

IFERC Newsletter

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Collaboration with ITER

Collaboration of REC with ITER in 2021

The Implementing Arrangement No.2 to the Cooperation Arrangement between BA Activities and the ITER Project was signed on June 21, 2021, for collaborative activities between ITER and IFERC. The first Work Programme 2021/2022 for IFERC activities was approved in Oct. 2021 by the Coordination Committee for this Arrangement. Based on the Work Programme 2021/2022, collaborative activities between IFERC-REC and ITER CODAC/IT were implemented in 2021 as well as between IFERC-CSC and ITER.

The activity plan for cooperation with ITER CODAC was discussed at the kick-off meeting held in Sep. 2021, where the Work Programme 2021/2022 of the collaboration and the contact persons of each party for this collaboration were agreed. The Work Programme agreed for 2021/2022 includes:

- Construction of connection environment using Layer 2 VPN (L2VPN)
- CODAC Application Testing
- Remote data access to ITER database
- Live data viewing of ITER operation status in REC
- Fast data transfer from ITER to REC.

The collaborative tests with IO have started. Real-time monitoring tests of the ITER facility from REC room are ongoing. The server installation in F4E Barcelona has been completed and will allow the installation of remote IO-CODAC virtual machines that will be used in the testing activities. The procurement of 100Gbps network switch and the related work have been completed for better network connection in accordance with the upgrade of Science Information NETWORK, SINET6. SINET6 has been available from April 2022. The speed of domestic backbone network is 400 Gbps, and the speed of international network between Tokyo and Amsterdam is 100 Gbps, which would be strengthened by 100 Gbps x 2 in FY 2024. In addition, a new DC (Data Center) is located in Noheji town, at about 30 km from IFERC site in Rokkasho village.

More detailed technical discussions on test planning were held among the experts from IO, F4E and QST at the technical meeting held in Sep. 2021. Preparations for the test of the remote participation to ITER CODAC

began, and a preliminary test was conducted.

The ITER Dashboard installed at REC was tested as a “Live data viewing tool”, using the L2VPN dedicated line between REC and CODAC (Fig.1). ITER Dashboard is a

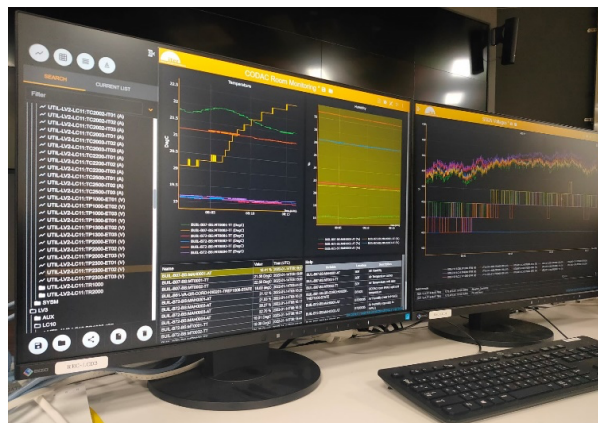


Fig. 1 Test of the data streaming of ITER facility by ITER Dashboard

web-based data viewing tool for the streaming data. The preliminary test results show that the auto-update of the streaming data works well, data viewing is stable during the long time test, and the latency between IO and REC is generally less than 1sec. In summary, the ITER dashboard is good enough for the visualisation of slow data sampling of facilities (PON data). Specific needs, such as fixed vertical axis scale, were formulated for IO attention and implemented in the later release of the Dashboard. Equally, IO engaged into detailed measurement of Dashboard's end-to-end performance, which revealed that most part of 1sec delay is due to backend internal processing at IO, and REC only adds a small delay proportional to signal propagation delay. Further tests are needed for the data with fast sampling rates such as the diagnostic data (DAN data) and the investigation of other methods is required. The 2nd technical meeting was held in Jan. 2022. The progress of the test and the next step of the test were discussed.

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