SUPPORT POSITION DESCRIPTION

<table>
<thead>
<tr>
<th>Position Title</th>
<th>Systems Engineer / Senior Systems Engineer – IT Operations</th>
<th>Reports To</th>
<th>IT Operations Manager</th>
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<tbody>
<tr>
<td>Function</td>
<td>IT Service</td>
<td>Location</td>
<td>Wellington</td>
</tr>
<tr>
<td>Position Status</td>
<td>Permanent, Full-Time</td>
<td>Date Prepared</td>
<td>January 2020</td>
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**Purpose of Position**

The Systems Engineer (or Senior) works as part of the national IT Operations Team responsible for ensuring full functionality of all NIWA infrastructure, hardware, software, networks and facilities throughout the organisation. Continuous improvement is an ongoing focus and the Systems Engineer will maintain an awareness of relevant developments in IT Operations, and proactively contribute to strategies that enhance NIWA IT services.

Systems Engineers will have a minimum of five years & a Senior Systems Engineer ten years of practical experience working with complex IT systems and may be called upon to provide leadership and guidance to other members of IT Operations as a result of that experience.

**Scope**

The Systems Engineers and Senior Systems Engineers employed within IT Operations act as senior technical experts within the wider NIWA IT Team, working closely with colleagues throughout NIWA. Our Systems Engineers act as technical coaches and mentors to less experienced IT staff, as a sounding board or peer reviewer for other Systems Engineers, and as a trusted adviser to IT Management. The position is part of the centralised IT Operations team but has considerable NIWA-wide responsibilities and may be fully or partially responsible for systems at other sites.

Each Systems Engineer is assigned primary responsibility for particular IT services and/or NIWA sites and works with their peers to ensure that those services are supportable in the primary engineer’s absence.

**Linux Engineering Speciality:** Within the IT Operations team there are several discrete areas of expertise represented. This successful candidate in this case will have very strong Linux Engineering skills and will be a technical champion within NIWA for all things Linux related, including both the operating environment and the integration of dependent software and services.

**Direct Reports**

Nil, but as a respected (senior) technical expert, the incumbent is expected to coach and mentor others to spread knowledge as widely as possible.
## Key Relationships

<table>
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<th>Internal</th>
<th>External</th>
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<tr>
<td>▪ IT Management Team and other IT team members</td>
<td>▪ Key hardware and software vendors</td>
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<td>▪ Internal customers (all science, support, and management staff)</td>
<td>▪ Suppliers of Underpinning Contracts for IT service</td>
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<td>▪ Non-NIWA industry peers</td>
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## Budget Accountability & Delegated Authorities

**This position has the following budget accountability:**
The Senior Systems Engineer & Systems Engineer – IT Operations has no direct budget accountability but works with IT management to formulate annual budgets (capital and operational).

**Delegated authorities defined in the Delegated Authority document updated annually, currently:**
Nil, however the incumbent may be issued a NIWA purchasing card for day-to-day purchases (most often related to travel and minor IT equipment purchases) and has a delegated authority of $1,000.

## Key Result Areas for both Senior Systems Engineer and Systems Engineer

### Planning and Budgeting

- Actively contribute to development of IT plans, technology roadmaps, service designs, annual budgets and providing expert-level technical advice based on detailed knowledge of IT industry developments and practices as well as NIWA’s current infrastructure and services.
- Contribute to negotiation of service level agreements and underpinning contracts for IT systems and services.
- Research, propose, and develop tools to streamline the IT Service’s activities.

### IT Services and Systems

- Actively contribute to the research, design, planning, and implementation of new IT services and enhancements to existing IT services, within the IT project management framework.
- Ensure that new services and their underpinning systems are well-documented and understood by IT staff prior to release to enable ongoing supportability.
- Establish monitoring, alerting, and reporting for service performance and resource utilisation to enable proactive capacity planning and timely response to service issues.
- Commission, configure, and maintain services and underpinning systems as required to provide agreed services to users. This may include carrying out planned maintenance tasks outside of core business hours.
- Ensure that assigned services are available to their users at the agreed level of service, through appropriate service design and problem analysis and resolution in accordance with the approved Problem Management process.
- Use the IT Service’s shared tools to maintain up-to-date, accurate, and complete documentation and configuration data for assigned services and
| Security and Continuity | ▪ Ensure that assigned services and systems:
  ○ Comply with NIWA security policies, including physical security
  ○ Have their data backed up and archived in accordance with policies
  ○ Maintain user-identity information in accordance with security and identity policies, leveraging central identity management whenever possible
  ○ Have adequate peer-reviewed disaster-preparedness and -recovery documentation in the approved repository. |
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<tr>
<td>Service Support</td>
<td>▪ Provide expert second and third-level support, responding to escalations from first-level support, both during business-hours and after-hours as required. This may, on occasion, include response to urgent after-hours calls with remote support and returning to the office if needed. ▪ Participate in the 24/7 on-call support roster for critical IT services, typically once every 7 – 8 weeks (depending on staff leave and vacancies). The remuneration for this position includes an element that recognises this duty. ▪ Respond to escalated incidents in accordance with their assigned priority (based on impact and urgency). If necessary, escalate further (e.g., to the IT Operations Manager) to resolve conflicts in priority or resourcing. ▪ Use the IT Service’s shared tools to track problems and solutions, thus ensuring that the Service Desk is able to keep affected users informed during diagnosis and resolution.</td>
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<tr>
<td>Communication and Knowledge-sharing</td>
<td>▪ Maintain positive relationships with all IT staff and users, encouraging open and constructive communication at all times. ▪ Promote the sharing of knowledge within the IT Service and beyond. ▪ Use the IT Service’s shared tools to share knowledge of assigned services and systems, thus avoiding sole expert status and developing the technical expertise of assigned deputies. ▪ Visit nationwide NIWA sites to maintain understanding of the staff and systems based there. ▪ Coach and mentor less experienced IT staff to assist in their development. ▪ Develop and deliver relevant IT training seminars/workshops.</td>
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<tr>
<td>NIWA Culture and Working Environment</td>
<td>▪ Maintain an open, accessible, friendly and helpful manner to facilitate service delivery to users. ▪ Contribute to building and maintaining a positive work environment and culture that enables NIWA staff to perform to their potential. ▪ Adhere to NIWA’s standards of professionalism and ethics. IT-specific ethical considerations are well described by LOPSA’s System Administrators’ Code of Ethics and all IT team members are expected to behave in accordance with this code: <a href="https://lopsa.org/CodeOfEthics">https://lopsa.org/CodeOfEthics</a></td>
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<tr>
<td>Health and Safety</td>
<td>▪ Take all practicable steps to ensure own safety at work (including using suitable personal protective equipment)</td>
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- Ensure that no action or inaction while at work causes harm to any other person
- Accurately report and record all incidents and accidents
- Undertake Health and Safety training and other specific safety training relevant to your work.
## Person Specification

### Qualifications
- A recognised relevant qualification: Computer Science and/or Business Computing and or equivalent experience.
- ITIL certification and experience is an advantage.

**More senior appointee:**
- A recognised relevant tertiary qualification, e.g., in Computer Science and/or Business Computing and postgraduate study, or equivalent experience.
- Relevant IT professional qualifications to an advanced level, ideally including ITIL certification and experience.

### Experience
- At least 5 years working in a technical environment with a focus on platforms, systems or network infrastructure
- Previous experience in an IT Engineering position preferred.
- Experience in any of the following areas will be of benefit:
  - Science or Research organisations
  - Public Sector – local or central government
- Technical installations in remote environments

**More senior appointee:**
- At least 10 years working in a technical environment with a focus on platforms, systems or network infrastructure
- Previous experience in a Senior IT Engineering position preferred.
- Experience integrating Linux in a mixed-platform environment.

### Technical Knowledge & Skills
**Systems Engineer – Linux Skills Focus**
- Administration and Systems skills on common Linux platforms including Red Hat, CentOS, SUSE, Debian and Ubuntu
- Coding and Scripting; proficiency with two or more of the following languages: Bash, Perl, Python, C or C++, PHP, R
- Experience with Virtualisation Platforms including VMware ESXi (v5.5+)
- Network Engineering competencies:
  - Layer 1/2/3 networking
  - TCP/IP – ports, protocols and the use of packet capture analysis using tools such as Wireshark and TCPDump
  - Common application layer protocols including SMTP & HTTP
  - Strong understanding of common Internet Services:
    - Web services including Apache and NGINX
    - Email services (MTA)
    - DNS services
    - Database services, particularly PostgreSQL and MariaDB
- Operational Security concerns:
  - SSH including the use of Key based authentication
  - Integration with LDAP and Active Directory, Kerberos and 2FA techniques
  - Management of SSL Certificates and the use of encrypted protocols
  - Firewall Management, both at host level and via dedicated appliances (experience with Juniper or Fortinet an advantage).
  - Working knowledge of SELinux in an operational context.
- Server & Storage: Experience managing server hardware, SAN and NAS solutions, and NFS.
- Network Monitoring tool configuration & maintenance — Nagios, Icinga, LibreNMS.
- Build & Deployment tools – Katello, Kickstart, Puppet and other similar tools.
- General IT Environmental Infrastructure – power, cooling and networks
- Experience administering Windows Servers & Services (Active Directory, Exchange, Office 365, Azure, MSSQL) to a basic level is desirable, but not essential.
- Experience working in a mixed-platform environment comprised of Windows, Linux and MacOS platforms is highly desirable.

**Senior Systems Engineer – Linux Skills Focus**

- Administration and Systems skills on common Linux platforms including Red Hat, CentOS, SUSE, Debian and Ubuntu
- Coding and Scripting; proficiency with two or more of the following languages: Bash, Perl, Python, C or C++, PHP, R
- Automation
  - Jenkins, Gitlab-CI.
  - Build and deployment tools – Ansible, Puppet, Katello, Kickstart.
- Version control – Git.
- Containerisation - Docker, Kubernetes and cloud-based services.
- Operational Security
  - SSH including the use of key based authentication.
  - Integration with LDAP and Active Directory, Kerberos.
  - Management of SSL certificates and the use of encryption.
  - Firewall management, both at host level and dedicated appliances (Fortigate and Juniper).
  - Working knowledge of SELinux in an operational context.
- Strong understanding of common Internet Services
  - Web services including Apache and nginx.
  - DNS services.
  - Load balancers and high availability.
  - Database services, PostgreSQL and MariaDB.
- Experience with virtualisation platforms - VMware 6.5+
- Network engineering competencies
  - Layer 1/2/3 networking proficiency.
  - Network protocols and the use of packet capture analysis using tools such as Wireshark and TCP dump.
  - Common application layer protocols.
- Storage - SAN, NAS, Fibre Channel and multipathing.
- Network monitoring tool configuration and maintenance – Icinga, LibreNMS.
- General IT environmental infrastructure – power, cooling and physical racking.
- Experience administering Microsoft systems (Active Directory, Office 365, Azure, MSSQL) to a basic level is desirable, but not essential.

**Competencies**

**Communication Skills**

Writes and speaks clearly and concisely. Able to convey their ideas and seek relevant information from others effectively.

**Initiative**

Self-motivated, proactive, identifies opportunities, willing to take on extra responsibility. Able to work with minimal supervision.

**Keeping Informed**
Maintains awareness of external events with implications for their work. Ensures up-to-date knowledge and skills in their professional area (e.g. membership of professional bodies, conference attendance, technical reading, training and development activities).

**Lateral Thinking**
Identifies new and different ways to operate. Sees numerous opportunities and alternatives. Innovative.

**Results Orientation**
Focused on achieving bottom line results. Puts in the time & effort, drives self & others to achieve outcomes. Proactive in setting & pursuing challenging goals & targets.

**Open Communication**
Honest and direct. Encourages information sharing & constructive debate. Willing to make requests, delegate tasks, and able to say “no” and accept “no” from others.

**Problem-Solving**
Able to think critically and analyse data/situations. Positive approach to solving problems on-the-job. “Can do” attitude. Perseveres to find a workable solution despite difficulties.

**Planning and Organising**
Thinks ahead and plans work so requirements are met. Prioritises and manages time effectively. Well-organised and systematic approach.

**Quality Focus**
Aware of quality requirements, committed to maintain high quality standards, proactive in taking steps to improve quality.

**Technical Knowledge & Skills**
Possesses required technical knowledge & skills to operate effectively in relevant specialist area.
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<tr>
<th>NIWA Values</th>
<th>Working safely is paramount at all times.</th>
<th>We strive for excellence in everything we do.</th>
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<tbody>
<tr>
<td>Safety</td>
<td>▪ We take personal responsibility for the safety of ourselves and others.</td>
<td>▪ We apply the highest standards of rigour to our work.</td>
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<td>▪ We are always safety conscious, thinking “What am I about to do? What could go wrong? How can I do it safely?”</td>
<td>▪ We are creative and innovative in our thinking and apply leading-edge practices.</td>
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<td>▪ We maintain high standards of safety in all working environments.</td>
<td>▪ We are highly professional in the way we operate.</td>
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<td>▪ We report all hazards, incidents and near misses, acting on and learning from them.</td>
<td>▪ We are proud of our reputation for high quality science.</td>
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<td>▪ We continually improve our safety systems and processes.</td>
<td>▪ We are efficient, effective and resourceful, seeking to eliminate waste and maximise opportunities.</td>
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<td>Customer Focus</td>
<td>We provide our customers with an outstanding service and experience.</td>
<td>Agility</td>
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<td>▪ We recognise that NIWA wouldn’t exist without its customers.</td>
<td>We are agile, resourceful and responsive to opportunities, and challenges.</td>
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<td>▪ We all work together to ensure a positive customer experience.</td>
<td>▪ We actively create, identify and develop new opportunities.</td>
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<td>▪ We value and respect our customers, and act to ensure excellent and enduring relationships with them.</td>
<td>▪ We react quickly and flexibly to changing priorities.</td>
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<td>▪ We communicate with our customers openly and proactively.</td>
<td>▪ We are positive, solution-focused and future-oriented in our outlook.</td>
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<td>▪ We deliver on our commitments to customers – in full, on time and within specifications.</td>
<td>▪ We recognise change as continuous, and treat it as an opportunity.</td>
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<td>▪ We seek customer feedback to help us improve.</td>
<td>▪ We are committed to continuous learning and improvement.</td>
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<tr>
<td>People and Teamwork</td>
<td>We are OneNIWA and work collaboratively for the greater benefit of NIWA and our customers.</td>
<td>Integrity</td>
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<td></td>
<td>▪ We help and support our colleagues, treating each other with courtesy and respect.</td>
<td>▪ We are honest, trustworthy and reliable in our work and our relationships with others.</td>
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<td>▪ We value diversity and respect other cultures.</td>
<td>▪ We uphold the highest ethical standards.</td>
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<td></td>
<td>▪ We value the opinions, knowledge and contributions of others, and celebrate success.</td>
<td>▪ We deliver.</td>
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<td></td>
<td>▪ We willingly share our expertise.</td>
<td>▪ We take ownership and are accountable for our actions.</td>
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<td></td>
<td>▪ We all take responsibility for getting things done.</td>
<td>▪ We provide accurate, evidence-based information and advice.</td>
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<td>▪ We listen openly and communicate honestly and constructively.</td>
<td>▪ We maintain objectivity at all times, avoiding advocacy and bias.</td>
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<td>▪ NIWA’s interests and reputation take precedence over advancing our own individual interests and reputation.</td>
<td>▪ We are viewed as trusted professionals in our areas of expertise.</td>
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<td></td>
<td>▪ We are proud to be part of NIWA.</td>
<td>▪ We avoid or declare all conflicts of interest.</td>
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Skills Framework for the Information Age
Profile for Systems Engineer and Senior Systems Engineer

SFIA, the Skills Framework for the Information Age, describes skills required by professionals in roles involving information and communications technology. It provides a common reference model in a two-dimensional framework consisting of skills on one axis and seven levels of responsibility on the other. It describes professional skills at various levels of competence. It also describes generic levels of responsibility, in terms of Autonomy, Influence, Complexity and Business Skills.

This document identifies the Skills and Levels required for the position of Senior Systems Engineer at NIWA. For most of these skills, the candidate should be operating at levels 4 – Enable, and 5 – Ensure, Advise.
This role primarily involves the categories of Development and Implementation, Delivery and Operation.

Below are the generic definitions for each level of responsibility, which may help to assess the competency level desired for each listed skill. After the generic definitions, the specific SFIA-defined skills for the role and the level assessed for it are provided in table form.

More information on the SFIA is available at www.sfia-online.org. See also the NIWA SFIA Position Description tool as below:

Systems Engineer:

Senior Systems Engineer: