم يقرنه بدراسة جدوى اقتصادية، فأبدى مجلس شورى الدولة الموافقة شكلا، من دون التمحيص في الانعكاسات المالية للمشروع على إيرادات قطاع الاتصالات وبالتالي على الخزينة.

وفي المعلومات ان صحناوي لم يناقش التفاصيل المالية للمشروع حسب الاصول مع وزارة المال، خصوصا أن للمشروع انعكاسات مالية ستترتب على غياب مقارنة تظهر الفوارق في المداخيل بين التعرفة المعمول بها حاليا وتلك المقترحة في المرسوم الجديد.

كذلك ارتكب صحناوي خطأ فادحا إذ لم يناقش التفاصيل التقنية للمرسوم مع الهيئة الناظمة لقطاع الاتصالات الأمر الذي يعتبر مخالفة واضحة لنص المادة الخامسة من القانون رقم ٤٣١ الخاص بقطاع الاتصالات.

الجدير ذكره أن مشروع المرسوم هو نسخة معدلة من مشروع المرسوم رقم ١٦٨٥٢ تاريخ ٢٠٠٦/٤/٢٨ الذي سبق ان قدمه النائب مروان حمادة عند توليه وزارة الاتصالات والتعديلات التطويرية التي اقترحتها حكومة الرئيس فؤاد السنيورة الثانية بما يخص خدمات الـDSL و شبكاتها.

وهذا نص مشروع المرسوم:

تعديل المرسوم رقم ٥٧٠٤ تاريخ ٢٠٠١/٦/١٩، والمرسوم رقم ١٦٨٥٢ تاريخ ٢٠٠٦/٤/٢٨ وتخفيض تعرفة ورسوم خدمات المزة العريضة (Broadband Services) بواسطة تقنية الـDSL، وخدمات خطوط الانترنت والخطوط التأجيرية (Leased Lines) المحلية والدولية

إن رئيس الجمهورية،

بناء على الدستور،

بناء على المرسوم الاشتراعي رقم ١٢٦ تاريخ ١٩٥٩/٦/١٤ وتعديلاته وانشاء المجلس الأعلى للتلزيم،

بناء على المرسوم رقم ٤٣١ تاريخ ٢٠٠٢/٧/١٦ (قانون تنظيم قطاع الاتصالات)،

بناء على المرسوم رقم ١٦٨٥٢ تاريخ ٢٠٠٦/٤/٢٨ وتعديلاته،

بناء على المرسوم رقم ١٧٠٩٦ تاريخ ٢٠٠٦/٥/٥ المتعلق بتعديل بعض بنود المرسوم رقم ١٦٨٥٢ تاريخ ٢٠٠٦/٤/٢٨ المتعلق برسوم وأجور بعض الخدمات الهاتفية وخدمات جديدة تتعلق بإدخال الانترنت السريع (DSL)،

بناء على اقتراح وزير الاتصالات،

المادة الخامسة:

يعدل الجدول الوارد في المرسوم رقم ١٦٨٥٢ تاريخ ٢٠٠٦/٤/٢٨، الفصل الرابع، المادة السادسة، الفقرة (٢) (ب) «الرسوم المتوجبة على شركات توزيع الانترنت» بحيث يصبح كالآتي: جدول رقم ٥

المادة السادسة:

يعدل الجدول الوارد في المرسوم رقم ١٦٨٥٢ تاريخ ٢٠٠٦/٤/٢٨، الفصل الرابع، المادة السادسة، البند (٣) «وصلة DSL مؤمنة من خارج وزارة الاتصالات، مع خدمة انترنت من قبل وزارة الاتصالات» بحيث يصبح

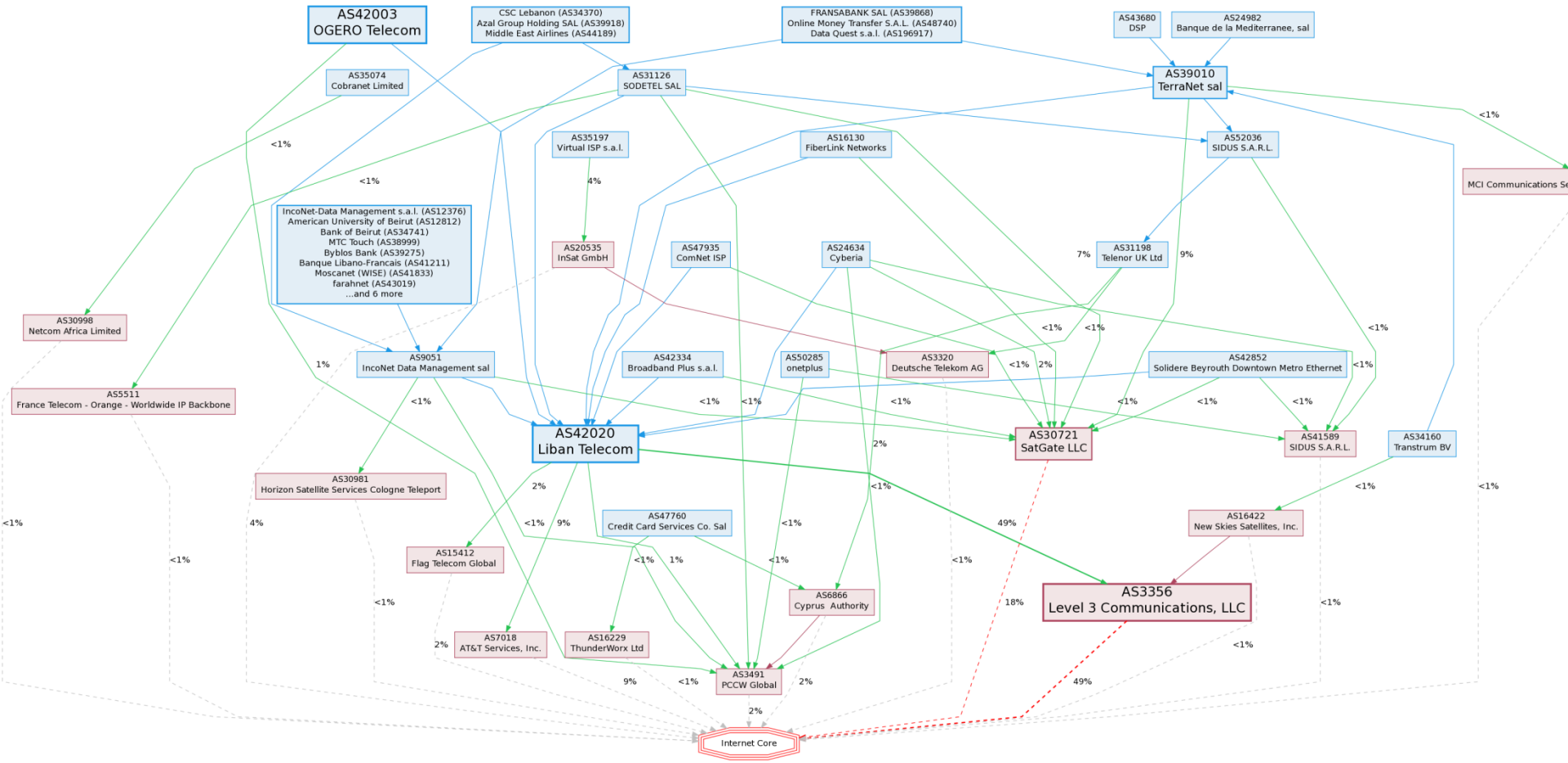
جدول رقم ١

	رسم مقطوع لموضع في الخدمة (ل.ل)	رسم شهري (ل.ل)
المخطوط بسرعة ٢٥٦ هيبيت/ ثانية أو أقل لمسافة أقل أو تساوي ٢٠ كم	٧٥٠,٠٠٠	٣٠٠,٠٠٠
المخطوط بسرعة ٢٥٦ هيبيت/ ثانية أو أقل لمسافة أكثر من ٢٠ كم	٥٠٠,٠٠٠	٢٠٠,٠٠٠
المخطوط بسرعة ١٠٢٤ هيبيت/ ثانية لمسافة أقل أو تساوي ٢٠ كم	١,٠٠٠,٠٠٠	٤٥٠,٠٠٠
المخطوط بسرعة ١٠٢٤ هيبيت/ ثانية لمسافة أكثر من ٢٠ كم	٧٥٠,٠٠٠	٣٠٠,٠٠٠
المخطوط بسرعة ٢٠٤٨ هيبيت/ ثانية لمسافة أقل أو تساوي ٢٠ كم	١,٥٠٠,٠٠٠	٦٠٠,٠٠٠
المخطوط بسرعة ٢٠٤٨ هيبيت/ ثانية لمسافة أكثر من ٢٠ كم	١,٠٠٠,٠٠٠	٤٠٠,٠٠٠

جدول رقم ٢

السرعة	سعات دولية للاتصال بشبكة الإنترنت العامة مع إخفاء مجموعات لمراجع IP (with IP addresses)	سعات دولية للاتصال بشبكة الإنترنت العامة دون إخفاء مجموعات لمراجع IP (without IP addresses)	سعات دولية للاتصال مع جميع أنحاء العالم للخدمات هاتفة (International leased circuits)
Kbps	وحدة سحب خاصة (SDR)	وحدة سحب خاصة (SDR)	وحدة سحب خاصة (SDR)
٢٥٦	سرعة غير متوفرة	سرعة غير متوفرة	١٧٠
٥١٢	سرعة غير متوفرة	سرعة غير متوفرة	٣٥٠
١٠٢٤	١٠٠	٩٠	٧٥٠
٢٠٤٨	٢٠٠	١٨٥	١٧٠٠

Lebanon Connectivity



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Saudi Arabia (#4)

- 95 originating ASNs (**+11**)
- Saudi Telecom, Etisalat Atheeb, KACST/ISU Riyadh, Mobily/Bayanat, others have direct international connectivity
- Geographic centrality provides diverse entry/exit points for international transit
- Level3, Tata, GLBX, Emirates all providing significant transit onward to Europe and Asia
- Little domestic market change in 2010

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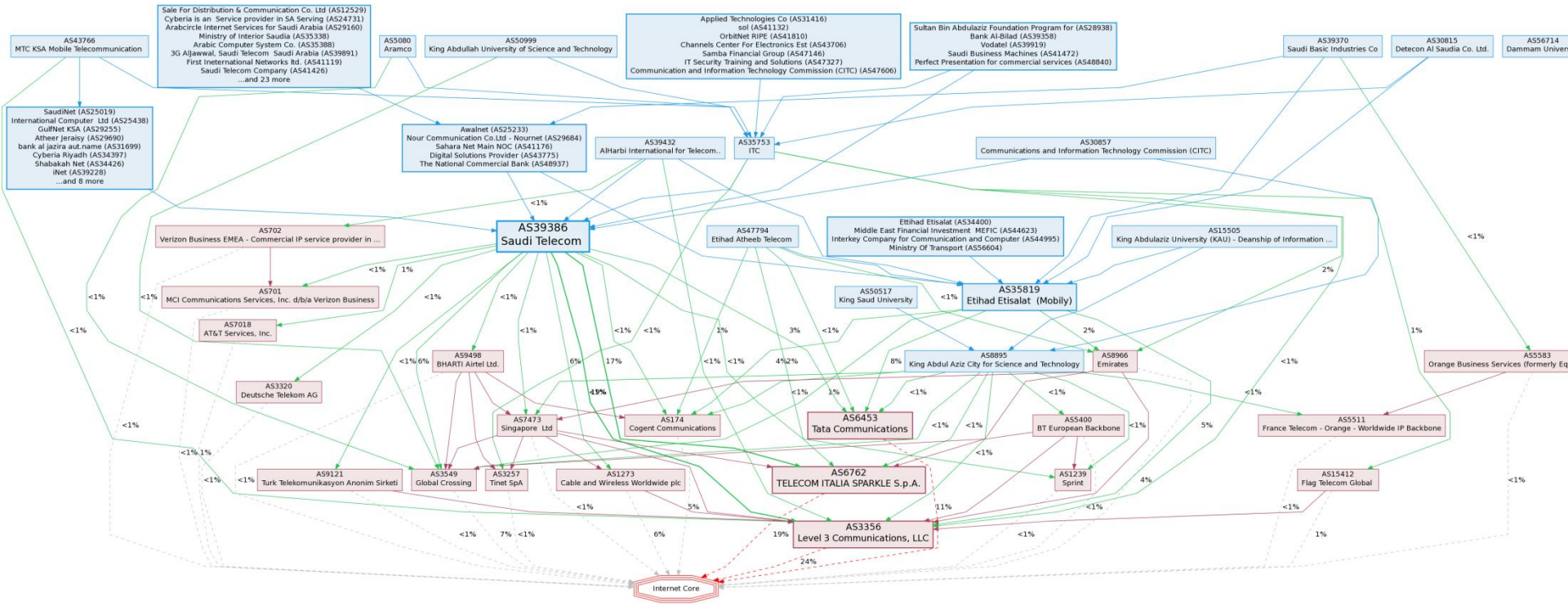
Saudi Arabia Connectivity



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Iran (#3)

- 177 originating ASNs (**+46**); DCI (AS12880)
  - Smallest “surface-to-volume ratio” of any Middle Eastern Internet market
  - Submarine cable connectivity from UAE, terrestrial paths to Turkey, Azerbaijan provide increasingly diverse international transit
- Since 2010: **Rostelecom** transit increases substantially to 26%, **Telia** reduced to 11%; significant increase in direct purchase of **Flag** transit (AS15412, to 22%)

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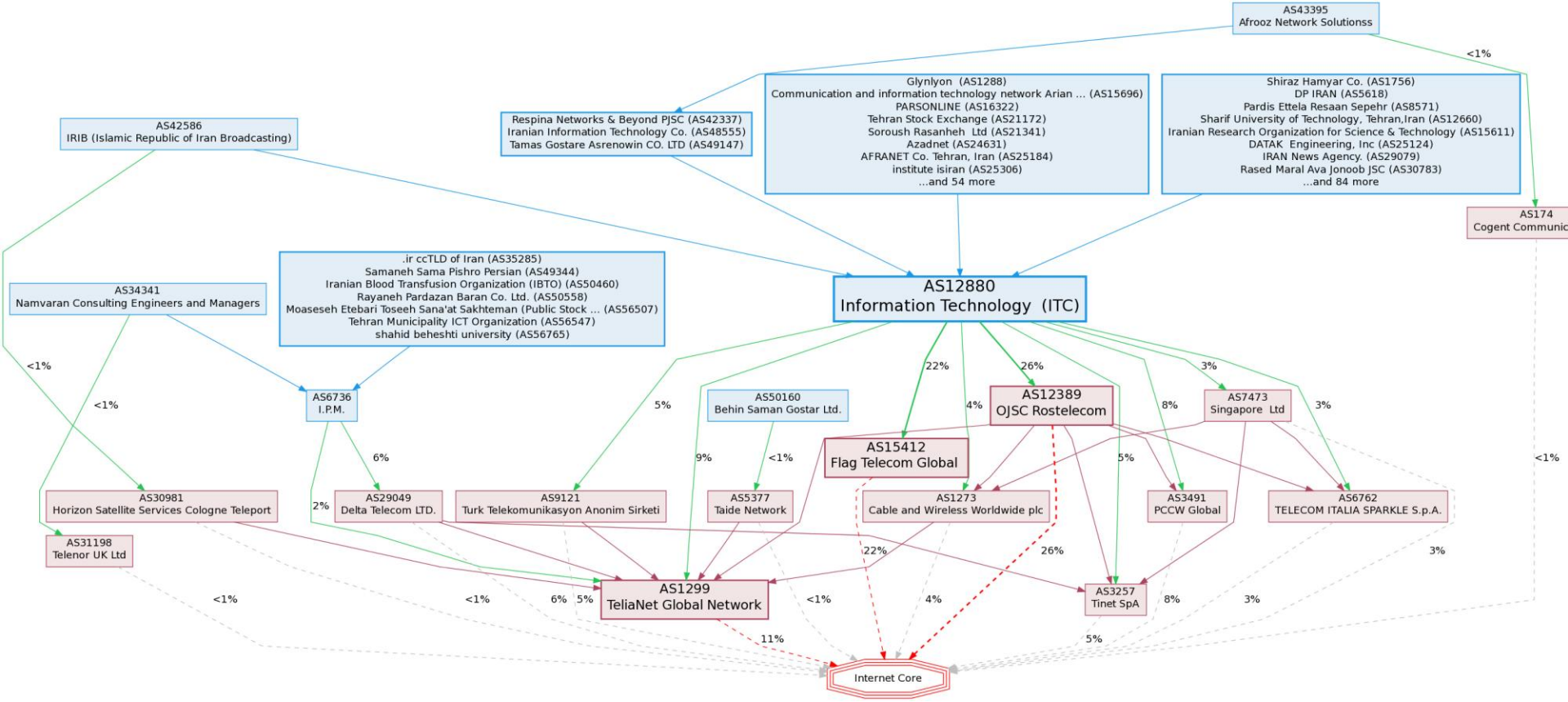
Iran Connectivity



- ✓ Originating ASNs growing at 35% y/y: Israel, Turkey at 7%
- ✓ By this metric, Iran could overtake Israel by 2Q12, Turkey 4Q12

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Israel (#2)

- 201 originating ASNs (**+14**)
- Smile (9116), Bezeqint (8551), NetVision (1680) are leading providers
- In all, 26 ASNs have direct international connectivity – compare to Lebanon (17) or Turkey (12)
- Wholesale rankings led by TINet, Level3, Verizon Business, PCCW, Telia

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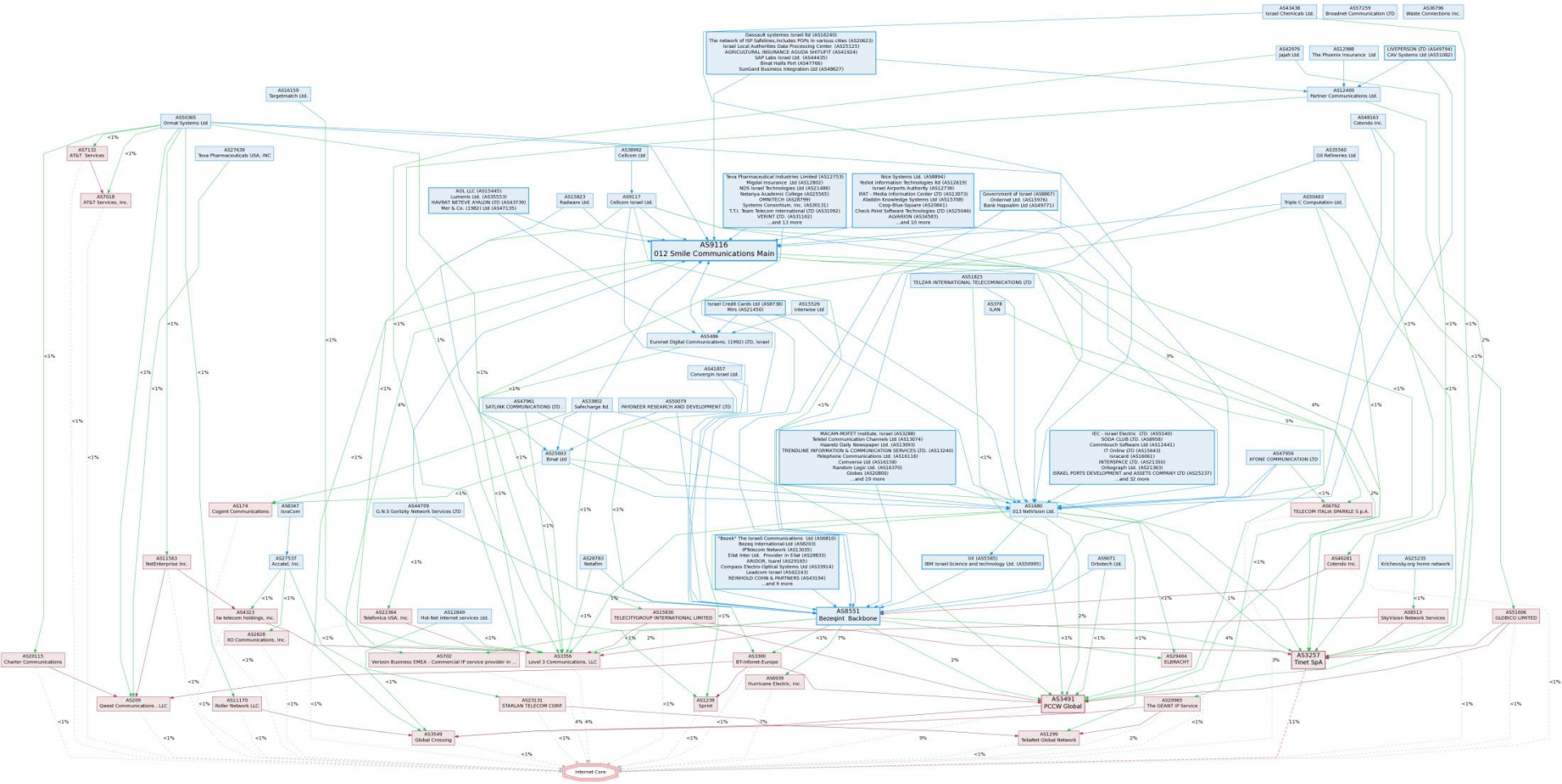
Israel Connectivity



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Turkey (#1)

- 281 originating ASNs (**+19**)
  - 27% more originating ASNs than #2 Israel
  - …but only half as many **multihomed** ASNs
- Turk Telekom, SuperOnline both building international terrestrial networks to bridge Europe to Asia
- Turk Telekom + Invitel carry bulk of Turkish international traffic to Europe
- Telia, L3, Global Crossing are primary transit
- Cogent, Tinet making modest contributions now

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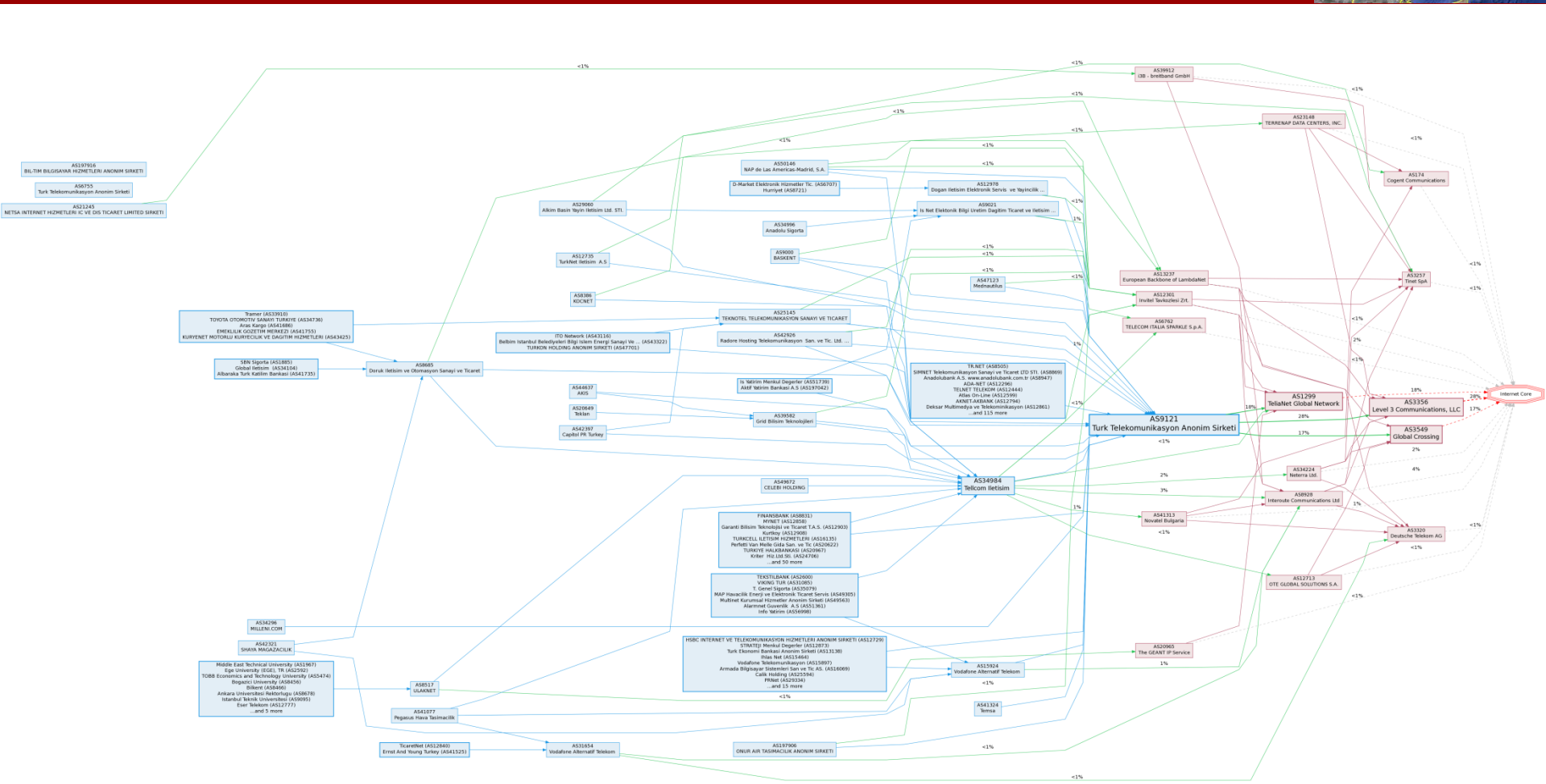
Turkey Connectivity



What to look for in 2012?

- **Egypt, Libya, Tunisia** may explore different regulatory approaches to international transit
- **Saudi Arabia** will represent increasingly important international connectivity alternative for neighboring countries: e.g., Bahrain, Jordan, Yemen
- **Bahrain** connectivity and diversity continue to increase at highest rate in the Gulf region, 2 new cable landings bringing the number of international physical paths to 5

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What to look for in 2012?

- **Lebanon** will experience at least 5x reduction in pricing, maybe substantially more, depending on how Ogero distributes the extra 1Tbps of capacity to other providers
- **Syria** is the wild card for the evolution of terrestrial paths, with both JADI and RCN projects at stake
- **Iraq** poised for higher regional traffic on north-south backbone capitalizing on new cable landing at Basra
- **Oman's** EPEG project may enable game-changing great-circle terrestrial route to Northern Europe.

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Thank you!

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