

Data Mover Challenge 2019/20

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Data Mover Challenge 2019

- Inaugural Data Mover Challenge 2019 (DMC19) organised by NSCC
- Held in conjunction with NSCC's flagship conference SupercomputingAsia
 2019 (SCA19)
- Bring together experts from industry and academia
- To test their software across servers in various countries connected by 100G international networks





Partner DTN Setup

- Basic OS and Software
 - Centos7.5, Iperf3, Singularity
- OS and 100G NIC tuning according to ESnet FasterData Guide
- /DMC directory created on each DTN with subdirectory
 - /test a READ/WRITE directory as the destination the data set transfer
 - /data a READONLY directory as the source of the data set
- Bandwidth utilization and statistics captured at NSCC and SingAREN





DMC19 Competition Scope

- 2TB data set consisting of Genome and Satellite mixed data type and sizes
- DTNs 2-way Data Transfer scenarios

nscc01 <-> starlight01

nscc01 <-> nict01

nscc01 <-> nci01

nscc01 <-> kisti01



Rules and Conditions



- Participants will log in with non-root user accounts
- Data transfer tools deployed only on Singularity Containers running on the DTNs
- Limited BIOS and administrator/root level access by request basis only
- Changes implemented by local partner systems administrator only



DMC19 Participating Teams

Organisation	Solution Title:	
SEAIP/NCHC+Starlight	SEAIP DTN-as-a-Service	
Fermilab	BigData Express	
Zettar Inc.	Zettar zx hyperscale data distribution software platform	
The University of Tokyo	Secure Data Reservoir	
Argonne National Laboratory	Using GridFTP and Globus Online for Large Data Transfers	
iCAIR/Northwestern University	STARLIGHT DTN-as-a-Service for Intensive Science	
JAXA & Fujitsu	Smart Communication Optimizer	



DMC19 Winners

1. **Overall Winner Award**

Zettar Inc. They achieve an amazing 68 Gbps transfer rate between Chicago and NSCC (Singapore).

2. Most Innovative Award

StarLight/iCAIR (International Center for Advanced Internet Research) team. They impressed the judges with their flexible framework to support large data transfers.





SCA19 Data Mover Challenger Zettar Inc. Results



2-way transfers. Both memory-to-memory and disk-to-disk (in Gbps)

Data Mover Challenge 2020 "Data For Science"

- 2nd iteration Data Mover Challenge (DMC) <u>https://www.sc-asia.org/dmc20/</u> organised by NSCC Singapore
- Organised by NSCC Singapore in collaboration with International R&E partners
- Held in conjunction with SupercomputingAsia 2020 (SCA20) <u>https://www.sc-asia.org/</u>
- A platform to bring together experts from industry and academia
- To test their data transfer software across DTNs set up in various countries connected by 100G international networks



DMC20 Partners and Topology





DMC20 Partners and Topology





DMC20 Partners





DMC20 Partners

• SingAREN



- StarLight STAR LIGHT
- SURFnet



TransPAC



 NSCC (Organiser)



NORDUnet NORDUnet
 PACIFIC WAVE PACIFIC WAVE

te of Informatics

PACIFIC RESEARCH
 PLATFORM



• SINET

• NII





Data Mover Challenge 2020

- Running from Aug 2019 Jan 2020 (excluding Oct and Nov 2019)
- Each Team given 5 days
 - Monday– Wednesday: Software Setup
 - Thursday Friday: Running and demonstration of Software to judges
- Participating Teams invited to SCA20 for award presentation and solution showcase



Important Dates





DMC20 Competition Scope

 About 2TB data set consisting of Genome and Satellite mixed data type and sizes

Memory-to-Memory and Disk-to-Disk Data Transfer scenarios:

- 1. surfnet01 -> simultaneous transfer to nscc01 (via CAE-1-SingAREN) and aarnet01 (via CAE-1-Indigo)
- 2. aarnet01 -> geant01 (via Indigo-CAE-1-GEANT)
- 3. nscc01 -> starlight01 (via SingAREN-I2-PacificWave-StarLight)
- 4. nii01 -> nordunet01 (via SINET-US-NetherLight-Nordunet)
- 5. nict01 -> kisti01 (via NICT/JGN-SingAREN-Internet2-StarLight-Kreonet



Judging Criteria

- 1. Error free data transfer performance (average transfer rate and time taken) of the data set:
- Memory to Memory Test (Weightage 10%).
- Disk to Disk Test (Weightage 50%).
- Technological Innovation base on solution submission and interview with judges (Weightage 20%).
 - Disk Management (management of files for efficient transfer)
 - Access Management (integration with federated services and single sign-on)
 - Protocol adaptability
 - OS scheduling
 - Others
- 3. End-user Experience including user interface, ease of installation, licensing model, and integration with services such as access federation etc. (Weightage 20%).



DMC20 Competition Teams

Organisation	Country	Solution Title:
	Israel	NQ line of products - SMB
Visuality Systems		implementation
Gauss Centre for Supercomputing	Germany	
(GCS) e.V.		Unicore UFTP
JAXA: Japan Aerospace Exploration	Japan	High-speed satellite data
Agency, NICT: National Institute of		transferring over the world from
information and Communications		JAXA/NICT via HpFP protocol
National Institute of Informatics	Japan	MMCFTP
	Taiwan, U.S.A,	
National Center for High-performance	Thailand, Japan,	
Computing/NARLabs	Indonesia, Vietnam	SEAIP DTN-as-a-Service
iCAIR/Starlight	United States	StarLight DTN-as-a-Service
Compute Canada/Calcul Canada	Canada	DTN as a service

