Radiant

The Radiant documentation has moved to https://docs.ncsa.illinois.edu/systems/radiant/. Please update any bookmarks you may have. Click in the link above if you are not automatically redirected in 5 seconds.

Radiant Service

Radiant is a new private cloud computing service operated by NCSA for the benefit of NCSA and UI faculty and staff. Customers can purchase VM's, computing time in cores, storage of various types and public IP's for use with their VM's.

Page Owner	James Glasgow
Reviewer	Daniel Lapine
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Service Description

Radiant provides researchers a flexible, elastic, and scalable computing solution, using cloud-like virtualization, while remaining on-site at NCSA. Resource requests are made using NCSA's allocation management system and are reviewed on a weekly basis. Virtual machines can be as small as 1 vCPU with 4GB RAM up to a max of 32 vCPUs and 64GB RAM. Projects may be a single large VM, many small VMs, or any combination that meets your requirements. Each project will be encapsulated so that other users of the Radiant system will not be able to see, access, or disrupt machines running as part of your project. Using an interactive web interface or Openstack API, you can create new virtual machines that are based on available operating system images. You will be able to fully customize your virtual machines including the software and services they run. Virtual machines may optionally have publicly accessible network interfaces so that external users can access the resources provided by your systems. Radiant hosts provide 25Gb network links to the 100Gb cluster network and links to the NCSA WAN infrastructure at 100Gb. Radiant offers two pools of storage to meet different data storage needs; a high-performance, low-latency CEPH storage system built on enterprise SSDs, and a high-volume, bulk storage system available using NFS. Radiant will leverage future NCSA storage initiatives such as Taiga and Granite as they become available.

Your use of this resource may quality for funding via Illinois Computes [Learn more about Illinois Computes] and [How to submit a request].

Technical Specifications

- 100 compute nodes each with:
  - 2 x 12 core, Intel® Xeon® E5-2690 v3, 2.6GHz CPU with 256GB RAM
- Over 4000 virtual CPU's available for allocation
- 2 A100-80 GPU nodes each with:
  - Dell PowerEdge XE8545
  - 2 x 24 core AMD 7413 2.65GHz CPU with 1TB RAM
  - 4 x Nvidia HGX A100 - SXM4 80GB
- 25TB aggregate memory
- 25GbE host/100GbE backing networking
- 265TB Usable flash storage capacity
- Access to NCSA's 10PB+ (and growing) center-wide file system (currently via NFS)

Openstack Components

- Nova
- Cinder
- Glance
- Heat
- Neutron
- Keystone
- Horizon

Requesting Resources or Starting a project

Requesting resources on Radiant is done through NCSA's resource management request portal (using the XSEDE Resource Allocation System). Access to the Resource portal requires an NCSA identity. If you do not already have one, please request one using the Identity Portal. Internal users will be asked to provide a University account number (CFOPA) for billing. External users should contact James Glasgow before submitting a resource request.

Information about Radiant allocations are in in the user documentation here. Submit your request using the form at:

- **Submit Resource Request**

Rates

Radiant resources can be purchased at government costing approved rates as detailed below. The minimum resource request is 1 VM of 1vCPU and 4GB of RAM. Each VM is assigned 40GB of SSD storage for memory backing and minimal file system requirements. Additional flash storage requests will be additional to the per VM base. **Usage will be billed monthly** and this is the shortest allocation period.

Resource	Unit	Internal	External
Compute	1 vCPU + 4GiB RAM	$5.03	TBD
GPU-A100	1 A100-80 + 24 vCPU + 230GiB RAM	$546.45	TBD
GPU-V100	1 V100-32 + 8 vCPU + 40GiB RAM	$291.34	TBD
Virtual Machine	1 VM + 40GB Flash	$5.47	TBD
Public IP Address	1 IP address	$0.42	$0.67
Flash Storage	Gigabyte(10^{9})	$0.14	TBD
Bulk Storage	Terabyte(10^{12})	$2.54	$4.03

Public IP address space is limited and restrictions may apply. NCSA security will monitor all public traffic. An explanation of internal and external users is here: OBFS

Example configuration pricing for an internal user:

1 VM with 8 CPUs, 32GB of RAM, 1 public address, and 40GB + 100GB of flash storage

Resource	Units	Per Month	Per Year
Compute	8	$36.56	
Virtual Machine	1	$4.97	
Public IP Address	1	$0.42	
Flash Storage	100	$12.00	
Total		$53.95	$647.40

1 VM with 1 GPU-A100 (10 vCPU + 256GiB RAM) with 1 public IP address and an additional 200GB of flash

Resource	Units	Per Month	Per Year
GPU-A100	1	$546.45	
Virtual Machine	1	$4.97	
Public IP Address	1	$0.42	
Flash Storage	200	$24.00	
Total		$575.84	$6910.08

Questions or Need Help?

To put in a ticket for issues concerning Radiant please use the email help@ncsa.illinois.edu. It is very helpful when submitting requests to include your project name and any specific instance IDs that relate to your problem. Please note that Radiant admins will assist with any Openstack or Radiant problems, but may not be able to provide system administration advice or assist with issues specific to your host operations. Radiant is a standard Openstack environment and if you are stuck on something there are many resources available to you on the internet to solve your issues. You may also find help from other Radiant users in the #radiant-discussion Slack channel. Members of NCSA's software development team frequent the channel and have experience with operating complex systems on Radiant.

Other Contacts

For Technical and On-boarding Questions, please reach out to Jim Glasgow (glasgow@illinois.edu).

For Financial and Billing Concerns, please reach out to Richelle Lu (rlu@illinois.edu).

For Proposal Inclusions, please reach out to Janessa Gentry (janessag@illinois.edu).