

## Network Performance Report

This report is an actual performance analysis, modified to protect the customer. It provides insight into the performance of a network, based on 3 days of [RMON SNMP](#) information. The following trends are apparent in the various statistics that RMON provides: Note that the following Attributes had ZERO counts: **Oversized, Jabbers**.

Also note that the samples utilised for all summaries is the entire period i.e. 3:47am on the 20<sup>th</sup> through to 3:17pm on the 22<sup>nd</sup> in 30 minute intervals, *except where otherwise indicated*. This seems fine for most statistics, as I have sorted by the "SUM" of each attribute, excluding the Load, as it is a percentage, and therefore inappropriate to sum. For the load, you will notice that the backup server wins hands down on average load, except when you filter for Working Hours, then we have a different result.

### Table of Contents

<i>Average Load - Entire Period</i> _____	1
<i>Average Load - During Working Hours</i> _____	2
<i>Octet Count</i> _____	2
<i>Broadcasts</i> _____	2
<i>Multicasts - During Working Hours</i> _____	2
<i>Collisions - During Working Hours</i> _____	3
<i>Collision to Packets Ratio - During Working Hours</i> _____	3
<i>CRC / Alignment Errors</i> _____	3
<i>Fragments</i> _____	3
<i>Runts / Undersized</i> _____	4
<i>Unicasts</i> _____	4
<i>Conclusions</i> _____	4

### Average Load - Entire Period

The following table summarises the top 25% of interfaces on the 9E423-36 card according to the Average Load during the entire period as described above.

<b>Average Load - Top Interfaces</b>	<b>Average</b>	<b>Minimum</b>	<b>Maximum</b>
9E423-36e32 - Backup Server	8.46	0.00	56.02
9E423-36e2 - Top Hub	6.62	0.32	60.23
9E423-36e28 - Server1	5.06	0.00	38.52
9E423-36e25 - Message Server	5.00	0.00	41.41
9E423-36e11 - Centre Hub	3.66	0.26	49.04
9E423-36e1 - Repeater1	3.16	0.31	35.10
9E423-36e36 - Server2	2.55	0.00	44.37

# Network Design & Control Inc.

Web: <http://www.ndc.nu>  
Email: <mailto:analysis@ndc.nu>

## Average Load - During Working Hours

The following table summarises the top 25% of interfaces on the 9E423-36 card according to the Average Load. Note the distinct difference when the hours are limited to core business hours...

Description	Average	Minimum	Maximum
9E423-36e25 - Message Server	9.60	0.00	41.41
9E423-36e28 - Server1	9.56	0.00	38.52
9E423-36e2 - Top Hub	8.94	0.94	60.23
9E423-36e32 - Backup Server	6.20	0.00	46.96
9E423-36e1 - Repeater1	4.86	0.34	23.38
9E423-36e11 - Centre Hub	4.82	0.61	49.04
9E423-36e24 - Ground Floor	4.12	0.19	13.98

## Octet Count

Overall Traffic is best reflected by the Octet (Byte) count as follows:

Octets - Top Interfaces	Sum	Average	Minimum	Maximum
9E423-36e32 - Backup Server	22,336,659,115	186,138,826	0	1,238,784,950
9E423-36e2 - Top Hub	16,988,445,641	141,570,380	6,397,588	1,315,976,661
9E423-36e28 - Server1	13,284,477,643	110,703,980	0	848,377,496
9E423-36e25 - Message Server	13,057,382,794	108,811,523	0	907,325,225
9E423-36e11 - Centre Hub	9,366,139,709	78,051,164	5,396,905	1,079,368,753
9E423-36e1 - Repeater1	8,056,421,483	67,136,846	6,099,301	773,297,153
9E423-36e36 - Server2	6,706,589,527	55,888,246	0	979,814,777

## Broadcasts

The broadcast is the basis of all address resolution for Netbios, IP, and IPX traffic alike. As such it is a necessary evil in connectionless networks. It is interesting to note that there is a significant leader in this table – the 20<sup>th</sup> Floor.

Broadcasts - Top Interfaces	Sum	Average	Minimum	Maximum
9E423-36e5 - 20th Floor	1,798,588	7,494	6,047	22,568
9E423-36e10 - 3Com NetBuilder	899,351	7,495	6,047	22,595
9E423-36e23 - 8th Floor	899,308	7,494	6,047	22,575
9E423-36e16 - 28th Floor	899,303	7,494	6,047	22,583
9E423-36e9 - 3rd Floor	899,297	7,494	6,047	22,569
9E423-36e6 - 19th Floor	899,294	7,494	6,047	22,568
9E423-36e8 - 7th Floor	899,286	7,494	6,047	22,573

## Multicasts - During Working Hours

The multicast should be of limited use currently in BSI's network. It is interesting to note that there is a significant leader in this table. Once again, Level 20.

Multicasts - Top Interfaces	Sum	Average	Minimum	Maximum
9E423-36e5 - 20th Floor	525,530	5,474	3,746	9,876
9E423-36e31 - NMS	266,979	5,449	3,746	9,876
9E423-36e10 - 3Com NetBuilder	262,770	5,474	3,746	9,876
9E423-36e9 - 3rd Floor	262,768	5,474	3,746	9,876
9E423-36e4 - 25th Floor	262,768	5,474	3,746	9,876
9E423-36e8 - 7th Floor	262,765	5,474	3,746	9,877
9E423-36e6 - 19th Floor	262,765	5,474	3,746	9,876

## Collisions - During Working Hours

Potential bottlenecks are best reflected by the Collisions count as follows:

Collisions - Top Interfaces	SUM	AVG	MIN	MAX
9E423-36e2 - Top Hub	822695	17,504.15	81	318614
9E423-36e1 - Repeater1	168820	3,517.08	6	42752
9E423-36e36 - Server2	141615	2,890.10	0	50189
9E423-36e11 - Centre Hub	102969	2,145.19	69	47180
9E423-36e28 - Server1	97327	2,027.65	0	16617
9E423-36e24 - Ground Floor	91245	1,900.94	0	12341
9E423-36e21 - 17th Floor	75541	1,573.77	11	22013

## Collision to Packets Ratio - During Working Hours

This ratio is a handy indicator of very high loads, as the collision levels will rise in direct relationship with the overall load levels of that segment. It is calculated by dividing the Collision Count by the Packet Count, shown as a percentage figure. It is sorted by the Maximum recorded value, and the data is filtered for Working Hours only.

Collisions to Packets Ratio	Average	Maximum
9E423-36e2 - Top Hub	1.58%	16.19%
9E423-36e36 - Server2	1.16%	5.26%
9E423-36e27 - Firewall	1.27%	4.86%
9E423-36e3 - Bottom Hub 2nd Fl	0.32%	4.03%
9E423-36e11 - Centre Hub	0.47%	3.89%
9E423-36e29 - IT Notes Server	0.71%	2.71%
9E423-36e21 - 17th Floor	0.38%	2.57%

## CRC / Alignment Errors

Other Error types can indicate different issues in your network. The following provides worst interfaces for CRC & Alignment errors (Note that the counts are relatively insignificant):

CRC/Align - Top Interfaces	Sum	Average	Minimum	Maximum
9E423-36e1 - Repeater1	1,087	9	0	128
9E423-36e3 - Bottom Hub 2nd Fl	674	6	0	113
9E423-36e24 - Ground Floor	434	4	0	26
9E423-36e2 - Top Hub	263	2	0	97
9E423-36e23 - 8th Floor	157	1	0	15
9E423-36e4 - 25th Floor	121	1	0	12
9E423-36e22 - 15th Floor	117	1	0	8

## Fragments

The following provides worst interfaces for Fragments (Which generally are caused by Collisions, so the table should be similar to the Collisions table):

Fragments - Top Interfaces	Sum	Average	Minimum	Maximum
9E423-36e2 - Top Hub	1,177,189	9,810	6	318,614
9E423-36e36 - Server2	216,421	1,804	0	50,189
9E423-36e11 - Centre Hub	205,524	1,713	0	47,180
9E423-36e1 - Repeater1	181,567	1,513	3	42,752
9E423-36e21 - 17th Floor	125,377	1,045	10	22,013
9E423-36e28 - Server1	111,821	932	0	16,617
9E423-36e24 - Ground Floor	101,752	848	0	12,341

## Runts / Undersized

Runts (Or Undersized) as follows: (Note that a single interface [Repeater1] has 20 times the next nearest interface count, so needs to be looked at. Also the 3<sup>rd</sup> floor has a significant count...)

Undersized - Top Interfaces	Sum	Average	Minimum	Maximum
9E423-36e1 - Repeater1	469,871	3,916	3,611	7,348
9E423-36e9 - 3rd Floor	18,051	150	0	2,675
9E423-36e7 - 14th Floor	288	2	0	22
9E423-36e4 - 25th Floor	84	1	0	10
9E423-36e22 - 15th Floor	44	0	0	5
9E423-36e24 - Ground Floor	24	0	0	3
9E423-36e23 - 8th Floor	8	0	0	4

## Unicasts

Unicasts reflect the bread and butter of network traffic - fully addressed "normal" packets...

Unicasts - Top Interfaces	Sum	Average	Minimum	Maximum
9E423-36e2 - Top Hub	43,219,712	360,164	33,011	2,961,363
9E423-36e32 - Backup Server	25,472,043	212,267	0	1,080,394
9E423-36e11 - Centre Hub	25,205,957	210,050	17,320	1,246,485
9E423-36e1 - Repeater1	22,268,176	185,568	34,793	1,674,931
9E423-36e25 - Message Server	21,574,079	179,784	0	1,211,393
9E423-36e28 - Server1	18,123,957	151,033	0	906,050
9E423-36e24 - Ground Floor	16,287,481	135,729	7,479	1,131,644

## Conclusions

As you can see, the Loads on some interfaces are peaking at relatively high levels. However, the only interface where the Collision to Packet Ratio (a percentage) is unacceptably high is the "Top Hub" (see table for details). This should be resolved through increasing use of switching rather than shared ports over time. The high broadcasts and multicasts counts on Level 20 are interesting, and should be looked into. The VERY high runt (undersized) count on Repeater1 should definitely be checked out. Other than these extremes, the parameters are as expected and seem to indicate a healthy (though admittedly busy) network.