	Technical Support Tasks and KSAs	
		Avg
S	<b>Tasks</b> PECIFIC THINGS an entry level person would BE EXPECTED TO PERFORM on the job WITH LITT	
3	SUPERVISION.	
	Install, Configure, Update, Maintain	
T-1	Install and maintain network infrastructure device operating system software (e.g., IOS, firmware).	3.3
T-2	Install and configure hardware, software, and peripheral equipment for system users in accordance with organizational standards.	3.3
T-3	Manage changes/updates for both internal and external customers when policies and procedures change.	3.0
T-4	Maintain computer hardware.	2.8
T-5	Provide technical support for software maintenance or use.	3.6
T-6	Troubleshoot system hardware and software.	3.4
T-7	Diagnose and resolve customer-reported system incidents, problems, and events.	3.3
T-8	Identify, test, and implement solutions to computer hardware and software problems or escalate if required.	3.5
T-9	Test software performance in relation to troubleshooting.	2.8
T-10	Test computer hardware performance in relation to troubleshooting.	2.6
Г-11	Collaborate with others to resolve information technology issues.	3.3
Г-12	Identify and escalate issues to improve computer or information systems.	3.2
T-13	Escalate computer hardware and software problems according to organization policies.	3.3
T-14	Monitor and report client-level computer system performance.	3.3
Γ-15	Monitor computer system performance to ensure proper operation.	3.1
Г-16	Assess or monitor system for cyberattacks.	3.3
T-17	Responds to crises/security incidents following SOPs.	3.3
T-18	Learn continuously about emerging industry or technology trends (e.g., machine learning and AI).	3.2
T-19	Administer accounts, network rights, and access to systems and equipment.	3.5
T-20	Perform asset management/inventory of information technology (IT) resources.	2.8
T-21	Maintain incident tracking and solution database.	2.8
T-22	Effectively document operational activities and enter results into the knowledge base and/or ticketing systems.	3.3
	Knowledge	
	edge focuses on the understanding of concepts. It is theoretical. An individual may have an understal	
a topi	c or tool or some textbook knowledge of it but have no experience applying it. For example, someone	e migh
	read hundreds of articles on health and nutrition, many of them in scientific journals, but that doesn't	
	that person qualified to dispense advice on nutrition.	
have	that person qualified to dispense advice on nutrition.  Knowledge of the basic operation of computers.	make
have		make
have K-1 K-2	Knowledge of the basic operation of computers.  Knowledge of computer networking concepts and protocols and network security methodologies.	3.9 3.6
K-1 K-2 K-3	Knowledge of the basic operation of computers.  Knowledge of computer networking concepts and protocols and network security methodologies.  Knowledge of operating environments, organizational software and applications.	3.9 3.6 3.3
K-1 K-2 K-3 K-4	Knowledge of the basic operation of computers.  Knowledge of computer networking concepts and protocols and network security methodologies.  Knowledge of operating environments, organizational software and applications.  Knowledge of practices of internal, external, and global customers (as applicable).	3.9 3.6 3.3 2.8
K-1 K-2 K-3 K-4 K-5	Knowledge of the basic operation of computers.  Knowledge of computer networking concepts and protocols and network security methodologies.  Knowledge of operating environments, organizational software and applications.  Knowledge of practices of internal, external, and global customers (as applicable).  Knowledge of internal organizational communication processes.	3.9 3.6 3.3 2.8 3.1
K-1 K-2 K-3 K-4 K-5 K-6	Knowledge of the basic operation of computers.  Knowledge of computer networking concepts and protocols and network security methodologies.  Knowledge of operating environments, organizational software and applications.  Knowledge of practices of internal, external, and global customers (as applicable).  Knowledge of internal organizational communication processes.  Knowledge of customer support processes and practices.	3.9 3.6 3.3 2.8 3.1 3.7
K-1 K-2 K-3 K-4 K-5 K-6	Knowledge of the basic operation of computers.  Knowledge of computer networking concepts and protocols and network security methodologies.  Knowledge of operating environments, organizational software and applications.  Knowledge of practices of internal, external, and global customers (as applicable).  Knowledge of internal organizational communication processes.  Knowledge of customer support processes and practices.  Knowledge of technical support operations, issues, and constraints.	3.9 3.6 3.3 2.8 3.1 3.7 3.4
K-1 K-2 K-3 K-4 K-5 K-6 K-7	Knowledge of the basic operation of computers.  Knowledge of computer networking concepts and protocols and network security methodologies.  Knowledge of operating environments, organizational software and applications.  Knowledge of practices of internal, external, and global customers (as applicable).  Knowledge of internal organizational communication processes.  Knowledge of customer support processes and practices.  Knowledge of technical support operations, issues, and constraints.  Knowledge of business issues regarding software licensing.	3.9 3.6 3.3 2.8 3.1 3.7
K-1 K-2 K-3 K-4 K-5 K-6 K-7 K-8	Knowledge of the basic operation of computers.  Knowledge of computer networking concepts and protocols and network security methodologies.  Knowledge of operating environments, organizational software and applications.  Knowledge of practices of internal, external, and global customers (as applicable).  Knowledge of internal organizational communication processes.  Knowledge of customer support processes and practices.  Knowledge of technical support operations, issues, and constraints.  Knowledge of business issues regarding software licensing.  Knowledge of interrelation between different organizational groups.	3.9 3.6 3.3 2.8 3.1 3.7 3.4 3.0
K-1 K-2 K-3 K-4 K-5 K-6 K-7 K-8 K-9	Knowledge of the basic operation of computers.  Knowledge of computer networking concepts and protocols and network security methodologies.  Knowledge of operating environments, organizational software and applications.  Knowledge of practices of internal, external, and global customers (as applicable).  Knowledge of internal organizational communication processes.  Knowledge of customer support processes and practices.  Knowledge of technical support operations, issues, and constraints.  Knowledge of business issues regarding software licensing.  Knowledge of interrelation between different organizational groups.  Knowledge of organization chart and roles/responsibilities of company personnel/departments.	3.9 3.6 3.3 2.8 3.1 3.7 3.4 3.0 2.5
K-1 K-2 K-3 K-4 K-5 K-6 K-7 K-8 K-9 K-10	Knowledge of the basic operation of computers.  Knowledge of computer networking concepts and protocols and network security methodologies.  Knowledge of operating environments, organizational software and applications.  Knowledge of practices of internal, external, and global customers (as applicable).  Knowledge of internal organizational communication processes.  Knowledge of customer support processes and practices.  Knowledge of technical support operations, issues, and constraints.  Knowledge of business issues regarding software licensing.  Knowledge of interrelation between different organizational groups.	3.9 3.6 3.3 2.8 3.1 3.7 3.4 3.0 2.5 2.7 3.3
K-1 K-2 K-3 K-4 K-5 K-6 K-7 K-8 K-9 K-10 K-11	Knowledge of the basic operation of computers.  Knowledge of computer networking concepts and protocols and network security methodologies.  Knowledge of operating environments, organizational software and applications.  Knowledge of practices of internal, external, and global customers (as applicable).  Knowledge of internal organizational communication processes.  Knowledge of customer support processes and practices.  Knowledge of technical support operations, issues, and constraints.  Knowledge of business issues regarding software licensing.  Knowledge of interrelation between different organizational groups.  Knowledge of organization chart and roles/responsibilities of company personnel/departments.  Knowledge of preventative maintenance procedures and processes.	3.9 3.6 3.3 2.8 3.1 3.7 3.4 3.0 2.5 2.7
K-1 K-2 K-3 K-4 K-5 K-6 K-7 K-8 K-9 K-10 K-11 K-12	Knowledge of the basic operation of computers.  Knowledge of computer networking concepts and protocols and network security methodologies.  Knowledge of operating environments, organizational software and applications.  Knowledge of practices of internal, external, and global customers (as applicable).  Knowledge of internal organizational communication processes.  Knowledge of customer support processes and practices.  Knowledge of technical support operations, issues, and constraints.  Knowledge of business issues regarding software licensing.  Knowledge of interrelation between different organizational groups.  Knowledge of organization chart and roles/responsibilities of company personnel/departments.  Knowledge of preventative maintenance procedures and processes.  Knowledge of applicable backup and restoration procedures.  Knowledge of system monitoring and diagnostic tools and processes.  Awareness of the components of the risk management process (e.g., methods for assessing and mitigating	3.9 3.6 3.3 2.8 3.1 3.7 3.4 3.0 2.5 2.7 3.3 3.5
K-1 K-2 K-3 K-4 K-5 K-6 K-7 K-8 K-9 K-10 K-11	Knowledge of the basic operation of computers.  Knowledge of computer networking concepts and protocols and network security methodologies.  Knowledge of operating environments, organizational software and applications.  Knowledge of practices of internal, external, and global customers (as applicable).  Knowledge of internal organizational communication processes.  Knowledge of customer support processes and practices.  Knowledge of technical support operations, issues, and constraints.  Knowledge of business issues regarding software licensing.  Knowledge of interrelation between different organizational groups.  Knowledge of organization chart and roles/responsibilities of company personnel/departments.  Knowledge of preventative maintenance procedures and processes.  Knowledge of applicable backup and restoration procedures.  Knowledge of system monitoring and diagnostic tools and processes.	3.9 3.6 3.3 2.8 3.1 3.7 3.4 3.0 2.5 2.7 3.3 3.5 3.5

K-17	Knowledge of cyber threats and vulnerabilities.	3.3
K-18	Knowledge of specific operational impacts of cybersecurity lapses.	3.2
K-19	Knowledge of measures or indicators of system performance and availability.	3.0
K-20	Knowledge of systems administration concepts.	3.1
K-21	Knowledge of physical computer components and architectures, including the functions of various	3.3
	components and peripherals.	
	Knowledge of electronic devices (e.g., computer systems/components, access control devices, digital	3.1
K-22	cameras, digital scanners, electronic organizers, hard drives, memory cards, modems, network components,	
	networked appliances, networked home control devices, printers, removable storage devices, telephones,	
	copiers, facsimile machines, etc.).	
K-23	Knowledge of file extensions (e.g., .dll, .bat, .zip, .pcap, .gzip).	3.1
K-24	Knowledge of Cloud-based technologies and concepts (e.g., IAAS, SAAS, PAAS, file/sync/share).	3.6
K-25	Knowledge of system administration concepts for operating systems such as but not limited to Unix/Linux,	3.4
K 25	IOS, Android, and Windows operating systems.	
K-26	Knowledge of industry best practices for service desk (e.g., machine learning and AI).	3.1
K-27	Knowledge of organizational security policies.	3.4
K-28	Knowledge of remote access processes, tools, and capabilities related to customer support.	3.6
K-29	Knowledge of Personally Identifiable Information (PII) data security standards.	3.3
K-30	Knowledge of Payment Card Industry (PCI) data security standards at an awareness level.	2.9
K-31	Knowledge of Personal Health Information (PHI) data security standards.	3.1
	Knowledge of an organization's information classification program and procedures for information	2.8
K-32	compromise.	
	Knowledge of the operations and processes for incident, problem, and event management including	3.3
K-33	escalation as needed.	
	Knowledge of IT system operation, maintenance, and security needed to keep equipment functioning	3.3
K-34	properly.	0.0
K-35	Knowledge of procedures used for documenting and querying reported incidents, problems, and events.	3.0
	Knowledge of successful capabilities to identify the solutions to less common and more complex system	3.1
K-36	problems.	
	Knowledge of principles and processes for providing customer and personal services. This includes customer	2.8
K-37	needs assessment, knowledge assessment, meeting quality standards for services, and evaluation of	
137	customer satisfaction.	
	Knowledge of the structure and content of the English language including the meaning and spelling of	3.3
K-38	words, rules of composition, and grammar.	3.5
K-39	Knowledge of troubleshooting methods.	3.6
		3.3
	Knowledge of change control procedures.	
	Knowledge of documentation processes and procedures.  Knowledge of technical presentation tools.	3.1
K-42	·	2.6
K-43	Knowledge of continuous quality improvement.	2.8
K-44	Knowledge of VOIP telecommunication systems, both cloud-based and on premise, as well as the OSI model	2.8
	and common networking protocols.	
K-45	Knowledge of what is cloud-based and what is on premises as well as the different support models for each.	3.4
K-46	Knowledge of when to escalate to vendor or providers and how to monitor progress through solution.	3.2
K-47	Knowledge of cybersecurity trends and effect of changes due to cybersecurity event.	3.0
K-48	Knowledge of change management approaches and communication.	2.9
K-49	Knowledge of security threats.	3.6
K-50	Knowledge of professional services automation and management (e.g. security patches that are	3.0
K-50	automatically deployed).	
K-51	Knowledge of case management tools, processes, and procedures.	3.1
K-52	Knowledge of crisis management processes and procedures.	2.9

## Skills

The capabilities or proficiencies developed through training or hands-on experience. Skills are the practical application of theoretical knowledge. Someone can take a course to gain knowledge of concepts without developing the skills to apply those concepts. Development of skills requires hands-on application of the concepts.

S-1	Skill in identifying possible causes of degradation of system performance or availability as well as skill in	3.3
	initiating actions needed to mitigate this degradation.	
S-2	Skill in using the appropriate tools for repairing software, hardware, and peripheral equipment of a system.	3.3
S-3	Skill in conducting research for troubleshooting novel client-level problems.	3.1
S-4	Skill in configuring and validating network workstations and peripherals in accordance with approved	3.3
3-4	standards and/or specifications.	
S-5	Skill in incident response for on premises or cloud service models.	3.3
S-6	Skill in communicating with others.	3.7
S-7	Skill in listening to others, not interrupting, and asking good questions.	3.7
S-8	Skill in recognizing a problem and figuring out the best way to solve it.	3.5
S-9	Skill in thinking about the pros and cons of different ways to solve a problem.	3.4
S-10	Skill in writing for communicating with co-workers or customers.	3.2
S-11	Skill in reading work-related technical information.	3.5
S-12	Skill in monitoring workload, managing time, and prioritizing requests.	3.4
S-13	Skill in adapting to and implementing change as a result of cybersecurity incident or Al directive.	3.3
S-14	Skill in applying techniques for handling unhappy customers professionally.	3.7
S-15	Skill in communicating with a customer at a level they can comprehend.	3.7

## **Abilities**

Abilities have historically been used to describe the innate traits or talents that a person brings to a task or situation. Many people can learn to negotiate competently by acquiring knowledge about it and practicing the skills it requires. A few are brilliant negotiators because they have the innate ability to persuade. In reality, abilities may be included under skills or may be separated out.

A-1 Ability to analyze and interpret customer input for expressed and implied issues.  A-2 Ability to accurately define incidents, problems, and events in the trouble ticketing system.  A-3 Ability to follow, develop, update, and/or maintain standard operating procedures (SOPs).  A-4 Ability to find solutions to less common and more complex system problems including escalating problems when needed.  A-5 Ability to translate technical language into lay terminology when needed.  A-6 Ability to communicate verbally, appropriately for different audiences and organizational levels.  A-7 Ability to communicate complex technical issues and business implications.  A-8 Ability to read and interpret technical documents, diagrams, and decision trees.  A-9 Ability to record data in knowledge bases using proper keywords.  A-10 Ability to listen and understand what people say.  A-11 Ability to recognize and understand details.  3.7  A-12 Ability to speak clearly.  3.7  A-13 Ability to make order out of ambiguity.  3.5  A-14 Ability to use rules to solve problems.  3.6  A-15 Ability to create appropriate presentation visuals for technical material.  A-17 Ability to adjust to changing technology.			
A-3 Ability to follow, develop, update, and/or maintain standard operating procedures (SOPs).  A-4 Ability to find solutions to less common and more complex system problems including escalating problems when needed.  A-5 Ability to translate technical language into lay terminology when needed.  A-6 Ability to communicate verbally, appropriately for different audiences and organizational levels.  A-7 Ability to communicate complex technical issues and business implications.  A-8 Ability to read and interpret technical documents, diagrams, and decision trees.  A-9 Ability to record data in knowledge bases using proper keywords.  A-10 Ability to listen and understand what people say.  A-11 Ability to recognize and understand details.  3.7  A-12 Ability to speak clearly.  3.7  A-13 Ability to make order out of ambiguity.  3.5  A-14 Ability to use rules to solve problems.  3.6  A-15 Ability to create appropriate presentation visuals for technical material.	A-1	Ability to analyze and interpret customer input for expressed and implied issues.	3.4
A-4 Ability to find solutions to less common and more complex system problems including escalating problems when needed.  A-5 Ability to translate technical language into lay terminology when needed.  A-6 Ability to communicate verbally, appropriately for different audiences and organizational levels.  A-7 Ability to communicate complex technical issues and business implications.  A-8 Ability to read and interpret technical documents, diagrams, and decision trees.  A-9 Ability to record data in knowledge bases using proper keywords.  A-10 Ability to listen and understand what people say.  A-11 Ability to recognize and understand details.  A-12 Ability to speak clearly.  A-13 Ability to make order out of ambiguity.  A-14 Ability to use rules to solve problems.  A-15 Ability to communicate by writing.  A-16 Ability to create appropriate presentation visuals for technical material.	A-2	Ability to accurately define incidents, problems, and events in the trouble ticketing system.	3.4
A-5 Ability to translate technical language into lay terminology when needed.  A-6 Ability to communicate verbally, appropriately for different audiences and organizational levels.  A-7 Ability to communicate complex technical issues and business implications.  A-8 Ability to read and interpret technical documents, diagrams, and decision trees.  A-9 Ability to record data in knowledge bases using proper keywords.  A-10 Ability to listen and understand what people say.  A-11 Ability to recognize and understand details.  A-12 Ability to speak clearly.  A-13 Ability to make order out of ambiguity.  A-14 Ability to use rules to solve problems.  A-15 Ability to create appropriate presentation visuals for technical material.  3.2  3.3  3.4  3.6  3.6  3.7  3.8  3.8  3.9  3.9  3.9  3.9  3.9  3.9	A-3	Ability to follow, develop, update, and/or maintain standard operating procedures (SOPs).	2.9
when needed.  A-5 Ability to translate technical language into lay terminology when needed.  A-6 Ability to communicate verbally, appropriately for different audiences and organizational levels.  A-7 Ability to communicate complex technical issues and business implications.  A-8 Ability to read and interpret technical documents, diagrams, and decision trees.  A-9 Ability to record data in knowledge bases using proper keywords.  A-10 Ability to listen and understand what people say.  A-11 Ability to recognize and understand details.  A-12 Ability to speak clearly.  A-13 Ability to make order out of ambiguity.  A-14 Ability to use rules to solve problems.  A-15 Ability to communicate by writing.  A-16 Ability to create appropriate presentation visuals for technical material.	Λ 1	Ability to find solutions to less common and more complex system problems including escalating problems	3.0
A-6 Ability to communicate verbally, appropriately for different audiences and organizational levels.  A-7 Ability to communicate complex technical issues and business implications.  A-8 Ability to read and interpret technical documents, diagrams, and decision trees.  A-9 Ability to record data in knowledge bases using proper keywords.  A-10 Ability to listen and understand what people say.  A-11 Ability to recognize and understand details.  3.7  A-12 Ability to speak clearly.  A-13 Ability to make order out of ambiguity.  3.5  A-14 Ability to use rules to solve problems.  3.6  A-15 Ability to create appropriate presentation visuals for technical material.  3.2  3.4  3.5  3.6  3.6  3.7  3.7  3.8  3.9  3.9  3.9  3.9  3.9  3.9  3.9	A-4	when needed.	
A-7 Ability to communicate complex technical issues and business implications.  A-8 Ability to read and interpret technical documents, diagrams, and decision trees.  A-9 Ability to record data in knowledge bases using proper keywords.  A-10 Ability to listen and understand what people say.  A-11 Ability to recognize and understand details.  3.7  A-12 Ability to speak clearly.  3.7  A-13 Ability to make order out of ambiguity.  3.5  A-14 Ability to use rules to solve problems.  3.6  A-15 Ability to communicate by writing.  3.6  A-16 Ability to create appropriate presentation visuals for technical material.	A-5	Ability to translate technical language into lay terminology when needed.	3.2
A-8 Ability to read and interpret technical documents, diagrams, and decision trees.  A-9 Ability to record data in knowledge bases using proper keywords.  3.5  A-10 Ability to listen and understand what people say.  3.8  A-11 Ability to recognize and understand details.  3.7  A-12 Ability to speak clearly.  3.7  A-13 Ability to make order out of ambiguity.  3.5  A-14 Ability to use rules to solve problems.  3.6  A-15 Ability to communicate by writing.  3.6  A-16 Ability to create appropriate presentation visuals for technical material.	A-6	Ability to communicate verbally, appropriately for different audiences and organizational levels.	3.2
A-9Ability to record data in knowledge bases using proper keywords.3.5A-10Ability to listen and understand what people say.3.8A-11Ability to recognize and understand details.3.7A-12Ability to speak clearly.3.7A-13Ability to make order out of ambiguity.3.5A-14Ability to use rules to solve problems.3.3A-15Ability to communicate by writing.3.6A-16Ability to create appropriate presentation visuals for technical material.2.5	A-7	Ability to communicate complex technical issues and business implications.	2.9
A-10 Ability to listen and understand what people say.  A-11 Ability to recognize and understand details.  3.7  A-12 Ability to speak clearly.  3.7  A-13 Ability to make order out of ambiguity.  3.5  A-14 Ability to use rules to solve problems.  3.3  A-15 Ability to communicate by writing.  3.6  A-16 Ability to create appropriate presentation visuals for technical material.  3.8	A-8	Ability to read and interpret technical documents, diagrams, and decision trees.	3.4
A-11 Ability to recognize and understand details.  A-12 Ability to speak clearly.  A-13 Ability to make order out of ambiguity.  A-14 Ability to use rules to solve problems.  A-15 Ability to communicate by writing.  A-16 Ability to create appropriate presentation visuals for technical material.  3.7  3.7  3.8  3.9  3.9  3.0  3.1  3.1  3.2  3.2  3.3  3.3  3.3	A-9	Ability to record data in knowledge bases using proper keywords.	3.5
A-12Ability to speak clearly.3.7A-13Ability to make order out of ambiguity.3.5A-14Ability to use rules to solve problems.3.3A-15Ability to communicate by writing.3.6A-16Ability to create appropriate presentation visuals for technical material.2.5	A-10	Ability to listen and understand what people say.	3.8
A-13Ability to make order out of ambiguity.3.5A-14Ability to use rules to solve problems.3.3A-15Ability to communicate by writing.3.6A-16Ability to create appropriate presentation visuals for technical material.2.5	A-11	Ability to recognize and understand details.	3.7
A-14Ability to use rules to solve problems.3.3A-15Ability to communicate by writing.3.6A-16Ability to create appropriate presentation visuals for technical material.2.5	A-12	Ability to speak clearly.	3.7
A-15 Ability to communicate by writing. 3.6 A-16 Ability to create appropriate presentation visuals for technical material. 2.5	A-13	Ability to make order out of ambiguity.	3.5
A-16 Ability to create appropriate presentation visuals for technical material. 2.5	A-14	Ability to use rules to solve problems.	3.3
	A-15	Ability to communicate by writing.	3.6
A-17 Ability to adjust to changing technology. 3.5	A-16	Ability to create appropriate presentation visuals for technical material.	2.5
	A-17	Ability to adjust to changing technology.	3.5



This material is based upon work supported by the National Science Foundation under Grant No. 1838535. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.