

Annexure D
Work Packages

Work Package Name	1. NETWORK WP01 CTN LAN REFRESH
Short Description	<ul style="list-style-type: none"> • Replacement of EOL Cisco distribution switches in CPT and adding additional access port capacity in certain other wire centres. • Upgrading of certain wire centre fibre uplinks to 10Gig
As-is Environment	<ul style="list-style-type: none"> • 2X Cisco WS-C3560E-12SD-E distribution switches are EOL • Multiple Cisco 2960X and 3750X switch stacks require additional port capacity. Since ACSA do not want to procure these models anymore the intention is to replace certain of these switch stacks with newer equipment and use the decommissioned switches to add capacity to other overpopulated stacks. • Certain switch stacks are over utilizing the 1Gig fibre uplink capacity.
Requirement	<ul style="list-style-type: none"> • Supply and install equivalent latest model device to replace 2x WS-C3560E-12SD-E distribution switches with 12x 1Gig SFP ports, dual modular power supplies and minimum 2 x SFP+ ports. • Supply 4x 10Gig SFP SM 1310nm fibre transceivers for the distribution switches • Supply 8x 1Gig SFP SM 1310nm fibre transceivers for the distribution switches • Supply and install 14x 48 port 10/100/1000 PoE+ stackable access switches with dual modular power supplies, stack card/module, hot-swappable fan trays and minimum 2x SFP+ uplink fibre ports. • Supply 14x 10Gig SFP SM 1310nm fibre transceivers for the access switches. • Redeploy removed 14x 2960x and 3750x switches to existing overpopulated switch stacks (to be identified at the time)
Additional Requirements	<ul style="list-style-type: none"> • All hardware to be supplied with C14-C15 power cables, equivalent to Cisco CAB-C15-CBN. • Should the proposed product not support Cisco SFPs then the quote must include pricing for 1x 10Gig SM 1310nm SFPs per device. SFPs must be DOM (Digital Diagnostic Monitoring) capable. • All hardware must be covered with 3 years OEM extended warrantee 24x7x4 • Pricing must include onsite maintenance and support for 3 years • All installation and decommissioning activities are to be priced for after hours. • All fibre cabling requirements are to be planned and implemented in conjunction with the ACSA onsite cabling provider via the Project Manager.
	2. NETWORK WP02 KSIA MSP LAN REFRESH
Short Description	<ul style="list-style-type: none"> • Replacement of EOL Cisco access switches in DUR and adding additional access port capacity in certain other wire centres. • Replacement of SC fibre leads with LC leads (ACSA supplied)
As-is Environment	<ul style="list-style-type: none"> • 30X Cisco WS-C3750E access switches are EOL • All current switches have X2 GBICs connecting with SC fibre patch leads.
Requirement	<ul style="list-style-type: none"> • Supply and install 30x 48 port 10/100/1000 PoE+ stackable access switches with dual modular power supplies, stack card/module, hot-swappable fan trays and minimum 2x SFP+ uplink fibre ports, • Supply 30x 10Gig SFP SM 1310nm fibre transceivers. • Replace SC-LC fibre leads with LC-LC leads (ACSA supplied) in conjunction with ACSA onsite cabling provider
Additional Requirements	<ul style="list-style-type: none"> • All hardware to be supplied with C14-C15 power cables, equivalent to Cisco CAB-C15-CBN.

	<ul style="list-style-type: none"> SFPs must be DOM (Digital Diagnostic Monitoring) capable. All hardware must be covered with 3 years OEM extended warrantee 24x7x4 Pricing must include onsite maintenance and support for 3 years All installation and decommissioning activities are to be priced for after hours. All fibre cabling requirements are to be planned and implemented in conjunction with the ACSA onsite cabling provider via the Project Manager.
	3. NETWORK WP03 JNB LAN REFRESH
Short Description	<ul style="list-style-type: none"> Replacement of EOL Cisco access switches in JNB and adding additional access port capacity in certain other wire centres. Upgrading of certain wire centre fibre uplinks to 10Gig
As-is Environment	<ul style="list-style-type: none"> Several access switches in are EOL. These include Cisco 3750E, 3750G and 8/24/48 port 3560 models. Multiple Cisco 2960X and 3750X switch stacks require additional port capacity. Since ACSA do not want to procure these models anymore the intention is to replace certain of these switch stacks with new equipment and use the decommissioned switches to add capacity to other overpopulated stacks and also to replace the EOL switches as described above. Certain switch stacks are over utilizing the 1Gig fibre uplink capacity and needs upgrading to 10Gig
Requirement	<ul style="list-style-type: none"> Supply and install 14x 48 port 10/100/1000 PoE+ stackable access switches with dual modular power supplies, stack card/module, hot-swappable fan trays and minimum 2x SFP+ uplink fibre ports, Supply 36x 10Gig SFP SM 1310nm fibre transceivers. Supply 28x 1Gig SFP SM 1310nm fibre transceivers. Redeploy removed 14x 2960x and 3750x switches to existing overpopulated switch stacks (to be identified at the time) Redeploy removed 2960x switches to replace remaining EOL Cisco 3750E, 3750G and 3560 models.
Additional Requirements	<ul style="list-style-type: none"> All hardware to be supplied with C14-C15 power cables, equivalent to Cisco CAB-C15-CBN. Should the proposed product not support Cisco SFPs then the quote must include pricing for 1x 10Gig SM 1310nm SFPs per device. SFPs must be DOM (Digital Diagnostic Monitoring) capable. All hardware must be covered with 3 years OEM extended warrantee 24x7x4 Pricing must include onsite maintenance and support for 3 years All installation and decommissioning activities are to be priced for after hours. All fibre cabling requirements are to be planned and implemented in conjunction with the ACSA onsite cabling provider via the Project Manager.
	4. NETWORK WP05 CTN DC CORE REPLACEMENT
Short Description	Replacement of EOL 2x Cisco 6500 MPLS PE-nodes at CPT I.e. CIA-CTB-CR3DC-PE14 and CIA-DC-RACK19-PE15
As-is Environment	<ul style="list-style-type: none"> The current 2X Cisco 6500 Supervisors are EOL. Upgrading the Supervisors will also require replacement of the line cards, which is cost inefficient. The devices are to be replaced with high-density 1 rack unit core switches. All current switches have some X2 Gig GBICs connecting with LC fibre patch leads.

Requirement	<ul style="list-style-type: none"> Supply and install 2x 1U core switches with minimum 24x SFP+ ports each, dual modular power supplies with front-to-back cooling. These devices will be configured as MPLS PE-nodes and perform inter-vlan routing for the precinct and thus must support MPLS, MPLS VPN, BGP, IS-IS, OSPF, IGMP, PIM and MST. The Cisco equivalent would be in the Cisco 9500 series with Advantage OS. Supply 24x 10Gig SFP SM 1310nm fibre transceivers for new PE-nodes Replace SC-LC fibre leads with LC-LC leads (ACSA supplied) in conjunction with ACSA onsite cabling provider. Re-Integrate the 2x MPLS PE-nodes with the CTN MPLS core by establishing redundant connectivity with the existing Cisco 7600 MPLS P-nodes as depicted in <i>Figure 12 in RFP document "Appendix 1 - ACSA Logical Network Topology"</i>
Additional Requirements	<ul style="list-style-type: none"> All hardware to be supplied with C14-C15 power cables, equivalent to Cisco CAB-C15-CBN. SFPs must be DOM (Digital Diagnostic Monitoring) capable. All hardware must be covered with 3 years OEM extended warrantee 24x7x4 Pricing must include onsite maintenance and support for 3 years All installation and decommissioning activities are to be priced for business hours. All fibre cabling requirements are to be planned and implemented in conjunction with the ACSA onsite cabling provider via the Project Manager.
5. NETWORK WP06 JNB CTB CORE REPLACEMENT	
Short Description	Replacement of EOL Cisco 6500 MPLS PE-nodes at JNB Central Terminal
As-is Environment	<ul style="list-style-type: none"> The current Cisco 6500 Supervisors are EOL. Upgrading the Supervisors will also require replacement of the line cards, which is cost inefficient. The devices are to be replaced with high-density 1 rack unit core switches. All current switches have X2 10Gig GBICs connecting with SC-LC fibre patch leads. <p>Current topology is depicted in <i>Figures 18 and 19 in RFP document "Appendix 1 - ACSA Logical Network Topology"</i></p>
Requirement	<ul style="list-style-type: none"> Supply and install 4x 1U core switches with minimum 40x SFP+ ports each, dual modular power supplies with front-to-back cooling. These devices will be configured as MPLS PE-nodes and perform inter-vlan routing for the precinct and thus must support MPLS, MPLS VPN, BGP, IS-IS, OSPF, IGMP, PIM and MST. The Cisco equivalent would be in the Cisco 9500 series with Advantage OS. Supply 86x 10Gig SFP SM 1310nm fibre transceivers for new PE-nodes Replace SC-LC fibre leads with LC-LC leads (ACSA supplied) in conjunction with ACSA onsite cabling provider. Re-Integrate the 4x MPLS PE-nodes with the JNB MPLS core by establishing redundant connectivity with the existing MPLS P-nodes as depicted in <i>Figure 15 in RFP document "Appendix 1 - ACSA Logical Network Topology"</i>
Additional Requirements	<ul style="list-style-type: none"> All hardware to be supplied with C14-C15 power cables, equivalent to Cisco CAB-C15-CBN. SFPs must be DOM (Digital Diagnostic Monitoring) capable. All hardware must be covered with 3 years OEM extended warrantee 24x7x4 Pricing must include onsite maintenance and support for 3 years All installation and decommissioning activities are to be priced for business hours. All fibre cabling requirements are to be planned and implemented in conjunction with the ACSA onsite cabling provider via the Project Manager.
6. NETWORK WP08 JNB DC NEXUS REPLACEMENT	
Short Description	Replacement of 2X EOL Cisco Nexus7000 C7010 (10 Slot) Chassis in JNB i.e. JNB-TA-DC-NX1-ORT and JNB-DC-CAB4.1-NX
As-is Environment	<ul style="list-style-type: none"> 2X Cisco Nexus7000 C7010 (10 Slot) switches are EOL

	<ul style="list-style-type: none"> Upgrading the Supervisors and the cards is cost inefficient. The devices are to be replaced with high performance 1 rack unit access switches. The devices are located in the JNB data centre and are sparsely populated. Since the chassis have vertical slots and the replacement switches will be horizontally mounted, there will be extensive copper re-cabling required for the migration. Fibre cabling will be minimal.
Requirement	<ul style="list-style-type: none"> Supply and install 4x high performance 48 port 10/100/1000 PoE+ stackable access switches with dual modular power supplies, stack card/module, hot-swappable fan trays and minimum 8x SFP+ uplink fibre ports each, The Cisco equivalent will be from the Cisco 9300 series Catalysts. The switches must be configured in 2 stacks of 2 switches each. Supply 20x 10Gig SFP SM 1310nm fibre transceivers. Replace copper and fibre cabling (ACSA supplied) in conjunction with ACSA onsite cabling provider where necessary
Additional Requirements	<ul style="list-style-type: none"> All hardware to be supplied with C14-C15 power cables, equivalent to Cisco CAB-C15-CBN. SFPs must be DOM (Digital Diagnostic Monitoring) capable. All hardware must be covered with 3 years OEM extended warrantee 24x7x4 Pricing must include onsite maintenance and support for 3 years All installation and decommissioning activities are to be priced for after hours. All fibre cabling requirements are to be planned and implemented in conjunction with the ACSA onsite cabling provider via the Project Manager.
7. NETWORK WP09 CTN INT CORE REPLACEMENT	
Short Description	Replacement of EOL Cisco 6500 MPLS PE-nodes at CPT I.e. CIA-INT-CR2-PE3 and CIA-CTB-CR3-PE4
As-is Environment	<ul style="list-style-type: none"> The current Cisco 6500 Supervisors are EOL. Upgrading the Supervisors will also require replacement of the line cards, which is cost inefficient. The devices are to be replaced with high-density modular core switches Current switches have some X2 10Gig GBICs connecting with SC fibre patch leads. Current topology is depicted in <i>Figure 14 in RFP document "Appendix 1 - ACSA Logical Network Topology"</i>
Requirement	<ul style="list-style-type: none"> Supply and install 2x modular core switches with minimum 96x SFP+ ports each, dual modular power supplies with front-to-back cooling. These devices will be configured as MPLS PE-nodes and perform inter-vlan routing for the precinct and thus must support MPLS, MPLS VPN, BGP, IS-IS, OSPF, IGMP, PIM and MST. The Cisco equivalent would be the Cisco 9606 series with Advantage OS. Supply 46x 10Gig SFP SM 1310nm fibre transceivers for new PE-nodes Supply 66x 1Gig SFP SM 1310nm fibre transceivers for new PE-nodes Replace all SC-LC fibre leads with LC-LC leads (ACSA supplied) in conjunction with ACSA onsite cabling provider Re-Integrate the 2x MPLS PE-nodes with the CTN MPLS core by establishing redundant connectivity with the existing MPLS P-nodes as depicted in <i>Figure 12 in RFP document "Appendix 1 - ACSA Logical Network Topology"</i>
Additional Requirements	<ul style="list-style-type: none"> All hardware to be supplied with suitable C19 power cables. SFPs must be DOM (Digital Diagnostic Monitoring) capable. All hardware must be covered with 3 years OEM extended warrantee 24x7x4 Pricing must include onsite maintenance and support for 3 years All installation and decommissioning activities are to be priced for business hours. All fibre cabling requirements are to be planned and implemented in conjunction with the ACSA onsite cabling provider via the Project Manager.

	8. NETWORK WP10 KSIA MB AND MSP CORE REPLACEMENT
Short Description	Replacement of EOL Cisco 6500 MPLS PE-nodes at DUR MSP Parking and Maintenance Building
As-is Environment	<ul style="list-style-type: none"> The current Cisco 6500 Supervisors are EOL. Upgrading the Supervisors will also require replacement of the line cards, which is cost inefficient. The devices are to be replaced with high-density 1 rack unit core switches. All current switches have X2 10Gig GBICs connecting with SC fibre patch leads. Current environment is depicted in <i>Figures 9 and 10 in RFP document "Appendix 1 - ACSA Logical Network Topology"</i>
Requirement	<ul style="list-style-type: none"> Supply and install 4x 1U core switches with minimum 32x SFP+ ports each, dual modular power supplies with front-to-back cooling. These devices will be configured as MPLS PE-nodes and perform inter-vlan routing for the precinct and thus must support MPLS, MPLS VPN, BGP, IS-IS, OSPF, IGMP, PIM and MST. The Cisco equivalent would be in the Cisco 9500 series with Advantage OS. Supply 86x 10Gig SFP SM 1310nm fibre transceivers for new PE-nodes Replace SC-LC fibre leads with LC-LC leads (ACSA supplied) in conjunction with ACSA onsite cabling provider Re-Integrate the 4x MPLS PE-nodes with the KSIA MPLS core by establishing redundant connectivity with the existing Cisco 7600 MPLS P-nodes as depicted in <i>Figures 8 in RFP document "Appendix 1 - ACSA Logical Network Topology"</i>
Additional Requirements	<ul style="list-style-type: none"> All hardware to be supplied with C14-C15 power cables, equivalent to Cisco CAB-C15-CBN. SFPs must be DOM (Digital Diagnostic Monitoring) capable. All hardware must be covered with 3 years OEM extended warrantee 24x7x4 Pricing must include onsite maintenance and support for 3 years All installation and decommissioning activities are to be priced for business hours. All fibre cabling requirements are to be planned and implemented in conjunction with the ACSA onsite cabling provider via the Project Manager.
	9. NETWORK WP11 JNB MSP CORE REPLACEMENT
Short Description	Replacement of EOL Cisco 7600 MPLS PE-nodes at JNB MSP1 and MSP2 Parking
As-is Environment	<ul style="list-style-type: none"> The current Cisco 7600 routers are EOL. Upgrading the Supervisors will also require replacement of the line cards, which is cost inefficient. The devices are to be replaced with high-density 1 rack unit core switches. All current switches have some X2 10Gig GBICs connecting with SC fibre patch leads. Current topology is depicted in <i>Figure 22 in RFP document "Appendix 1 - ACSA Logical Network Topology"</i>
Requirement	<ul style="list-style-type: none"> Supply and install 2x 1U core switches with minimum 48x SFP+ ports each, dual modular power supplies with front-to-back cooling. These devices will be configured as MPLS PE-nodes and perform inter-vlan routing for the precinct and thus must support MPLS, MPLS VPN, BGP, IS-IS, OSPF, IGMP, PIM and MST. The Cisco equivalent would be in the Cisco 9500 series with Advantage OS. Supply 86x 10Gig SFP SM 1310nm fibre transceivers for new PE-nodes Replace SC-LC fibre leads with LC-LC leads (ACSA supplied) in conjunction with ACSA onsite cabling provider. Re-Integrate the 2x MPLS PE-nodes with the JNB MPLS core by establishing redundant connectivity with the existing Cisco 7600 MPLS P-nodes as depicted in <i>Figures 15 in RFP document "Appendix 1 - ACSA Logical Network Topology"</i>
Additional Requirements	<ul style="list-style-type: none"> All hardware to be supplied with C14-C15 power cables, equivalent to Cisco CAB-C15-CBN. SFPs must be DOM (Digital Diagnostic Monitoring) capable. All hardware must be covered with 3 years OEM extended warrantee 24x7x4 Pricing must include onsite maintenance and support for 3 years

	<ul style="list-style-type: none"> All installation and decommissioning activities are to be priced for after hours. All fibre cabling requirements are to be planned and implemented in conjunction with the ACSA onsite cabling provider via the Project Manager.
	10. NETWORK WP12 CTN MPLS CORE REPLACEMENT
Short Description	Replacement of EOL Cisco 7600 MPLS P-nodes at CTN i.e. CIA-SOB-CR1-P1 and CIA-CTB-CR3-P2
As-is Environment	<ul style="list-style-type: none"> The current Cisco 7600 routers are EOL. Upgrading the Supervisors will also require replacement of the line cards, which is cost inefficient. The devices are to be replaced with high-density 1 rack unit core switches. All fibre patch leads have already been changed to LC-LC leads <p>Current topology is depicted in <i>Figure 12 in RFP document "Appendix 1 - ACSA Logical Network Topology"</i></p>
Requirement	<ul style="list-style-type: none"> Supply and install 2x 1U core switches with minimum 40x SFP+ ports each, dual modular power supplies with front-to-back cooling. These devices will be configured as MPLS P-nodes. The device must support MPLS, MPLS VPN, BGP, IS-IS, OSPF, IGMP and PIM. The Cisco equivalent would be in the Cisco 9500 series with Advantage OS. Supply 44x 10Gig SFP SM 1310nm fibre transceivers for new P-nodes Re-Integrate the 2x MPLS P-nodes with the CTN MPLS core by establishing redundant connectivity with the MPLS PE-nodes as depicted in <i>Figure 12 in RFP document "Appendix 1 - ACSA Logical Network Topology"</i>
Additional Requirements	<ul style="list-style-type: none"> All hardware to be supplied with C14-C15 power cables, equivalent to Cisco CAB-C15-CBN. SFPs must be DOM (Digital Diagnostic Monitoring) capable. All hardware must be covered with 3 years OEM extended warrantee 24x7x4 Pricing must include onsite maintenance and support for 3 years All installation and decommissioning activities are to be priced for after hours. All fibre cabling requirements are to be planned and implemented in conjunction with the ACSA onsite cabling provider via the Project Manager.
	11. NETWORK WP13 CTN DC NEXUS REPLACEMENT
Short Description	Replacement of 4X EOL Cisco Nexus7000 C7010 (10 Slot) Chassis in CPT i.e. CIA-DC-RACK18-CIA, CIA-DC-RACK3-CIA, CIA-DC-RACK5-SOBEXT-CIA and CIA-DC-RACK16-SOBEXT-CIA
As-is Environment	<ul style="list-style-type: none"> 4X Cisco Nexus7000 C7010 (10 Slot) switches are EOL Upgrading the Supervisors and the cards is cost inefficient. The devices are to be replaced with high performance 1 rack unit access switches. The devices are located in the CPT data centre and are sparsely populated. Since the chassis have vertical slots and the replacement switches will be horizontally mounted, there will be extensive copper re-patching required for the migration. Fibre cabling will be minimal.
Requirement	<ul style="list-style-type: none"> Supply and install 6x high performance 48 port 10/100/1000 PoE+ stackable access switches with dual modular power supplies, stack card/module, hot-swappable fan trays and minimum 8x SFP+ uplink fibre ports each, The Cisco equivalent will be from the Cisco 9300 series Catalysts. The switches must be configured in 2 stacks of 2 switches each, and 2 single switches. Supply 20x 10Gig SFP SM 1310nm fibre transceivers. Replace copper and fibre cabling (ACSA supplied) in conjunction with ACSA onsite cabling provider where necessary
Additional Requirements	<ul style="list-style-type: none"> All hardware to be supplied with C14-C15 power cables, equivalent to Cisco CAB-C15-CBN.

	<ul style="list-style-type: none"> SFPs must be DOM (Digital Diagnostic Monitoring) capable. All hardware must be covered with 3 years OEM extended warrantee 24x7x4 Pricing must include onsite maintenance and support for 3 years All installation and decommissioning activities are to be priced for after hours. All fibre cabling requirements are to be planned and implemented in conjunction with the ACSA onsite cabling provider via the Project Manager.
	12. NETWORK WP16 KSIA CUTE LAN AND CORE REFRESH
Short Description	<ul style="list-style-type: none"> Replacement of EOL Cisco access and Core switches in DUR CUTE network Replacement of SC fibre leads with LC leads (ACSA supplied) Integrate the DUR CUTE network with the DUR MPLS core
As-is Environment	<ul style="list-style-type: none"> 16X Cisco WS-C3750E access switches and 2x Cisco o6500 core switches are EOL. All current switches have X2 GBICs connecting with SC fibre patch leads. The DUR CUTE network is an isolated domain and does not integrate with the KSIA MPLS Core
Requirement	<ul style="list-style-type: none"> Supply and install 16x 48 port 10/100/1000 PoE+ stackable access switches with dual modular power supplies, stack card/module, hot-swappable fan trays and minimum 2x SFP+ uplink fibre ports, Supply 32x 10Gig SFP SM 1310nm fibre transceivers for the access switches Replace SC-LC fibre leads with LC-LC leads (ACSA supplied) in conjunction with ACSA onsite cabling provider Supply and install 2x 1U core switches with minimum 24x SFP+ ports each and dual modular power supplies with front-to-back cooling. These devices will be configured as MPLS PE-nodes and perform inter-vlan routing for the precinct and thus must support MPLS, MPLS VPN, BGP, IS-IS, OSPF, IGMP, PIM and MST. The Cisco equivalent would be in the Cisco 9500 series with Advantage OS. Supply 36x 10Gig SFP SM 1310nm fibre transceivers for new PE-nodes Supply 8x Cisco 10Gig LR-S SFPs for the Cisco P-nodes. Cisco PID = SFP-10G-LR-S= Integrate the 2x MPLS PE-nodes with the KSIA MPLS core by establishing redundant connectivity with the existing Cisco 7600 MPLS P-nodes as depicted in <i>Figure 8 in RFP document "Appendix 1 - ACSA Logical Network Topology"</i>
Additional Requirements	<ul style="list-style-type: none"> All hardware to be supplied with C14-C15 power cables, equivalent to Cisco CAB-C15-CBN. SFPs must be DOM (Digital Diagnostic Monitoring) capable. All hardware must be covered with 3 years OEM extended warrantee 24x7x4 Pricing must include onsite maintenance and support for 3 years All installation and decommissioning activities are to be priced for after hours All fibre cabling requirements are to be planned and implemented in conjunction with the ACSA onsite cabling provider via the Project Manager.
	13. NETWORK WP38 KSIA MPLS CORE REPLACEMENT
Short Description	Replacement of EOL 2x Cisco 7600 MPLS P-nodes at DUR I.e. DUR-TMB-CR1-R2-CAB1-P1 & DUR-TMB-CR1-R2-CAB1-P1
As-is Environment	<ul style="list-style-type: none"> The current Cisco 7600 routers are EOL. Upgrading the Supervisors will also require replacement of the line cards, which is cost inefficient. The devices are to be replaced with high-density 1 rack unit core switches. Current switches have X2 10Gig GBICs connecting with SC fibre patch leads. Current topology is depicted in <i>Figure 8 in RFP document "Appendix 1 - ACSA Logical Network Topology"</i>

Requirement	<ul style="list-style-type: none"> Supply and install 2x 1U core switches with minimum 40x SFP+ ports each, dual modular power supplies with front-to-back cooling. These devices will be configured as MPLS P-nodes. The device must support MPLS, MPLS VPN, BGP, IS-IS, OSPF, IGMP and PIM. The Cisco equivalent would be in the Cisco 9500 series with Advantage OS. Replace SC-LC fibre leads with LC-LC leads (ACSA supplied) in conjunction with ACSA onsite cabling provider Supply 44x 10Gig SFP SM 1310nm fibre transceivers for new P-nodes Re-Integrate the 2x MPLS P-nodes with the DUR MPLS core by establishing redundant connectivity with the MPLS PE-nodes as depicted in <i>Figure 8 in RFP document "Appendix 1 - ACSA Logical Network Topology"</i>
Additional Requirements	<ul style="list-style-type: none"> All hardware to be supplied with C14-C15 power cables, equivalent to Cisco CAB-C15-CBN. SFPs must be DOM (Digital Diagnostic Monitoring) capable. All hardware must be covered with 3 years OEM extended warrantee 24x7x4 Pricing must include onsite maintenance and support for 3 years All installation and decommissioning activities are to be priced for after hours. All fibre cabling requirements are to be planned and implemented in conjunction with the ACSA onsite cabling provider via the Project Manager.
14. NETWORK WP58 JNB WESTERN PRECINCT ACSA LAN	
Short Description	<ul style="list-style-type: none"> Establishment of new access and distribution network infrastructure in the Western Precinct Office Building Block 1
As-is Environment	<ul style="list-style-type: none"> This is a greenfield deployment of new network infrastructure in the new Western Precinct Office building which will host ACSA Corporate staff and certain other divisions. The building will have 5 floors with a wire centre on each floor and including 2 fibre distribution centres which will integrate with the JNB MPLS Core network. It will be a separate layer 2 domain from existing infrastructure. IP subnet, m-VPN and VLAN information will be provided by ACSA IT Infrastructure.
Requirement	<ul style="list-style-type: none"> Supply and install 22x 48 port 10/100/1000 PoE+ stackable access switches with dual modular power supplies, stack card/module, hot-swappable fan trays and minimum 2x SFP+ uplink fibre ports. Supply 22x 10Gig SFP SM 1310nm fibre transceivers for access switches Supply and install 2x 1U core switches with minimum 32x SFP+ ports each and dual modular power supplies with front-to-back cooling. These devices will be configured as MPLS PE-nodes and perform inter-vlan routing for the precinct and thus must support MPLS, MPLS VPN, BGP, OSPF, IGMP, PIM and MST. The Cisco equivalent would be in the Cisco 9500 series with Advantage OS. Supply 26x 10Gig SFP SM 1310nm fibre transceivers for new PE-nodes Supply 8x Cisco 10Gig LR-S SFPs for the Cisco P-nodes. Cisco PID = SFP-10G-LR-S= Integrate the 2x MPLS PE-nodes with the JNB MPLS core by establishing redundant connectivity with the existing Cisco 6800 MPLS P-nodes as depicted in <i>Figure 15 in RFP document "Appendix 1 - ACSA Logical Network Topology"</i>
Additional Requirements	<ul style="list-style-type: none"> All hardware to be supplied with C14-C15 power cables, equivalent to Cisco CAB-C15-CBN. SFPs must be DOM (Digital Diagnostic Monitoring) capable. All hardware must be covered with 3 years OEM extended warrantee 24x7x4 Pricing must include onsite maintenance and support for 3 years All installation activities are to be priced for business hours. Physical Integration of the MPLS PE switch/router to the MPLS Core network must be priced for after hours All fibre cabling requirements are to be planned and implemented in conjunction with the ACSA onsite cabling provider via the Project Manager.

	15. NETWORK WP59 JNB GPS SYNC TIME SERVER APPLIANCE
Short Description	<ul style="list-style-type: none"> Implementation of additional network time server appliance with authenticated NTP and PTP
As-is Environment	<ul style="list-style-type: none"> ACSA has several GPS synched time servers deployed at various airports. An additional/secondary time source is required ant JNB
Requirement	<ul style="list-style-type: none"> Supply and install MicroSemi S650 Sync Server Standard Oscillator, Redundant AC power supplies Supply and install GPS Antenna kit for the S650
Additional Requirements	<ul style="list-style-type: none"> All hardware to be supplied with C14-C15 power cables, equivalent to Cisco CAB-C15-CBN. All hardware must be covered with 3 years OEM extended warrantee 8X5XNBD Pricing must include onsite maintenance and support for 3 years All installation activities are to be priced for business hours.
	16. IPT Work Package - UCCX installation at Regional airports
Short Description	<ul style="list-style-type: none"> Implementation of Intelligent Telephone Contact Centre Call queuing system installation for use by Regional airports.
As-is Environment	<ul style="list-style-type: none"> ACSA recently installed Cisco IP Telephony at all regional airports. ACSA has Cisco Contact Centres deployed at ORTIA, CTIA and KSIA airports. An additional Contact Centre Server is required at JNB, for use by the regional airports. All regional airports are configured in a single cluster. ACSA currently has Cisco Unified CCX Administration, System version: 11.6.1.10000-51 (ES02-24) installed at CTIA, JNB and KSIA. The hardware platform is built on high availability UCSC-C240-M4S server appliances and caters for 90 premium agent licenses. JNB, KSIA and CTIA are configured as separate clusters and operate autonomously from each other. All servers are built as VMware hosts on the C240 appliance servers. JNB, CTIA and KSIA, each has two servers respectively, with two instances each of the UCCX software in a high availability fashion.
Requirement	<p>Contact centre server licenses for high availability Agent licenses for 30 users Server VMware hosts will be supplied</p>
Additional Requirements	<ul style="list-style-type: none"> All applicable hardware to be supplied with C14-C15 power cables, equivalent to Cisco CAB-C15-CBN. All hardware must be covered with 3 years OEM extended warrantee 8X5XNBD Pricing must include onsite maintenance and support for 3 years All installation activities are to be priced for business hours.
	17. IPT Work Package - Voice Recorder installation at Regional airports
Short Description	<ul style="list-style-type: none"> Implementation Telephone Voice recording solution for regional for use by Regional airports.
As-is Environment	<ul style="list-style-type: none"> ACSA currently has Libra Datavoice voice recorders installed at CTIA, JNB and KSIA. This system integrates via CTI with the installed Cisco Unified Communications servers at each of these airports. Each airport allows for 50 concurrent calls to be recorded and the retention and backup is handled by ACSA's backup systems. The hardware in place is a Libra 4200 rack mounted appliance. ACSA uses the G729a codec for recording. No more than 50 concurrent calls are expected, and the solution needs to be sized appropriately. The supervisors of these departments use the recordings for training and improvement as well as satisfying compliance requirements.

Requirement	A hardware solution to record 50 concurrent calls. The solution needs to integrate with the onsite Cisco Call Manager. The installed version of CUCM is System version: 11.5.1.13902-2.
Additional Requirements	<ul style="list-style-type: none"> • All hardware to be supplied with C14-C15 power cables, equivalent to Cisco CAB-C15-CBN. • All hardware must be covered with 3 years OEM extended warrantee 8X5XNBD • Pricing must include onsite maintenance and support for 3 years • All installation activities are to be priced for business hours.
18. IPT End of life replacements	
Short Description	<ul style="list-style-type: none"> • Replace end of life hardware due to the OEM recommendations
As-is Environment	<ul style="list-style-type: none"> • The ACSA telephony network is built on Cisco hardware. Cisco publishes when each piece of hardware becomes end-of-life and recommends replacement dates. ACSA follows the recommendations and replaces hardware as and when required. ACSA has multiple Cisco Call Managers installed across the airports, including Cisco 2900 series gateways and Cisco IP phones. The hardware that has or will reach end of life are Cisco VG224 Analog Voice Gateway Unified Communications Manager
Requirement	<ul style="list-style-type: none"> • JIA - Supply and install 42x Analog Voice Gateways to connect analogue phones to an IP network. The Cisco equivalent would be the Cisco VG224 Analog Voice Gateway • CTIA - Supply and install 4x Analog Voice Gateways to connect analogue phones to an IP network. The Cisco equivalent would be the Cisco VG224 Analog Voice Gateway • DUR- Supply and install 2 x Call Manager processing servers to handle call processing. The Cisco equivalent would be the Call Manager Server UCSC-C220-M3S • COR - Supply and install 2 x Call Manager processing servers to handle call processing. The Cisco equivalent would be the Call Manager Server UCSC-C220-M3S • PLZ - Supply and install 2 x Call Manager processing servers to handle call processing. The Cisco equivalent would be the Call Manager Server UCSC-C220-M3S
Additional Requirements	<ul style="list-style-type: none"> • All hardware must be covered with 3 years OEM extended warrantee 8X5XNBD • Pricing must include onsite maintenance and support for 3 years • All installation activities are to be priced for business hours. • Power cord, C13 to C14 (recessed receptacle), 10A, 2 per server • Media (no lic) for • Virt. Hypervisor 5.x (2-socket) • Virt. Hypervisor 5.x - SnS • 1200W V2 AC Power Supply for 2U C-Series Servers • 300GB 6Gb SAS 10K RPM SFF HDD/hot plug/drive sled mounted, 12 per server

- | | |
|--|--|
| | <ul style="list-style-type: none">• 2.50 GHz E5-2680 v3/120W 12C/30MB Cache/DDR4 2133MHz, 1 per server• 16GB DDR4-2133-MHz RDIMM/PC4-17000/dual rank/x4/1.2v, 4 per server• 12G SAS Modular Raid Controller• 12Gbps SAS 1GB FBWC Cache module (Raid 0/1/5/6)• Right PCIe Riser Board (Riser 1) (3 x8) for 6 PCI slots• Intel i350 Quad Port 1Gb Adapter• Enable RAID 5 Setting |
|--|--|

Work Package Name	WIFI End Of Life Access Point Replacements
Short Description	<ul style="list-style-type: none"> • ACSA currently have various models of Wireless Access Points that will reach End of Life. This work package relates to the lifecycle replacement of Wireless Access Points all Sites. These sites include Johannesburg International Airport (JNB), Cape Town International Airport (CIA), King Shaka International Airport (DUR),
As-is Environment	<ul style="list-style-type: none"> • The existing Wireless Environment consists Cisco WISM2 high availability controllers at four of the major sites - Johannesburg International Airport (JNB), Cape Town International Airport (CIA), King Shaka International Airport (DUR). The access points at these sites connect as local access points and the remaining sites Access points connect via flex connect with local switching. Corporate connects to the OR Tambo Wlan controller and the Regional Airports connect to the CTIA Wlan controller. Models of the Access Points being replaced, and their current locations are shown in table 1. Below is the typical topology of the Wlan environment. <div data-bbox="595 619 1868 1369" data-label="Diagram"> <p>The diagram, titled "OR TAMBO WLAN DIAGRAM", illustrates the network architecture. On the left, a server rack contains several servers: JNBVMACSSRV2 (.11), JNBVMACSSRV1 (.10), JNBDC1ISESRV2 (.9), JNBDC1ISESRV1 (.8), and JNBDC1MSESRV1 (.11). These servers are connected to a central switch. The central switch is part of an "On-site WLC HA Pair" (High Availability Pair) consisting of two controllers connected via a Virtual IP (.253) and a link labeled ".1". The switch also connects to a "WAN" cloud. The WAN cloud is connected to several "Flex Connect Access Points" at various sites: CORP, ELS, GRJ, BFN, KIM, and UTN. The central switch also connects to a "Local Access Points" block at the bottom. The switch is connected to two other switches, JNB-TA-CR1-R2C6-PE1 (.253) and JNB-TA-WC8-R1C1-1-PE2 (.252), which are connected to the WAN cloud. The central switch is also connected to a "VLAN 64 10.68.64.0/24" and a "VLAN 249 10.68.249.0/24".</p> </div> <p>Diagram 1: Wlan Architecture Diagram</p>

Requirement

- Replacement of the Access Points that will reach End Of life during the duration of the contract across the various sites are as per the table below.

Existing Access Point	AIR-CAP1552E-E-K9	AIR-CAP1552I-E-K9	AIR-CAP1552E-E-K9	AIR-LAP1522AG-E-K9	AIR-CAP1702I-E-K9	AIR-CAP2602E-E-K9	AIR-CAP3602E-E-K9	AIR-CAP702W-E-K9
Site	Quantity							
JNB	45	2	45		40	1	25	87
CIA			11	18		1	5	
DUR					30			
COR								
PLZ	3			1				
ELS	1						3	
KIM							3	
BFN							8	
UTN							3	
GRJ							2	

Table 1: Ap replacement Schedule

- Replacement access points will be installed in the same position as the current AP that it replaces.
- Only controller-based Access Points are to be used for centralised management and configuration.
- All new Access Points to be supported by the existing Wlan controller or a Wlan controller, including licenses, where applicable, must be provided. New Access Points to be supported by the existing monitoring system or a monitoring system must be provided.
- Some SSIDs use 802.1x EAP/TLS authentication and any changes in controllers will have to maintain all the current SSID and authentications standards.
- All Access Points to support a minimum 802.11ac standard, support high density environments and GigabitEthernet.
- Aps must also be supported by the existing lan environment including power over ethernet (POE) or any proposed lan equipment.
- Outdoor Access Points should be ruggedized and highly resistant to temperature and weather conditions.
- All access points to also include mounting hardware.
- Where an existing access point has external antennae's, it must be replaced with an antenna with a similar Dbi rating

Additional Requirements

- All Access Point hardware must be covered with 3 years OEM extended warrantee 24x7xNBD
- All Wlan controller hardware must be covered with 3 years OEM extended warrantee 24x7x365
- Pricing must include onsite maintenance and support for 3 years
- All setup, configuration and decommissioning activities are to be priced for after hours.
- Installation and decommissioning exclude physical cabling and physical installation.

Work Package Name	WIFI Access Point Capacity Increase
Short Description	<ul style="list-style-type: none"> Currently, the wireless world is being driven by people who want to connect to the Internet anywhere and anytime using portable devices such as laptop computers, tablet computers, handheld personal computers (HPC) or personal digital assistants (PDAs). This demand has created an increased number of Wlan clients and as a result ACSA increases its wlan client capacity and coverage area on an ongoing basis. This work package will review and increase Wireless Access Points capacity and the following sites: Johannesburg International Airport (JNB), Cape Town International Airport (CIA) and King Shaka International Airport (DUR).
As-is Environment	<ul style="list-style-type: none"> The existing Wireless Environment consists Cisco WISM2 high availability controllers at four of the major sites - Johannesburg International Airport (JNB), Cape Town International Airport (CIA), King Shaka International Airport (DUR). The access points at these sites connect as local access points and the remaining sites Access points connect via flex connect with local switching. Corporate connects to the OR Tambo Wlan controller and the Regional Airports connect to the CTIA Wlan controller. Models of the Access Points being replaced, and their current locations are shown in table 1. Below is the typical topology of the Wlan environment. <div data-bbox="595 608 1868 1358" data-label="Diagram"> <p>The diagram, titled "OR TAMBO WLAN DIAGRAM", illustrates the network architecture. On the left, a server rack contains several servers: JNBVMACSSRV2 (.11), JNBVMACSSRV1 (.10), JNBDC1ISESRV2 (.9), JNBDC1ISESRV1 (.8), and JNBDC1CPISRV1 (.10). Below these are JNBDC1MSESRV1 (.11) and JNBDC1MSESRV1 (.10). These servers are connected to a central switch (JNB-TA-CR1-R2C6-PE1) via VLAN 64 (10.68.64.0/24). This switch is part of an "On-site WLC HA Pair" consisting of two controllers (IPs .3 and .4) connected via a "Virtual IP" (.253). The HA pair is connected to another switch (JNB-TA-WCB-R1C1-1-PE2) via IP .252. This second switch is connected to a WAN cloud. The WAN cloud is connected to several "Flex Connect Access Points" at various sites: CORP, ELS, GRU, BFN, KIM, and UTN. Local access points are also shown connected to the central switch via VLAN 249 (10.68.249.0/24).</p> </div> <p>Diagram 1: Wlan Architecture Diagram</p>

Requirement	<ul style="list-style-type: none"> Replacement of the additional Access Points to increase client capacity and coverage area as per the table below. <table border="1" data-bbox="539 181 1223 523"> <thead> <tr> <th>Site</th> <th>AP Model</th> <th>Quantity</th> </tr> </thead> <tbody> <tr> <td>JNB</td> <td>AIR-AP28021-E-K9</td> <td>35</td> </tr> <tr> <td>JNB</td> <td>AIR-AP1562I-E-K9</td> <td>10</td> </tr> <tr> <td>CPT</td> <td>AIR-AP28021-E-K9</td> <td>35</td> </tr> <tr> <td>CPT</td> <td>AIR-AP1562I-E-K9</td> <td>10</td> </tr> <tr> <td>DUR</td> <td>AIR-AP28021-E-K9</td> <td>35</td> </tr> <tr> <td>DUR</td> <td>AIR-AP1562I-E-K9</td> <td>10</td> </tr> </tbody> </table> <p>Table 2: Ap Capacity Increase Schedule</p> <ul style="list-style-type: none"> A survey must first be done of the existing coverage areas at the three sites. Any coverage holes and or areas that need additional access points must be identified and a new layout must be produced that incorporates the additional access points that will be required. Only controller-based Access Points are to be used for centralised management and configuration. All new Access Points to be supported by the existing Wlan controller or a Wlan controller, including licenses, where applicable, must be provided. New Access Points to be supported by the existing monitoring system or a monitoring system must be provided. Some SSIDs use 802.1x EAP/TLS authentication and any changes in controllers will have to maintain all the current SSID and authentications standards. All Access Points to support a minimum 802.11ac standard, support high density environments and GigabitEthernet. Aps must also be supported by the existing lan environment including power over ethernet (POE) or any proposed lan equipment. Outdoor Access Points should be ruggedized and highly resistant to temperature and weather conditions. All access points to also include mounting hardware. 	Site	AP Model	Quantity	JNB	AIR-AP28021-E-K9	35	JNB	AIR-AP1562I-E-K9	10	CPT	AIR-AP28021-E-K9	35	CPT	AIR-AP1562I-E-K9	10	DUR	AIR-AP28021-E-K9	35	DUR	AIR-AP1562I-E-K9	10
Site	AP Model	Quantity																				
JNB	AIR-AP28021-E-K9	35																				
JNB	AIR-AP1562I-E-K9	10																				
CPT	AIR-AP28021-E-K9	35																				
CPT	AIR-AP1562I-E-K9	10																				
DUR	AIR-AP28021-E-K9	35																				
DUR	AIR-AP1562I-E-K9	10																				
Additional Requirements	<ul style="list-style-type: none"> All Access Point hardware must be covered with 3 years OEM extended warrantee 24x7xNBD All Wlan controller hardware must be covered with 3 years OEM extended warrantee 24x7x365 Pricing must include onsite maintenance and support for 3 years All setup, configuration and decommissioning activities are to be priced for after hours. Installation and decommissioning exclude physical cabling and physical installation. 																					
	WIFI Increase of MSE License capacity																					
Short Description	<ul style="list-style-type: none"> Procurement of 1500 additional Ap licenses for the Cisco Mobility Services Engine 																					
As-is Environment	<ul style="list-style-type: none"> ACSA currently has MSE version XXXXX with only XXXX licenses. ACSA require 1500 more licenses for the additional Aps that have and will be deployed. 																					

Requirement	Provision of context aware software to track Wi-Fi clients, rogue clients, rogue APs, and wired clients. All software to be compatible with existing and new access points being deployed.
Additional Requirements	<ul style="list-style-type: none"> • Pricing must include maintenance and support for 3 years • Location of all old and new Access Points to be obtained from the wlan controller.
Security Mobile Threat Prevention	
Short Description	Supply and Installation of Mobile Protection software for Mobile devices
As-is Environment	Current mobile devices use Intune for Mobile Device Management however the security functionally is limited
Requirement	<p>Supply and installation of a Mobile threat protection software with the below features:</p> <ul style="list-style-type: none"> • Protect mobile devices from malware • Protect against man-in-the-middle attacks over cellular, Wi-Fi networks, • Protect against OS exploits and phishing attacks • Blocks zero-day malware • Prevents phishing on all apps • Block devices from sending data to botnets • Prevent infected devices from accessing corporate apps
Additional Requirements	<ul style="list-style-type: none"> • Pricing must include maintenance and all subscription licenses for 3 years. • All software must support IOS and android devices. • The software must integrate seamlessly into the existing environment • Reporting functionality to be provided.
Security Data Loss Protection	
Short Description	ACSA currently has limited Data Loss Protection security.
As-is Environment	ACSA has a decentralised Internet architecture. Each of the nine airports has its own Internet breakout and Corporate office is directly connected to JNB airport and also shares the JNB Internet link. Each site has its own Checkpoint Firewall that is connected to the Internet. ACSA uses Outlook365 for email connectivity and other Cloud bases services such as Microsoft Teams and Oracle. ACSA uses local redundant Cisco Web Security Appliances at each site

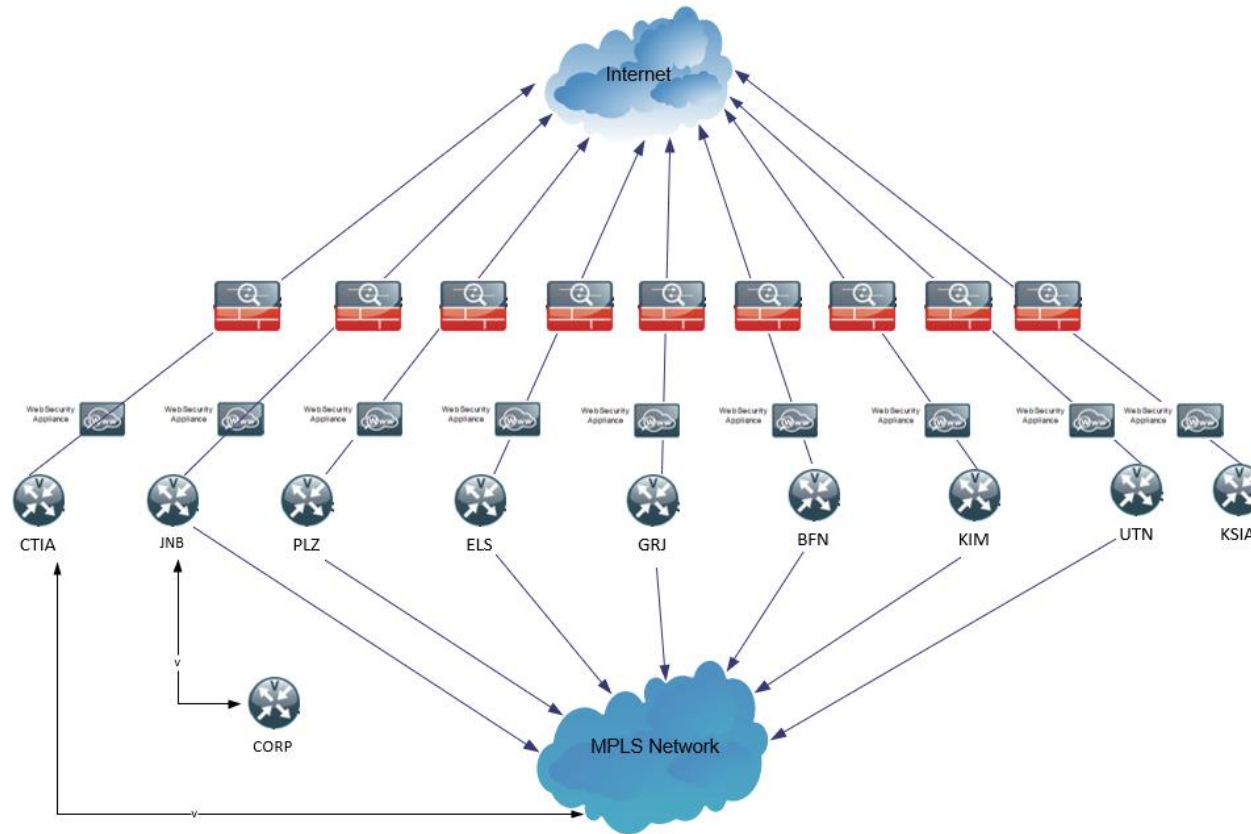


Diagram 2: Internet Architecture Diagram

Requirement

The requirement is to install Data Loss Prevention software or hardware that is able to:

- Stop data leakage through the most common applications such as emails, browsers, and other online applications.
- Control and set rights for removable devices and ports and establish policies for users, computers and groups.
- Create policies to inspect data residing on protected Windows, macOS and Linux computers.
- Discover sensitive data at rest and encrypt or delete it.
- Within a centralised management console, set up security policies for corporate or employee-owned mobile devices
- Protect data against loss and theft on all company's endpoints.

Additional Requirements

- All hardware must be covered with 3 years OEM extended warrantee 24x7x4
- Pricing must include onsite maintenance and support for 3 years
- Any software or hardware must be compatible with the current enterprise infrastructure such as the CISCO Web Security Appliances and the Checkpoint Firewalls.

	<ul style="list-style-type: none"> The Solution must support a decentralised environment and must protect all sites. The solution must be fully customisable to our environment and capable of customising the list of data that is of interest
	Security ASA
Short Description	Installation of Firewall Threat Defence software licenses and management Centre licenses on the existing perimeter firewalls
As-is Environment	The current environment consists a HA cluster of Cisco ASA5545X Firewalls at the perimeter
Requirement	Installation of Firewall Threat defence software that is able to : ''
Additional Requirements	<ul style="list-style-type: none"> Virtual hardware Must run on VMware ESXi version 6.0 All hardware must be covered with 3 years OEM extended warrantee 24x7x4 Pricing must include onsite maintenance and support for 3 years
	Security Disaster Recovery VPN
Short Description	Supply and Installation of a redundant remote access VPN at the CTIA site.
As-is Environment	<ul style="list-style-type: none"> current environment uses CP-MOB CheckPoint Mobile Access Blade License HA The current mobile access is via the ORTIA Firewalls only Authentication is based on Active directory authentication All access rules are based on active directory groups Current user count caters for 1000 concurrent users

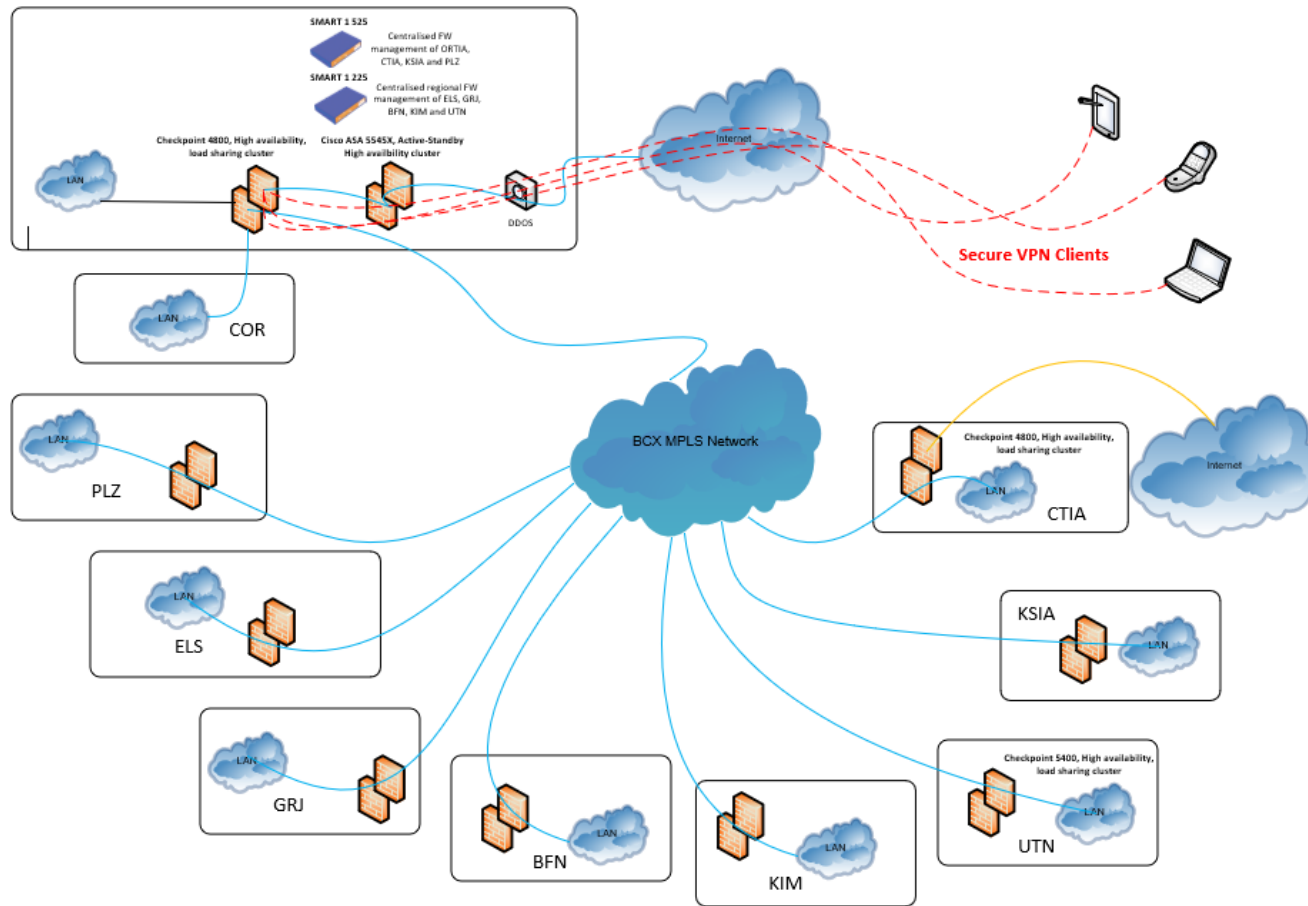


Diagram 2: VPN Architecture Diagram

Requirement

- Supply and install a secondary Remote access VPN at CTIA to cater for disaster recovery.
- Authentication must be based on Active directory authentication
- All access rules must be based on active directory groups
- Current user count must cater for 1000 concurrent users

Additional Requirements

- All hardware or software must be covered with 3 years OEM extended warrantee 24x7x4
- Pricing must include installation and rollout to all clients if necessary
- Pricing must include onsite maintenance and support for 3 years

Table 3

General Supply	
Short Description	From time to time there might be items required that do not form part of the above work packages. This section defines those items.
Option 1:	A list of general supply items not covered in any of the other work packages, shown in table 3
Option 2:	A list of general supply items not covered in any of the other work packages similar to Option 1 but using the proposed OEM equipment
Additional Requirements	<ul style="list-style-type: none"> • Virtual hardware Must run on VMware ESXi version 6.0 • All hardware must be covered with 3 years OEM extended warranty 24x7x4 • Pricing must include onsite maintenance and support for 3 years

Category	Item	Description	Part Number	UOM	QTY
IPT	Entry level, compact IP phone	IP Phone -single-line endpoint delivering cost-effective access to Cisco Unified Communications Manager . Designed with a trimline-like low profile, ideal solution for lobbies, hallways, elevators, hotel bathrooms, or other settings that have an occasional need for voice communications services.	CP-6901-CL-K9=	Each	1
	Handheld wireless phone	IP Phone - ruggedized, resilient, and secure 802.11 wireless LAN handset that delivers cost-effective, on-premises, comprehensive Voice over Wireless LAN (VoWLAN) communications for the highly mobile in-campus worker.	CP-8821	Each	1

Medium IP Phone, type 1	IP Phone -single-line model is ideal for occasional-to-light communications needs, such as in lobbies, cafeterias, and conference centers.	CP-7811	Each	1
Medium IP Phone, type 2	IP Phone - 2-line model is ideal for information workers and teleworkers who have light-to-moderate voice communications needs.	CP-7821	Each	1
Conference IP Phone	IP Phone - conference phone for small conference rooms and private office desktops.	CP-7832	Each	1
High spec IP Phone, type 1	IP Phone - 4-line model suited for knowledge workers, administrative staff, managers, customer care agents, and supervisors who have moderate-to-active voice communications needs.	CP-7841	Each	1
High spec IP Phone, type 2	IP Phone - 16-line model to meet the active communications needs of managers, administrative staff, customer care agents, and supervisors.	CP-7861	Each	1
Entry Level, Lobby IP Phone	IP Phone - entry-level VoIP endpoint that delivers basic telephony features at a very affordable price. Well-suited for settings with occasional needs for VoIP communications, such as Lobbies, Classrooms, Laboratories, Hallways	CP-3905=	Each	1
Mid level Unified Communications server	Mid level Unified Communications Manager server	UCSC210 M2	Each	1
Base Platform Software for voice recording server Professional	Base Platform Software for voice recording server Professional	DV-SW-LIB-BPS	Each	1
License for VoIP Recording - Per Ch	License for VoIP Recording - Per Ch	DV-LIC-RL-IP	Each	1
License for Storage Rule for Network Storage - Per Rule	License for Storage Rule for Network Storage - Per Rule	DV-LIC-SYS-SNS	Each	1
Base Platform Software for Nexus MTMS	Base Platform Software for Nexus MTMS	DV-SW-NEX-MTMS-BPS	Each	1
License for Client Health Monitoring - Per Monitored System	License for Client Health Monitoring - Per Monitored System	DV-LIC-NEX-MTMS-CHM	Each	1
License for Storage & Archiving Bundle - Per 50 Ch	License for Storage & Archiving Bundle - Per 50 Ch	DV-LIC-NEX-MTMS-SA50	Each	1

License for Voice recording Playback Client - Per Simultaneous User	License for Voice recording Playback Client - Per Simultaneous User	DV-LIC-WBR-USR	Each	1
Stainless Steel 2mm iP Phone Brackets Desk / Wall Mount supply and installation	Stainless Steel 2mm iP Phone Brackets Desk / Wall Mount supply and installation		Each	1
Intelligent Telephone Call queuing system media	Intelligent Telephone Call queuing system media	CCX-11-MED-K9	Each	1
Intelligent Telephone Call queuing system - Media Kit,NO LICENSES	Intelligent Telephone Call queuing system - Media Kit,NO LICENSES	CCX-11MEDIKIT-K9	Each	1
Intelligent Telephone Call queuing system	Intelligent Telephone Call queuing system	CCX-11-SYSTEM-K9	Each	1
Intelligent Telephone Call queuing system Licenses	Intelligent Telephone Call queuing system Licenses	CCX-11-LIC-K9	Each	1
Intelligent Telephone Call queuing system PRE Seat Qty 1 LICENSE ONLY	Intelligent Telephone Call queuing system PRE Seat Qty 1 LICENSE ONLY	CCX-11-N-P-LIC	Each	1
Intelligent Telephone Call queuing system High availability LICENSE ONLY	Intelligent Telephone Call queuing system High availability LICENSE ONLY	CCX-11-PHA-LIC	Each	1
Intelligent Telephone Call queuing system Server License	Intelligent Telephone Call queuing system Server License	CCX-11-P-SVR-LIC	Each	1
Intelligent Telephone Call queuing system Install and Upgrade license	Intelligent Telephone Call queuing system Install and Upgrade license	CCX-11-PAK	Each	1
License for Intelligent Telephone Call queuing system	License for Intelligent Telephone Call queuing system	CCX-CUIC-PREM	Each	1
Software support for Intelligent Telephone Call queuing system, New Licenses	Software support for Intelligent Telephone Call queuing system, New Licenses	CON-PSBU-CC11LK9C	Each	1
Software support IP phone	Software support IP phone	CON-PSRT	Each	1
Wallmount kit for IP Phone	Wallmount kit for IP Phone	CP-7800-WMK=	Each	1
Realtime DASHBOARDS & WALLBOARDS to display realtime telephone call statistics	Realtime DASHBOARDS & WALLBOARDS to display realtime telephone call statistics	2Ring DASHBOARDS & WALLBOARDS - single airport	Each	1
Analogue voice gateway	Analogue voice gateway - 160-port gateway, 19-inch rack-mount chassis	Cisco VG350	Each	1
Analogue voice gateway	Analogue voice gateway - 48-port gateway, 19-inch rack-mount chassis	Cisco VG320	Each	1
Analogue voice gateway	Analogue voice gateway - 24-port gateway, 19-inch rack-mount chassis	Cisco VG310	Each	1

Installation, commissioning and detailed documentation	Installation, commissioning and detailed documentation	Professional Services	Each	1
Voice Router gateway	Integrated Services Routers offer embedded hardware encryption acceleration, voice- and video-capable Digital Signal Processor (DSP) slots, optional firewall, intrusion prevention, call processing, voicemail, and application services. Must support industries range of wired and wireless connectivity options such as T1/E1, T3/E3, xDSL, copper and fiber GE.	CISCO2911-V/K9	Each	1
High spec Call Manager Server	High spec Call Manager Server	BE7M-M4-K9	Each	1
Wan interface card - 2 port	Wan interface card - 2 port	VVIC3-2MFT-T1/E1	Each	1
16-channel to 128-channel factory upgrade memory module	16-channel to 128-channel factory upgrade memory module	PVDM3-16U128	Each	1
Voice recorder rack mounted server	Voice recorder rack mounted server	DVR-LIB-POW	Each	1
BLU-RAY drive for Libra system	BLU-RAY drive for Libra system	3BLU001C	Each	1
BLU-RAY media for Libra system	BLU-RAY media for Libra system	3BLU002A	Each	1
Voice recorder recorder software	Voice recorder recorder software	DVR-LIB-LIC-AQ	Each	1
Recorded IP channel license - per channel	Recorded IP channel license - per channel	DVR-LIB-LIC-IPRP	Each	1
Single Network storage license - per rule	Single Network storage license - per rule	DVR-LIB-LIC-SR	Each	1
Decoding License - per user	Decoding License - per user	DVR-LIB-LIC-PB-G729	Each	1
Alarm notification license for Libra system	Alarm notification license for Libra system	DVR-LIB-LIC-HMA	Each	1
Cisco Call Manager JTAPI Recording Controller	Voice Recording system - Cisco Call Manager JTAPI recording control software	DVR-CJT-SW	Each	1
Handset replacement curly cords	Handset replacement curly cords, 3 Metre	RJ9/RJ9	Each	1
Handset replacement curly cords	Handset replacement curly cords, 1 Metre	RJ9/RJ9	Each	1
Handset replacement curly cords	Handset replacement curly cords, 5 Metre	RJ9/RJ9	Each	1
2 Port Analog Telephone Adapter	2 Port Analog Telephone Adapter	ATA190	Each	1
Entry level Unified Communications server	Entry level Unified Communications server	BE6M-M4-K9=	Each	1
Intelligent Telephone Call queuing system licenses	Intelligent Telephone Call queuing system licenses	CCX-10-ADD-K9	Each	1

	Analogue single line telephone	Analogue single line telephone	Analogue single line telephone	Each	1
	Session Border Controller Gateway	Session Border Controller Gateway - Requires high density to handle increased traffic. Low power consumption to reduce cost. High-density packet voice/fax digital signal processor (DSP) to provide greater price/performance, higher density, and expanded codec and feature support for intelligent packet voice services. Universal port DSP feature cards to support remote access services in combination with voice and fax applications	Cisco AS5400XM	Each	1
	MSE licenses	MSE License PAK for CMX 10 and higher	L-MSE-PAK-N	Each	1
	DNA Spaces	Cisco DNA Spaces is a location platform offered as a XaaS	DNAS	Each	1
	DNA Spaces ACT licenses	DNA Spaces ACT software subscription	DNAS-ACT	Each	1
	Small Ap Indoor Intergrated	AP 802.11ac Wave 2; 4x4:4SS; Int Ant; E Reg Dom	AIR-AP1852I-E-K9	Each	1
	Medium Ap Indoor Intergrated	AP 802.11ac W2 AP w/CA; 4x4:3; Int Ant; 2xGbE E	AIR-AP2802I-E-K9	Each	1
	Medium Ap Indoor External	Ap 802.11ac W2 AP w/CA; 4x4:3; Ext Ant; 2xGbE, E Domain	AIR-AP2802E-E-K9	Each	1
WIFI	AP Antennae	2.4 GHz 3dBi/5 GHz 5dBi Low Profile Antenna, White, RP-TNC	AIR-ANT2535SDW-R	Each	1
	AX Access Point Medium	AP with 802.1AX support	C9117AXI-E	Each	1
	Outdoor medium External AP	802.11ac W2 Low-Profile Outdoor AP, External Ant, E Reg Dom.	AIR-AP1562E-E-K9	Each	1
	AP Mounting kit	Standard Pole/Wall Mount Kit for external APs	AIR-ACC1530-PMK1	Each	1
	Ap external Antennae	2.4 GHz 4dBi/5 GHz 7dBi Dual Band Omni Ant., Gray, N conn.	AIR-ANT2547VG-N	Each	1
	Ap Outdoor directional	802.11ac W2 Low-Profile Outdoor AP, Direct. Ant, E Reg Dom.	AIR-AP1562D-E-K9	Each	1
	AP high end outdoor External	802.11ac Outdoor AP, External-Ant, AC-power, Reg. Domain-E	AIR-AP1572EAC-E-K9	Each	1

	Ap mounting kit	External AP Pole-Mount Kit	AIR-ACCPMK1570-1	Each	1
	Ap external Omni Antennaes	2.4 GHz 4dBi/5 GHz 7dBi Dual Band Omni Ant., Gray, N conn.	AIR-ANT2547VG-N	Each	1
	Small Wlan Controller	Regional Airport Wireless Controller	C9800-L-C-K9	Each	1
	Medium Wireless controller	Medium Airport Wireless Controller	C9800-40-K9	Each	1
	Wireless controller small no DNS	Small Airport Wireless Controller	AIR-CT3504-K9	Each	1
	Controller AP license	Wireless Controller AP Adder License	LIC-CT3504-1A	Each	1
	Ap power injector	Ap Power Injector	AIR-PWRINJ1500-2=	Each	1
	AP power cord	Ap Power Cord	AIR-CORD-R3P-40UE=	Each	1
	Hot Spot Gateway	wifi Hot Spot Gateway	AIR-CMX-3375-K9	Each	1
Firewall, Web Security and ISE	Small Site FW	Regional Airport Firewall with Next generation Threat Prevention	CPAP-SG5400-NGTX-HPP	Each	1
	Small Site HA FW	Regional Airport Firewall HA with Next generation Threat Prevention	CPAP-SG5400-NGTX-HA	Each	1
	Large Site FW	Firewall for Large size Airport HA with Next generation Threat Prevention	CPAP-SG6800-NGTX	Each	1
	Large Site HA FW	Firewall for Large size Airport HA with Next generation Threat Prevention	CPAP-SG6800-NGTX-HA	Each	1
	Medium Site FW	Firewall for Medium Size Airport with Next generation Threat Prevention	CPAP-SG15600-NGTX	Each	1
	Medium Site HA FW	Firewall for Medium Size Airport HA with Next generation Threat Prevention	CPAP-SG15600NGTX-HA	Each	1
	1Gb FW SFP	SFP transceiver for 1G fiber ports - long range (1000Base-LX)	CPAC-TR-1LX-B	Each	1
	FW Management Server	Firewall Management Server	CPAP-NGSM525	Each	1
	VPN lic 200	VPN Client Licenses for 200 Users	T-200	Each	1
	VPN lic unlimited	VPN Client Licenses for unlimited Users	T-U	Each	1
	DLP appliance	Data Loss Prevention Appliance	CPSB-DLP-L-1Y	Each	1
	Sandblast appliance	Sandblast Agent including Forensics and AntiRansomware	CPEP-SBA-BASIC-1Y	Each	1

	Sandblast Management device	Endpoint Management pre-defined system for unlimited number of endpoints	CPSM-P1003-	Each	1
	Wmware firewall	VMWare Network Firewall - Next Generation Threat Prevention	CPSG-vSEC-NSX-NGTX-GW	Each	1
	Identity Services licenses	Identity Services License upgrade	L-Identity Services-BSE-P5	Each	1
	Small Identity Services server	Small Secure Network Server for Identity Services Applications	SNS-3615-K9	Each	1
	Medium Identity Services server	Medium Secure Network Server for Identity Services Applications	SNS-3655-K9	Each	1
	Medium Identity Services VM	Identity Services Virtual Machine Medium	R-Identity Services-VMM-K9=	Each	1
	Small Identity Services VM	Identity Services Virtual Machine Small	R-Identity Services-VMS-K9=	Each	1
	Proxy appliance small	Regional Airport Proxy Server	WSA-S195-K9	Each	1
	Proxy appliance large	Large Airport Proxy Server	WSA-S395-K9	Each	1
	Perimeter NGFW software	Perimter Firewall Software License upgrade kit	ASA5545-FP-UPG	Each	1
	Firewall Software	Cisco ISR 4351 Sec bundle w/SEC license	ISR4351-SEC/K9	Each	1
	Firewall Software	Upgrade Kit: ASA5545-X FW, IPS, CX to ASA5545-X FirePower	ASA5545-FP-UPG	Each	1
	Firewall Software	Cisco Firepower Management Center, (VMWare) for 2 devices	SF-FMC-VMW-2-K9	Each	1
	Firewall Software	Cisco Firepower 2120 Master Bundle	FPR2120-BUN	Each	1
	Perimter NGFW VPN licenses	Perimter Firewall VPN Licenses	AC-PLS-P-50-S	Each	1
	Perimeter NGFW management server	Perimeter FW management server	SF-FMC-VMW-2-K9	Each	1
	Perimier NGFW	Perimter FW Next Generation Firewall	FPR2120-NGFW-K9	Each	1
LAN and CORE	10GBASE-LRM SFP fibre tranceiver	10GBASE-LRM SFP Module	SFP-10G-LRM	Each	1
	10GBASE-LRS SFP fibre tranceiver	10GBASE-LR SFP Module, Enterprise-Class	SFP-10G-LR-S	Each	1
	10GBASE-SR SFP fibre tranceiver	10GBASE-SR SFP Module	SFP-10G-SR	Each	1
	1GE Long Range SM/MM Fibre tranceiver	1000BASE-LX/LH SFP transceiver module, MMF/SMF, 1310nm, DOM	GLC-LH-SMD	Each	1

50CM Type 1 Stacking Cable	50CM Type 1 switch Stacking Cable	STACK-T1-50CM	Each	1
50CM Type 4 Stacking Cable	50CM Type 4 switch Stacking Cable	STACK-T4-50CM	Each	1
Access Switch Type 1	8 Port PoE+ LAN switch with 2x 1GE SFP ports	WS-C3560CX-8PC-S	Each	1
Access Switch Type 2	12 Port PoE+ LAN switch with 2x 1GE SFP ports	WS-C3560CX-12PC-S	Each	1
Access Switch Type 4	24-port PoE+ STACKABLE LAN switch	C9200-24P-E	Each	1
Access Switch Type 4 and 5 stacking module	Switch Stacking Module	C9200-STACK	Each	1
Access Switch Type 4 and 5 4x 1G network module	4 x 1G Network Module	C9200-NM-4G	Each	1
Access Switch Type 5	48-port PoE+ stackable LAN switch	C9200-48P-E	Each	1
Access Switch Type 6	24-port PoE+ stackable LAN switch with power stacking	C9300-24P-E	Each	1
Access Switch Type 7	48-port PoE+ stackable LAN switch with power stacking	C9300-48P-E	Each	1
Access Switch Type 6 and 7 8x 10G network module	8 x 10GE Network Module	C9300-NM-8X	Each	1
Core Switch Type 1 - 2TB Supervisor Card	Supervisor Module with 2 x 10GbE fibre ports	VS-S2T-10G	Each	1
Core Switch Type 1 - 6TB Supervisor Card	Supervisor module 440G/slot) with 8x10GE, 2x40GE	C6800-SUP6T	Each	1
Core Switch Type 1 - 7 slot chassis	7-slot chassis, 10RU	C6807-XL	Each	1
Core Switch Type 1 - Fan Tray	Chassis Fan Tray	C6807-XL-FAN	Each	1
Core Switch Type 1 - Power Supply	3000W Power Supply	C6800-XL-3KW-AC	Each	1
Core Switch Type 1 16 Port 10GE Line Card	16 port 10GE SFP+	C6800-16P10G	Each	1
Core Switch Type 1 32 Port 10GE Line Card	32 port 10GE SFP+	C6800-32P10G	Each	1
Core Switch Type 1 48 port RJ45 line card	48-port 10/100/1000 GE RJ45 LINE CARD	C6800-48P-TX-XL	Each	1
Core Switch Type 1 8 port 40GE line card	8 port 40GE with integrated DFC4	C6800-8P40G	Each	1
Core Switch Type 2 2x 40G network module	2 x 40GE Network Module	C9500-NM-2Q	Each	1
Core Switch Type 2 8x 10G network module	8 x 10GE Network Module	C9500-NM-8X	Each	1
Core Switch Type 2 with 40x 10G Fibre ports	Fixed 1U 40-port 10Gig switch MPLS VPN capable	C9500-40X-A	Each	1
Core Switch Type 2 with 48x 10G Fibre ports	Fixed 1U 48-port 10Gig switch MPLS VPN capable bundle	C9500-48X-A	Each	1

Core Switch Type 3 - 48 port line card	48-Port 25GE/10GE/1GE	C9600-LC-48YL	Each	1
Core Switch Type 3 - 6 slot Blank Chassis	6 Slot Chassis	C9606R	Each	1
Core Switch Type 3 - Power Supply	2000W AC Power Supply	C9600-PWR-2KWAC	Each	1
Core Switch Type 3 - Fan Tray	Chassis Fan Tray	C9606-FAN	Each	1
Core Switch Type 3 - Supervisor	Supervisor 1 Module	C9600-SUP-1	Each	1
Data Center Switch Type 1	48 Port 10G BASE-T and 6X 100G QSFP28	N9K-C93108TC-EX	Each	1
Data Center Switch Type 2	48 Port 10/25G SFP+ and 6X 100G QSFP28	N9K-C93180YC-EX	Each	1
Distribution Switch Type 1	12 Port fibre distribution switch	WS-C3850-12S-S	Each	1
Distribution Switch Type 1 and 2 2X 10GE fibre network module	2 x 10GE Fibre Network Module	C3850-NM-2-10G	Each	1
Distribution Switch Type 2	24 Port fibre distribution switch	WS-C3850-24S-S	Each	1
GPS Antenna	Antenna kit for GPS time server appliance	990-15202-100	Each	1
GPS NTP Network Time Server	GPS Synched Network time server appliance	090-15200-651	Each	1
WAN optimization Type 1	Steelhead-SD ready CXA 3070 B110 with RiOS (configured)	CXA-03070-B110-C	Each	1
WAN optimization Type 2	Steelhead CXA 5070 B010 with RiOS	CXA-05070-B010-C	Each	1