



# Deep dive CIFS/SMB

Created for CUSTOMER

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## Introduction

### *Preface*

This report takes a deep-dive into the CIFS/SMB2 protocol optimization on SteelHeads within your estate. This report includes details of the error profiles in the network. It is not the intention of the report to give recommendations or advise on how to troubleshoot or reconfigure the SteelHead estate. This is meant as a detailed technical overview of the health of the CIFS/SMB2 protocol optimization only.

## ***SteelHeads in Scope***

This is a list of SteelHeads that have been analyzed.

**Total number of monitored devices: 33**

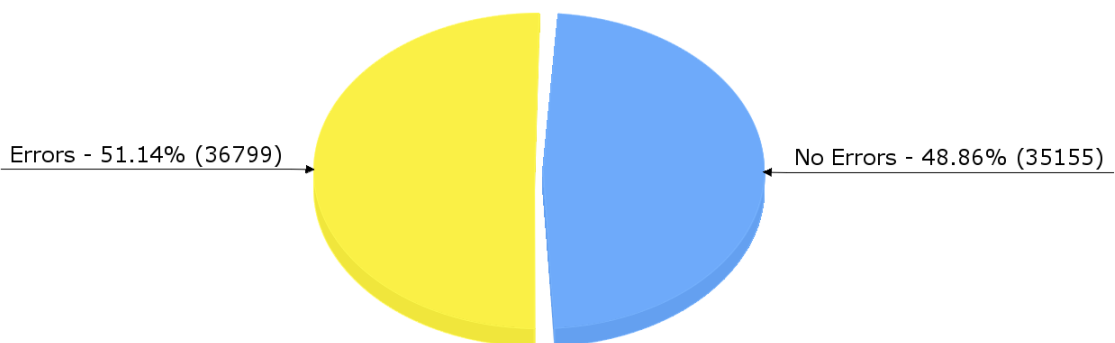
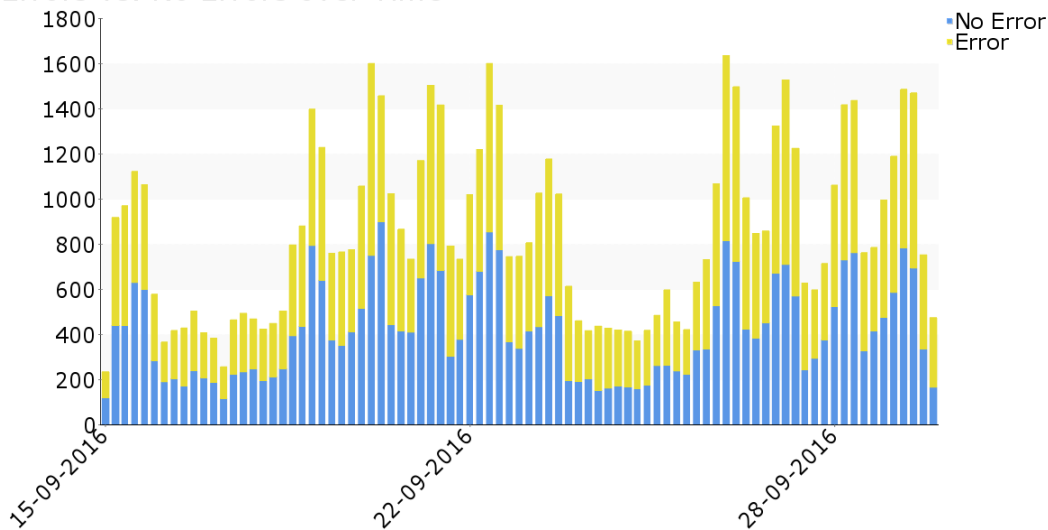
<b>Site</b>	<b>Model</b>	<b>RIOS version</b>
STEELHEAD-01	250H	9.1.2
STEELHEAD-02	EX560L	4.3.0
STEELHEAD-03	250L	9.1.2
STEELHEAD-04	EX560L	4.3.0
STEELHEAD-05	250H	9.1.2
STEELHEAD-06	250H	9.1.2
STEELHEAD-07	250M	9.1.2
STEELHEAD-08	250L	9.1.2
STEELHEAD-09	250H	9.1.2
STEELHEAD-10	1050H	9.1.2
STEELHEAD-11	250H	9.1.2
STEELHEAD-12	EX560M	4.3.0
STEELHEAD-13	EX560L	4.3.0
STEELHEAD-14	EX560L	4.3.0
STEELHEAD-15	250H	9.1.2
STEELHEAD-16	250H	9.1.2
STEELHEAD-17	EX560L	4.3.0
STEELHEAD-18	EX560L	4.3.0
STEELHEAD-19	250H	9.1.2
STEELHEAD-20	250M	9.1.2
STEELHEAD-21	250H	9.1.2
STEELHEAD-22	CX755L	9.1.2
STEELHEAD-23	250M	9.1.2
STEELHEAD-24	250M	9.1.2
STEELHEAD-25	250L	9.1.2
STEELHEAD-26	EX560L	4.3.0
STEELHEAD-27	250H	9.1.2
STEELHEAD-28	EX560L	4.3.0
STEELHEAD-29	EX560L	4.3.0
STEELHEAD-30	250H	9.1.2
STEELHEAD-31	1050H	9.1.2
STEELHEAD-32	CX1555L	9.1.2
STEELHEAD-33	CX1555L	9.1.2

## Optimization Errors vs. No Errors

In this section we have analyzed how many errors were logged, comparing it to the number of sessions optimized with no errors. Please note that an error is not a session that is broken from the user perspective its an error in the optimization.

When we see optimization errors, it means the SteelHead cannot perform layer7 optimization, but is capable of bandwidth optimization only. Without Layer 7 optimization in place users will experience significant performance degradation, in particular this will impact those links and sites with high latency.

Errors vs. No Errors over Time

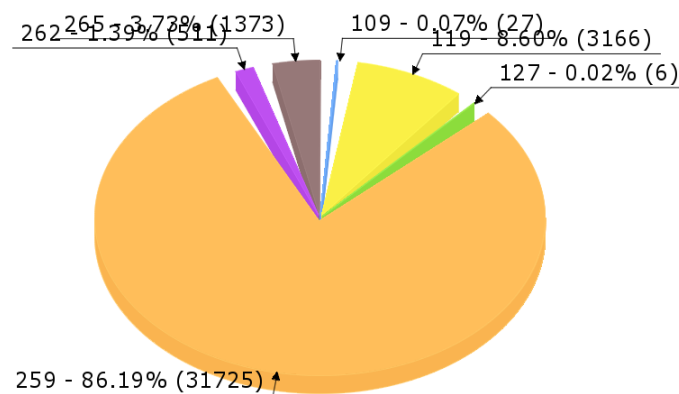
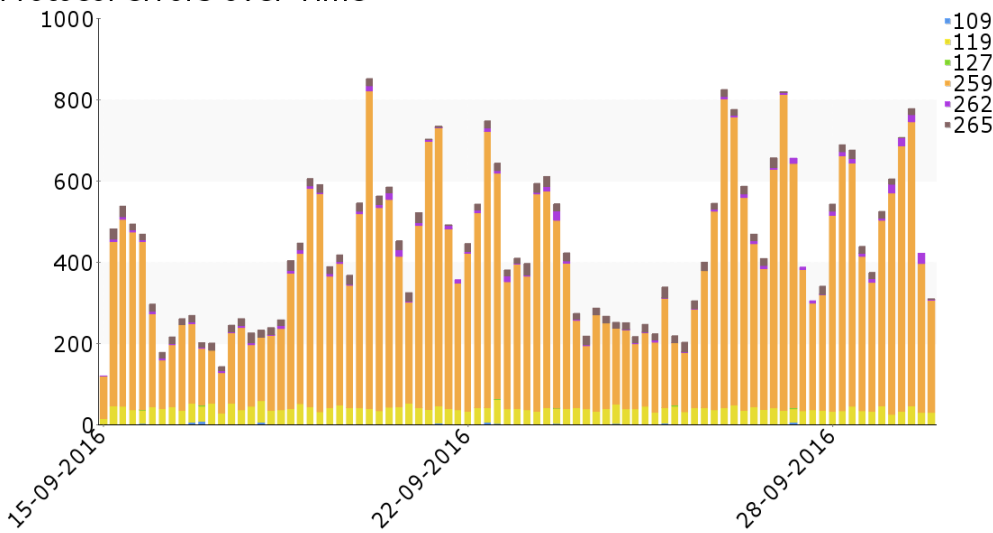


## Protocol errors

When a protocol error occurs, the SteelHead lists a reason why the event occurred. There will be many different causes, the most common are SMB-signing or SMB2 not enabled, but it can also be that the client or server operating system is not supported. The protocol error code list is the official Riverbed one and is available from the Riverbed knowledge base or from the appendix to this report.

This view is global, but in later sections you will be able to see what SteelHeads, servers or clients are causing the errors.

Protocol errors over Time

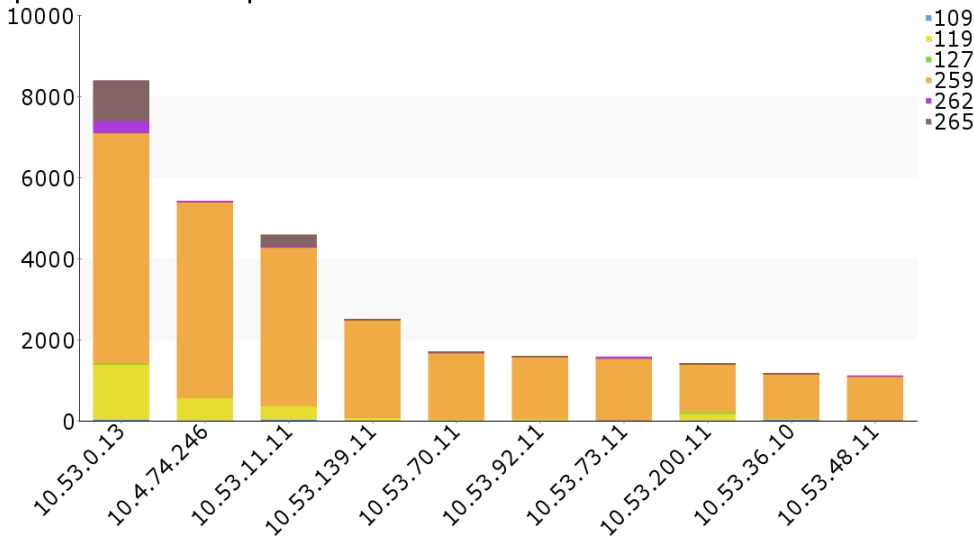


## Top 10 SteelHead peers with errors

When we analyze a session, data is collected to identify the server-side SteelHeads. We use this information to detect SteelHeads that have problems, helping you to identify and prioritize the SteelHeads that need to be focused on when troubleshooting issues.

Note that the IP addresses are the In-path interfaces, this means that the same SteelHead can show up one or more times depending on how many interfaces it has.

Top 10 SteelHead peers with errors

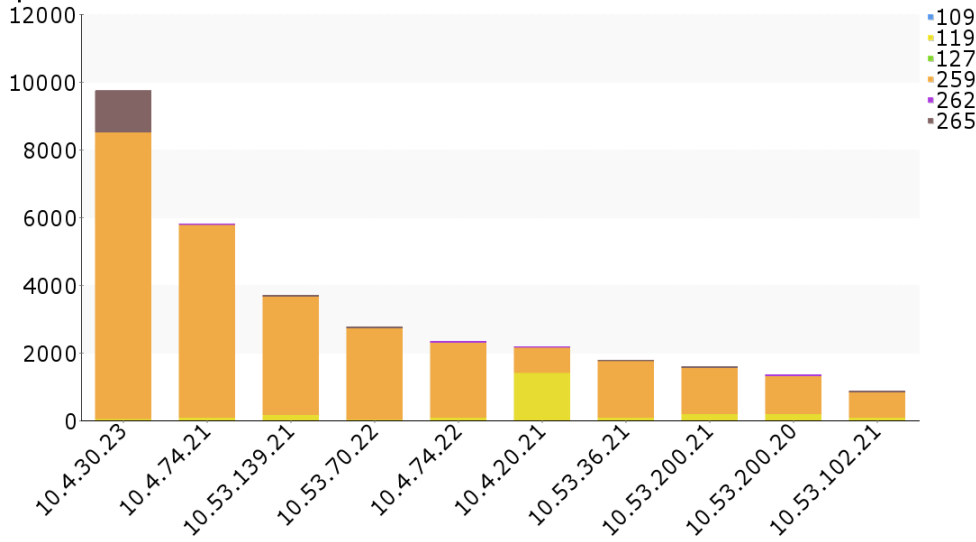


Peer SH	109	119	127	259	262	265
10.53.0.13	11	1373	3	5695	278	1011
10.4.74.246	0	547	0	4834	3	0
10.53.11.11	6	343	0	3910	8	301
10.53.139.11	0	56	0	2411	4	6
10.53.70.11	0	11	0	1653	7	3
10.53.92.11	0	40	0	1504	16	2
10.53.73.11	0	0	0	1531	28	0
10.53.200.11	0	177	1	1190	23	1
10.53.36.10	1	30	0	1089	21	4
10.53.48.11	0	0	0	1088	6	0

## Top 10 servers with errors

Within this section of the report we identify the servers causing the issues. It could be that a server is running a CIFS/SMB version or operating system that is not supported. Furthermore you can use this section to prioritize between servers/locations that have higher business priority.

Top 10 servers with errors



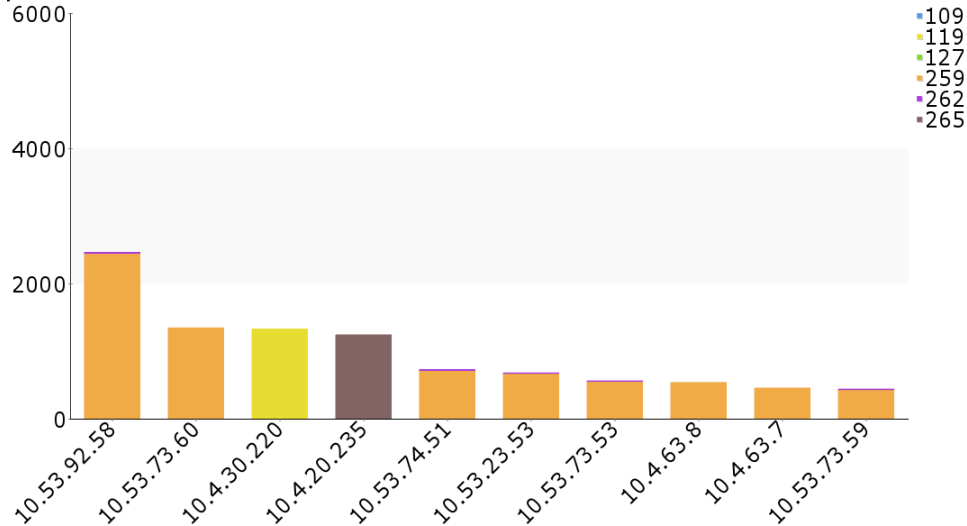
Server IP	109	119	127	259	262	265
10.4.30.23	0	53	0	8438	0	1238
10.4.74.21	0	57	0	5729	2	0
10.53.139.21	0	137	0	3531	0	6
10.53.70.22	0	20	0	2718	0	5
10.4.74.22	0	55	0	2246	1	0
10.4.20.21	0	1408	0	748	4	0
10.53.36.21	0	58	0	1698	0	5
10.53.200.21	0	164	0	1389	0	3
10.53.200.20	0	172	0	1159	2	0
10.53.102.21	0	63	0	768	0	8



## Top 10 clients with errors

Within the section of the report we identify the clients that are causing issues. Like the server section it could be that the client is running a CIFS/SMB version or operating system that is not supported. You can also use this section to prioritize between clients/locations that have higher business priority.

Top 10 clients with errors



Client IP	109	119	127	259	262	265
10.53.92.58	0	0	0	2445	4	0
10.53.73.60	0	0	0	1336	0	0
10.4.30.220	0	1319	0	0	0	0
10.4.20.235	0	0	0	0	0	1233
10.53.74.51	0	0	0	712	1	0
10.53.23.53	0	0	0	662	8	0
10.53.73.53	0	0	0	536	16	0
10.4.63.8	0	0	0	528	0	0
10.4.63.7	0	0	0	446	0	0
10.53.73.59	0	0	0	422	9	0

## Appendix

### *How we collect data and analyze*

We collect data in several ways to provide the most comprehensive view of the SteelHeads performance, workload and efficiency. The primary method is CLI (Command Line Interface). For connection data the SteelHead is instructed to transmit the details of currently open sessions - every 5 minutes. By automatically sampling for connection data per SteelHead, 24 hours a day, 7 days a week we build up the most detailed set of statistics possible, meaning that we can provide the most robust and valid analysis of this important performance metric.

Additionally both Syslog and SNMP data are used to collect complimentary data to further increase our understanding of the SteelHead environment.

### *Protocol Error Codes*

This table contains known error codes, and reasons on SMB/CIFS traffic.

Protocol error	Error description
102	Client sent unhandled NT Transact request type
103	Client sent unhandled request type
104	Client sent unhandled Trans2 request type
109	Negotiate response contains older CIFS dialect
111	UNKNOWN_SHUTDOWN_ERROR
112	Session setup request contains older CIFS dialect
113	SMB_SHUTDOWN_ERR_BAD_SSETUP_REQ See: <a href="https://supportkb.riverbed.com/support/index?page=content&amp;id=S15714">https://supportkb.riverbed.com/support/index?page=content&amp;id=S15714</a>
116	Tree connect response contains older CIFS dialect
118	Security signatures are enabled on the server
119	Security signatures are required on the server
122	Server returned duplicate FID
123	UNKNOWN_SHUTDOWN_ERROR
124	Unable to optimize SMB2 traffic
125	CIFS parser shutting down due to error - Disabling latency optimization - only bandwidth will be optimized
127	SMB_SHUTDOWN_ERR_INVALID_TID
128	UNKNOWN_SHUTDOWN_ERROR
129	CIFS parser shutting down due to error - Disabling latency optimization - only bandwidth will be optimized
258	UNEXPECTED_SMB2_TRAFFIC
259	SIGNING_IN_USE (SMB2 signing required)
261	SMB2 blade disabled
262	SMB2 Connection Blacklisted
263	UNSUPPORTED_DIALECT
265	SMB3_DISABLED
272	UNABLE_TO_THROTTLE
273	SMB3_02_UNAVAILABLE_ON_PEER