

Category 1.0D – Ultra Small Form Factor Desktop – Windows 10 Pro

- a) Intel Core i5-10500T (35 Watt) or AMD Ryzen 5 PRO 4650GE (35 watt)
- b) Intel Q470 or AMD Pro 565 chip set
- c) 16.0 GB of DDR4 RAM
- d) 256GB M.2 PCIe NVMe SSD upgradeable to 512 GB or 1 TB. (please indicate if upgrade is required)
- e) Intel UHD 630 Graphics or Radeon Vega 7 Graphics
- f) Built-in speaker / two channel high definition audio controller.
- g) 3 x USB-A or Type C port USB 3.1 (2 ports on case front), 1 x RJ-45, 2 x full size DisplayPort v1.2, 1 x Audio line in and line out or Audio combo jack (on case front), 1 x free external slot for Digital video or RS-232 or VGA port, 1 x internal M.2 slot, 1 x internal 2 ½ inch drive bay.
- h) Optional Wireless M.2 802.11 a/g/n/ac & Bluetooth 5.0 with integrated or external antenna (please indicate if upgrade is required)
- i) Keyboard - QWERTY keyboard available in both English layout, Bilingual layout (Microsoft CF) with control keys in both languages & TBITS-5 Multi-lingual layout. (please choose one or both layout(s) required. LoD will reflect each quantity if both are required)
- j) Wired 3 button mouse with scroll function.
- k) Security – FIPS 140-2 compliant and TCG certified TPM (Trusted Platform Module) vers. 2.0, NIST SP 800-147 compliant secure UEFI including Pre-Boot and Multi-factor authentication set up option (if two levels of authentication are deployed), Absolute Data & Device Security (not enabled), Kensington lock slot.
- l) Minimum EPEAT 2018 Gold level certified
- m) External AC Adapter of 87% efficiency.
- n) USFF chassis (not exceeding 1.2 liters) and with VESA 100 mounting apertures.

For complete technical details on all NMSO products please refer to the NMSO Benchmark Report

<http://canada.nstl.com/SipssWebSites/Report/d19/DesktopCategory.asp>

Category 2.0D – Small Form Factor Desktop – Windows 10 Pro

- a) Intel Core i5-10500 or AMD Ryzen 5 PRO 4650G
- b) Intel Q470 or AMD Pro 565 chip set

- c) 16.0 GB of DDR4 RAM
- d) 256GB M.2 PCIe NVMe SSD upgradeable to 512 GB or 1 TB. (please indicate if upgrade is required)
- e) Intel UHD 630 Graphics or Radeon Vega 7 Graphics
- f) Built-in speaker / two channel high definition audio controller.
- g) 6 x USB-A or Type C port USB 3.1 (2 ports on case front), 1 x RJ-45, 2 x full size DisplayPort v1.2, 1 x Audio line in and line out or Audio combo jack (on case front), 1 x internal M.2 slot, 2 x internal SATA connectors, 1 x PCIe16v3.0 slot, 1 x PCIe1v3.0 slot, 1 x internal 2 ½ inch drive bay.
- h) Optional Wireless M.2 802.11 a/g/n/ac & Bluetooth 5.0 with integrated antenna (please indicate if upgrade is required).
- i) Keyboard - QWERTY keyboard available in both English layout, Bilingual layout (Microsoft CF) with control keys in both languages & TBITS-5 Multi-lingual layout (please choose one or both layout(s) required. LoD will reflect each quantity if both are required).
- j) Wired 3 button mouse with scroll function.
- k) Security – FIPS 140-2 compliant and TCG certified TPM (Trusted Platform Module) vers. 2.0, NIST SP 800-147 compliant secure UEFI including Pre-Boot and Multi-factor authentication set up option (if two levels of authentication are deployed), Absolute Data & Device Security (not enabled), Kensington lock slot.
- l) Minimum EPEAT 2018 Silver level certified
- m) Internal 80Plus Gold certified power supply.
- n) SFF chassis not exceed 1.35 liters.

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Category 3.0D – Tower Form Factor Desktop – Windows 10 Pro

- a) Intel Core i5-10500 or AMD Ryzen 5 Pro 4650
- b) Processor upgrades to Intel Core i7-10700 available (please indicate if upgrade is required).
- c) Intel Q470 or Intel C246 or AMD Pro 565 chip set
- d) 16.0 GB of DDR4 RAM.

- e) 256GB M.2 PCIe NVMe SSD upgradeable to 512 GB or 1 TB. (please indicate if upgrade is required).
- f) Intel UHD 630 Graphics or Radeon Pro 565 Graphics and optional discrete video controllers upgrades available (please indicate if upgrade is required).
- g) Built-in speaker / two channel high definition audio controller.
- h) 6 x USB-A or Type C port USB 3.1 (2 ports on case front) , 1 x RJ-45, 2 x full size DisplayPort v1.2, 1 x Audio line in and line out or Audio combo jack (on case front), 1 x internal M.2 slot, 2 x internal SATA connectors, 1 x PCIe x16 v3.0 slot, 1 x PCIe x1 v3.0 slot, 1 x internal 2 ½ inch drive bay, 1 x external 5 ¼ drive bay.
- i) Optional Wireless M.2 802.11 a/g/n/ac & Bluetooth 4.0 with integrated antenna (please indicate if upgrade is required).
- j) Keyboard - QWERTY keyboard available in both English layout, Bilingual layout (Microsoft CF) with control keys in both languages & TBITS-5 Multi-lingual layout (please choose one or both layout(s) required. LoD will reflect each quantity if both are required).
- k) Wired 3 button mouse with scroll function.
- l) Security – FIPS 140-2 compliant and TCG certified TPM (Trusted Platform Module) vers. 2.0, NIST SP 800-147 compliant secure UEFI including Pre-Boot and Multi-factor authentication set up option (if two levels of authentication are deployed), Absolute Data & Device Security (not enabled), Kensington lock slot.
- m) Minimum EPEAT 2018 Silver level certified
- n) Internal 80Plus Gold certified power supply.
- o) Case must offer one vacant drive bay that will accommodate a removable drive carrier.

For complete technical details on all NMSO products please refer to the NMSO Benchmark Report

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Category 4.0D – High Performance 3D Simulation Desktop Computer – Windows 10 Pro

- a) Intel Core i7-9800X or AMD Ryzen Threadripper Pro 3945WX with optional processor upgrades (please indicate if upgrade is required).
- b) Intel X299 or AMD WRX80 chip set
- c) 32.0 GB of DDR4 2666 MHz. upgradeable to a maximum of 128 GB. (Intel) and 512 GB (AMD) (please indicate if upgrade is required).

- d) 512GB M.2 PCIe NVMe SSD with optional SSD upgrades (please indicate if upgrade is required).
- e) NVidia RTX 2080 8GB. discrete video controller with optional video controller(s) upgrades available (please indicate if upgrade is required).
- f) Two channel high definition audio controller.
- g) 6 x USB-A or Type C port USB 3.1 (2 ports on case front), 1 x RJ-45, 2 x full size or mini digital video ports (DP or HDMI), 1 x Audio combo jack (on case front), 2 x internal M.2 slot, 4 x internal SATA connectors, 5 x PCIe 3.0 slots, 4 x internal 2 ½ inch or 3 ½ inch drive bays.
- h) Keyboard - QWERTY keyboard available in both English layout, Bilingual layout (Microsoft CF) with control keys in both languages & TBITS-5 Multi-lingual layout (please choose one or both layout(s) required. LoD will reflect each quantity if both are required).
- i) Wired 3 button mouse with scroll function.
- j) Security – TPM (Trusted Platform Module) vers. 2.0, NIST SP 800-147 compliant secure UEFI including Pre-Boot and Multi-factor authentication set up option (if two levels of authentication are deployed), Absolute Data & Device Security (not-enabled), Kensington lock slot.
- k) Minimum EPEAT 2018 Silver level certified
- l) Internal 1000 watt if 80Plus Platinum certified power supply.
- m) Case must be tower form factor and no less than 13 inches tall.

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Category 5.0D – Single Processor Engineering Workstation

- a) Intel Xeon W2245 with optional processor upgrades (please indicate if upgrade is required).
- b) Intel C422 chip set
- c) 32.0 GB of DDR4 RAM upgradeable to a maximum of 256 GB. (please indicate if upgrade is required).
- d) 512GB M.2 PCIe NVMe SSD with optional SSD upgrades (please indicate if upgrade is required).
- e) Nvidia Quadro P1000 4 GB. or an AMD Radeon Pro WX 4100 4 GB. with optional video controller(s) upgrades available (please indicate if upgrade is required).

- f) Two channel high definition audio controller.
- g) 10 x USB ports (2 ports on case front), 2 x PS/2 ports, 1 x RJ-45, 2 x full size Digital video ports, 1 x Audio combo jack (on case front), 2 x internal M.2 slot, 6 x internal SATA connectors, 5 x PCIe slots, 4 x internal 2 ½ inch or 3 ½ inch drive bays, 2 external front facing drive bays.
- h) Keyboard - QWERTY keyboard available in both English layout, Bilingual layout (Microsoft CF) with control keys in both languages & TBITS-5 Multi-lingual layout (please choose one or both layout(s) required. LoD will reflect each quantity if both are required).
- i) Wired 3 button mouse with scroll function.
- j) Security – FIPS 140-2 compliant and TCG certified TPM (Trusted Platform Module) vers. 2.0, NIST SP 800-147 compliant secure UEFI including Pre-Boot and Multi-factor authentication set up option (if two levels of authentication are deployed), Absolute Data & Device Security (not enabled), Kensington lock slot.
- k) Minimum EPEAT 2018 Gold level certified
- l) Internal 465 watts 80Plus Gold certified power supply with optional PSU upgrades available (please indicate if upgrade is required).
- m) Case must offer one vacant drive bay that will accommodate a removable drive carrier.

For complete technical details on all NMSO products please refer to the NMSO Benchmark Report

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Category 6.0D – Dual Processor Engineering Workstation

- a) Dual Intel Xeon Silver 4114SP with optional processor upgrades available (please indicate if upgrades are required).
- b) Intel C621 chip set
- c) 32.0 GB of DDR4 RAM upgradeable to a maximum of 512 GB. (please indicate if upgrade is required).
- d) 512GB M.2 PCIe NVMe SSD with optional SSD upgrades (please indicate if upgrade is required).
- e) Nvidia Quadro P1000 4 GB. or an AMD Radeon Pro WX 4100 4 GB. with optional video controller(s) upgrades available (please indicate if upgrade is required).
- f) Two channel high definition audio controller.
- g) 10 x USB ports (2 ports on case front), 2 x PS/2 ports, 1 x RJ-45, 2 x full size Digital video ports, 1 x Audio combo jack (on case front), 2 x internal M.2 slot, 6 x internal SATA connectors, 5 x PCIe slots, 4 x internal 2 ½ inch or 3 ½ inch drive bays, One external front facing drive bay.

- h) Keyboard - QWERTY keyboard available in both English layout, Bilingual layout (Microsoft CF) with control keys in both languages & TBITS-5 Multi-lingual layout (please choose one or both layout(s) required. LoD will reflect each quantity if both are required).
- i) Wired 3 button mouse with scroll function.
- j) Security – FIPS 140-2 compliant and TCG certified TPM (Trusted Platform Module) vers. 2.0, NIST SP 800-147 compliant secure UEFI including Pre-Boot and Multi-factor authentication set up option (if two levels of authentication are deployed), Absolute Data & Device Security (not-enabled), Kensington lock slot.
- k) Minimum EPEAT 2018 Silver level certified
- l) Internal 900 watts 80Plus Gold certified power supply.

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On the NMSO there coexists two levels of device (e.g. notebook, desktop) security, identified as either Medium or Advanced. The medium designation represents the minimum level of security as defined by GoC security authorities. The advanced level introduces additional hardware resiliency as well as formal assurances of the OEM's (Original Equipment Manufacturer) secure supply chain infrastructure.

It is the client's discretion to select which criteria is appropriate for their business needs and is invited to choose accordingly prior to their RVD solicitation. Please inform the assigned PVR contract authority of your choice prior to that solicitation. If no choice is made the security level will default to Medium.

Information on the device's security status is available on the NMSO Benchmark Report under "BIOS/UEFI SECURITY AND AUTHENTICATION".

Medium Security Criteria

- a) Integrated embedded FIPS 140-2 compliant and TCG certified TPM (Trusted Platform Module) vers. 2.0. PTT (Platform Trust Technology) firmware TPM is acceptable for Category 2.0N only.
- b) All devices must have a NIST SP 800-147 compliant, secure UEFI.
- c) Absolute Data & Device Security (not-enabled)
- d) The device must have the ability to be secured by a cable lock.
- e) System or motherboard OEM (Original Equipment Manufacturer) created and supplied BIOS/UEFI security features and related security utilities or management suite that allow for the set-up and/or management of:
 - (i) Pre-boot and multi-factor authentication set up (if two levels of authentication are

deployed (e.g. boot password with PKI reader))

Advanced Security Criteria

The Advanced security level must meet all the criteria listed above as well as all of the following:

- a) System unit OEM must have in place a process for verifying the authenticity and integrity of BIOS updates and a mechanism for ensuring that the BIOS is protected from modification outside of that secure update process. The update mechanism shall ensure that the BIOS update image has been digitally signed and that the digital signature can be verified using a key in the RTU (Root of Trust) before updating. The system unit must be designed to permit only IT administrative (prohibiting individual users) control over updates by counter-signing with an IT administration controlled key. The secure update BIOS update process described herein must conform to the ISO/IEC 19678:2015 standard;
- b) System unit must be able to detect and provide notification when the system BIOS has been corrupted and must recover from a backup firmware image stored in a separate storage location from the primary system BIOS (e.g., a second, internal NVRAM, a hidden partition on the SSD or OEM provided and authorised USB key).
- c) System unit OEM must have available an image verification utility which must:
 - (i) Verify the security and quality of the image prior to or following deployment;
 - (ii) Verify the authenticity and OEM authorised source of installed device drivers, firmware, patches and BIOS;
 - (iii) Identify issues and anomalies and recommend remediation;
 - (iv) Operate under Microsoft Windows 10 Pro;
 - (v) Be authored and approved by the device OEM;
 - (vi) Be free of charge and be exclusively available from the OEMs' support web site or have the same utility available from the Microsoft App store.
- d) System unit OEM must have a mature and comprehensive Supply Chain Integrity (SCI) process in place. This process must involve the mitigation of the infiltration of fraudulent, maliciously tainted or counterfeit components as well as the mitigation of the introduction of hardware based threat vectors during the manufacturing process and throughout the subsequent supply chain and delivery channel up to final delivery (design, sourcing, build, fulfilment and distribution). This OEM conducted process must adhere to and include the principals, and be currently an active participant, in the conformance to (if the standard development does not include industry participation) or development of (if industry participation is integral to the standard's development) at the least three of the following related international secure supply chain standards, initiatives and best practices:
 - (i) ISO/IEC 20243:2015 - Open Trusted Technology Provider Standard (O-TTPS)
 - (ii) ISO 28000 – Supply Chain Resiliency
 - (iii) ISO – 15408 – Common Criteria

(iv) NIST 800-161 – Supply Chain Risk Management

(v) NIST Cybersecurity Framework

(vi) TAPA – Transported Asset Protection Association

(vii) ISO 27036-2 and ISO 27036-3 Information technology – Security techniques

(viii) C-TPAT tier 3 certification