

THE CONTRACT WITH THE BOEING COMPANY is supplemented by the following additional clauses:

1.1 If Seller delivers any Goods that emit radio frequency energy or Seller and Seller's subcontractors or suppliers perform any On-Site Services that require the use of radio frequency energy, systems, or devices (excluding the use of commercial cellular phones), the additional requirements listed below shall apply with respect to that Service and Goods.

1.2 On-Site Services are those services performed on property owned or leased by Boeing and leased or subleased by Boeing to Seller or a subcontractor or supplier of Seller.

1.3 Seller shall include the requirements listed below in each of its subcontractor and supplier contracts in support of the performance of Seller's obligations under this Contract.

1.4 Compliance with Applicable Radio Frequency Equipment Conformance Regulations. Any radio frequency emitters, devices or systems provided under this Contract or Agreement shall comply with applicable radio frequency equipment conformance regulations. Upon request from Boeing, Seller shall provide to the Boeing proof of certification or the regulatory conformance test report in Seller's format within ten business days of receiving the request for Boeing's acceptance. For the purposes of this Contract or Agreement, radio frequency equipment is defined as any device which in its operation is capable of emitting radio frequency energy by radiation, conduction, or other means, including but not limited to transmitters, receivers, or other intentional, unintentional or incidental emitters of radio frequency signals.

If Seller designs, delivers, installs, or utilizes systems or devices (excluding personal computing devices and commercial cellular phones) that emit radio frequency energy and/or utilize Wi-Fi networks in any Boeing location, then the requirements in Sections 1.5 through 1.8 apply:

1.5 Architecture Requirements

All devices using TCP/IP protocols shall use the common Boeing-provisioned infrastructure through use of either the common Boeing Enterprise Network (BEN) or a private (isolated, standalone) network. If Seller systems/devices architecture requires the use of real-time protocols (such as Process Field Net or PROFINET) then they shall be integrated into existing network infrastructure if one already exists in the location they are implemented in. If a real-time protocol enabled network does not currently

exist, the Seller systems/devices must be implemented in such a way that any following systems/devices with the same requirements can use the same common wireless network infrastructure in that location.

Number	Requirement
1.5.1	<p>Whenever architecturally feasible, Seller systems/devices shall utilize the Boeing Enterprise Network (BEN) for all networking needs.</p> <ul style="list-style-type: none">• Seller systems/devices shall utilize only TCP/IP protocols.• Seller systems/devices shall comply with all Boeing security standards (see PRO 2227).• Seller systems/devices should utilize Dynamic Host Configuration Protocol (DHCP) rather than static IP addresses.
1.5.2	<p>If it is not architecturally feasible for Seller systems/devices to utilize the BEN for networking needs, then Seller shall utilize the common Boeing-provisioned infrastructure for all networking needs.</p> <ul style="list-style-type: none">• Seller systems/devices shall utilize only TCP/IP protocols.• Seller systems/devices shall utilize Boeing-provisioned isolated private Virtual Local Area Network (VLAN).• Seller systems/devices should use Dynamic Host Configuration Protocol (DHCP) rather than static IP addresses.
1.5.3	<p>If Seller systems/devices require real-time protocols (such as Process Field Net or PROFINET) then Seller systems/devices shall utilize existing Boeing-provisioned, “heartbeat-supported” wireless network infrastructure (if available).</p> <ul style="list-style-type: none">• “Heartbeat-supported” shall mean machine-to-machine communication with real-time accuracy within 10 milliseconds, such as may be required for supporting automation.• “If available” shall mean that a heartbeat-supported wireless network is installed and accessible in the location.• If the relationship between the Programmable Logic Controller (PLC) and the end device does not require a heartbeat-support network then system/device shall not use a heartbeat-supported solution and shall instead utilize 1.5.1 or 1.5.2 as architecturally feasible.

Number	Requirement
1.5.4	<p>If there is not an existing Boeing-provisioned, “heartbeat-supported” wireless network infrastructure, Seller shall architect and implement an infrastructure, acceptable to Boeing, which is robust enough to accommodate other follow-on systems/products (from Seller, Boeing, or other Boeing suppliers) that have similar “heartbeat” requirements.</p> <ul style="list-style-type: none">• Heartbeat-supported means machine-to-machine communication with real-time accuracy within 10 milliseconds, such as may be required for supporting automation.• If the relationship between the Programmable Logic Controller (PLC) and the end device does not require a heartbeat-support network then system/device shall not use a heartbeat-supported solution and shall instead utilize 1.5.1 or 1.5.2 as architecturally feasible.

1.6 Integration Requirements

Number	Requirement
1.6.1	<p>In reference to 1.5.1, Seller shall meet with authorized Boeing contact to identify approved systems/devices or develop a temporary waiver for non-approved systems/devices to access the BEN.</p> <ul style="list-style-type: none">• Seller shall provide all data necessary for architectural, security, and other reviews that determine fit for BEN connectivity.• Seller shall identify a technical subject matter expert(s) to work with Boeing counterparts to perform analysis and implementation design before any Seller systems/devices are installed.• Seller systems/devices shall use the lowest transmit power setting possible to meet the architectural need of the systems/devices.• Seller systems/devices shall not access or connect to the BEN without prior written permission from Boeing.

Number	Requirement
1.6.2	<p>In reference to 1.5.2, Seller shall meet with authorized Boeing contact to identify approved systems/devices access to Boeing-provisioned infrastructure.</p> <ul style="list-style-type: none">• Seller shall provide all data, acceptable to Boeing, necessary for architectural, security, and other reviews that determine fit for connectivity.• Seller shall identify a technical subject matter expert(s) to work with Boeing counterparts to perform analysis and implementation design.• Seller systems/devices shall use the lowest transmit power setting possible to meet the architectural need of the systems/devices.• Seller systems/devices shall not access or connect to any Boeing network without prior written permission from Boeing.
1.6.3	<p>In reference to 1.5.3, Seller shall work with authorized Boeing contact to identify approved systems/devices access to Boeing-provisioned, “heartbeat-supported” wireless network infrastructure.</p> <ul style="list-style-type: none">• Seller shall provide all data, acceptable to Boeing, necessary for architectural, security, and other reviews that determine fit for connectivity.• Seller shall identify a technical subject matter expert(s) to work with Boeing counterparts to perform analysis and implementation design.• Seller shall redesign or expand, acceptable to Boeing, existing Boeing-provisioned infrastructure as necessary to support Seller systems/devices.• Seller systems/devices shall use the lowest transmit power setting possible to meet the architectural need of the systems/devices.• Seller systems/devices shall not access or connect to any Boeing network without prior written permission from Boeing.

Number	Requirement
1.6.4	<p>In reference to 1.5.4, Seller shall work with authorized Boeing contact to identify approved systems/devices access to Boeing-provisioned, “heartbeat-supported” wireless network infrastructure.</p> <ul style="list-style-type: none">• Seller shall provide all data, acceptable to Boeing, necessary for architectural, security, and other reviews that determine fit for connectivity.• Seller shall identify a technical subject matter expert(s) to work with Boeing counterparts to perform analysis and implementation design.• Seller shall work with Boeing to design Boeing-provisioned infrastructure as necessary to support systems/devices.• Seller system architecture shall not be proprietary or otherwise preclude implementation of follow-on systems/devices that can share the common heartbeat-supported infrastructure.• Seller systems/devices shall not access or connect to any Boeing network without prior written permission from Boeing.

1.7 Process Requirements

Number	Requirement
1.7.1	<p>Seller shall obtain Boeing-authorized Radio Frequency spectrum allocation, transmit power levels, and frequency approvals and avoid frequency conflicts through the Unlicensed Radio Operation Committee (UROC).</p> <ul style="list-style-type: none">• Seller shall notify the Boeing UROC Committee in writing of any transmit power levels, antennas, frequency, antenna installation location, or manufacture/model number changes to their systems/devices within 2 business days of making the change.• Seller shall work with the Boeing UROC Committee to receive approval for any network-impacting change and receive written approval before implementation.• Seller shall abide by the Service Session Identifier (SSID) naming guidelines provided by the UROC Committee.• Seller shall communicate pre- and post-installation site survey results, installation specifications, and system/device configuration information in writing to the UROC within 5 business days of making any changes.

Number	Requirement
1.7.2	<p>Seller shall review configurations and components with the Boeing Enterprise Network Technical Advisory Group (BENTAG) Committee. Seller must obtain prior approval in writing for any systems/devices that will be connected to the BEN or obtain temporary waivers from Boeing where necessary prior to connecting Seller systems/devices to the BEN.</p> <ul style="list-style-type: none">• Temporary BENTAG waivers will be assessed by the BENTAG Committee and may be issued for the duration requested with a ceiling of one calendar year or less.• Temporary BENTAG waivers and renewals, if permitted, will be granted or rescinded solely at the discretion of the BENTAG Committee.
1.7.3	<p>Seller shall not install or implement any wireless network infrastructure at any Boeing facility without prior written permission from Boeing.</p>

1.8 Implementation Requirements

Seller systems/devices must integrate and coexist with other systems/devices in the Boeing network ecosystem.

Number	Requirement
1.8.1	<p>Seller shall ensure that any and all subcontractors are in compliance with all preceding requirements (in Sections 1.5 through 1.8) at all times and assure that Seller systems/devices and configurations are in compliance.</p>
1.8.2	<p>Seller shall facilitate direct communication between Boeing and their subcontractors as necessary for configuration and problem-solving during implementation, testing, operation, and sun-setting at end of life of Seller systems/devices.</p>
1.8.3	<p>Seller shall reconfigure or make adjustments to Seller systems/devices, acceptable to Boeing, to assure that Seller systems/devices continually operate as designed and interoperate with other systems/devices in the installation environment for the duration of Seller's system/device warranty period.</p>