Invoice QA Data Report

Q1'17 Invoices: Jan'17 - Mar'17

Transport
Colocation
IP Transit
Cross Connect

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Report Preview:

- Previous QA report covered Jan'16 to Dec'16 invoices: transport, colocation, IP transit, cross connect.
- This report will cover Jan - Mar'17 invoices.
- We will:

  1. Identify & fix invoice errors by using service-type specific <u>rules</u>

  2. Analyze spend on month-to-month variations

  3. Identify opportunities for Costsheet & / or vendors to improve quality

Transport: 2016 Review

2016 Error Spend, Loaded in 2017Q1:

- 155 errors were found in previous QA report for 2016 invoices:
  - 118 fixed.
  - 37 remains.
    - 21 assigned to Oliver
    - 12 assigned to Roxanne
    - 4 assigned to Annalyn
- 670 transport line items were loaded in RVM after last QA for 2016 invoices. No errors were found

Not fixed yet
34.4%

$2,440,019
37 Lines

Fixed
65.6%

$4,646,766
118 Lines
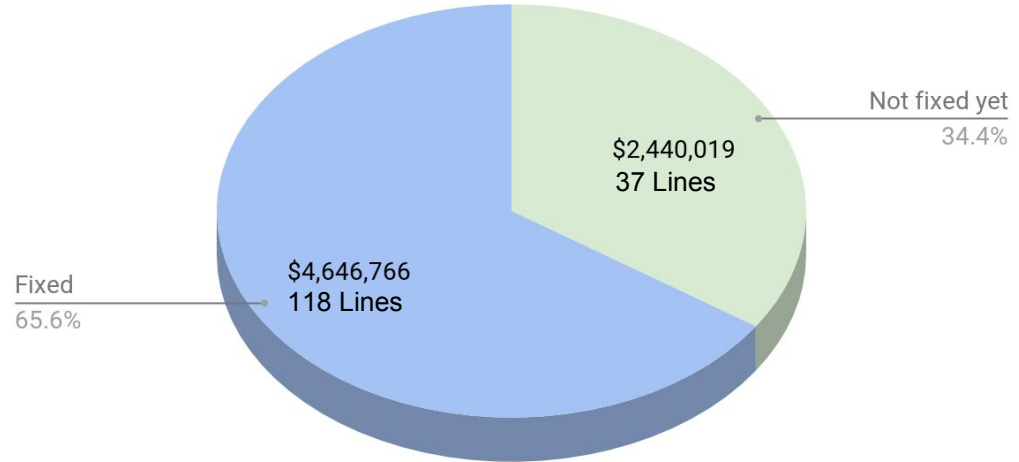
Transport: 2017 Scope

Original Invoice / MRC Spend

1. Review details by Transport specific rules (*i.e.Transport charge type cannot = UBC*).
2. Analyze fluctuations of spend month-to-month (*i.e. FEB to MAR $700K variance*).
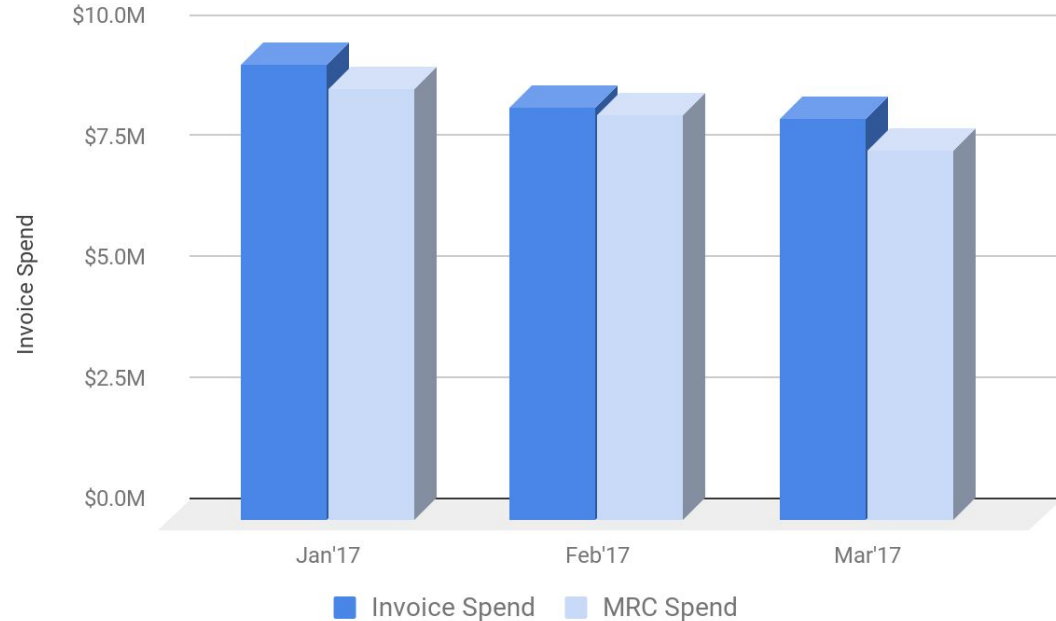
Transport: Invoice Error

Short Term	Error Type
IST	Incorrect Service Type
ICT	Incorrect Charge Type

Month	IST	ICT	Error Lines	Error Spend
Jan		3	3	$4,574
Feb	5	2	7	$41,199
Mar	1	45	46	$406,184
Grand Total	**6**	**50**	**56**	**$451,957**

Transport: Invoice Error

Vendors Rank by Error Spend

Vendor Name	Error Spend	% Error Spend	Error Line	% Error Line
BICS Belgacom International	$369,179	1.41%	34	0.34%
Tata Communications America	$39,185	0.15%	5	0.05%
SILICA NETWORKS ARGENTINA	$28,263	0.11%	6	0.06%
Zayo Group, LLC	$15,195	0.06%	6	0.06%
Level 3 Communications LLC	$135	0.00%	5	0.05%

- **BICS Belgacom INTL** - $369k MRC entered as "NRC"
- **Tata** - $41k Install charge entered as "Transport"
- **Silica Networks** - $28K MRC was entered as NRC incorrectly.
- **Zayo** - $15K MRC was entered as NRC incorrectly.

Transport: MRC Invoice Spend Adjusted

MRC Spend Adjustment

Methodology:
- MRC items w/ identified service- or charge- type errors are removed from MRC spend. Other items that identified as MRC are added to MRC spend.
- For non-data entry error findings, allocate MRC per billing period accordingly.
- The output will be the result in a more ideal circumstance when data entry error is fixed and vendors bill according to the monthly billing period

Google

Transport: MRC Spend Adjustment

Jan'17 Invoices:	$8,924,852

QA MRC Adjustment:	$4,574
China Mobile INTL: (Inv.)	($142,000)
CID: GGSG0005 - GGSG0014	
Billed Dec'16 in Jan'17.	
China Mobile INTL: (Inv.)	($70,000)
Billed incorrectly, we've received credit.	
Emirates (Jan.Inv.)	($20,000)
CID: 441H/2010	
Billed quarterly in Jan'17	

Jan'17 Invoice Adjusted:	$8,697,426*

*China Unicom Americas:	($119,150)
Service terminated on Feb 16th'17	
*Telstra: (Jan.Inv.)	($172,500)
Rate decreased from $354K to $172.5K after Jan'17	

Jan'17 Run Rate Adjusted:	$8,405,776

Feb'17 Invoices:	$8,376,009

QA MRC Adjustment:	$2,014
Emirates (Jan.Inv.)	$10,000
CID: 441H/2010	
Billed quarterly in Jan'17	

Feb'17 Invoice Adjusted:	$8,383,995*

| *China Unicom Americas: | ($51,065) |
| *Service terminated on Feb 16th'17* | |

Feb'17 Run Rate Adjusted:	$8,332,930

Mar'17 Invoices:	$7,644,019

QA MRC Adjustment:	$399,563
Emirates (Jan.Inv.)	$10,000
CID: 441H/2010	
Billed quarterly in Jan'17	

Mar'17 Invoice Adjusted:	$8,053,582*

Mar'17 Run Rate Adjusted:	$8,053,582*

Google

Transport: Invoice Error Trending

2nd report 3rd report

$10.0M

$9,348,287.00

$7,780,122.52

$7.5M

Error Spend

$5.0M

$2.5M

$1,167,975.00

$451,957.48

$0.0M

2016Q1+Q2   2016Q3   2016Q4   2017Q1

Invoice Quarters

1st report   Now

# Colocation: 2016 Review
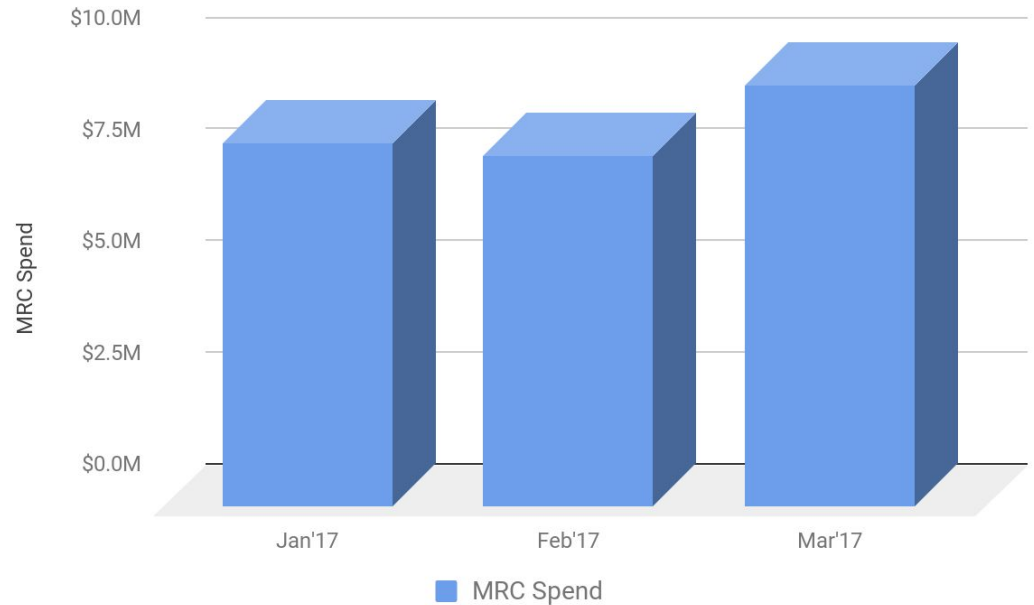
2016 Error Spend in 2017Q1:

- 493 errors were found in previous QA report for 2016 invoices:
  - 173 fixed.
  - 320 remains.
    - 199 assigned to Oliver
    - 96 assigned to Roxanne
    - 14 assigned to Annalyn
    - 11 assigned to Justine
- 651 line items were loaded in RVM after previous QA for 2016 invoices: 18 QA errors has been found.

Fixed
27.0%

$1,443,303
173 Lines

$3,911,273
320 Lines

Not fixed yet
73.0%

Google
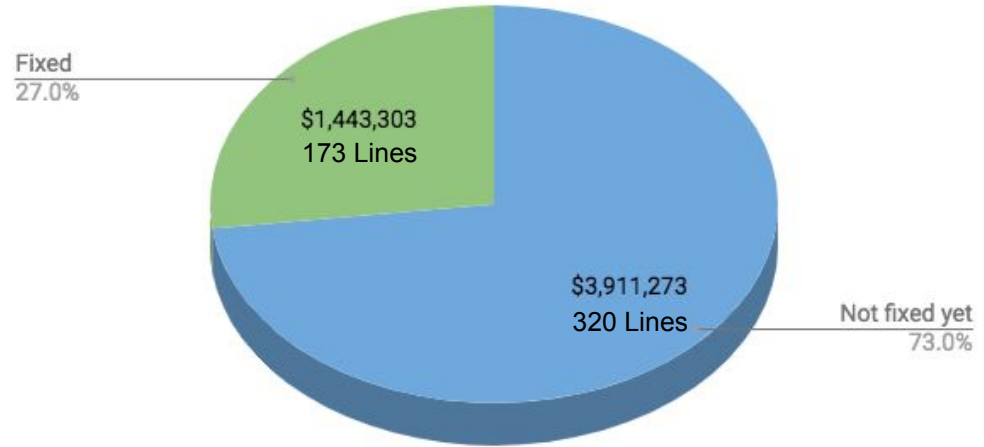
Colocation MRC: 2017 Scope

1. Review details by colocation specific rules (*i.e.Colocation UBC UOM=kWh*).
2. Analyze fluctuations of spend month-to-month (*i.e. FEB to MAR $2M variance*).

Colocation: Invoice Error

Short Term	Error Type
IST	Incorrect Service Type
ICT	Incorrect Charge Type
IU	Incorrect Usage
IUOM	Incorrect Unit Of Measure
NA	Unidentified Amount/Usage

Highlights:

- 45% are errors that entered charge type incorrectly.
  - 45 line items were entered as "NRC" but is actually MRC or UBC
- 26% are errors that entered UOM incorrectly.
  - 39 line items were entered as "Each" or "kW" for UBC incorrectly.

Month	IST	ICT	IU	IUOM	NA	Error Line	Error Spend
Jan	10	36	8	15	4	66	$2,864,953
Feb		22	6	15	12	47	$242,074
Mar		18	7	14	2	33	$274,773
Grand Total	**10**	**76**	**21**	**44**	**18**	**146**	**$3,381,800**

Colocation: Invoice Error

Vendor Name	Error Spend	% Error Spend	Error Line	% Error Line
Zayo Group, LLC	$2,497,534	7.20%	46	31.51%
Quality Technology	$358,500	1.03%	8	5.48%
Interxion EspaÃ±a, S.L.	$180,275	0.52%	3	2.05%
Equinix Hong Kong	$108,037	0.31%	7	4.79%
Level 3 GmbH (DE)	$49,174	0.14%	1	0.68%

Zayo Group:
- $1.6M - 10 lines entered as colocation incorrectly. They are Install service NRC.(i.e. $200K, Jan.Inv.)
- $934K - 2 lines entered as UBC without usage data. (i.e. $618,774, Jan.Inv.)
- $6.4K - 32 lines entered as NRC incorrectly. They are MRC.(i.e. $237.8, Jan.Inv.)
- $4.3K - 1 line entered Usage and UOM for UBC incorrectly. Usage>1 and UOM=kWh for colocation UBC.(Mar.Inv)
- $-58.2K - 1 line entered as MRC incorrectly. Negative amount is credit, should be NRC.(Jan.Inv.)

Quality Technology:
- $450K - 6 lines entered as UBC incorrectly. They are MRC. (i.e. $75K, Jan.Inv.)
- $-91.5K - 2 lines entered usage and UOM incorrectly for credit. Credit should have Usage=1 and UOM=Each.(i.e. $-42K, Feb.Inv.)

Google

Colocation: Invoice Error
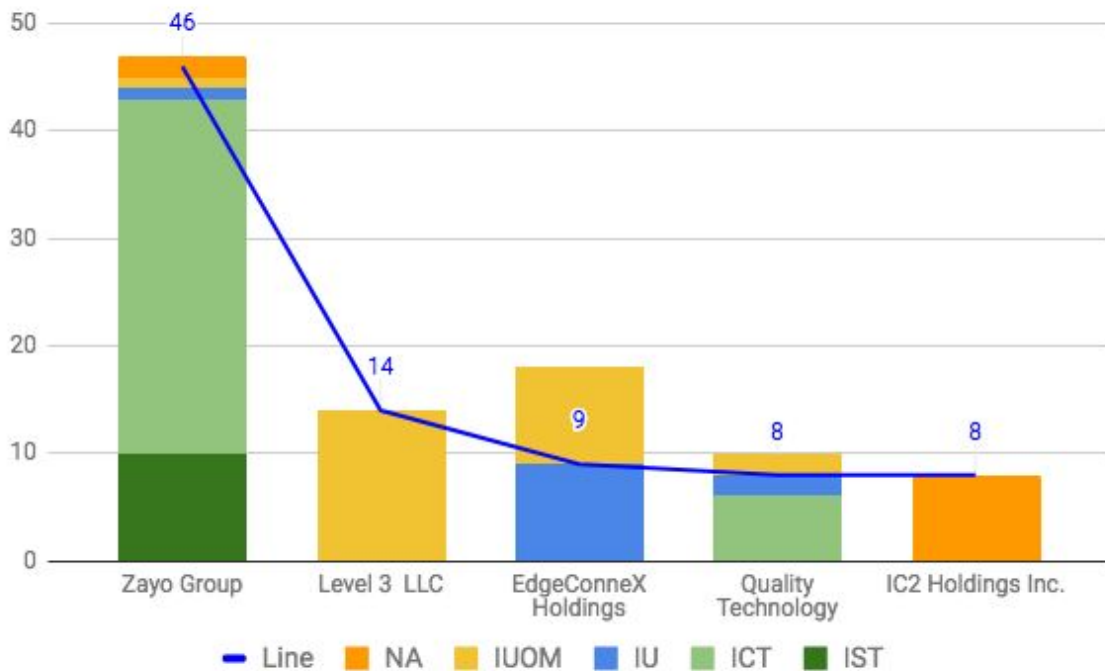
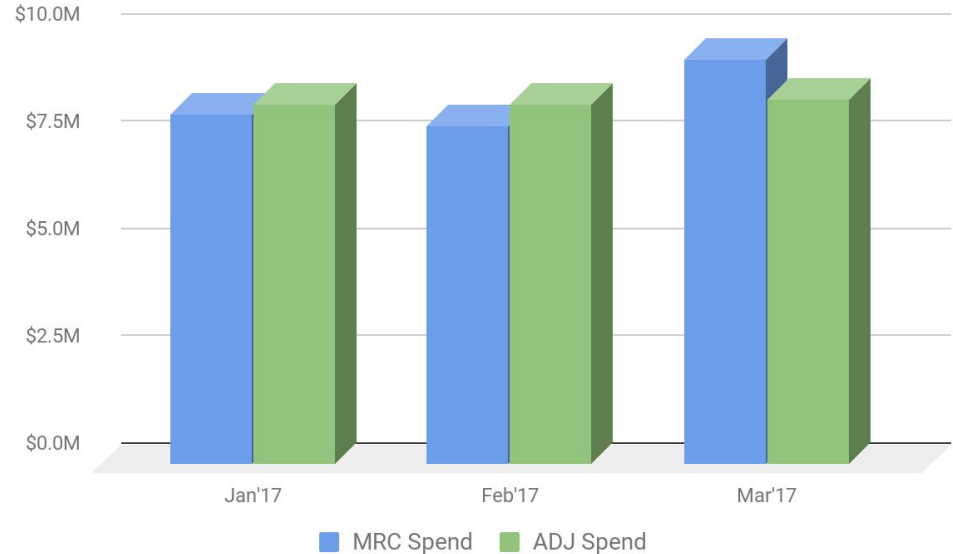# Colocation: Invoice Error

Methodology:
- MRC items with identified service or charge type errors are removed from MRC spend.Other items that identified as MRC are added to MRC spend.
- For non-data entry error findings, allocate MRC per billing period accordingly.
- The output will be the result in a more ideal circumstance when data entry error is fixed and vendors bill following our method.

Colocation: Invoice Error

Jan'17 Invoice:	$8,132,184

QA MRC Adjustment	$396,053
Interxion GmbH: ([Mar.Inv](#))	$112,208
CID: DE_GO0092001_005A_F8.1	
Billing quarterly in Mar'17	
Equinix Germany: ([Jan.Inv.](#))	($154,187)
CID: IXSQ34397-B,1-33868354421	
Billing Dec'16 in Jan'17	
INFOMART DALLAS: ([Inv.1](#))	($145,000)
Billing Jan'16 to Apr'16 in Jan'17	
Equinix INC: ([Feb.Inv.](#))	$21,006
CID: 1-91956904483	
Billing Oct'16 to Feb'17 in Feb'17	

Jan'17 Invoice Adjusted:	$8,362,264

Feb'17 Invoice:	$7,856,585

QA MRC Adjustment	$470,089
Interxion GmbH: ([Mar.Inv](#))	$112,208
CID: DE_GO0092001_005A_F8.1	
Billing quarterly in Mar'17	
INFOMART DALLAS: ([Inv.](#))	($36,250)
Billing May'16 in Feb'17	
Eckhoff: ([Feb.Inv.](#))	($113,333)
CID: 010355-20354582	
Billing Feb'17 to Jun'17 in Feb'17	
Equinix INC: ([Feb.Inv.](#))	($84,023)
CID: 1-91956904483	
Billing Oct'16 to Feb'17 in Feb'17	
Lemur Properties LLC: ([Jan.Inv.](#))	$172,554
CID: POD3, POD4	
Skipping invoice in Feb'17	

Feb'17 Invoice Adjusted:	$8,377,830

Mar'17 Invoice:	$9,431,822

QA MRC Adjustment	$209,111
KDDI Corporation: ([Mar.Inv.](#))	($624,139)
CID: HND12	
Billing Apr'16 to Oct'16 in Mar'17	
Interxion France SAS: ([Mar.Inv.](#))	($288,268)
CID: FR_A0005317_001 Avenant #4	
Billing Apr'17 to Jun'17 in Mar'17	
Interxion GmbH: ([Mar.Inv](#))	($224,416)
CID: DE_GO0092001_005A_F8.1	
Billing quarterly in Mar'17	
INFOMART DALLAS: ([Inv.](#))	($36,250)
Billing Jun'16 in Mar'17	
Eckhoff: ([Feb.Inv.](#))	$28,333
CID: 010355-20354582	
Billing Feb'17 to Jun'17 in Feb'17	

| Mar'17 Invoice Adjusted:	$8,496,193

Colocation: Invoice Error Trending
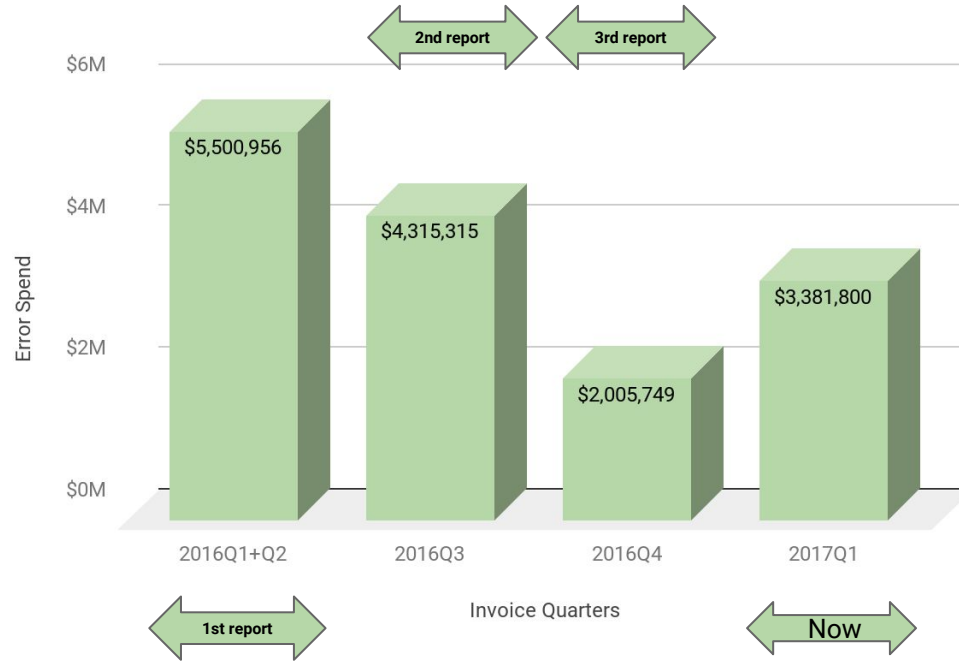
IP Transit: 2016 Review

2016 Error Spend in 2017Q1:

- 687 errors were found in previous QA report for 2016 invoices:
    - 46 fixed.
    - 641 remains.
        - 352 assigned to Oliver
        - 261 assigned to Justine
        - 14 assigned to Roxanne
        - 14 assigned to Annalyn
- 294 line items were loaded in RVM after previous QA report for 2016 invoices. 9 line items have been identified with QA errors.

Fixed
44.1%

$564,756
46 Lines

$715,036
641 Lines

Not yet fixed
55.9%
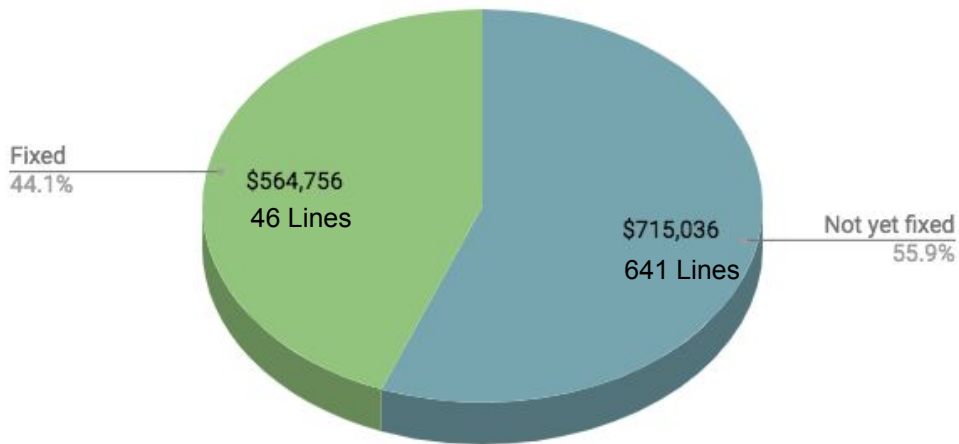
IP Transit MRC: 2017 Scope

1. Review details by transit specific rules (*i.e. Transit UBC UOM=Mbps*).
2. Analyze fluctuations of spend month-to-month (*i.e. JAN to FEB $2.5M variance*).

IP Transit: Invoice Error

Short Term	Error Type
IST	Incorrect Service Type
ICT	Incorrect Charge Type
IU	Incorrect Usage
IUOM	Incorrect Unit Of Measure

Highlight:

- 43% are errors that entering UOM incorrectly.
  - 46 line items were entered as Each or Mb for UBC incorrectly.

- 42% are errors that entering charge type incorrectly.
  - 39 line items were MRC entered as NRC incorrectly.

Month	IST	ICT	IU	IUOM	Error Line	Error Spend
Jan	1	4	6	46	55	$195,989
Feb		41	5	2	46	$122,362
Mar		4	6	2	10	$76,602
Grand Total	**1**	**49**	**17**	**50**	**111**	**$394,953**

IP Transit: Invoice Error

Vendor Name	Error Spend	% Error Spend	Error Line	% Error Line
Hurricane Electric	$225,000	0.91%	12	0.56%
XO Communications	$76,513	0.31%	49	2.27%
Comcast Cable	$75,375	0.31%	2	0.09%
Zayo Group, LLC	$9,326	0.04%	1	0.05%
Terremark NA	$4,000	0.02%	2	0.09%

Hurricane Electric:
- $225K- 12 lines ented usage not =1 for MRC. Usage should be 1 for MRC.(i.e. $11250, Jan. Inv.)

XO Communications:
- $76.3K - 47 lines entered UOM=Mb for UBC. It should be Mbps for transit UBC. (i.e. $1618.28, Jan.Inv.)
- $195 - 2 lines ented MRC as UBC incorrectly. (i.e. $150, Feb. Inv.)

Comcast Cable:
- $75K - 2 lines entered UBC as MRC. (i.e. $30943.35, Jan.Inv.)

IP Transit: Invoice Error

Top 5 Vendors Break Down by Error Value
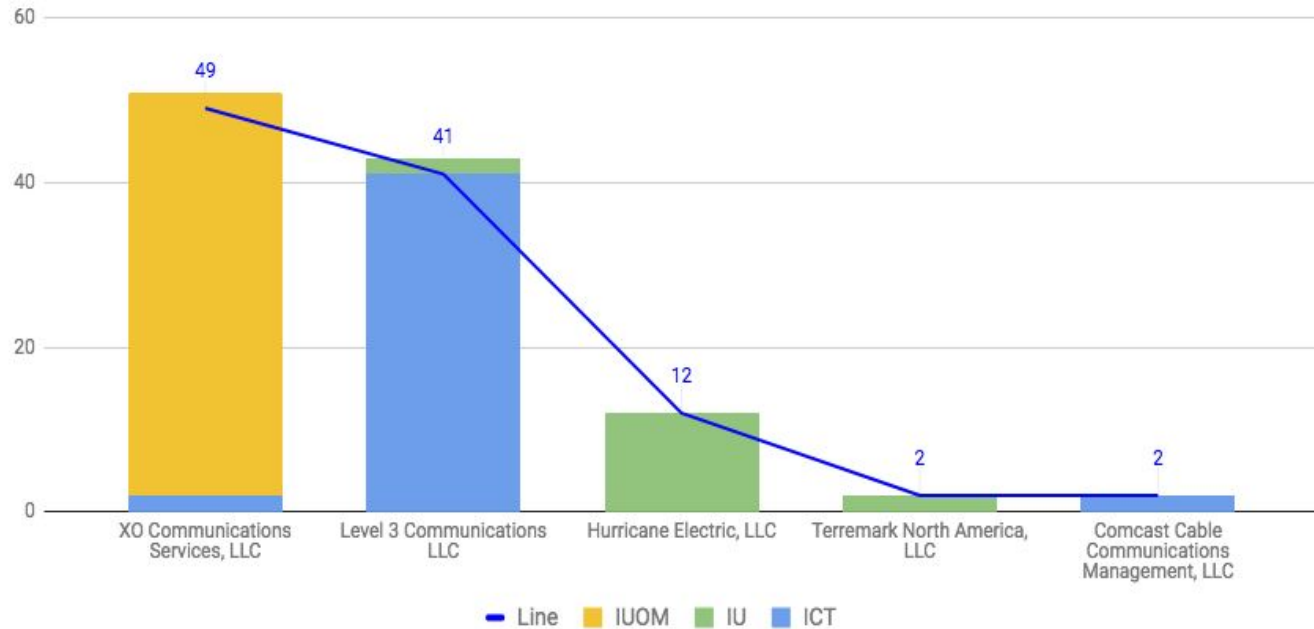
IP Transit: Invoice Error

MRC Spend Adjustment

Methodology:
- MRC items with identified service or charge type errors are removed from MRC spend.Other items that identified as MRC are added to MRC spend.
- For non-data entry error findings, allocate MRC per billing period accordingly.
- The output will be the result in a more ideal circumstance when data entry error is fixed and vendors bill following our method.

Google
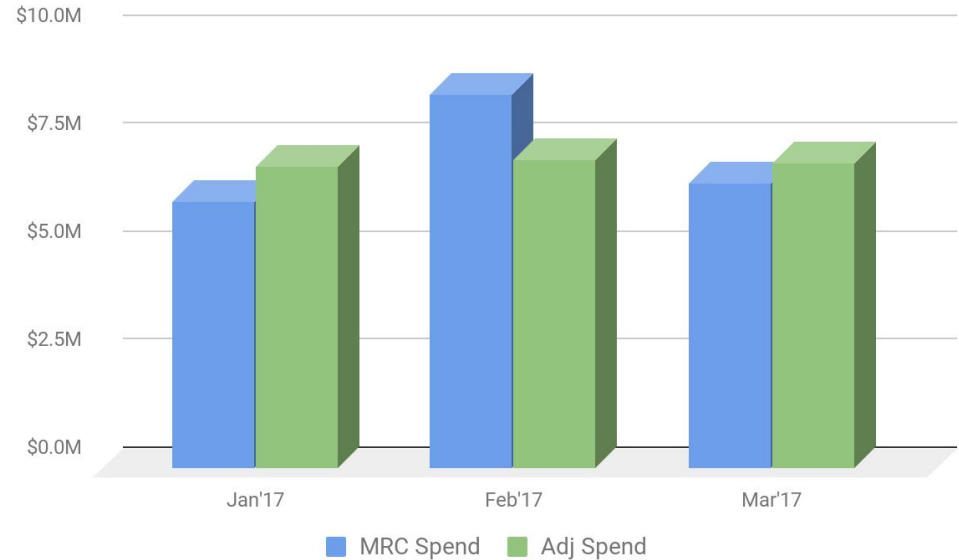
IP Transit: Invoice Error

MRC Spend Adjustment

Jan'17 Invoice:	$6,149,560

QA MRC Adjustment	$370,654
China Netcom Beijing: (Feb.Inv.)	$489,101
CID: BGP Port	
Billing Dec'16 to Mar'17 in Feb'17	
Broadband Hosting BV: (Dec.Inv.)	$10,164
CID: NLIX-1	
Billing quarterly in Dec'16, Mar'17...	
Torix : (Jan.Inv.)	($24,643)
CID:50152 SO1398	
Billing Jan'17 to Dec'17 in Jan'17	

Jan'17 Invoice Adjusted:	$6,994,836

Feb'17 Invoice:	$8,647,106

QA MRC Adjustment	($43,501)
China Netcom Beijing:(Feb.Inv.)	($1,467,302)
CID: BGP Port	
Billing Dec'16 to Mar'17 in Feb'17	
Broadband Hosting BV: (Dec.Inv.)	$10,164
CID: NLIX-1	
Billing quarterly in Dec'16, Mar'17...	
Torix : (Jan.Inv.)	$2,240
CID:50152 SO1398	
Billing Jan'17 to Dec'17 in Jan'17	

Feb'17 Invoice Adjusted:	$7,148,707

Mar'17 Invoice:	$6,574,732

QA MRC Adjustment	$772
China Netcom Beijing: (Feb.Inv.)	$489,101
CID: BGP Port	
Billing Dec'16 to Mar'17 in Feb'17	
Broadband Hosting BV: (Dec.Inv.)	($20,293)
CID: NLIX-1	
Billing quarterly in Dec'16, Mar'17...	
Torix : (Jan.Inv.)	$2,240
CID:50152 SO1398	
Billing Jan'17 to Dec'17 in Jan'17	

| Mar'17 Invoice Adjusted:	$7,046,552

IP Transit: Invoice Error Trending
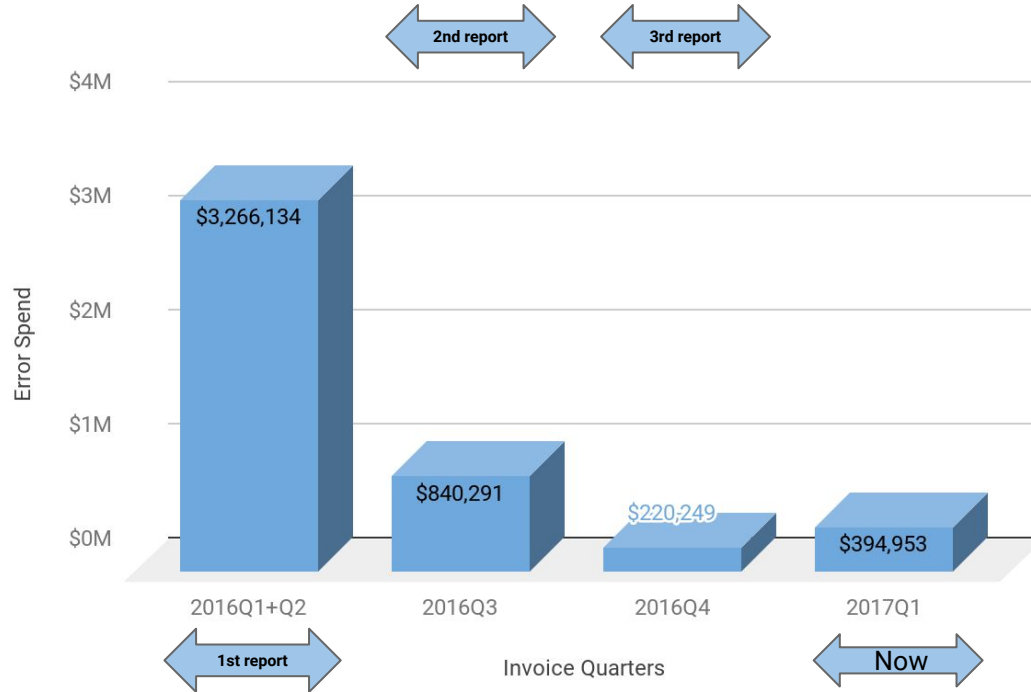
Cross Connect: 2016 Review
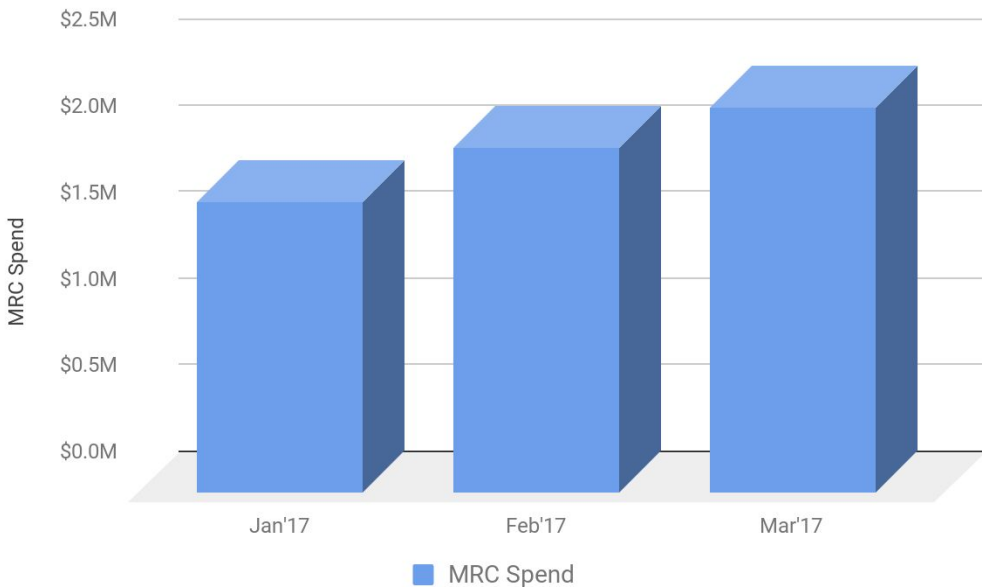
2016 Error Spend in 2017Q1:

- 690 errors were found from previous QA report in Jul'17.
  - 367 fixed.
  - 323 remains.
    - 173 assigned to Oliver
    - 127 assigned to Roxanne
    - 23 assigned to Justine

- 470 line items has been loaded in RVM after previous QA report for 2016 invoices. 15 QA errors has been found.

Not Yet Fixed
14.5%

$752,245
323 Lines

$4,451,097
367 Lines

Fixed
85.5%

Google
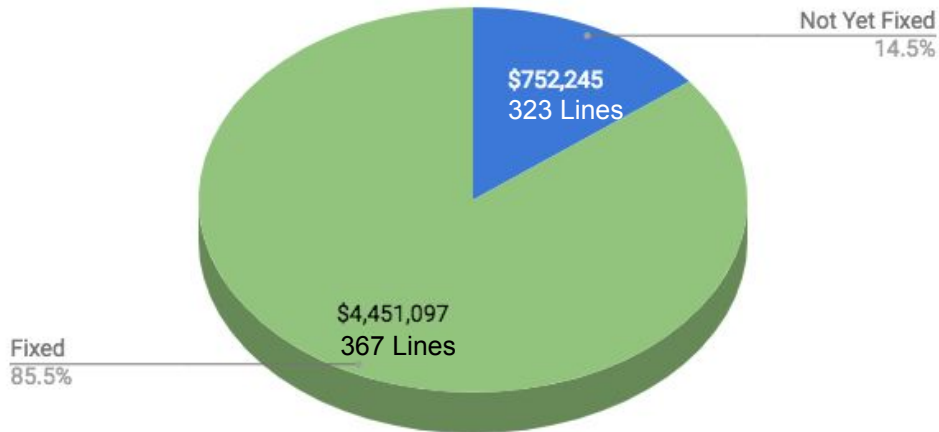
Cross Connect: 2017 Scope

Original MRC Spend

1. Review details by cross connect specific rules (*i.e. Cross Connect no UBC*).
2. Analyze fluctuations of spend month-to-month (*i.e. JAN to FEB $500K variance*).

Cross Connect: Invoice Error

Short Term	Error Type
IST	Incorrect Service Type
ICT	Incorrect Charge Type
IU	Incorrect Usage
IUOM	Incorrect Unit Of Measure
ER	Spend >2000 or unidentified amount

Highlight:

- 50% are errors that entering charge type incorrectly.
  - 149 line items were "MRC" entered as NRC or UBC incorrectly.

- 42% are errors that entering Service Type incorrectly.
  - 70 line items were Dark Fiber service entered as "Cross Connect" incorrectly.

Month	IST	ICT	IU	IUOM	ER	Error Spend
Jan'17	29	133	1	1	10	$232,739
Feb'17	52	13	1	1	6	$409,693
Mar'17	56	17	1	1	6	$486,575
Grand Total	**137**	**163**	**3**	**3**	**22**	**$1,129,007**

Cross Connect: Invoice Error

QA triggers for cross connect:

- MRC > $2,000
- NRC > $0
- UBC, all

Month	Error Spend	Invoice Spend Analyzed	ER Spend % (of Analyzed Spend)
Jan'17	$232,739	$264,894	87.86%
Feb'17	$409,693	$439,737	93.17%
Mar'17	$486,575	$539,608	90.17%
Total	**$1,129,007**	**$1,244,239**	**90.74%**

- Total invoice spend $5.7M
  - Overall error spend % : 19.85%

Google

Cross Connect: Invoice Error

Vendor Name	Error Spend	% Error Spend	Error Line	% Error Line
Telia Carrier U.S. Inc.	$252,105	4.43%	31	1.73%
Emirates Telecommunications	$203,691	3.58%	27	1.50%
Equinix (Netherlands) BV	$119,110	2.09%	5	0.28%
Tata Communications (America)	$68,557	1.21%	4	0.22%
ISIX Communications LLP	$59,516	1.05%	14	0.78%

Telia Carrier U.S. Inc.:
- $119K - 6 lines with Rack service were entered as Cross Connect incorrectly.(i.e. €19,635 EUR, Mar.Inv.)
- $118K - 24 lines with Dark Fiber service were entered as Cross Connect incorrectly. (i.e. €11,250 EUR, Jan. Inv.)
- $14.8K - 1 line with Colocation service were entered as Cross Connect incorrectly.(i.e. €13,950 EUR Mar.Inv.)

Emirates Telecommunications:
- $186K - 24 lines with Transport service were entered as Cross Connect incorrectly. (i.e. $1618.28, Jan.Inv.)
- $18K - 3 lines cross connect MRC charged over $2,000 (i.e. $5,977, Jan. Inv.)

Cross Connect: Invoice Error

Top 5 Vendors Break Down by Error Lines
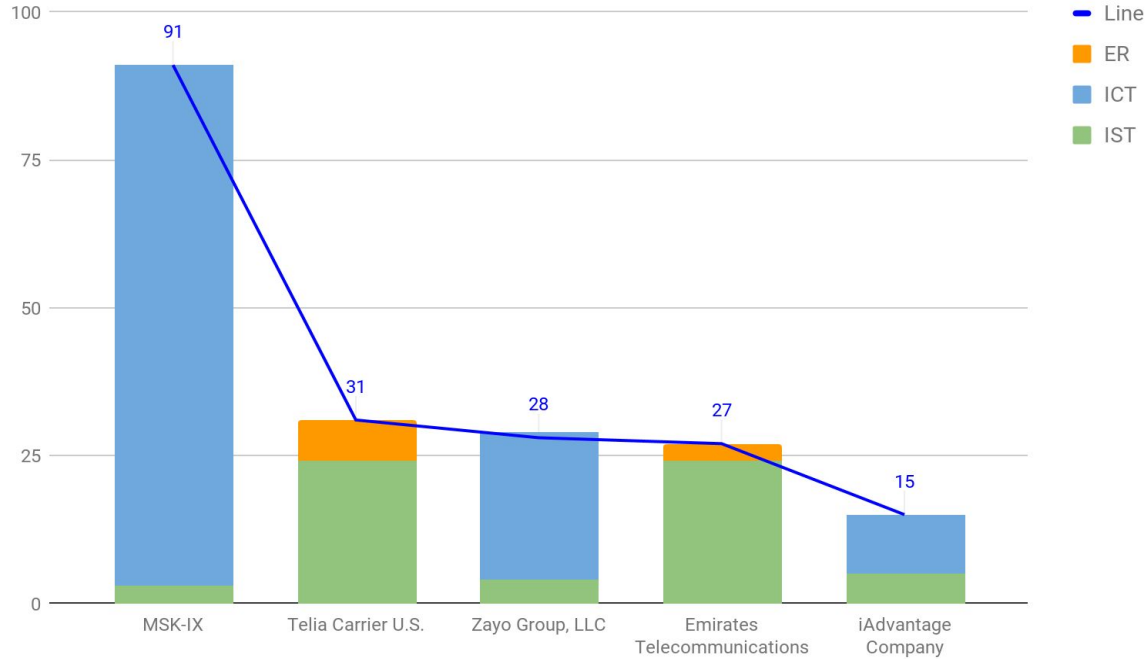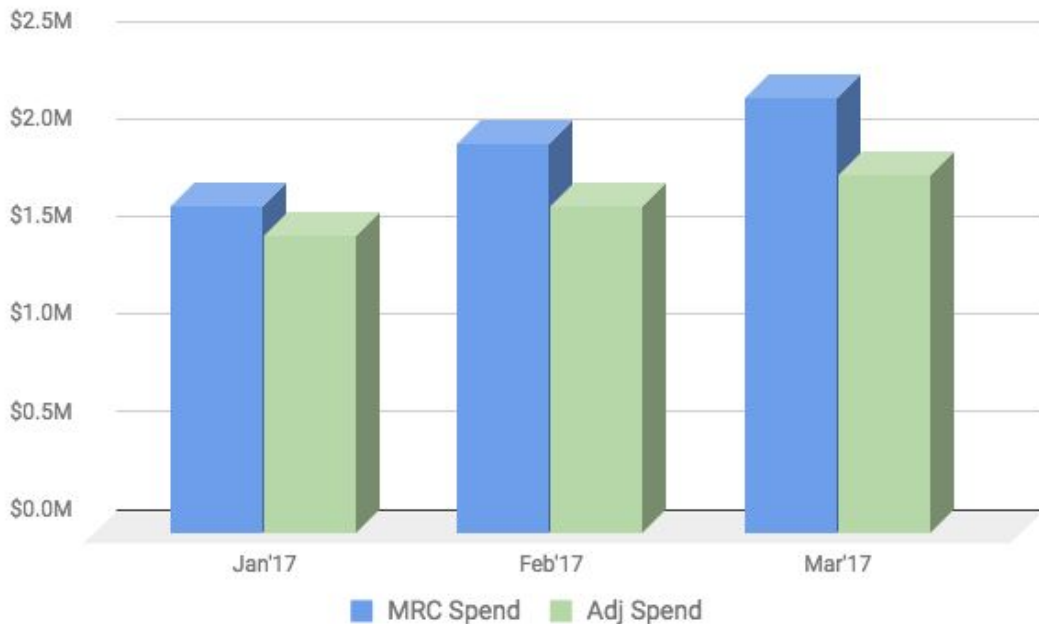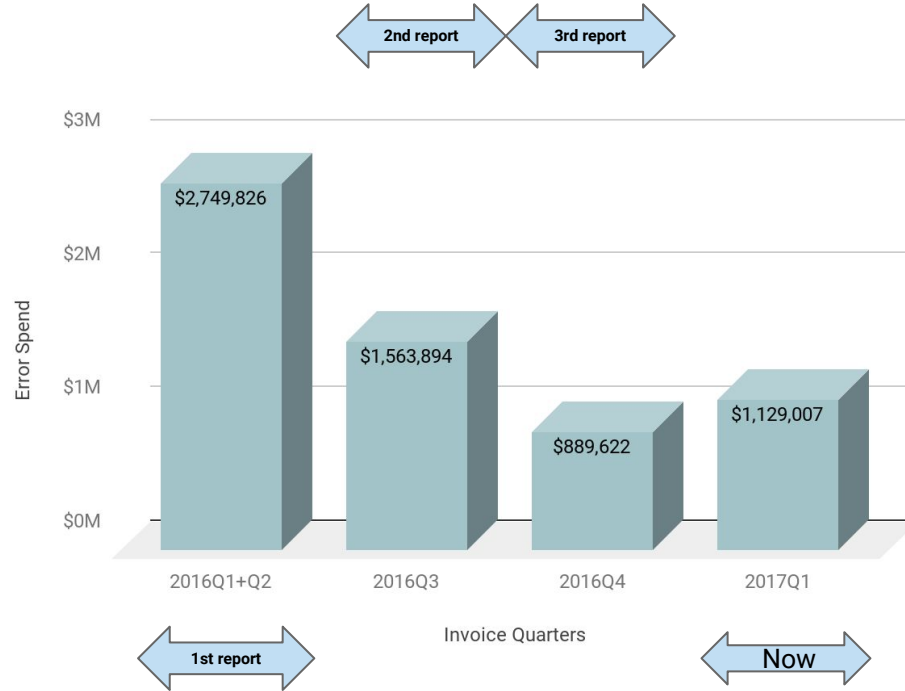
Cross Connect: Invoice Error

Methodology:

- MRC items with identified service or charge type errors are removed from MRC spend.

- Other items that identified as MRC are added to MRC spend.

Cross Connect: Invoice Error Trending

THANK YOU

Any questions?