# PEA Job Description

## 1. Position Identification

<table>
<thead>
<tr>
<th>Position Number</th>
<th>991781, 991837, 998902 999003</th>
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<tbody>
<tr>
<td>Position Title:</td>
<td>Senior Systems Administrator</td>
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<td>Department:</td>
<td>Research Computing Services</td>
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<td>Reports to:</td>
<td>Manager, Research Computing Services</td>
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<tr>
<td>Number of Direct/Indirect Reports</td>
<td>Direct 0 Indirect 0</td>
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<tr>
<td>Classification Level</td>
<td>SG14</td>
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<tr>
<td>Last Updated</td>
<td>December 2018</td>
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## 2. Position Summary

Reporting to the Manager, Research Computing Services, the Senior Systems Administrator works as part of a team to ensure the operational effectiveness of the university’s research servers and storage. Members of this team maintain systems critical to many research groups on-campus, including web servers and database servers, and large, high-performance research computing systems (HPC) and OpenStack clouds used by researchers both at UVic, from institutions across the country, and with international collaborations. These systems are required to be in operation 24 hours per day, 365 days of the year.

Functions include the installation, configuration, and maintenance of hardware and software, problem determination/resolution, resource allocation, performance and security monitoring, and usage reporting. Each position has specialized areas of expertise in storage technologies such as Ceph, DDN WOS, GPFs and Lustre, deployment technologies like, xCAT, Ansible, puppet, oneSIS and applications such as OpenStack, HPC Schedulers (SLURM, HTCondor, Moab), and Systems Monitoring.

This position requires the incumbent to have significant problem solving skills to analyze and correct software and hardware problems and to automate administration tasks. The incumbent also must possess effective communications skills in order to provide technical assistance and advice to peers and the user community.

System maintenance is usually required to be performed off-hours and major issues are responded to on a 24/7 basis.

## 3. Key Responsibilities and Expectations

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| Installation, Configuration, and Maintenance of Hardware and Software 50% | • Investigates, pilots and recommends hardware and software solutions  
• Make recommendations to Management regarding major acquisitions  
• Use programming skills to automate common and repetitive administration tasks. Create procedures whereby tasks can be delegated to users or user support groups (i.e., Help Desk)  
• Ensure systems and technology are upgraded to remain technically current  
• Develop and maintain software and processes to enhance systems’ maintainability, functionality, security and integrity  
• Sets up performance and security monitoring |
- Develop and maintain documentation of services, configurations and procedures.

| Problem Determination/System Operations 35% | • Provide support to clients; identify, research and resolve technical issues; track and monitor problems and escalations to ensure timely resolutions;  
• Diagnose and ensure correct operation of server and storage systems in consultation with vendors and other technical staff  
• Monitor the status of alerts, tickets and processes to ensure timely completion of tasks and resolution of issues  
• Make recommendations to senior management for procedural changes and improvements  
• Performance and security monitoring |

| Professional Development 15% | • Participates in on-campus and external committees and working groups (e.g. BCNET); attends conferences and vendor exhibitions  
• Attend courses, seminars and conferences and study documentation, manuals, trade publications and electronic discussion lists to keep up to date with, and to enhance understanding and knowledge of new procedures, software and hardware  
• Maintain up-to-date knowledge of servers and storage systems, concepts and technology |

4. Classification Factors:

Problem-Solving:
This position involves a high degree of technical analysis and creative problem solving: Anticipates and identifies problem areas and associated risks. Identifies solutions to support strategic goals and enterprise-wide priorities, at times without benefit of precedent or existing guidelines. Uses formal methodologies to forecast trends and define innovative strategic choices in response to the potential implications of multiple options. Generates and solicits the approval of leadership prior to defining critical issues and solutions to unclear, multi-faceted problems of high risk which span across and beyond the enterprise. Probes for, and points to, subtle and unclear relationships in highly complex matters and evaluates the merit of potential solutions; anticipates the possible outcome of potential solutions. Systematically identifies and exercises judgment in resolving complex enterprise-wide issues while communicating both the nature of the issues and their resolutions to leadership.

If there is an interruption or degradation in a service, the Senior Systems Administrator must be able to determine the cause and take corrective action. Cause and resolution may lie in the operating system of the client, server or storage, in the network, in the database, within the application, or within the hardware. Due to the critical nature of the services that are supported, this position must be able to act effectively under pressure and be able to quickly and accurately diagnose and correct problems (or contribute to these).

Each server or storage system we run has unique properties, configuration and/or software producing its own unique set of interdependencies and problems.

Responsibility for Financial & Material resources:
Provides recommendations for upgrades/replacements of portions of the university's server and storage infrastructure that has significant capital value (each can range from several thousand dollars up to several million dollars). Final approval of these decisions would typically require senior leadership involvement.

Responsibility for Human Resources:
Works under administrative and broad technical and strategic direction of the Research Computing Services Manager. The work is largely self-managed and is reviewed based in terms of objective achievements. Generally, works within assigned areas of responsibility with
minimal daily involvement from leadership. Indirect supervision and training of junior system administrators.
Managing a project team and supervising progress on projects using the Project Management Office (PMO) process. Creates procedures and interfaces to allow delegation of common and repetitive tasks to users or user support groups (i.e., Help Desk). Provides technical guidance and supervision for some procedures executed by the operations staff.

**Impact of Decisions and Actions:**
The servers and storage systems within the data centres serve the entire University community and researchers across Canada (including international collaborations).

These systems have become central components of all aspects of the University's research computing life. The actions of this position impact all academic faculties and departments, research projects, and research computing at the university.

**Independence:**
Collaborative involvement in decision-making has a major impact on the operation and development of the server and storage infrastructure and therefore a major impact on the University's services, resources and obligations.

This position:
Makes independent studies and analyses of varying problems as well as judgments in the identification of solutions which are not always easily found. Solutions are generally guided by procedures, policies and precedents however, investigation is at times required to modify methods and procedures and to create new ones. Analyzes client requirements and provides recommendations on how a server or storage solution can be built to effectively satisfy those requirements. These recommendations may be reviewed by senior leadership for soundness of judgment, but are relied upon as being technically accurate, feasible and appropriate. Determine and correct the cause of problems when server or storage services are interrupted, degraded or unstable. Solutions may involve following established procedures or developing a unique procedure to fit the circumstances. Bearing in mind the need to satisfy user requirements, a systems administrator is required to evaluate competing demands for system resources and to establish priorities for various services available on the platforms supported. This may require developing innovative solutions to meet user requirements. Decides whether an identified system problem is an emergency that needs to be responded to immediately, particularly outside of normal working hours. Develops and documents best practices and operational procedures. There is a high expectation that systems within the incumbent’s areas of responsibility will work correctly, efficiently, and to the satisfaction of users.

**5. Summary of qualifications:**
This position requires a Bachelor’s Degree in Computer Science or other relevant discipline plus at least five years of experience in system administration in a large enterprise environment.
An equivalent combination of education and experience may be considered.

Specialized qualifications:
- Expert knowledge of RedHat Enterprise Linux and/or derivatives
- In-depth experience with PERL and Python
- Working knowledge of Ansible and xCAT
- Working knowledge of Load Balancers and HA environments
- Experience supporting HPC environments
- Experience supporting cloud computing environments

In addition, this position requires:
• High degree of attention to detail is required, as is the ability to understand complex technical concepts and the need to maintain broad and in-depth technical knowledge of all aspects of servers and server operating systems.
• High level of problem solving abilities; must be able to effectively identify and resolve unusual and highly complex technical problems.
• Ability to effectively manage multiple tasks and priorities and work under pressure to meet time sensitive and mission critical deadlines in a complex environment.
• Ability to take initiative and work with limited direction.
• Ability to work collaboratively.
• Ability to mentor and coach technical staff and teams, and act as a resource.
• Ability to successfully contribute to complex projects: developing project work plans; monitoring and directing the activities of a project team.
• Excellent written and oral communications skills.
• Strong interpersonal skills.
• Ability to work outside of normal working hours on an emergency or pre-scheduled basis.
• Ability for out of town/country travel.

Experience in an academic/research environment will be considered an asset.

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<th>Employee's Signature:</th>
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<td>Manager’s/Supervisor’s Signature</td>
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