

NTQR

Network Traffic & Quality Reports

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What is NTQR?

NTQR is a web application for monitoring the capacity and the traffic of Voice, VoIP and IMS networks. It provides network capacity planner and network operation & management with traffic analysis data and network performance information.

NTQR generates reports based on the switch traffic measurement, device logs, CDR (Call Detail Record) and port allocation data. Several reports are available for the network capacity management and network quality monitoring.

The development the NTQR application was started in 2001. It has been growing since then with new features accompanying the evolution of the networks.

The focus of the development has been the web-based applications that work as well as they look, which is essential for the users to enhance the way doing the daily business. The approach is to find creative ways to design web portal that look nice and work for everyone.

NTQR is developed to provide a single environment to support regional network planning and traffic engineering across different countries and networking technologies (Nortel, Siemens, Cisco, Sonus).

NTQR Modules

NTQR comprises of several modules. Following are the most used modules and are explained in the next slides:

- Trunkgroup Traffic Reports
- Network Quality Reports
- Germany Transit Traffic Analysis
- Cisco Monitoring
- Sonus Monitoring

Module “Trunkgroup Traffic Reports”

Incorporate trunkgroup description, categories and tags

Search trunkgroups

Manage trunkgroups in the watchlist

Alert notification on trunkgroup faults

Generate monthly capacity reports

How can I manage more than 25,000 trunkgroups of a large pan-European network without tools? It was the question raised by a desperate network planning engineer. NTQR was developed to help users monitor huge number of trunkgroups. User can manage trunkgroups in her/his watchlists. NTQR provides reports that show historical data of traffic volume, call statistics, trunk usage, trunk status etc. of trunkgroups. It can help us detect traffic flow problems such as out-of-service trunks, all trunk busy conditions, or call blocking which ensures uninterrupted voice services to the customers. Customers sometimes ask for reports for their PBX trunks. Such PBX traffic report can be generated by NTQR in a very easy way.

Module “Trunkgroup Traffic Reports”

NTQR
Network Traffic & Quality Reports

Trunkgroup/PBX Traffic Report

Switch Summary | Monthly Summary | **TGRP/PBX By Switch** | TGRP/PBX By Category | TGRP/PBX By Tag | Watchlist | Search | Data Availability

Home | Logout | User: mabduh | Admin | Select Module...

Trunk Traffic | Trunk Editor

Trunk Type: *ANY* | Daily Busyhour Traffic | We 2009-09-02 | Download

Prev 2 3 4 5 6 7 8 9 10 11 ... 50 Next | Page 1 of 50 | Total Rows 1979

NO.	NAME	ID	TYPE	MODE	CATEGORY	DESCRIPTION	CCTs TOTAL (EI EQUIV.)	CCTs IN SERV. (EI EQUIV.)	TR. (EI EQUIV.)	UTILIZATION
1	3IGE_001_2W	2968	PR1	2W	CORPORATE	3E GESTION SA	30 (1)	30 (1)	1	3%
2	3SIN_001_2W	2937	PR1	2W	CORPORATE	3S INFORMATIQUE	30 (1)	30 (1)	3	10.0%
3	9CEG_001_0G	833	C7	2W	NAT	Vegetal - Nds Exchange COLT to NC	277 (9)	277 (9)	274	46.6%
4	9CEG_MI3_IC	836	C7	2W	NAT	Vegetal - Nds Exchange NC to COLT	341 (11)	341 (11)	159	45.5%
5	9CEG_MI3_0G	837	C7	2W	NAT	Vegetal - Nds Exchange COLT to NC	310 (10)	310 (10)	141	13.3%
6	AAAR_001_2WDSL	2112	PR1	2W	INT	ALI AHMADI ARMAN (DSL)	30 (1)	30 (1)	4	13.3%
7	AABA_002_2WDSL	3092	PR1	2W	CORPORATE	AABAS INTERACTIVE	30 (1)	30 (1)	29	10.0%
8	AABA_003_2WDSL	3093	PR1	2W	CORPORATE	AABAS INTERACTIVE	30 (1)	30 (1)	27	33.3%
9	AABA_004_2WDSL	3295	PR1	2W	CORPORATE	AABAS INTERACTIVE	30 (1)	30 (1)	10	56.7%
10	AABA_005_2WDSL	2635	PR1	2W	CORPORATE	AABAS INTERACTIVE	30 (1)	30 (1)	17	36.7%
11	AABA_006_2WDSL	2636	PR1	2W	CORPORATE	AABAS INTERACTIVE	30 (1)	30 (1)	11	0.0%
12	AARP_001_2WDSL		PR1	2W	CORPORATE	AARPI MONTESPAR (DSL)	30 (1)	0 (0)	INB	0.0%
13	AAST_001_2WDSL	3058	PR1	2W	CORPORATE	AASTUCE .COM	30 (1)	30 (1)	2	6.7%
14	AAST_002_2WDSL	3057	PR1	2W	CORPORATE	AASTUCE .COM	30 (1)	30 (1)	1	3.3%
15	ABCD_001_IC	2203	PR1	2W	CORPORATE	ABRO BUSINESS COMMUNICATIONS	30 (1)	30 (1)	4	13.3%
16	ABCS_001_2WDSL	2928	PR1	2W	CORPORATE	ABC SYSTEMES ET FORMATION (DSL)	30 (1)	30 (1)	4	13.3%
17	ABPL_001_2WDSL	2212	PR1	2W	CORPORATE	AB PLUS (DSL)	30 (1)	30 (1)	3	10.0%
18	ABPL_002_2WDSL	2095	PR1	2W	CORPORATE	AB PLUS (DSL)	30 (1)	30 (1)	LO	0.0% (ATB)
19	ABPL_003_2WDSL	2243	PR1	2W	CORPORATE	AB PLUS (DSL)	30 (1)	30 (1)	2	6.7%
20	ABRP_PR1_2WDSL	2961	PR1	2W	CORPORATE	ABR PHARMA	30 (1)	30 (1)	1	3.3%
21	ABSB_PR1_2WDSL	2103	PR1	2W	CORPORATE	ABSES - MFI	30 (1)	0 (0)	INB	0.0%
22	ABTE_001_2W	3660	PR1	2W	CORPORATE	ABM TECHNOLOGIES	30 (1)	30 (1)	8	26.7% (ATB)
23	ABTE_002_2W	2992	PR1	2W	CORPORATE	ABM TECHNOLOGIES	30 (1)	30 (1)	14	46.7%
24	ACCE_001_2W		INT	2W	CORPORATE	ACCESS PLUS	30 (1)	30 (1)	0	0.0%
25	ACOR_001_2W		PR1	2W	CORPORATE	ACCOR SERVICES FRANCE SAS	30 (1)	0 (0)	INB	0.0% (ATB)

Use of color coding for quick recognition:
Overloaded or faulty trunkgroups are shown with red bar

Link for adding trunkgroup to watchlist

Display trunkgroups by switch

Module "Trunkgroup Traffic Reports"

NTQR

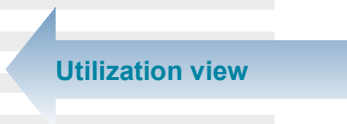
Traffic History

Country: **France**
 Switch: **WAT (Paris - Wattignies)**
 Trunk Name: **COLT_FRK_2W**
 Description: **COLT FRANKFURT Entrant**
 Live Date: **2007-07-03**

Utilization [dropdown] We 2009-09-02 Daily View Raw Data

Hint: To see the current hourly traffic select the date of today.

DATE/TIME	CCTs TOTAL (E1 EQUIV.)	CCTs IN SERV. (E1 EQUIV.)	TRAFFIC [ERL]	UTILIZATION
00:00	434 (14)	434 (14)	12	2.8%
01:00	434 (14)	434 (14)	8	1.8%
02:00	434 (14)	434 (14)	3	0.7%
03:00	434 (14)	434 (14)	5	1.2%
04:00	434 (14)	434 (14)	4	0.9%
05:00	434 (14)	434 (14)	2	0.5%
06:00	434 (14)	434 (14)	4	0.9%
07:00	434 (14)	434 (14)	7	1.6%
08:00	434 (14)	434 (14)	28	6.5%
09:00	434 (14)	434 (14)	136	31.3%
10:00	434 (14)	434 (14)	389	89.6% (ATB=252)
11:00	434 (14)	434 (14)	414	95.4% (ATB=112)
12:00	434 (14)	434 (14)	205	47.2%
13:00	434 (14)	434 (14)	131	30.2%
14:00	434 (14)	434 (14)	251	57.8%
15:00	434 (14)	434 (14)	267	61.5%
16:00	434 (14)	434 (14)	275	63.4%
17:00	434 (14)	434 (14)	221	50.9%
18:00	434 (14)	434 (14)	148	34.1%
19:00	434 (14)	434 (14)	69	15.9%
20:00	434 (14)	434 (14)	32	7.4%
21:00	434 (14)	434 (14)	33	7.6%
22:00	434 (14)	434 (14)	24	5.5%
23:00	434 (14)	434 (14)	10	2.3%



ATB (All Trunk Busy)
 A number of call attempts could not be routed through the current trunk because no idle circuit is available at that time. The calls might be routed to alternative trunk if there is any.

Trunk usage status:

ATB (All Trunk Busy):

Number of call attempts that could not be routed through the current trunk because available. The calls might be routed to alternative trunk if there is any.

Notice: ATB can also occur on trunks with low utilization. In such a case there probably was a high number of call attempts in a short time where no circuit was available to route the calls at the time. Whereas the trunk utilization is calculated as an average of one hour interval.

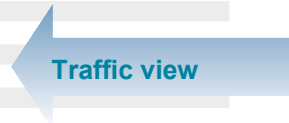
NTQR

Traffic History

Country: **Germany**
 Switch: **CBLN1 (Berlin 1)**
 Trunk Name: **B1XDF1**
 Description: **COLT DUESSELDORF**
 Live Date: **Unknown**

Utilization [dropdown] We 2009-09-02 Daily View Utilization Chart | Traffic Chart

DATE/TIME	CCTs TOTAL (E1 EQUIV.)	CCTs IN SERV. (E1 EQUIV.)	UTILIZATION	TRAFFIC [ERL] INCOMING/OUTGOING
00:00	401 (13)	401 (13)	6.5%	21/5
01:00	401 (13)	401 (13)	2.0%	4/4
02:00	401 (13)	401 (13)	1.2%	3/2
03:00	401 (13)	401 (13)	1.2%	3/2
04:00	401 (13)	401 (13)	1.0%	2/2
05:00	401 (13)	401 (13)	0.7%	1/2
06:00	401 (13)	401 (13)	1.0%	1/3
07:00	401 (13)	401 (13)	2.5%	3/7
08:00	401 (13)	401 (13)	13.7%	24/31
09:00	401 (13)	401 (13)	38.9%	84/72
10:00	401 (13)	401 (13)	68.1%	172/101
11:00	401 (13)	401 (13)	83.8%	235/101
12:00	401 (13)	401 (13)	76.3%	232/74
13:00	401 (13)	401 (13)	73.3%	223/71
14:00	401 (13)	401 (13)	82.5%	251/80
15:00	401 (13)	401 (13)	81.5%	247/80
16:00	401 (13)	401 (13)	83.3%	261/73
17:00	401 (13)	401 (13)	72.6%	227/64
18:00	401 (13)	401 (13)	68.6%	229/46
19:00	401 (13)	401 (13)	68.1%	226/47
20:00	401 (13)	401 (13)	55.6%	179/44
21:00	401 (13)	401 (13)	41.9%	139/29
22:00	401 (13)	401 (13)	28.9%	103/13
23:00	401 (13)	401 (13)	15.2%	54/7
				Proportion 75.3% : 24.7%



Display of traffic in Erlang split in incoming and outgoing

History of trunkgroup traffic & utilization

Module “Trunkgroup Traffic Reports”

NO.	REGION	COUNTRY	SWITCH	TYPE	MONTH	CATEGORY	UTILIZATION
1	CR	Austria	CLT01	EWSD	September 2009	COLT	34.0% N/A
2	CR	Austria	CLT01	EWSD	September 2009	IMT	0.0% N/A
3	CR	Austria	CLT01	EWSD	September 2009	INT	26.3% N/A
4	CR	Austria	CLT01	EWSD	September 2009	NAT	49.0% 60%-65%
5	NR	Belgium	BRU	DMS	September 2009	COLT	46.3% N/A
6	NR	Belgium	BRU	DMS	September 2009	INT	34.7% N/A
7	NR	Belgium	BRU	DMS	September 2009	NAT	56.3% 60%-65%
8	NR	Denmark	DAN01	EWSD	September 2009	COLT	28.9% N/A
9	NR	Denmark	DAN01	EWSD	September 2009	IMT	0.0% N/A
10	NR	Denmark	DAN01	EWSD	September 2009	INT	50.3% N/A
11	NR	Denmark	DAN01	EWSD	September 2009	NAT	42.6% 65%-70%
12	SR	France	PAT	DMS	September 2009	COLT	65.9% N/A
123	NR	United Kingdom	PBL	DMS	September 2009	IMT	66.7% 75%-
124	NR	United Kingdom	BGL	DMS	September 2009	IMT	66.1% 75%-
125	NR	United Kingdom	KJL	DMS	September 2009	IMT	75.4% 75%-
126	NR	United Kingdom	MBT	DMS	September 2009	IMT	67.2% 75%-
127	NR	United Kingdom	CRT	DMS	September 2009	IMT	67.7% 75%-
128	NR	United Kingdom	KC1	DMS	September 2009	IMT	78.8% 75%-
129	NR	United Kingdom	CRT	DMS	September 2009	INT	10.3% N/A
130	NR	United Kingdom	KC1	DMS	September 2009	INT	39.2% N/A
131	NR	United Kingdom	MBT	DMS	September 2009	ISP/CVX	0.0% 45%-55%
132	NR	United Kingdom	PBL	DMS	September 2009	NAT	65.9% 65%-70%
133	NR	United Kingdom	BGL	DMS	September 2009	NAT	54.3% 65%-70%
134	NR	United Kingdom	KJI	DMS	September 2009	NAT	86.0% N/A

Utilization Legends:

- █ Utilization > max. target
- █ Utilization is within target
- █ Utilization < min. target
- █ Target

Network usage is the KPI for the network capacity management. It can be monitored easily in NTQR.

To minimize the network cost e.g. leased line cost the network must be dimensioned properly. Underutilized trunks causes unnecessary cost.

Example:
The Interconnect-trunks should have the average usage of 80%. The monthly capacity reports show the actual average trunk utilization compared to the target utilization. If the actual utilization exceeds the target then there is a need to expand the capacity. If the current utilization is below the target some circuits may need to be ceased.

Monthly reports

Module “Trunkgroup Traffic Reports”

Utilization threshold can be specified for each trunkgroup. The user receives alert emails if the current utilization exceeds the threshold.

Trunkgroup/PBX Traffic Report

Switch Summary | Monthly Summary | TGRP/PBX By Switch | TGRP/PBX By Category | TGRP/PBX By Tsg | Watchlist | Search | Data Availability

Daily Busyhour Traffic | We 2009-09-02 | Download

Watchlist Folder

Folder	No.	COUNTRY	SWITCH	NAME	DESCRIPTION	CCTs TOTAL (EL EQUIV.)	UTILIZATION	UTIL THRESHOLD
Cisco Reseller VoIP (2)	1	Germany	CHAN1	A1XFA3	FOLT IMS GSR FRA RETAIL	124 (4)	56.5%	80%
Cisco VoIP Access FIC (2)	2	Germany	CHAN1	A1XZA3	FOLT IMS GSR ZRM RETAIL	124 (4)	0.0%	80%
Cisco VoIP Austria (4)	3	Germany	CBLN1	B1XFA3	FOLT IMS GSR FRA RETAIL	248 (8)	8.1%	80%
Cisco VoIP Belgium (4)	4	Germany	CBLN3	B3XZA3	FOLT IMS GSR ZRM RETAIL	248 (8)	0.4%	80%
Cisco VoIP Denmark (4)	5	Germany	CDUS1	D1XFA3	FOLT IMS GSR FRA RETAIL	155 (5)	1.1.0%	80%
Cisco VoIP France (8)	6	Germany	CDUS1	D1XZA3	FOLT IMS GSR ZRM RETAIL	154 (5)	0.6%	80%
Cisco VoIP Germany (4)	7	Germany	COLT1	F1XFA1	FOLT IMS GSR FRA WHOLESALE	743 (24)	3.6%	
Cisco VoIP Ireland (4)	8	Germany	COLT1	F1XFA3	FOLT IMS GSR FRA RETAIL	247 (8)	1.2%	
Cisco VoIP Italy (8)	9	Germany	COLT1	F1XFA8	FOLT IMS GSR FRA PREMIUM	124 (4)	0.8%	
Cisco VoIP Netherlands (4)	10	Germany	COLT1	F1XZA1	FOLT IMS GSR ZRM WHOLESALE	744 (24)	2.8%	
Cisco VoIP Portugal (4)	11	Germany	COLT1	F1XZA3	FOLT IMS GSR ZRM RETAIL	217 (7)	1.8%	
Cisco VoIP Spain (4)	12	Germany	COLT1	F1XZA8	FOLT IMS GSR ZRM PREMIUM	93 (3)	3.2%	
Cisco VoIP Sweden (4)	13	Germany	CFFM3	F3XZA3	FOLT IMS GSR ZRM RETAIL	309 (10)	1.0%	
Cisco VoIP Switzerland (4)	14	Germany	CFFM4	F4XFA3	FOLT IMS GSR FRA RETAIL	310 (10)	3.9%	
Cisco VoIP UK (8)	15	Germany	CHBG1	H1XFA3	FOLT IMS GSR FRA RETAIL	186 (6)	3.8%	
Genesys (5)	16	Germany	CHBG2	H2XZA3	FOLT IMS GSR ZRM RETAIL	196 (6)	1.1%	
IMS Austria (3)	17	Germany	CLTK1	K1XFA3	FOLT IMS GSR FRA RETAIL	124 (4)	4.0%	
IMS Belgium (5)	18	Germany	CLTK1	K1XZA3	FOLT IMS GSR ZRM RETAIL	124 (4)	0.0%	
IMS Denmark (6)	19	Germany	CNCH1	M1XFA3	FOLT IMS GSR FRA RETAIL	124 (4)	10.5%	
IMS France (10)	20	Germany	CNCH2	M2XZA3	FOLT IMS GSR ZRM RETAIL	124 (4)	0.0%	
IMS Germany (22)	21	Germany	CSTG1	S1XFA3	FOLT IMS GSR FRA RETAIL	124 (4)	9.7%	
IMS Ireland (4)	22	Germany	CSTG1	S1XZA3	FOLT IMS GSR ZRM RETAIL	124 (4)	0.8%	

Move selected trunkgroups to folder: Unfiled

Notice that trunks will not be displayed if traffic data of the selected date is missing. In that case you may want to

Notification

- Entries in the watchlist are monitored every day. You may want to get notified if the trunk utilization or ASR is reaching the threshold. Click [here](#) to edit the trunk utilization and ASR threshold.
- Send email on utilization/ASR alert
- Reports of trunks indicating fault or trouble can be generated and sent via email. These trunks are identified as follows:
 - The number of circuits in service is less than the total circuits.

Users of NTQR are from different departments. Each user is interested in specific trunks. The national interconnect managers are interested in Interconnect-trunks with national carriers whereas for the traffic management team the international trunk are more relevant.

To fulfil those requirements NTQR provides the Watchlist feature. The user can put trunkgroups to her/his watchlist folder. The trunkgroups can be moved to other watchlist folder or removed from the folder. Having trunkgroups in the watchlist the user can find the trunkgroups and generate the traffic reports quickly.

Manage trunkgroups in the Watchlist

Module “Network Quality Reports”

Monitor ASR, NER,
ACD by destination,
routing plan, supplier

Identify bad
suppliers

Real-time alert
notification on
ASR

Call routing
adjustment

Keep revenue for voice services high and increase customer trust with SLA assurance! NTQR performs real-time monitoring of network quality parameters ASR (Answer Seizure Ratio), NER (Network Effectiveness Ratio) and PDD (Post Dial Delay) per destination and per routing plan e.g. Wholesale, Retail. A real-time alert notification is available for network operation engineer. He is responsible for optimizing call routing in term of voice quality and economy, but also for routing adjustment of calls with low ASR to guarantee SLA's and to reduce revenue loss.

Module “Network Quality Reports”

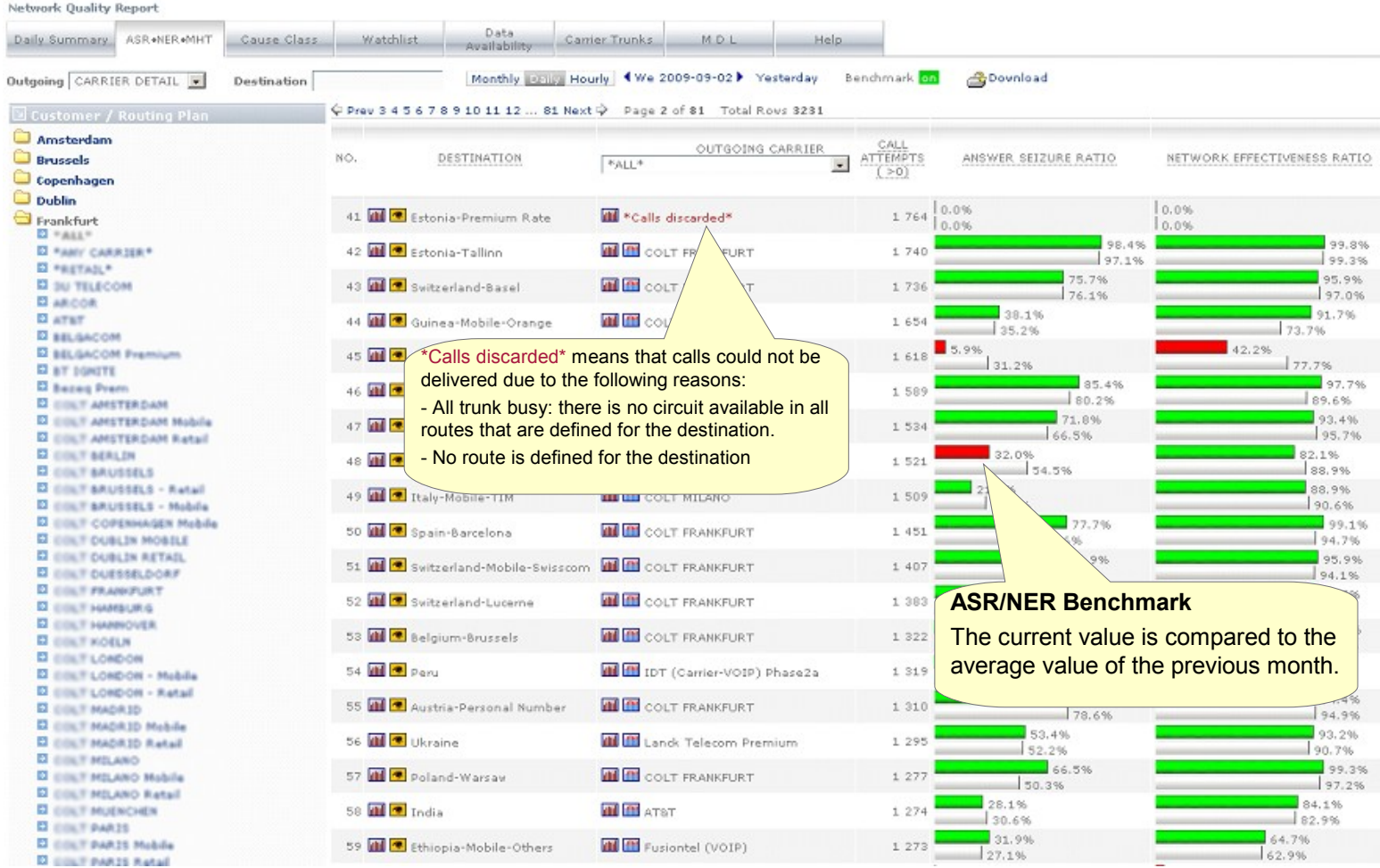
NO.	DESTINATION	CARRIER NAME ***	CALL ATTEMPTS (>1000)	ASR
1	Spain-Freephone	COLT Madrid BW	3 490	0.1%
2	Egypt	COLT Frankfurt Retail	1 425	3.4%
3	Canada	COLT FRANKFURT	1 072	4.2%
4	Bangladesh-Mobile-Others	COLT IMS GSX PAR PREMIUM	1 493	4.7%
5	Bangladesh-Mobile-Grameen	COLT IMS GSX PAR PREMIUM	2 366	5.1%
6	Bangladesh-Mobile-Others	COLT IMS GSX LON PREMIUM	1 553	5.2%
7	Bangladesh-Mobile-Grameen	COLT IMS GSX LON PREMIUM	2 408	5.2%
8	Sri Lanka	COLT Frankfurt Mobile	1 246	7.4%
9	Ethiopia-Mobile-Addis Ababa	Samtel	2 520	10.5%
10	Iran-Mobile	NOBEL (Carrier VoIP) Ph2	1 203	12.2%
11	Thailand	COLT FRANKFURT	3 978	13.2%
12	Guinea-Mobile-Sotelguy	COLT STOCKHOLM - Wholesale	1 038	14.2%
13	Zimbabwe-Mobile-Econet	Arbnet	16 027	15.5%
14	Armenia-Erevan	COLT AMSTERDAM	22 603	15.6%
15	Monaco-Mobile-KFOR	COLT MILAN	1 613	15.7%
16	Jamaica-Mobile-Digicel	VINCULUM (Carrier VoIP) Ph2	13 016	16.4%
17	Australia	COLT IMS GSX PAR WHOLESAL	7 284	20.1%
18	Australia	COLT IMS GSX LON WHOLESAL	7 170	20.8%
19	Tunisia-Mobile-Others	COLT MILAN	2 792	21.6%
20	Bangladesh-Mobile-Others	Telco214 (Carrier VoIP) Ph2	3 124	22.5%
Total			1 503 700	56.4%

Lower ASR means revenue loss.

Traffic management team is the main user of Network Quality Reports. The team is responsible for the routing management of international calls.

Destinations with poor ASR

Module “Network Quality Reports”



ASR, NER by destination

Module “Network Quality Reports”

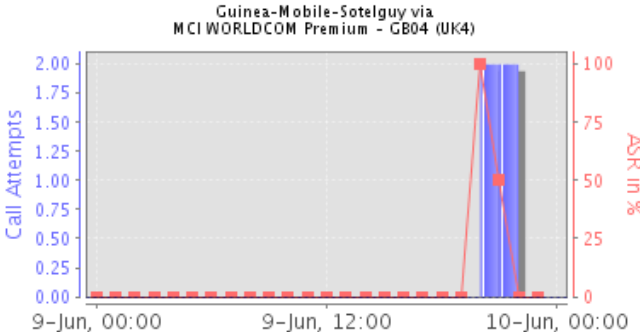
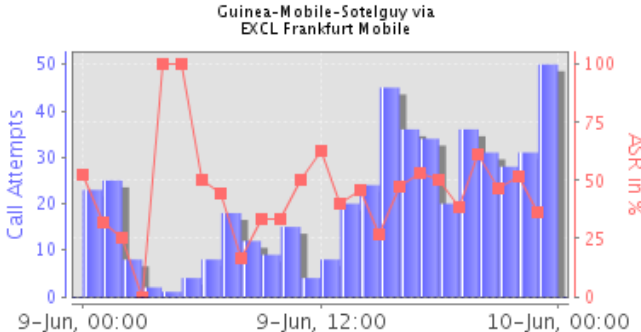
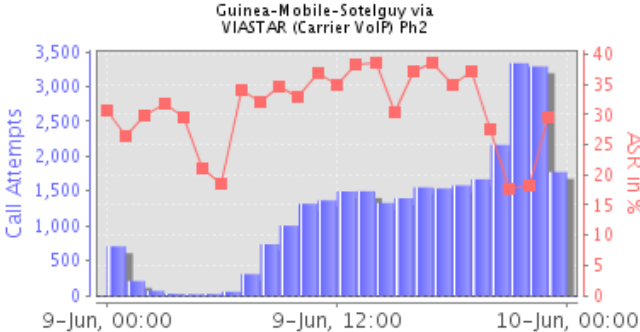
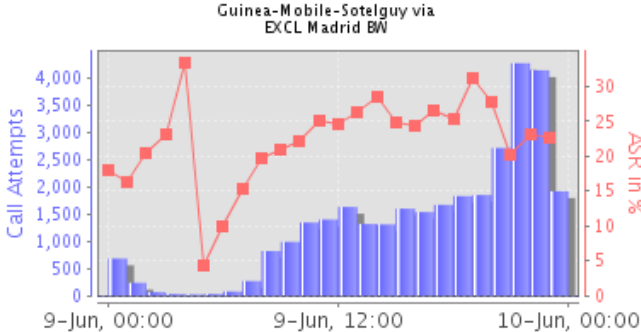
Network Quality Statistics

Gateway: London
 Routing Plan: *ALL*
 Destination: Guinea-Mobile-Sotelguy
 Prefix Codes: 22460

Monthly Daily **Hourly** ◀ Tu 2009-06-09 ▶

⬆ Back to standard display.

Historical trends of the traffic quality are provided for each supplier over time periods allowing any preventative action.



Comparison of ASR of different suppliers

Module “Germany Transit Traffic Analysis”

Charge for transit service is high

The goal is to reduce the transit traffic

Direct routing or routing via interconnect partners e.g. BT, Arcor

Provide transit service to other carriers

By default the calls to subscribers or to service numbers of other network operator are routed via Deutsche Telekom (DTAG). DTAG then forwards the calls to the actual network operator. This call routing service of DTAG is called transit service which causes high costs for the carrier. For this reason the carriers establish interconnect with some network operators to which they can route the calls directly and thus reduce the high charge for transit service via DTAG.

The transit traffic analysis in NTQR is based on CDR. The information regarding the subscriber numbers is available through the number database RDB. The database contains both native and ported numbers of German network operators.

Module “Germany Transit Traffic Analysis”

Mo 2009-06-08 Before

Prev 2 3 4 5 6 7 8 9 Page 1 of 8 Total Rows 402

NO.	OWNER OF THE CALLED NUMBER	TRAFFIC ROUTED VIA	TRAFFIC VOLUME [MINUTES / DAY]	PORTION
1	Arcor AG & Co.KG, Eschborn (D009)	Arcor AG & Co.KG, Eschborn	1 077 246	71.3%
2	Arcor AG & Co.KG, Eschborn (D009)	Deutsche Telekom AG, Bonn	420 275	27.8%
3	BT Germany GmbH & Co. OMS (D012)	BT Germany GmbH & Co. OMS	373 032	91.2%
4	HanseNet Telekommunikation GmbH, Hamburg (D019)	HanseNet Telekommunikation GmbH, Hamburg	267 385	69.8%
5	Telefonica Deutschland GmbH, 33415 Verl (D041)	Deutsche Telekom AG, Bonn	165 074	62.0%
6	Kabel Deutschland Vertrieb und Servic... (D191)	Deutsche Telekom AG, Bonn	133 497	98.4%
7	Verizon Deutschland GmbH, 44149 Dortmund (D008)	Verizon Deutschland GmbH, 44149 Dortmund	114 853	95.8%
8	NETCOLOGNE GmbH, Köln (D004)	NETCOLOGNE GmbH, Köln	101 213	81.0%
9	Telefonica Deutschland GmbH, 33415 Verl (D041)	Telefonica Deutschland GmbH, 33415 Verl	96 913	36.4%
10	HanseNet Telekommunikation GmbH, Hamburg (D019)	Deutsche Telekom AG, Bonn	94 505	24.7%
11	Ventelo GmbH, Köln (D027)	Ventelo GmbH, Köln	94 455	75.7%
12	Broadnet AG, 22083 Hamburg (D137)	Deutsche Telekom AG, Bonn	76 573	99.4%
13	EWE TEL GmbH, Oldenburg (D013)	Deutsche Telekom AG, Bonn	74 935	62.7%
14	Unitymedia NRW GmbH, 50933 Köln (D120)	Deutsche Telekom AG, Bonn	66 057	96.9%
15	freenet Cityline GmbH, Kiel (D015)	freenet Cityline GmbH, Kiel	65 760	51.7%
16	Versatel Süd-Deutschland GmbH, Stuttgart (D011)	Versatel Süd-Deutschland GmbH, Stuttgart	62 764	83.8%
17	3U TELECOM AG, Eschborn (D107)	3U TELECOM AG, Eschborn	62 556	97.1%
18	freenet Cityline GmbH, Kiel (D015)	Deutsche Telekom AG, Bonn	60 114	47.3%
19	Kabel Baden-Württemberg GmbH & Co. KG, ... (D127)	Kabel Baden-Württemberg GmbH & Co. KG, ...	49 846	72.0%

Before the migration of LNP/MNP into IN Teligen system the total portion of transit traffic was ~10%

Fr 2009-08-28 After

Prev 2 3 4 5 6 7 Next Page 1 of 8 Total Rows 315

NO.	OWNER OF THE CALLED NUMBER	TRAFFIC ROUTED VIA	TRAFFIC VOLUME [MINUTES / DAY]	PORTION
1	Arcor AG & Co.KG, Eschborn (D009)	Arcor AG & Co.KG, Eschborn	1 015 170	98.9%
2	BT Germany GmbH & Co. OMS (D012)	BT Germany GmbH & Co. OMS	281 354	98.0%
3	HanseNet Telekommunikation GmbH, Hamburg (D019)	HanseNet Telekommunikation GmbH, Hamburg	249 257	98.0%
4	Telefonica Deutschland GmbH, 33415 Verl (D041)	Telefonica Deutschland GmbH, 33415 Verl	149 668	98.5%
5	Kabel Deutschland Vertrieb und Servic... (D191)	Kabel Deutschland Vertrieb und Servic...	128 905	99.3%
6	Verizon Deutschland GmbH, 44149 Dortmund (D008)	Verizon Deutschland GmbH, 44149 Dortmund	117 835	99.3%
7	NR.NET services GmbH & Co.KG, 24944 F... (D142)	Star Communications GmbH, Frankfurt	91 731	94.5%
8	NETCOLOGNE GmbH, Köln (D004)	NETCOLOGNE GmbH, Köln	91 333	97.3%
9	Ventelo GmbH, Köln (D027)	Ventelo GmbH, Köln	89 886	99.0%
10	EWE TEL GmbH, Oldenburg (D013)	EWE TEL GmbH, Oldenburg	79 092	95.8%
11	freenet Cityline GmbH, Kiel (D015)	freenet Cityline GmbH, Kiel	64 423	99.4%
12	Versatel West-Deutschland GmbH (D000)	Versatel West-Deutschland GmbH	56 229	97.3%
13	3U TELECOM AG, Eschborn (D107)	3U TELECOM AG, Eschborn	55 663	97.1%
14	Kabel Baden-Württemberg GmbH & Co. KG, ... (D127)	Kabel Baden-Württemberg GmbH & Co. KG, ...	52 966	99.1%
15	M-net Telekommunikations GmbH, München (D052)	M-net Telekommunikations GmbH, München	52 609	97.6%
16	Versatel Süd-Deutschland GmbH, Stuttgart (D011)	Versatel Süd-Deutschland GmbH, Stuttgart	45 207	98.2%
17	Unitymedia NRW GmbH, 50933 Köln (D120)	Deutsche Telekom AG, Bonn	44 630	99.2%
18	Versatel Berlin GmbH, Berlin (D049)	Versatel Berlin GmbH, Berlin	43 495	98.3%
19	Broadnet AG, 22083 Hamburg (D137)	Ventelo GmbH, Köln	38 358	98.4%

After the migration of LNP/MNP into IN Teligen system the total portion of transit traffic is now < 1.5%

After the introduction of IN Teligen system as routing engine for LNP/MNP the transit traffic has been reduced drastically.

Module “Germany Transit Traffic Analysis”

Carriers that route transit calls.

Fr 2009-08-28 | Download | Page 1 of 15 | Total Rows 595

NO.	CARRIER	TRANSIT TRAFFIC [MINUTES / DAY]	TOTAL GERMANY FIXED [MINUTES / DAY]	PORTION
1	HANSENET Hamburg TRANSIT	95 700	113 825	84.1%
2	NETCOLOGNE	90 646	320 991	28.2%
3	IN-TELENGE	72 679	124 600	58.3%
4	MNET Nuernberg (NEFKOM)	71 075	257 738	27.6%
5	VSE NET - Geislauren	63 125	251 719	25.1%
6	HL KOMM	57 074	196 471	29.0%
7	MNET Muenchen	56 536	212 459	26.6%
8	VSE NET - Saarbruecken	49 998	205 224	24.4%
9	IN-Teleengce	48 793	84 596	57.7%
10	TELEOS	41 633	135 532	30.7%
11	HTP	36 890	116 773	31.6%
12	ARCOR HBG- Transit	36 536	114 972	31.8%
13	WILHELM.TEL	34 213	110 977	30.8%
14	KABEL BADEN-WUERTEMBERG	31 180	77 809	40.1%
15	KABELFERNSEHEN MUENCHEN SERVICECENTER GMBH & CO. KG	26 164	70 207	37.3%
16	AUCS / IFFONET	21 267	29 405	72.3%
17	HL KOMM - Mobile Routing	20 321	71 329	28.5%
18	WOBKOM	18 058	55 928	32.3%
19	DTAG Berlin (LEZB 30.1)	16 986	642 125	2.6%
20	DTAG Muenchen (LEZB 09.1)	15 765	311 990	5.1%
21	VERSATEL CHEMTEL	14 115	111 228	12.7%
22	FREENET (auch fur Transit nutzen)	13 846	36 769	37.7%
23	TELEGATE	13 591	59 738	22.8%
24	COLT PARIS	12 795	53 835	23.8%
25	COLT BRUSSELS - Mobile	12 259	37 052	33.1%
26	OUTBOX AG Frem	12 055	40 840	29.5%
27	MNET Augsburg (Augustakom)	11 912	52 896	22.5%
28	EWETEL Cluppenburg	11 041	47 766	23.1%
29	PLANINTERNET	9 742	35 272	27.6%
30	DTAG Chemnitz (LEZB 371.2)	9 345	48 305	19.3%
31	FFALZ	9 267	29 444	31.5%
32	...	9 035	81 552	11.1%
33	...	8 878	89 323	9.9%

For the service “National Termination” the portion of transit traffic may not exceed 5%. Otherwise the carrier will be charged with higher prices.

Module “Cisco Monitoring”

Display device configurations

System health stats

Customer dial plans

Customer traffic stats

Voice quality monitoring

Alert notification service

COLT provides VoIP services based on Cisco platform. The services include:

- **COLT Total**

An integrated package of high speed internet and voice services, providing business-grade IP services to midsize companies.

- **COLT VoIP Access**

It connects customer IP PBX to PSTN via an end-to-end IP network.

NTQR is used to monitor the Cisco VoIP devices e.g. PGW, HSI, Gatekeepers, AS5400. The main functions include system health and alarm monitoring, customer traffic reports, voice quality monitoring.

Module “Cisco Monitoring”

NTQR Network Traffic & Quality Reports

CISCO VoIP Monitoring

Home Logout User: mabduh Admin

PGW Health Statistics PGW Configuration Voice Gatekeeper Voice Gateway HSI Health Statistics Customer Traffic COLT Total Orders

PGW Cluster COLT Total PGW

System Health & Resource Usage

History Overview

Time: 2009-09-04 10:42:00 (105sec ago)

Active PGW: fra-pgw-1

Calls in Progress: 2,290

Calls Attempts per Second: 26.2% (Maximum 80.0 cps, Currently 21 cps)

1. CPU Utilization: 7.0%

2. CPU Utilization: 7.0%

Memory Usage: 38.3% (Total 8,391,896 kbytes, Used 3,213,496 kbytes)

Disk Usage on /: 3.0% (Total 4,133,838 kbytes, Used 125,702 kbytes)

Disk Usage on /opt: 25.6% (Total 53,709,855 kbytes, Used 13,746,174 kbytes)

MGCP Links: 5.2% (Maximum 250, In Service 13)

Dial Plans: 65.9% (Maximum 5,000, Currently 3,293)

Alarm Monitoring

The Cisco MGC generates autonomous messages, or events, to notify you of problems or atypical network conditions. Depending on the severity level, events are considered alarms or informational events. Events with a severity level of critical, major, or minor are classified as alarms. An alarm is reported when an alarm state changes. See also Cisco MGC Software Release 9 Message Reference Guide.

You can configure the alarm type to trigger email notification.

Current Alarms (Alarms that have not been cleared)

NO.	TIME	COMPONENT	CATEGORY	SEVERITY	STATUS
1	2009-09-04 07:17:22.699 MEST	mgc-01	MDL BKLLST 60	Minor	
2	2009-09-04 07:17:22.699 MEST	mgc-01	MDL BKLLST 15	Minor	
3	2009-08-06 16:54:46.788 MEST (28 days ago)	PDM-01	PDM: PEER_SYNC_ERR	Major	
4	2008-09-02 14:00:00.998 MEST (366 days ago)	mgc-01	MDL BKLLST 24	Minor	
5	2008-09-02 13:43:48.418 MEST (366 days ago)	ENG-01	Dial Plan Loading Failed	Major	

Daily Alarm Statistics

Friday 2009-09-04

NO.	TIME	COMPONENT	CATEGORY	SEVERITY
1	2009-09-04 10:15:27.41 MEST	PDM-01	PEER LINK A FAILURE	Minor
2	2009-09-04 10:15:27.41 MEST	PDM-01	PEER LINK B FAILURE	Minor
3	2009-09-04 07:17:22.699 MEST	mgc-01	MDL BKLLST 15	Minor
4	2009-09-04 07:17:22.699 MEST	mgc-01	MDL BKLLST 60	Minor
5	2009-09-04 00:27:22.354 MEST	mgc-01	MDL BKLLST 15	Minor

Alarm Count by Component

NO.	COMPONENT	ALARM COUNT
1	mgc-01	3
2	PDM-01	2
Total		5

Alarm Count by Category

NO.	CATEGORY	ALARM COUNT
1	MDL BKLLST 60	1
2	PEER LINK A FAILURE	1
3	PEER LINK B FAILURE	1
4	MDL BKLLST 15	2
Total		5

Count by Severity

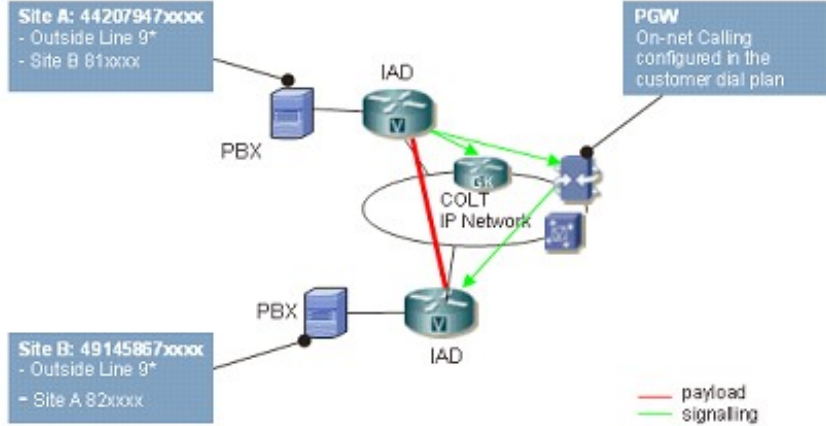
Real-time monitoring
 NTQR retrieves alarms and statistics from the Cisco devices every minute. Alerts are sent immediately so that proactive action can be performed.

PGW Health Statistics

Module “Cisco Monitoring”

Free Intersite Call Routing

Calls of COLT Total customers that is originated and terminated at COLT Total sites are routed directly over VoIP between the sites. This **on-net** calling is implemented in PGW dial plan SE03. Those calls are not charged and do not appear on the invoice or any CDR reporting systems.



Free Intersite Calls
 All calls to other sites (provided they are connected with COLT Total) and COLT Total customers will be provided free of charge and will not appear on bill.

 NTQR generates routing commands for the feature. The provisioning tool APT deploys the commands into PGW.

Search Digit String Go Country Download MML commands

Prev 1 ... 7 8 9 10 11 ... 340 Next Total Rows 13567

NO.	DIGIT STRING	NUMBER TYPE	SETNAME	H.323 ID	CUSTOMER	ON DMS/EWSD?	ON GATEKEEPER?	ON PGW?
						<input type="text" value="*ANY*"/>	<input type="text" value="*ANY*"/>	<input type="text" value="*ANY*"/>
321	322704996	ported	SW-BLIP	b043	AEXIS BELGIUM NV	✓	✓	✓
322	32270888	ported	SW-BLIP	b005	ADMS EUROPE SPRL	✓	✓	✓
323	322711203	ported	SW-BLIP			✓	✗	✓
324	322711204	ported	SW-BLIP			✓	✗	✓
325	322711205	ported	SW-BLIP			✓	✗	✓
326	322713071	ported	SW-BLIP	b037	PR FORCE PUBLIC RELATIONS & PRESS RELATIONS NV	✓	✓	✓
327	322713072	ported	SW-BLIP	b037	PR FORCE PUBLIC RELATIONS & PRESS RELATIONS NV	✓	✓	✓
328	322713073	ported	SW-BLIP	b037	PR FORCE PUBLIC RELATIONS & PRESS RELATIONS NV	✓	✓	✓
329	322713074	ported	SW-BLIP	b037	PR FORCE PUBLIC RELATIONS & PRESS RELATIONS NV	✓	✓	✓
330	322713090	ported	SW-BLIP	b037	PR FORCE PUBLIC RELATIONS & PRESS RELATIONS NV	✓	✓	✓
331	322714957	ported	SW-BLIP	b043	AEXIS BELGIUM NV	✓	✓	✓
332	322714958	ported	SW-BLIP	b043	AEXIS BELGIUM NV	✓	✓	✓

Free Intersite Call Routing

Module "Cisco Monitoring"

COLT Total VoIP Access

Search

Thursday 2009-09-03 Note: Call duration is rounded from seconds to minutes i.e. duration less than 30 seconds will be shown as 0 minute.

Prev 1 2 3 ... 48 Next Total Rows 1881

NO.	H.323 ID	ORDER NO.	CUSTOMER	ORIGINATING [MINUTES/DAY]	TERMINATING [MINUTES/DAY]	TOTAL [MINUTES/DAY]
1	if33	IT-081002042	JOBINTEL SRL	21,371	46	21,417
2	fb31			9,482	7,609	17,091
3	fc17	FR-071003345	CBA INFORMATIQUE LIBERALE	8,270	12	8,282
4	if14	IT-080903621	TWE SRL	7,403	2	7,405
5	ig91	IT-090400389	LARES SRL	505	5,849	6,354
6	ib15	IT-070600407	RECREPIN SERVICE SRL	4,733	1,217	5,950
7	ib95	IT-070700209	RECU-S ITALIA SRL	4,226	1,373	5,599
8	f175	FR-060203485	CONEXIO	5,193	174	5,367
9	fc55	FR-071210300	INDEX EDUCATION	3,291	1,719	5,010
10	ih33	IT-090402590	CAGLIARI CALL CENTER SRL	4,465	2	4,467
11	fd48	FR-081200353	SMART&CO	1,808	2,493	4,301

COLT Total

COLT Total VoIP Access

Search

Thursday 2009-09-03 Note: Call duration is rounded from seconds to minutes i.e. duration less than 30 seconds will be shown as 0 minute.

Prev 1 2 Next Total Rows 51

NO.	IP ADDRESS	ORDER NO.	CUSTOMER	ORIGINATING [MINUTES/DAY]	TERMINATING [MINUTES/DAY]	TOTAL [MINUTES/DAY]
1	10.253.33.78	ES-090402731	OVERTOP PROJECTS, S.L.	10,858	1,035	11,893
2	10.253.44.31	SE-081102967	ATLAS COLLECTION AB	2,825	541	3,366
3	10.253.49.55	AT-090400954	ÖSTERREICHISCHER AUTOMOBIL- MOTORRAD- UND TOURING-CLUB (ÖEAMTC)	712	2,547	3,259
4	10.253.44.40	UK-081201287	KING JOHN'S COURT	2,985	0	2,985
5	10.253.49.20	DE-080700301	ATOS ORIGIN RZ NECKERMAN	0	2,717	2,717
6	10.253.44.16	NL-090400705	FRV	1,081	1,332	2,413
7	10.253.33.25	FR-080803282	TELELANGUE	1,888	0	1,888
8	10.253.49.33	DE-081202370	ARGONDO REAL ESTATE GMBH	908	565	1,473
9	10.253.33.55	FR-090401273	PLEXICO	465	991	1,456
10	10.253.44.54	BE-090200675	MOTOR PARTS	258	1,160	1,418
11	10.253.49.23	DE-080801044	DRAFTFCB DEUTSCHLAND GMBH	1,125	1	1,126

COLT VoIP Access

Customer Traffic Statistics

Module “Sonus Monitoring”

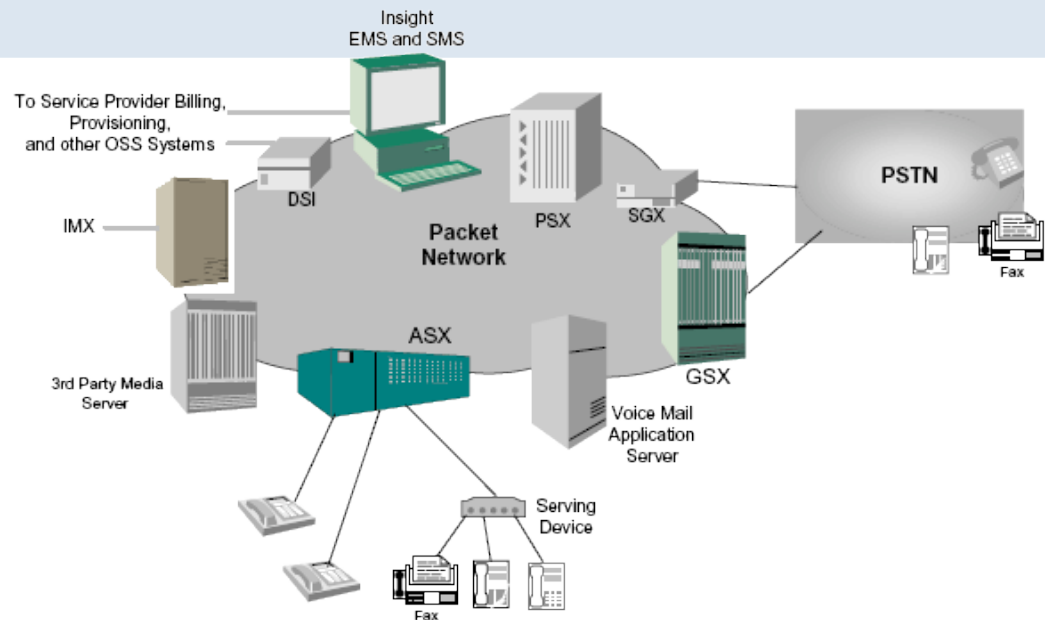
Display device configurations

Performance analysis and reports

System health stats

Trunkgroup traffic stats

The performance reports are generated based upon data collected from the Sonus Insight managed devices e.g. GSX, PSX Policy Server, ASX Access Server etc. The reports supply a variety of performance information useful in ascertaining the overall health of the network. The data collection within Sonus Insight is configured to export the data to NTQR server 15 minutes.



Module “Sonus Monitoring”

System Health Trunkgroups Network Design Data Availability

NO.	DEVICE	DESCRIPTION	HEALTH STATUS
PSX - Policy Server			
1	devpsx1	Engineering lab PSX	!
2	frapsx1	Frankfurt PSX 1	✓
3	frapsxha	Frankfurt Provisioning PSX	✓
4	lonpsx1	London PSX 1	✓
5	oppsx1	Operations lab PSX	!
GSX - Open Services Switch			
1	devgsx1	Engineering lab GSX	✓
2	fragsx1	Frankfurt GSX 1	✓
3	longsx1	London GSX 1	✓
4	madgsx1	Madrid GSX 1	✓
5	milgsx1	Milan GSX 1	✓
6	opsgsx1	Operations lab GSX	✓
7	pargsx1	Paris GSX 1	✓
8	zrhgsx1	Zurich GSX 1	✓
NBS - Network Border Switch			
1	franbs1	Frankfurt NBS 1	✓
2	lonnbs1	London NBS 1	✓
3	parnbs1	Paris NBS 1	✓
4	zrhnb1	Zurich NBS 1	✓
DSI - DataStream Integrator			
1	devdsi1	Engineering lab DSI	!
2	frads1	Frankfurt DSI 1	!
3	frads2	Frankfurt DSI 2	✓
4	londs1	London DSI 1	!

The system health status is determined based on Sonus Network Element Engineering Guidelines. According to guidelines the network elements should be engineered to the following thresholds:

- PSX**
 - CPU: 80%
- GSX**
 - CPU: 80% (for all server cards)
 - Memory: 80% (for all server cards)
- NBS**
 - CPU: 80% (for all server cards)
 - Memory: 80% (for all server cards)
- DSI**
 - CPU: 80%
- EMS**
 - CPU: 80%

Other indicators to monitor depend on the configuration, traffic characteristics and desired quality level:

- Call attempts per seconds
- Circuit utilization
- Signaling link utilization
- SIP registrations
- Subscriber feature complexity
- Server congestion
- Disk space usage

Currently the performance analysis includes the following number of devices

- 5** PSX - Policy Server
- 8** GSX - Open Services Switch
- 4** NBS - Network Border Switch
- 3** ASX - Access Server
- 14** DSI - DataStream Integrator
- 2** EMS - Element Management System

Total devices **36**

System Health Statistics

Module “Sonus Monitoring”

System Health Trunkgroups Network Design Data Availability

Search

◀ Prev 1 2 3 4 ... 8 Next ▶ Total Rows 286

NO.	GATEWAY	TRUNKGROUP	DESCRIPTION	CCTS_TOTAL	CCTS_AVAIL.	UTILIZATION
41	*ANY*	PTPSACXLIS018	PARGSX1 PT LIS Premium			
42		PTPSACXLIS011	PARGSX1 PT LIS Wholesale			
43		DEVASX1_16783800	DEVASX trunk - to allow DEVASX to Production calls			
44		UKLNASI015901	ORS C1590	60	51	85.0%
45		ESPSACXMAD018	PARGSX1 ES MAD Premium	31	31	92.5%
46		ESMDACXMAD018	MADGSX1 ES MAD Premium	31	31	92.5%
47		UKLNASI016501	NUCOM C1650	60	56	67.0%
48		UKLNASI016401	VIASTAR C1640	180	135	66.5%
49		UKLNACXKC1011	London c7 Wholesale	371	320	59.5%
50		UKLNASI015101	Compass Global C1510	300	284	52.2%
51		UKLNASI016701	DIGERATI C1670	60	57	46.7%
52		UKPSACXKC1011	PARGSX1 UK KC1 Wholesale	372	358	45.5%
53		UKLNAHI017001	VERSCOM C1700	60	59	36.7%
54		UKLNASI016001	WAVECREST C1600	300	297	33.2%
55		UKLNASI017501	TELCO C1750	240	240	28.5%
56		BELNACXBRU018	LONGSX1 BE BRU Premium	31	31	27.0%
57		ITZHACXMIT011	ZRHGSX1 IT MIT Wholesale	62	62	15.7%
58		UKPSACXKC1013	PARGSX1 UK KC1 Retail	154	154	13.8%
59		DEFTACXMM1013	FRAGSX1 DE MN1 Retail	124	124	11.7%
60		UKLNAHI015401	SOTUS C1540	388	388	11.5%
61		UKLNASI017101	PHONETIME C1710	227	227	9.0%
62		UKPSACXKC1018	PARGSX1 UK KC1 Premium	93	93	8.5%
63		ITMIACXMIT011	MILGSX1 IT MIT Wholesale	90	90	8.2%
64		NLLNACXAMS018	LONGSX1 NL AMS Premium	31	31	8.2%
65		ESPSACXMAD011	PARGSX1 ES MAD Wholesale	155	147	8.0%
66		IELNACXEW1013	LONGSX1 IE EW1 Retail	30	30	8.0%
67		ESPSACXMAD013	PARGSX1 ES MAD Retail	92	92	7.5%
68		UKLNASI015501	Worldwide Telecom C1550	120	120	7.0%
69		DEFTACXFT1018	Frankfurt C7 Premium	124	123	6.5%
70		DEZHACXFT1018	ZRHGSX1 DE FT1 Premium	93	93	6.0%
71		DEFTASI040303	ACRIS C403	120	120	6.0%
72		ESMDACXMAD013	MADGSX1 ES MAD Retail	92	92	5.7%
73		DEFTASIC15703	PurTel Teleson C1570	500	499	5.2%

Utilization > 80%

of available circuits is less than total circuits. Some circuits might be blocked.

Trunkgroup Traffic Statistics

Module “Sonus Monitoring”

Overview
PSX Policy Server
G SX Open Services Switch
ASX Access Server
N BS Network Border Switch
DSI DataStream Integrator
EMS Element Mgmt System

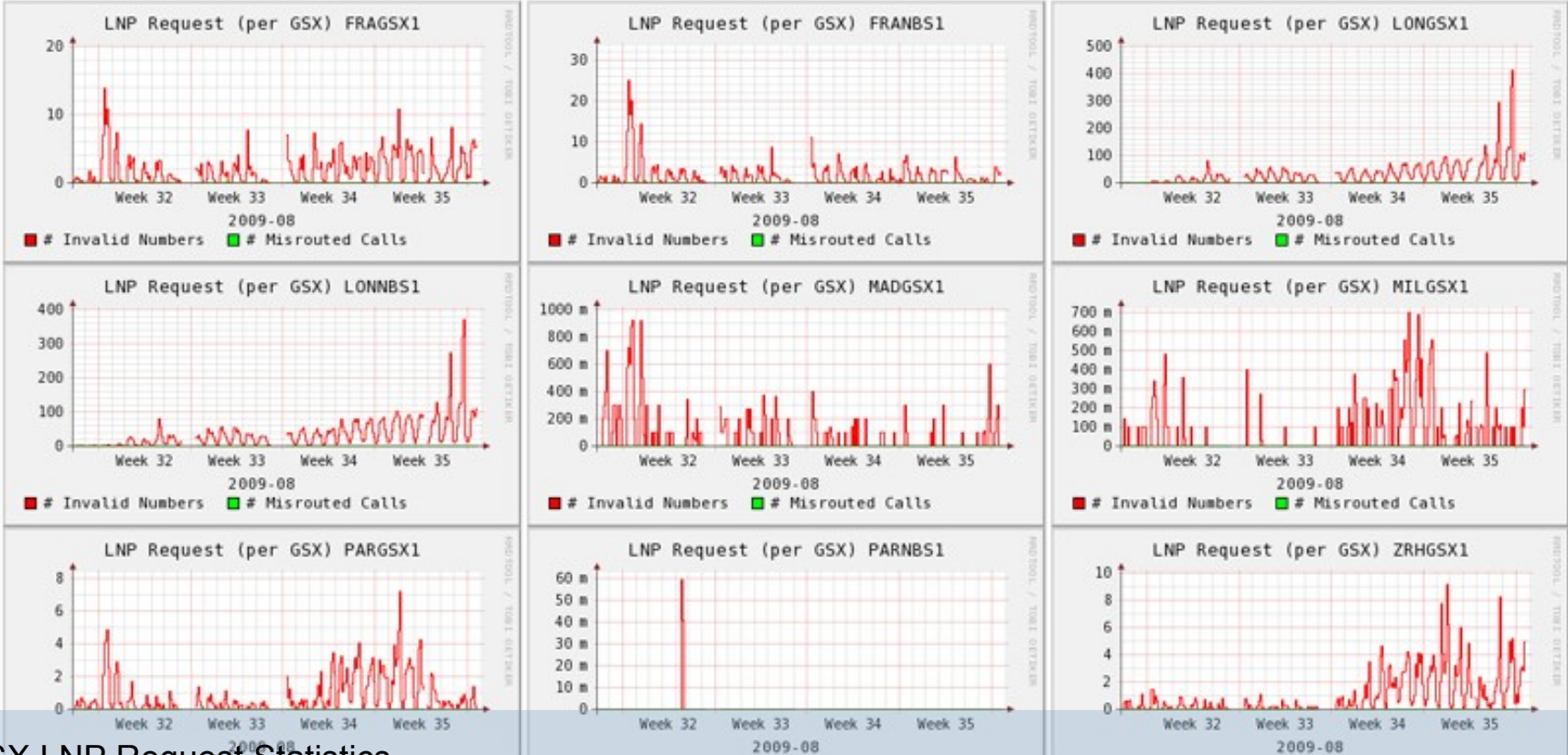
The Sonus PSX Policy Server is a scalable softswitch that controls the interworking of circuit-based and IP-based media streams at the media gateway. The PSX provides both policy and routing services. Scalability is achieved using both multiprocessor configurations and load sharing across multiple PSX systems. The PSX includes a database of signaling addresses for routing calls. It receives signaling information from a GSX, H.323 gateway or gatekeeper, SIP application server, or ASX, and instructs the requesting system on how to establish calls. The PSX also interacts with PSTN databases via TCAP or, for authorization code validation, via transactional SIP, and may route calls to application servers to enable a range of enhanced services.

PSX Node:

Statistics:

There are more than 40 performance statistics for PSX

2009-08 Daily Monthly Refresh



PSX LNP Request Statistics

Module “Sonus Monitoring”

Overview	P S X Policy Server	G S X Open Services Switch	A S X Access Server	N B S Network Border Switch	D S I DataStream Integrator	E M S Element Mgmt System
-----------------	-------------------------------	--------------------------------------	-------------------------------	---------------------------------------	---------------------------------------	-------------------------------------

The Sonus GSX9000 provides carrier-class media gateway functions. It provides the Sonus interface to the PSTN. A single GSX9000 chassis terminates and interconnects up to 22,176 simultaneous VoIP calls and supports toll-quality voice in a packet network environment (IP or ATM). The GSX9000 performs limited PSTN user interaction (announcements, tones, and digit collection) all under the control of the PSX Policy Server.

The GSX9000 supports voice coding and compression based on G.711, G.711 with Silence Suppression, G.723.1, G.723.1A, G.726, G.729A, G.729A+B, iLBC, and iLBC with Silence Suppression. Each Circuit Network Server (CNS) module is a data and protocol-processing engine, and has on-board DSP signal processing resources to support G.168 echo cancellation on all its associated DS0s. Voice activity detection and silence suppression are also supported for both G.711 and compressed encoding schemes.

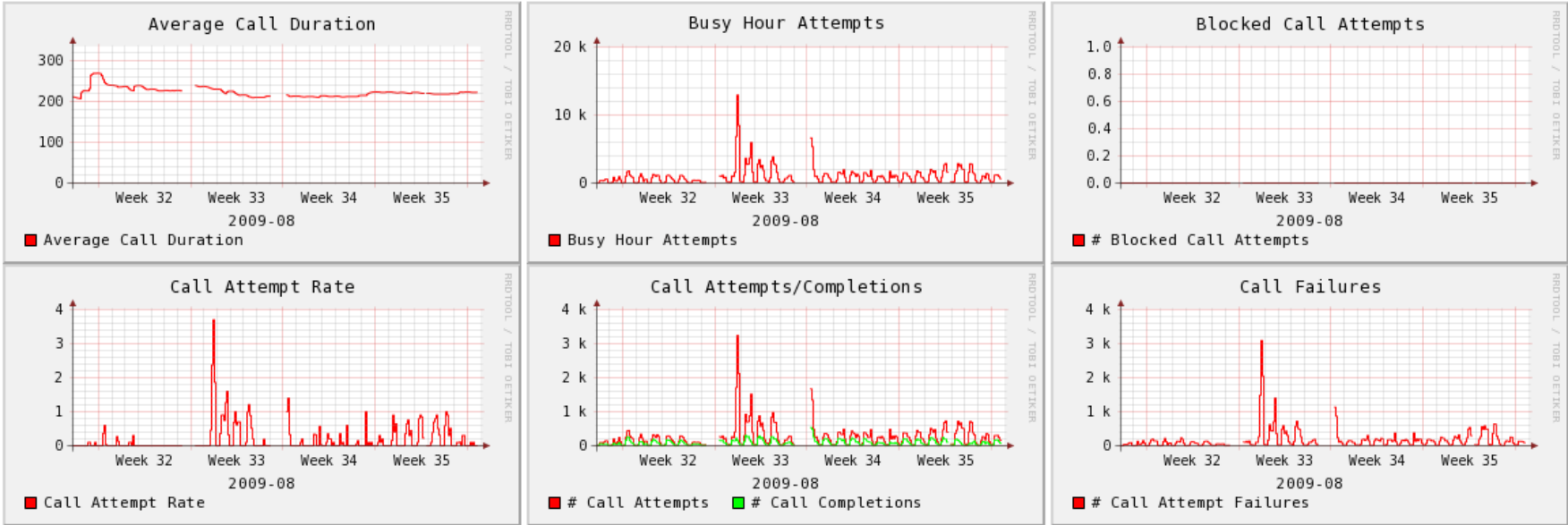
The GSX9000 handles higher level SS7 (for example, ISUP), ISDN, and CAS signaling and uses the Sonus SGX SS7 Signaling Gateway for lower level PSTN signaling (such as SS7 MTP). For signaling to IP telephony devices, the GSX9000 supports SIP, SIP-I, and H.323 protocols. To support peering relationships between packet carriers, the GSX9000 can function as a network border switch.

Performance Stats Configuration

GSX Node: fragsx1 (Frankfurt GSX 1)

Statistics: Accounting Summary Stats

2009-08 Daily Monthly Refresh



GSX Accounting Summary Statistics

Module "Sonus Monitoring"

Performance Stats | Configuration

GSX Node fragsx1 Download
 Prev 1 2 3 4 ... 9 Next Total Rows 843

Trunkgroup configurations

```
Local Policy Trunk Profile
-----
Local Trunk Name: GSX-CW-CW
-----
State                               ENABLED
Inbound Reserve (percent)           0
Mode                                INSERVICE
Action                               DRYUP
Timeout (min)                        5
Circuit Reservation State            DISABLED
Reserved Priority Calls (circuits)    1
Reserved Incoming Calls (circuits)   1
Reserved Outgoing Calls (percent)    10
Alternate Trunk Group Name
Trunk Group Rename Timer (sec)       0
SILC State                           DISABLED
SILC Congestion Level 1 Calls Allowed (percent) 075
SILC Congestion Level 2 Calls Allowed (percent) 025
Trunk Group Type                      IPSELECTED
IP Trunk Group Direction              BOTHWAYS
Parent IP Trunk Group
IP Network Selection Table            GSX-CW-CW
IP Call Limit                         UNLMT
IP Bandwidth Limit                   UNLMT
Packet Outage Detection Minimum Duration 6000
Packet Outage Detection Minimum Calls  1000
Packet Outage Detection Bandwidth Limit Reduct 50
Packet Outage Detection State         DISABLED
Packet Outage Detection Interval (minutes) 15
Master Trunk Group Name
Calls Requested Per MTRG Request      100
Bandwidth Requested Per MTRG Request (1K bps) 12400
Maximum Ingress Sustained Call Rate   0
Maximum Ingress Call Burst Size       0
Maximum Ingress Sustained SIP nonInvite Rate 0
Maximum Ingress SIP nonInvite Burst Size 0
Maximum Egress Sustained Call Rate    0
Maximum Egress Call Burst Size        0
Maximum Egress Sustained SIP nonInvite Rate 0
Maximum Egress SIP nonInvite Burst Size 0
HPC Profile Name                      defaultintipqueuing
HPC Early ACM or SIP-18X              USEDEFAULT
HPC IP Oversubscription Override      DISABLED
HPC IP Oversubscription Factor        10
Local Policy Trunk Profile
```

SIP service configurations

```
SHOW SIP SERVICE ALL ADMIN
Node: FRAGSX1                               Date: 2009/09/03 22:29:58 GMT
                                           Zone: GMTPLUS01-BERLIN
-----
SIP Service                                 : defaultSipIpSrvcGrp
-----
Admin State                               : ENABLED
Mode                                        : INSERVICE
Action                                     : UNDEFINED
Dryup Timeout (min)                       : 0
Trunk Group                               : defaultiptg
Disc Treatment                             : sipDefault
Tone Package                              : default
Source Address Filtering                   : ENABLED
Ans Supervision Timeout                   : 300
Ans Supervision Timeout Action            : RELEASE
Registration Expires (Default)           : 3600
Signaling Zone                            : INTERNAL
Media Zone                                : INTERNAL
Media NIF Group                           : PNS-1-3-1-INSIDE
NAPT for Signaling                        : DISABLED
NAPT for Media                            : DISABLED
NAPT QualificationTable name              :
Parse Embedded BGID                      : DISABLED
Congestion Reject Method                  : RELEASE
Congestion Retry Timer Min (sec)          : 10
Congestion Retry Timer Max (sec)         : 30
Congestion Release Timeout (sec)         : 0
SIP Timer T1 (msec)                      : 500
SIP Timer T2 (msec)                      : 4000
SIP Session Keepalive Timer (sec)        : 1800
SIP Session Term Delta Time (sec)        : 0
SIP Minimum Session Timer (sec)         : 90
Retry Count for SIP Messages              : 7
Retry Count for INVITE Message           : 6
Retry Count for RE-INVITE Message        : 0
Retry Count for BYE Message              : 3
Retry Count for CANCEL Message           : 3
Session keepalive retry on 422           : 5
Session keepalive retry on 491          : 5
Use Route Set                             : DISABLED
OPTIONS                                  : ALLOW
REFER                                     : ALLOW
SUBSCRIBE                                 : ALLOW
NOTIFY                                    : ALLOW
INFO                                      : ALLOW
```

GSX Configurations

Module “Sonus Monitoring”

Overview	P S X Policy Server	G S X Open Services Switch	A S X Access Server	N B S Network Border Switch	D S I DataStream Integrator	E M S Element Mgmt System
-----------------	-------------------------------	--------------------------------------	-------------------------------	---------------------------------------	---------------------------------------	-------------------------------------

The Sonus ASX Access Server provides line-side support for subscriber devices, call agent functions, and line-side access features. The ASX supports open standards-based interfaces. The ASX interfaces with the packet network using 100 Base-T Ethernet and supports MGCP, H.248, SIP, and the cable standard NCS to control a wide variety of access devices. The ASX can also leverage third-party application servers, providing additional line-side services such as intelligent call centers, IP voicemail, and unified communications.

The ASX runs on a Sun Netra platform and performs call agent functions including call setup and feature signaling for IP-based endpoints. It provides support for MGCP serving devices (SDs, such as IADs and MTAs), H.248 serving device (Media Gateway), and SIP endpoints. For PSTN interconnection, the ASX seamlessly interoperates with the GSX9000 and GSX4000 Open Services Switches and the SGX SS7 Gateway softswitch module to extend robust SS7/C7 signaling support to the network edge. This includes TCAP support and international ISUP variants for access to worldwide circuit-based networks and services. Also, the ASX communicates with the PSX, which provides both policy and routing services.

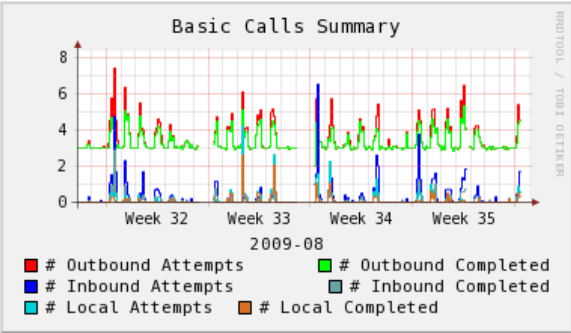
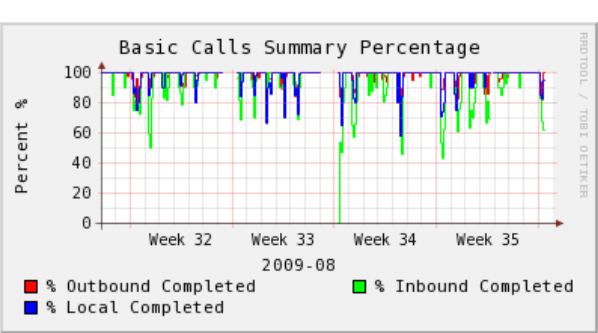
ASX Node:

Statistics:

Provides statistics on the basic call summary.

◀ 2009-08 ▶ Daily | Monthly

There are more than 40 performance statistics for ASX



Descriptions

- # **Inbound Attempts**
The number of inbound calls attempted in current interval.
- # **Inbound Completed**
The number of inbound calls completed in current interval.
- # **Local Attempts**
The number of local calls attempted in the current interval.
- # **Local Completed**
The number of local calls completed in the current interval.
- # **Outbound Attempts**
The number of outbound calls attempted in current interval.
- # **Outbound Completed**
The number of outbound calls completed in current interval.

ASX Call Summary Statistics

Module “Sonus Monitoring”

Overview	P S X Policy Server	G S X Open Services Switch	A S X Access Server	N B S Network Border Switch	D S I DataStream Integrator	E M S Element Mgmt System
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The DataStream Integrator (DSI) captures call data records from Sonus network elements, transforms them into the appropriate billing system input format, and distributes them to billing applications. Working with other components in Sonus Open Services Architecture (OSA), DSI ensures that network usage data is formatted properly and distributed to back-office applications such as billing, fraud, settlement, performance traffic management, and signaling analysis and reporting systems.

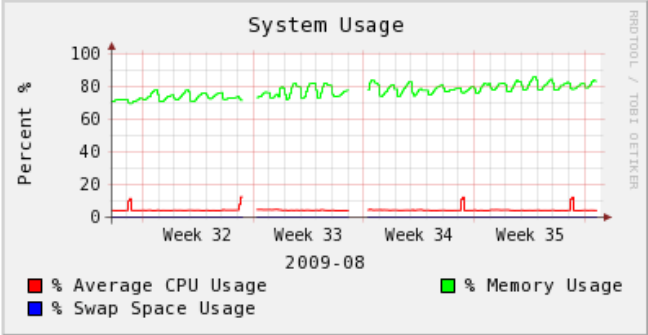
The DSI is typically deployed in a cluster configuration with a minimum of two servers to provide High Availability which ensures data integrity, transaction integrity, and continuity of operations through any single server failure. Secure communications between the DSI and backoffice applications keeps network usage data safe. The figure 1 illustrates how DSI is positioned in the network.

DSI Node

Statistics

Provides information concerning host system resource usage.

◀ 2009-08 ▶ Daily | Monthly Refresh



Descriptions

% Average CPU Usage

The total CPU time is the sum of 4 values: user time, kernel time, IO-wait time, and idle time. Each time value is calculated by taking the difference between present and the previous samples. The sampling period is 5 seconds. Usage is calculated using this formula: $(\text{user time} + \text{kernel time}) / (\text{user time} + \text{kernel time} + \text{IO-wait time} + \text{idle time}) * 100$. The value is rounded up to an integer. The calculation is performed for each CPU, and the usage value is the average.

% Memory Usage

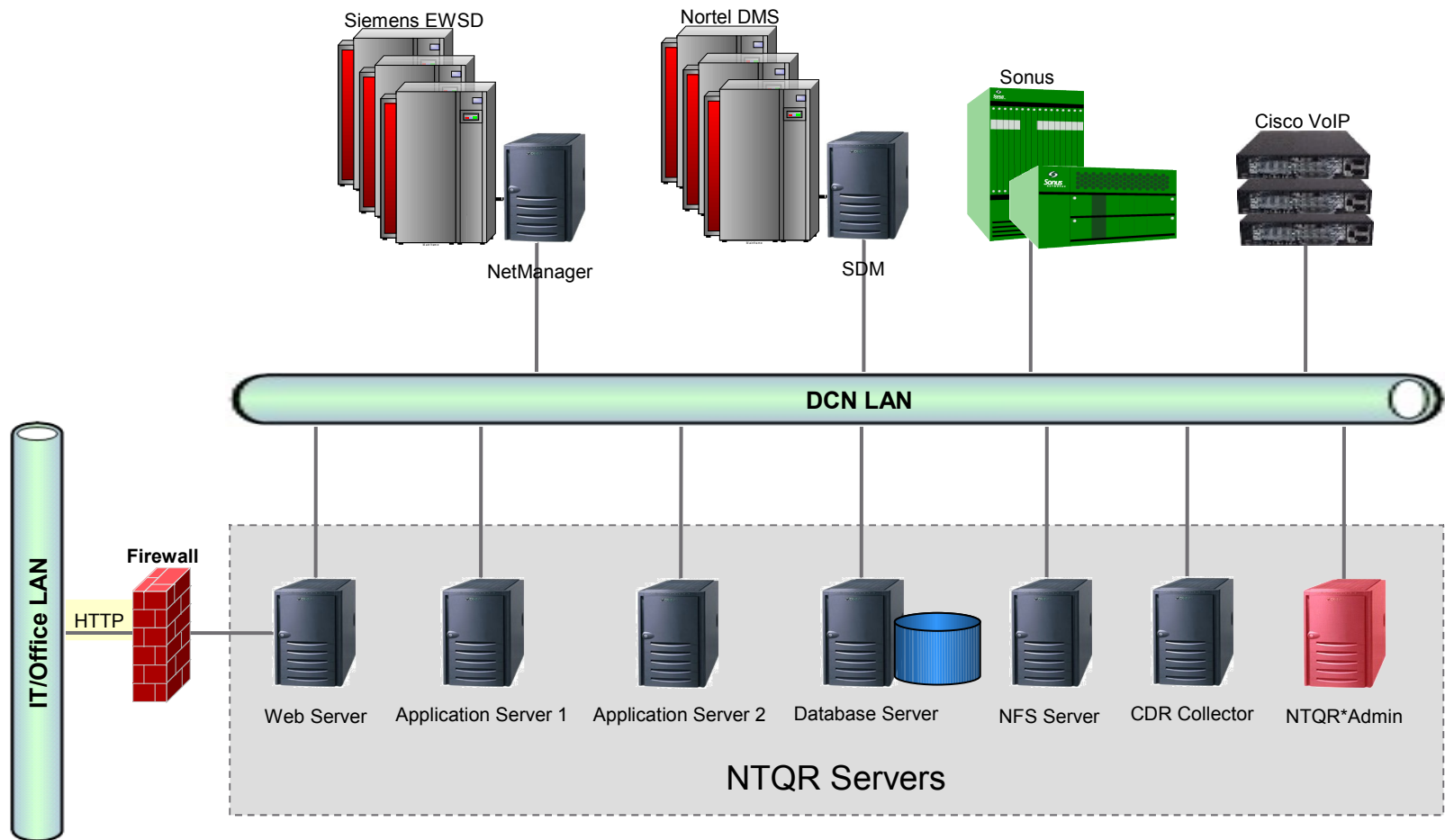
The usage value is calculated by dividing total in-use memory by total physical memory in the system. The Usage value is represented as a percentage and rounded up to an integer. The sampling period is 5 seconds.

% Swap Space Usage

The usage value is calculated by dividing total in-use swap space by total available swap space. The Usage value is represented as a percentage and rounded up to an integer. The sampling period is 5 seconds.

DSI System Usage Statistics

System Architecture



Some Technical Facts

Applications	NTQR applications are written in Java and JRuby. The applications run on the application servers Glassfish and Tomcat.
Host servers	SUN X2100 and X4200 series with Solaris 10.
Database servers	Oracle 10g