Migration to WebDAV in Belle II Experiment

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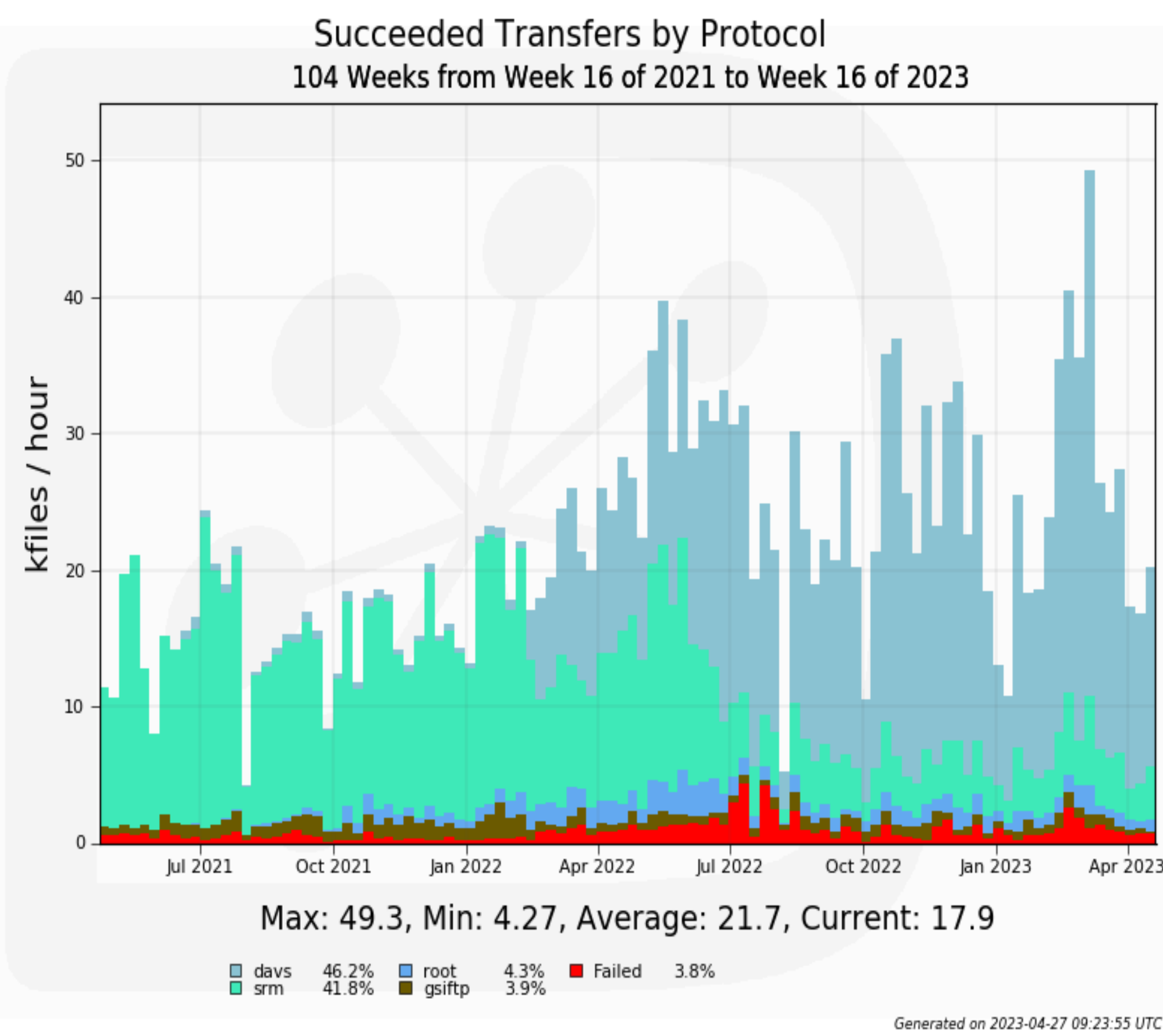[3]Deutsches Elektronen-Synchrotron (DESY), Notkestraße 85, 22607 Hamburg, Germany
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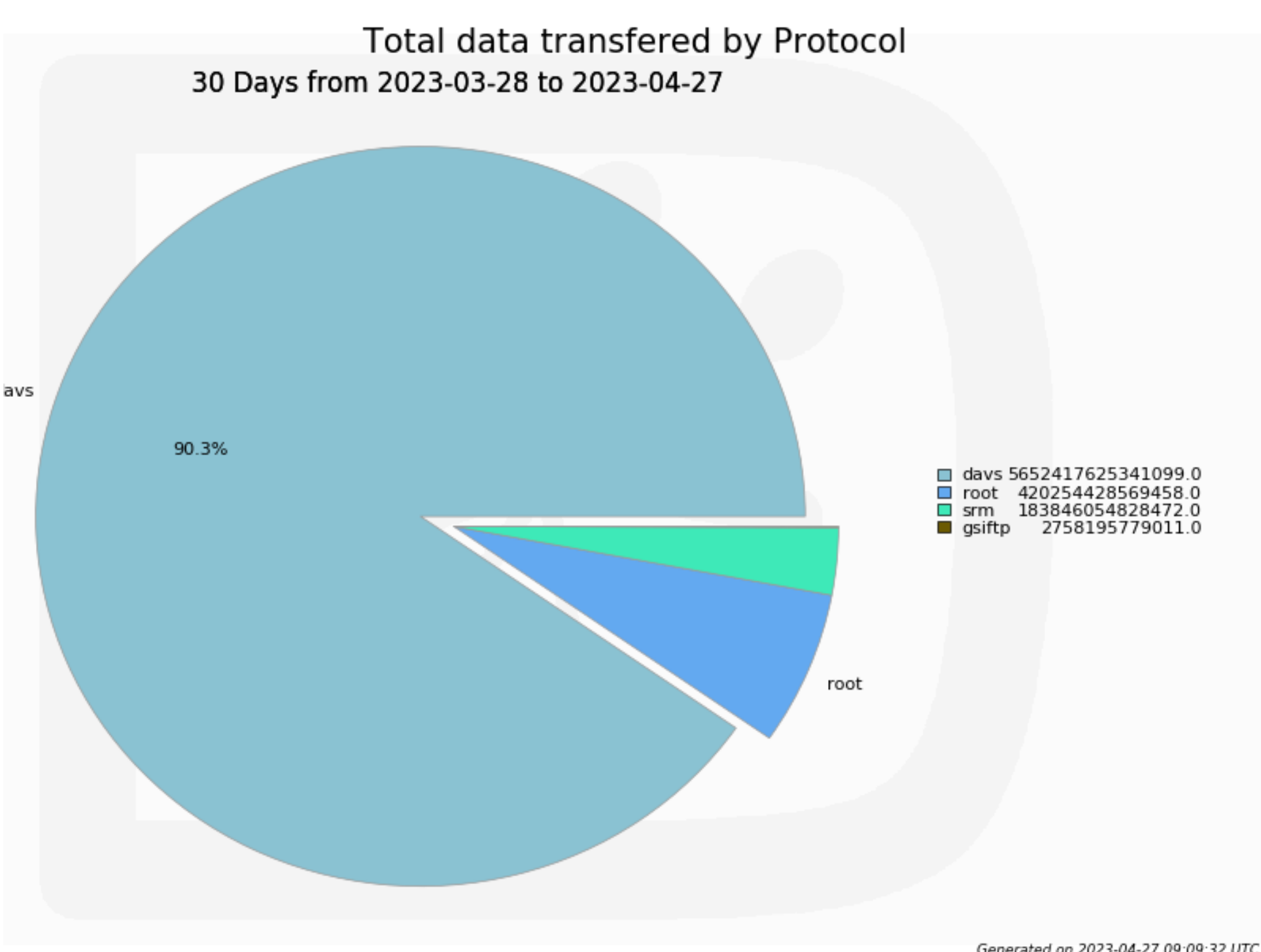[5]Nippon Dental University, 1-8 Hamaura-cho, Niigata 951-8580, Japan

INTRODUCTION

The usage of WebDAV protocol has become popular for physics experiments using grid middleware. It is a valid alternative to GridFTP after the retirement of Globus Toolkit. Belle II experiment adopted WebDAV as the main protocol for data access and third-party transfers. The migration process required a large effort to ensure a smooth transition while keeping the infrastructure operational.

Since the start of the migration campaign in 2022 the adoption of WebDAV is steadily increased. The graph show the traffic WN vs SE per protocol.

Succeeded Transfers by Protocol
104 Weeks from Week 16 of 2021 to Week 16 of 2023
Max: 49.3, Min: 4.27, Average: 21.7, Current: 17.9
davs 46.2% root 4.3% Failed 3.8%
srm 41.8% gsiftp 3.9%
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In the last month more that 90% of the transfers WN-SE have been done via WebDAV, and less than 3% via SRM .
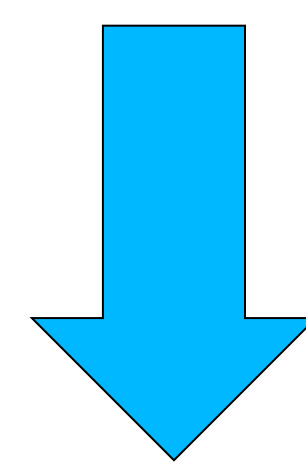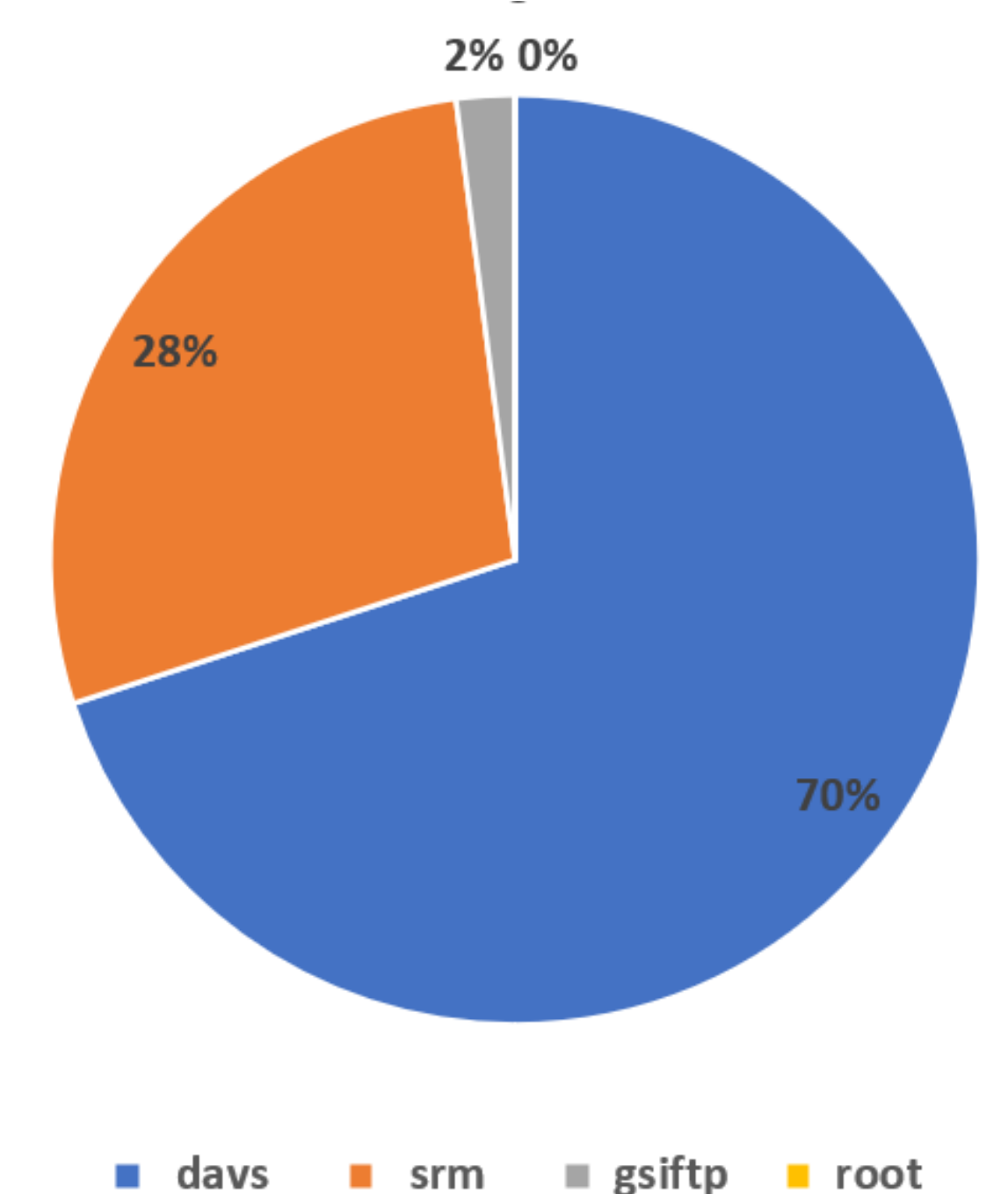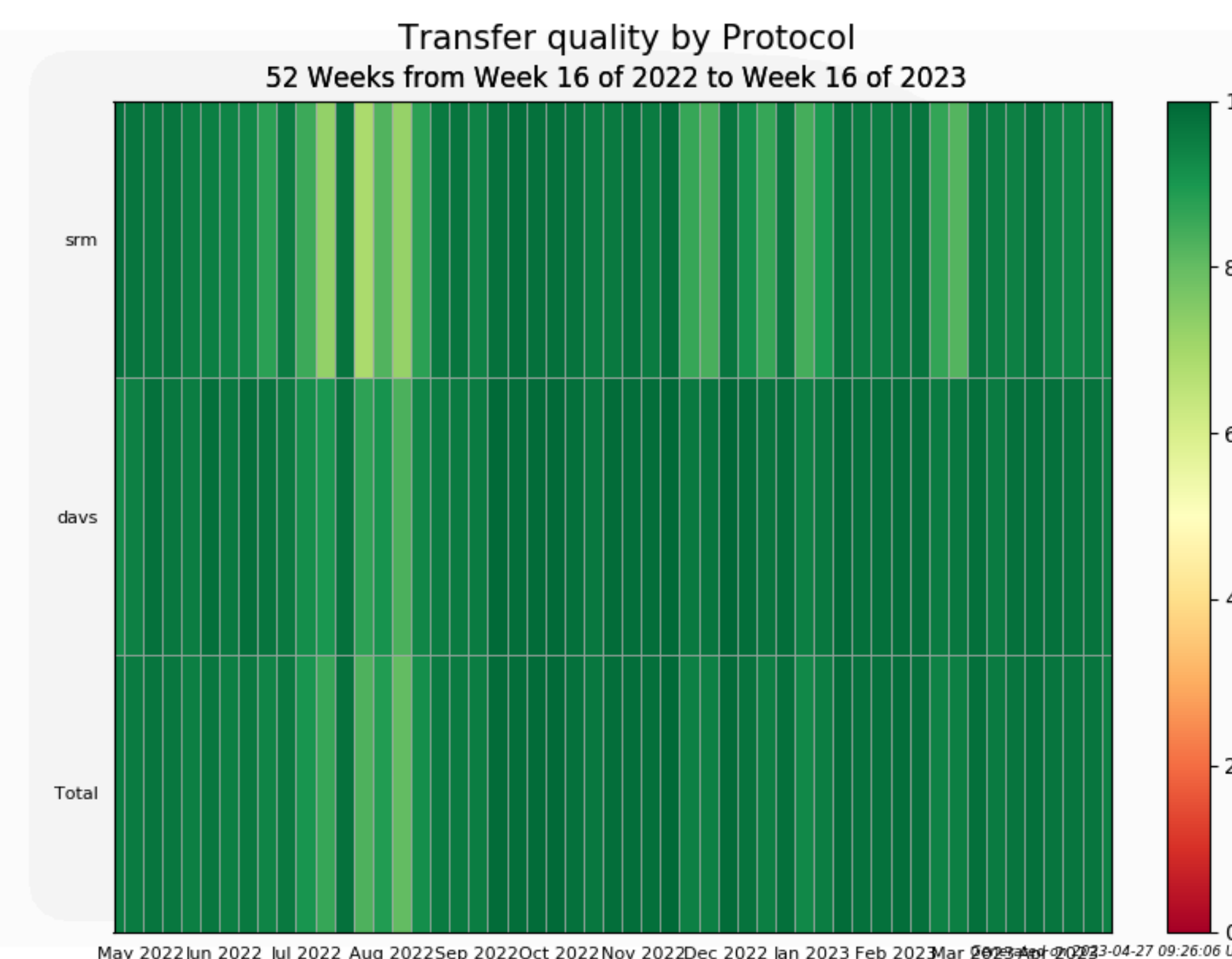
Third-Party-Copy Monitor

To monitor the progress of WebDAV support across the different Belle II storage systems for third-party copying, a testing engine has been set up. The system sends a set of file transfer jobs via the production FTS service. For each pair of endpoints, the system sends two jobs, one using the push mode and the other the pull mode. A full set of tests is run four times per day. All results are published via the web, showing a matrix in which, a green square indicates that both push and pull transfers were successful. Green and yellow colors suggest transfers with WebDAV can be put in production, requiring at least one successful mode.

APRIL 2022

DECEMBER 2022

APRIL 2023

After 1 year of operation WebDAV has demonstrated a high level of reliability.

Third-party-copy with WebDAV reached a peak of 100% in March 2023, with an average greater of 70% in the last 6 months. Large part of the residual SRM traffic is related to TAPE access and to the decommissioning of old SE.

Total data transfered by Protocol
30 Days from 2023-03-28 to 2023-04-27
90.3%
davs 5652417625341099.0
root 420254428569458.0
srm 183846054828472.0
gsiftp 2758195779011.0
Generated on 2023-04-27 09:09:32 UTC

Transfer quality by Protocol
52 Weeks from Week 16 of 2022 to Week 16 of 2023
srm
davs
Total
May 2022 Jun 2022 Jul 2022 Aug 2022 Sep 2022 Oct 2022 Nov 2022 Dec 2022 Jan 2023 Feb 2023 Mar 2023 Apr 2023
Generated on 2023-04-27 09:26:06 UTC

2% 0%
28%
70%
davs srm gsiftp root

CONCLUSION AND NEXT STEPS

Belle II has invested a significant amount of effort to extensively adopt WebDAV as the primary protocol for data access and transfer, replacing GridFTP. The transition has been completed for disk storages, the final step is to migrate the TAPE system to the WebDAV protocol and adopt REST API for tape staging.