



USC University of
Southern California

Senior HPC Engineer (ITS)

Job Description

JOB INFORMATION

Job Code:	166904
Job Title:	Senior HPC Engineer (ITS)
FLSA Status:	Exempt
Supervisory:	
Job Family:	Systems Engineering
Job Family Group:	Information Technology
Management Level:	7 Individual Contributor

JOB SUMMARY

Collaborates with technical leadership in the design, development, installation and maintenance of software for the Center for High-Performance Computing (HPC) systems. Manages the planning, implementation, availability, performance, security, maintenance, and repair of HPC infrastructure. Oversees ITS multi-vendor management, security, and network/internet protocols. Demonstrates ITS values in action.

JOB QUALIFICATIONS:

Education

Req	Pref	Degree	Field of Study	
X		Bachelor's degree		
	X	Bachelor's degree	Computer Science	Or
	X	Bachelor's degree	Computer Information Systems	Or
	X	Bachelor's degree	Information System Management - Network Management	Or
	X	Bachelor's degree	in related field(s)	

Additional Education

Check here if experience may substitute for some of the above education.

Combined experience/education as substitute for minimum education

Work Experience

Req	Pref	Work Experience	Experience Level	
X		5 years		
	X	8 years		

Additional Work Experience

Check here if education may substitute for some of the above work experience.

Combined experience/education as substitute for minimum work experience

Knowledge, Skills and Abilities

Req	Pref	Functional Skills
X		Proficiency with low-latency/high-bandwidth, interconnected infrastructure (including Infiniband, Myrinet, 10GigE, and others).
X		Expertise with HPC system software cluster management tools, job schedulers, and other HPC tools including slurm, salt, xcat, and more.
X		Proficiency with fundamental programming skills (Bash, PERL, Python, or similar languages).
X		Expertise with administration, monitoring, and maintaining secure Linux/Unix operating systems (CentOS, Solaris). Knowledge of HPC storage (FC, SAS) principles, file systems (samfs/qfs, beegfs, zfs, etc.), and computer node storage (NFS).
X		Proficiency in shared and distributed memory parallelism (OpenMP, MPI), and accelerators (GPUs).
X		Excellent written and oral communication skills, and the ability to establish strong, positive working relationships and rapport with diverse groups of team members.
X		Demonstrated experience leading project planning, with the ability to drive technical leadership and management of complex, large-scale computing system projects.
X		Expertise with multi-vendor management, security and network/Internet protocols.
X		Demonstrated expertise in design configuration and planning, with excellent organization skills, and the ability to identify and resolve problems and manage performance.
X		Experience establishing processes for maintaining system performance and managing best-in-class standards.
	X	Experience in high-performance computing and system administration.
	X	Familiarity with cloud computing and container technologies.

Other Job Factors

JOB ACCOUNTABILITIES

	% Time	Essential	Marginal	N/A
Drives day-to-day operations, monitoring computing resource performance, managing configurations, and addressing security administration. Serves as trusted technical advisor for researcher support and software applications and program documentation. Applies revisions to system firmware and software. Engages and collaborates with vendors to assist with support activities, as required.				
Leads the development of new HPC software deployment plans, custom scripts, and testing procedures to ensure operational reliability for researchers. Drives the training of technical ITS staff in the use of new software and hardware, either developed or acquired. Oversees the maintenance and management of HPC researcher accounts and logins for staff and university research groups. Manages the installation, modification, and maintenance of various research software applications for access on HPC clusters.				
Designs, installs and configures cluster infrastructure (e.g., SAN and network devices) and manages documentation. Investigates, debugs, and addresses research inquiries via the customer service ticketing system, presenting complex technical concepts in a simple and straightforward manner.				
Creates, develops and oversees training and education efforts for researchers and academic programs. Identifies new services, develops implementation plans, and fosters strong understanding of emerging technologies and technical developments to address expanding analytical requirements. Stays current with HPC best practices and trends, and champions collaborative relationships with peer research organizations.				
Supports the HPC team's vision and process improvement efforts. Aids the cultivation of an inclusive environment and a culture of trust and transparency, sharing information broadly, openly, and deliberately. Builds and maintains collaborative relationships with diverse team members, peers, and leaders. Actively embodies ITS values and behaviors (e.g., accountability, ethics, best-in-class customer service).				

Other Requirements

<i>Essential:</i>	<i>Emergency Response/Recovery</i>	<i>Essential:</i>	<i>Mandated Reporter</i>
	In the event of an emergency, the employee holding this position is required to “report to duty” in accordance with the university’s Emergency Operations Plan and/or the employee’s department’s emergency response and/or recovery plans. Familiarity with those plans and regular training to implement those plans is required. During or immediately following an emergency, the employee will be notified to assist in the emergency response efforts, and mobilize other staff members if needed.		A mandated reporter who in his or her professional capacity has knowledge of, or reasonably suspects a person who is under the age of 18 years, elderly, or a dependent adult has been the victim of abuse or neglect must report the suspected incident. The reporter must contact a designated agency immediately or as soon as practically possible by telephone or in writing within 36 hours. By virtue of the associated job duties, this position qualifies as a mandated reporter as required by state law and USC’s policy at: https://policy.usc.edu/mandated-reporters/
<i>Campus Security Authority (CSA)</i>			<i>Essential:</i>
By virtue of the associated job duties, this position qualifies as a Campus Security Authority as required by law and USC’s policy at: https://dps.usc.edu/alerts/clery/			No

ACKNOWLEDGMENTS

The above statements reflect the essential and non-essential functions as necessary to describe the principle contents of the job. They are not intended to be a complete statement of all work requirements or duties that may be required of the position. I understand that I may be asked to perform other duties as assigned. USC reserves the right to add or change duties at any time.

The University of Southern California is an Equal Opportunity Employer. USC prohibits discrimination on any basis protected under federal, state, or local law, regulation, or ordinance or university policies. All employment decisions are based on individual qualifications and business need.

I acknowledge receipt of this job description and its associated physical requirements. I have read and understand the job description and job requirements and agree to abide by their contents. I realize that duties may be requested of me that are not specifically stated herein. I understand that I will be expected to adjust to potential fluctuations in work volume. I understand that, if I have any questions about the essential functions or expectations of my position, my supervisor and/or HR partner are available to discuss them with me.

Print Employee Name

Signature

Date

Print Manager Name

Signature

Date

This job description describes the general nature and level of work required by the position. It is not intended to be an all-inclusive list of qualifications, skills, duties, responsibilities or working conditions of the job. The job description is subject to change with or without notice, and Management reserves the right to add, modify or remove any qualification or duty. Nothing in this job description changes the existing at-will employment relationship between the university and the employee occupying the position.