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# TACC Cloud APIs Documentation

*Release 1.0*

TACC

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The Cloud and Interactive Computing Group has been expanding the capabilities of its Science-as-a-service API platform, including new support for streaming/sensor data and a Version 3 of the primary APIs. We refer to this new effort as the Tapis Platform. More information on Project Tapis coming soon!

The TACC Cloud APIs include Tapis API, offering Science-as-a-Service; the Abaco API utilizes reactors, which are functions-as-a-service adapted to the HPC use case; and TAS, the TACC Allocation System which handles identity and allocations.



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## TACC Cloud Papers, Projects & Partnerships

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### 1.1 Papers & Projects

#### Projects

Users of our services are encouraged to cite Tapis, Abaco and Chameleon in publications that result from using TACC Cloud resources. Please use the following reference(s):

#### 1.1.1 Tapis

##### Reference Paper

- 1) *Tapis: An API Platform for Reproducible, Distributed Computational Research*.  
Advances in Intelligent Systems and Computing. 2021.  
Book chapter; DOI: 10.1007/978-3-030-73100-7\_61  
Part of ISSN: 2194-5357  
Part of ISSN: 2194-5365

##### Additional Papers

- 2) *Tapis v3 Streams API: Time-series and data-driven event support in science gateway infrastructure*.  
Concurrency and Computation: Practice and Experience. 2021-10-10.  
Journal article; DOI: 10.1002/cpe.6103  
Part of ISSN: 1532-0626  
Part of ISSN: 1532-0634
- 3) *Prediction of whole-cell transcriptional response with machine learning*.  
Bioinformatics. 2021-09-27  
Journal article; DOI: 10.1093/bioinformatics/btab676  
Part of ISSN: 1367-4803  
Part of ISSN: 1460-2059

4) *Building Tapis v3 Streams API Support for Real-Time Streaming Data Event-Driven Workflows.*  
Practice and Experience in Advanced Research Computing. 2021-07-17.  
Conference paper; DOI: 10.1145/3437359.3465567

5) *Real-World, Self-Hosted Kubernetes Experience*  
Practice and Experience in Advanced Research Computing. 2021-07-17  
Conference paper; DOI: 10.1145/3437359.3465603

6) *Sustainability in the Tapis Framework.*  
Proceedings of the 54th Hawaii International Conference on System Sciences. 2021  
Conference Paper; DOI: 10.24251/hicss.2021.874

7) *Tapis API Development with Python: Best Practices In Scientific REST API Implementation.*  
Practice and Experience in Advanced Research Computing. 2020-07-26  
Conference paper; DOI: 10.1145/3311790.3396647

8) *SSH-Backed API Performance Case Study.*  
Benchmarking, Measuring, and Optimizing. 2020.  
Book chapter; DOI: 10.1007/978-3-030-49556-5\_27  
Part of ISSN: 0302-9743  
Part of ISSN: 1611-3349

9) *Building Science Gateway Infrastructure in the Middle of the Pacific and Beyond.*  
Proceedings of the Practice and Experience on Advanced Research Computing. 2018-07-22  
Conference paper; DOI: 10.1145/3219104.3219151

10) *Virtualizing the Stampede2 Supercomputer with Applications to HPC in the Cloud.*  
Proceedings of the Practice and Experience on Advanced Research Computing. 2018-07-22  
Conference paper; DOI: 10.1145/3219104.3219131

11) *Distributed Systems of Microservices Using Docker and Serfnode.*  
7th International Workshop on Science Gateways (IWSG). 2015-06.  
Conference paper; DOI: 10.1109/iwsg.2015.16

## 1.1.2 Abaco

### Reference Paper

1) *Rapid development of scalable, distributed computation with Abaco.*  
Proceedings of the 10th International Workshop on Science Gateways (2018).  
Conference paper; <http://ceur-ws.org/Vol-2357/paper3.pdf>

### Additional Papers



2) *Tapis v3 Streams API: Time-series and data-driven event support in science gateway infrastructure.*

Concurrency and Computation: Practice and Experience. 2021-10-10.

Journal-article; DOI: 10.1002/cpe.6103

Part of ISSN: 1532-0626

Part of ISSN: 1532-0634

3) *Prediction of whole-cell transcriptional response with machine learning.*

Bioinformatics. 2021-09-27

Journal article; DOI: 10.1093/bioinformatics/btab676

Part of ISSN: 1367-4803

Part of ISSN: 1460-2059

4) *The Abaco Platform: A Performance and Scalability Study on the Jetstream Cloud.*

Advances in Parallel & Distributed Processing, and Applications. 2021

Conference paper; DOI: 10.1007/978-3-030-69984-0\_77

Part of ISBN: 978-3-030-69984-0

5) *GenApp, containers and Abaco.*

Proceedings of the Practice and Experience in Advanced Research Computing on Rise of the Machines (learning). 2019-07-28.

Conference paper; DOI: 10.1145/3332186.3332191

### 1.1.3 Chameleon

Keahey, K., Riteau, P., Stanzione, D., Cockerill, T., Mambretti, J., Rad, P., Ruth, P. Chameleon: a Scalable Production Testbed for Computer Science Research, book chapter in “Contemporary High Performance Computing: From Petascale toward Exascale, Volume 3”, Jeffrey Vetter ed., 2018

### 1.1.4 JetStream

Stewart, C.A., Cockerill, T.M., Foster, I., Hancock, D., Merchant, N., Skidmore, E., Stanzione, D., Taylor, J., Tuecke, S., Turner, G., Vaughn, M., and Gaffney, N.I., Jetstream: a self-provisioned, scalable science and engineering cloud environment. 2015, In Proceedings of the 2015 XSEDE Conference: Scientific Advancements Enabled by Enhanced Cyberinfrastructure. St. Louis, Missouri. ACM: 2792774. p. 1-8. <http://dx.doi.org/10.1145/2792745.2792774>

If you have any questions about citing us, please email [CICsupport@tacc.utexas.edu](mailto:CICsupport@tacc.utexas.edu)

## 1.2 Partnerships

The TACC Cloud team works with companies, nonprofits, government agencies and other organizations to help achieve research goals surrounding cloud technology. Click on any of the links below to learn more about our partners.

3dem - NeuroNex ([https://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=505281](https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505281))

Araport

Centers for Disease Control

CyVerse

Designsafe

Drug Discovery Portal

Ike'Wai at UH

IPT on the Web

iReceptor

Planet Texas 2050/Bridging Barriers

Project ECCO

SD2E

SGCI

UTRC

VDJServer

## 1.3 Get Help

Additional information and training resources are available at the [TACC User Portal](#) and the [TACC Learning Center](#).

We have a support team that is ready to help with questions regarding Tapis and Abaco. You can contact our support team via email or Slack.

**Email:** [CICsupport@tacc.utexas.edu](mailto:CICsupport@tacc.utexas.edu)

**Slack:** <https://tacc-cloud.slack.com/>

Just head to the #support channel once you get to our Slack.

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