

Internet2 Cloud Initiatives

Through Internet2 and Regional Networks, the Research and Education community (R&E) is creating a tailored and integrated cloud architecture that simplifies academic and scientific collaboration through cloud storage, compute and data sharing.

Through Internet2 and Regional Networks, the R&E community can:

- Simplify direct access to cloud providers via advanced R&E networking architectures.
- Help researchers pay for and manage cloud infrastructure, through cloud grants, credit applications and funding management.
- Leverage community scale and expertise to support cloud service adoption, with services customized to meet R&E standards, through strategic engagement with industry providers.
- Help ensure secure cloud access, by leveraging R&E community-built trust and identity applications.

Simplify R&E Cloud Access

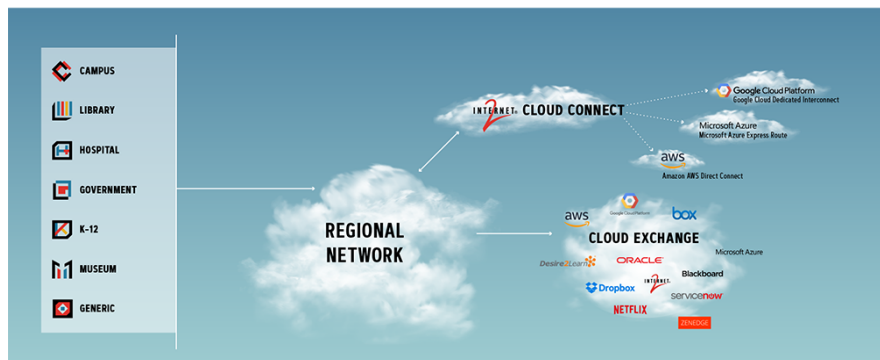
The Internet2 community is leveraging its trusted regional and national infrastructure to directly access leading Cloud services:

- Making it easier for researchers to access and use cloud resources in a campus/regional friendly way.
- Facilitating data movement using research and education networks into and out of the cloud.
- Facilitating movement between clouds and creating alternatives to single commercial vendor lock in.

CLOUD EXCHANGE provides use of the community's existing 800+ Gbps of Layer 3 peering capabilities to major cloud providers for advanced, community-enabled access to cloud services. This peering traffic stays on the regional and Internet2 networks rather than using the commodity internet—decreasing complexity and risk.

CLOUD CONNECT enables Internet2 and Regional R&E Network infrastructures to directly access Microsoft Azure Express Route, Amazon's AWS Direct Connect, and Google Cloud Platform Dedicated Interconnect services.

Internet2 Cloud Connect



Help Researchers Pay For and Manage Cloud Infrastructure

The research and education community exists to support new discoveries that benefit broader society. That's why Internet2 members and staff have worked to streamline the use of cloud grants and credits through campus-wide cloud programs that are designed to minimize the challenges of paying for research workloads in the cloud:

NET+ Amazon Web Services (AWS): <https://internet2.edu/aws>

NET+ Google Cloud Platform: <https://internet2.edu/gcp>

As a benefit of subscribing to NET+ AWS, the service addresses challenges with rebilling PO and accounts for each grant award or funding source. The program is also implementing cost management tools to provide better visibility to how funds are spent on cloud computing and storage. Additional options are being evaluated to track spending on cloud resources between multiple service providers. Internet2 NET+ Service Advisory Boards and staff have worked to establish practices on how to delegate access to cloud resources, ensuring researchers have direct access to the latest technology as it is released to speed time to science.

Through Internet2, the R&E community has also worked with Google, Amazon, and Microsoft to provide a Data Egress Fee Waiver that eliminates the fees for most research applications. Please visit the linked pages for details on the fee waiver and how to register your account or project for the waiver.

Google: <https://cloud.google.com/billing/docs/how-to/egress-waiver>

Amazon: <https://aws.amazon.com/blogs/publicsector/aws-offers-data-egress-discount-to-researchers/>

Microsoft: <https://azure.microsoft.com/en-us/blog/azure-egress-fee-waiver-for-the-academic-community/>

Leverage Community Scale and Expertise to Support Cloud Service Adoption

Internet2 NET+ Solutions helps solve the cloud conundrum for campuses with a unified portfolio of solutions specifically tailored by and for higher education:



- Leverages the capacity of the Internet2 Network connection for enhanced performance and delivery of cloud services.
- Expands adoption of InCommon Federation identity and access management among cloud services.
- Facilitates deployment and ease of integration of commercial cloud services uniquely configured for academic needs, legal terms negotiated via the power of a large community, and frequently consistent and predictable pricing.
- Peer reviews and validation of key service components includes: functional; security and compliance; technical; business and legal; and deployment.
- Facilitates peer-to-peer and community knowledge sharing of best practices, tools and capabilities.
- Influences industry to develop services meeting the particular needs of the R&E community.
- Encourages a strategic relationship between the community and service providers, and provides a basis for long-term collaboration on R&D and product roadmaps.



Secure Cloud Access

Internet2's Trust and Identity efforts encompass a number of services to support collaboration in the cloud, and identity and access management, for higher education and research through:

- Leveraging InCommon Federation for NET+ Cloud Services – Providing a collaboration-ready trust framework for research and education, including single sign-on and privacy-enhancing exchange of information among participants, allowing a user to securely use their home institution identity credentials to access a broad range of global collaboration services
- Software Engineering and Development – Ensuring key identity and access management (IAM) suite software components are deployable on cloud-native infrastructure with an eye towards future sustainability, with straightforward installation and configuration (including Shibboleth, Grouper, COmanage, and midPoint); also working with research and education on adoption strategies

Resources

Simplify R&E Cloud Access

Contact: cloudconnect_request@internet2.edu

About Cloud Connect: www.internet2.edu/vision-initiatives/initiatives/cloud-initiative/

Cloud Grants and Credits

NET+ Amazon Web Services:

www.internet2.edu/products-services/cloud-services-applications/amazon-web-services/

NET+ Google Cloud Platform:

www.internet2.edu/products-services/cloud-services-applications/google-cloud-platform/

Data Egress Fee Waivers

Google: <https://cloud.google.com/billing/docs/how-to/egress-waiver>

Amazon: <https://aws.amazon.com/blogs/publicsector/aws-offers-data-egress-discount-to-researchers>

Microsoft: <https://azure.microsoft.com/en-us/blog/azure-egress-fee-waiver-for-the-academic-community>

NET+ Cloud Solutions

Contact: netplus@internet2.edu

Cloud Services: www.internet2.edu/cloud-services/

About Internet2 NET+: www.internet2.edu/vision-initiatives/initiatives/internet2-netplus/

Trust and Identity

Contact: admin@incommon.org

About Trust and Identity Applications and Infrastructure:

www.internet2.edu/products-services/trust-identity/

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