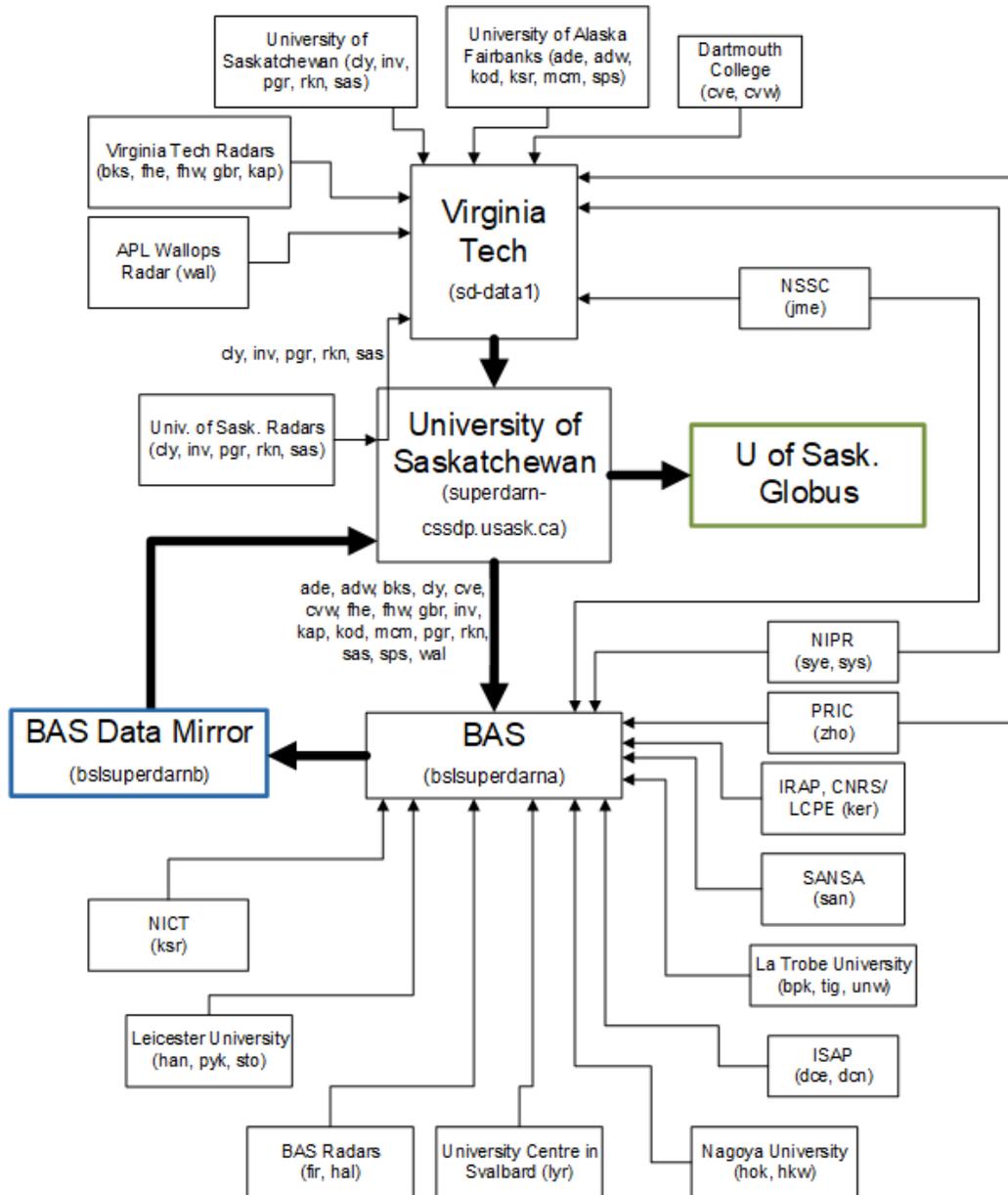# Summary of SuperDARN Data Transfers

Kevin Sterne, June 29, 2020

This figure shows the general state of data transfers within the SuperDARN institutions of Virginia Tech, University of Saskatchewan and the British Antarctic Survey (BAS).[1] The purpose is not to detail how the transfers occur (scp, sftp, etc.), but to provide a high level overview of how things are working. This figure does not reflect or account for

---

[1] In addition, the University of Saskatchewan downloads its own radars (cly, inv, pgr, rkn, sas) to the superdarn-cssdp server in duplication with the path through the VT system

current radar operating status, so some transfers are empty/ghost transfers due to operation issues at the radar.

Virginia Tech Data Collection

The Virginia Tech (VT) system took over the single point of data collection from the PI institutions from John Hopkins University/Applied Physics Lab (JHU/APL) in Sept. 2013. This has continued with the majority of radars/PI institutions even with the BAS data mirror coming online though they are not shown in the figure above. Of these, there are a number intermittent data downloads that do not occur on an automatic basis. These sporadic downloads are run manually due to data integrity issues at the PI institution which have not had any movement towards correcting or feedback in a number of months.

A subset of the radar files (shown in the figure above) that are being collected at VT are then staged up for the University of Saskatchewan to download. This is a legacy setup from years past where data is transferred to the University of Saskatchewan to be distributed out from their institution.

University of Saskatchewan Data Collection

The University of Saskatchewan downloads files from both the VT sd-data1 server as well as the BAS data mirror. These downloads are first staged onto the superdarn-cssdp server and then transferred over to the Globus system. In addition, the University of Saskatchewan downloads its own radars (cly, inv, pgr, rkn, sas) to the superdarn-cssdp server in duplication with the path through the VT system. This is a system loop check to make sure files are maintaining integrity while being processed through the VT system. While the Globus system contains a complete data archive of files, the superdarn-cssdp server contains only the last couple of months of data. This server allows sftp or other open source transfer protocol logins and allows users or SuperDARN institutions to pull the latest data for their own archives.

Files collected from the VT server are then staged up for the BAS data mirror to download. The superdarn-cssdp server is checking the hashes file for all files for both the BAS mirror and the Globus mirror to compare the two. Files that are not found on the Globus mirror are downloaded from the BAS mirror to the superdarn-cssdp server to be placed on the Globus server.

British Antarctic Survey Data Mirror Data Collection

The BAS data mirror became operational in 2016 and began collecting radar data for a subset of radars that had connections to the United Kingdom, Europe or Asia PI institutions. An even smaller subset of radar data is being transferred to the BAS data mirror first and not in parallel with transfers to the VT server. The BAS data mirror provides a number of open source transfer protocols to SuperDARN and other users. The data ingestion or collection occurs on the bslsuperdarna server while data access/distribution occurs on the bslsuperdarnb server. In addition, there is a well

documented catalogue API and web apps server that allows users to collect metadata (such as file content checksums) through http queries. The catalogue API and web apps server is run on the bslsuperdarnc server.

For the small subset of radars that are transferred only to the BAS data mirror first, both VT and University of Saskatchewan download files from the BAS data mirror just as any other user of SuperDARN data might download data.