National Defence | Défense nationale

CANADIAN ARMED FORCES

OFFICE OF

DIRECTORATE JOINT COMMUNICATIONS INFORMATION SYSTEMS (DJCIS

STATEMENT OF WORK

Stationary and Deployable Private Branch Exchange (PBX) Equipment

Canada

Table of Contents

Acronyms: 2
1. *Objective* 4
2. *Background* 4
3. *Scope* 4
4. *Requirement* 5
5. *Mandatory PBX Specifications* 5
6. *Stationary Core and Backup Sites Requirements (Site Number 1 to 2)* 9
7. *Stationary Training Sites Requirements (Site Number 3 to 5)* 10
8. *Deployable Sites Requirements (Site Number 6 to 32)* 10
9. *Configuration and Management Platform Requirements* 13
10. *Rated PBX Requirements* 13
11. *Recommended Spare Parts List* 14
12. *Factory Acceptance Test* 14
13. *Training* 15
14. *Documentation and Publications* 16
15. *Kick-Off Meeting* 16

List of Appendices

Appendix B1 – Current Network Configuration and where the PBX resides, within it.

Appendix B2 – Overview of intended use of the new system.

Appendix B3 – DND National Dial Plan.

Acronyms:

AA	Auto Attendant
ACD	Automatic Call Distribution/Distributor
ACO	Additional Call Offering
AES	Advanced Encryption Standard
APL	Approved Products List (DISA)
AS-SIP	Assured Services Session Initiation Protocol
BRI	Basic Rate Interface
CAF	Canadian Armed Forces
CD	Compact Disk
CFB	Canadian Forces Base
CFJSR	Canadian Forces Joint Signals Regiment
CFS	Canadian Forces Station
CLASS	Custom Local Area Signaling Services
CLI	Command Line Interface
CNTRL	Control
CNSSI	Committee on National Security Systems Instruction
CSN	Canadian Switched Network (voice)
DISA	Defense Information Systems Agency
DMS-100	Digital Multiplex System-100
DND	Department of National Defence
DSN	Defence Switch Network (voice)
DTN	Defence Telephone Network
DVD	Digital Video Disk
FTP	File Transfer Protocol
FXS	Foreign Exchange Subscriber
GDNS	Global Defence Network Services
GUI	Graphical User Interface
IEC	International Electro-technical Commission
IETF	Internet Engineering Task Force
IO	Input/output
IP	Internet Protocol
ISDN	Integrated Services Digital Network
JITC	Joint Interoperability Test Command

MLPP	Multilevel Precedence and Pre-emption
MUDG	Military Unique Deployment Guide
NCR	National Capitol Region
NI1	National ISDN 1
NI2	National ISDN 2
PBX	Private Branch Exchange
PC	Personal Computer
POE	Power Over Ethernet
PRI	Primary Rate Interface
PSTN	Public Service Telephone Network
QSIG	Protocol for Integrated Services Digital Network (ISDN) communications based on the Q.931 standard
RMA	Request Material Authorization
RS-232	Recommend Standard – 232 (EIA/TIA serial data exchange standard)
SOW	Statement of Work
SRTP	Secure Real-time Transport Protocol
SSC	Shared Services Canada
SIMPLE	SIP Instant Messaging and Presence Leveraging Extensions
SIP	Session Initiation Protocol
TA	Technical Authority
T1	Transmission System 1
TDM	Time Division Multiplex
TLS	Transport Layer Security
UCR	Unified Capabilities Requirements
VoIP	Voice over Internet Protocol
WCS	Workplace Communication Service
XMPP	Extensible Messaging and Presence Protocol
4ESS	4 Electronic Switching System
5ESS	5 Electronic Switching System

1. Objective

1.1. The Department of National Defence (DND) and Canadian Armed Forces (CAF) has a requirement to procure a fleet of Stationary and Deployable Private Branch Exchange (PBX) equipment.

1.2. It is imperative that DND immediately replace the existing aging and bulky fleet of PBX equipment in order to meet future CAF requirements to be mission ready.

1.3. The intent is to acquire technically compliant PBX equipment with the smallest footprint available, and install & commission it expediently.

2. Background

2.1 The CS1000E Release 5.0 Defence Switch Network (DSN) was originally owned by Nortel Network until sold to Avaya in 2009. The CS1000E Rel. 5.0 DSN software which supports Multilevel Precedence and Pre-emption (MLPP) is not available after Rel. 5.0 and network expansion is limited to available hardware.

2.2 The current legacy PBXs consist of over thirty (30) Avaya CS1000E PBXs. The current network includes two core sites, i.e. a main and an alternate, both having 100% redundant capabilities. There are multiple deployable sites connected via satellite at any given time, varying in user capacity requirements. Additionally, number of deployable sites vary depending upon number of ongoing missions in Canada and overseas.

2.3 The Canadian Armed Forces (CAF) has been engaged in multiple roles and must be ready to respond to an increasing spectrum of operations, such as domestic humanitarian assistance, disaster response, counter-terrorism, peace support operations, and high intensity combat operations.

2.4 This legacy PBX network provides a means of extending national services for both data and voice to operational theaters within Canada and overseas. The network includes the High Arctic Data Communications System (HADCS), providing data and voice services to CFS Alert and Fort Eureka.

2.5 DND must replace legacy PBX equipment expediently to upgrade its network while ensuring its operators and network administrators are suitably trained on the new PBX equipment to deliver a flawless service to Deployed Operations, across the world.

2.6 Once the legacy network is upgraded, the ongoing uninterrupted PBX service is critical to support these missions.

3. Scope

3.1 This procurement is for the acquisition of Private Automatic Branch Exchange **(**PBX) equipment with perpetual licences for DND Stationary and CAF Deployable Sites.

3.2 The supplied equipment must have ready to use Factory installed software, capable of being configured to the performance specifications listed in this SOW.

3.3 The supplied equipment must be scalable to meet DND’s ever-increasing requirements to expand its capacity and throughput at a later date.

3.4 The Contractor must conduct a Factory Acceptance Test (FAT) at its facility to demonstrate complete compliance with the Acceptance Criteria provided herewith.

3.5 DND technicians will install contractor supplied equipment after the FAT has been approved by the Technical Authority (TA).

3.6 DND technicians will install, configure and commission the PBX equipment upon delivery after the FAT has been successfully completed and approved by the TA.

4. Requirement

The Contractor must deliver:

4.1 Scalable IP PBX equipment for the Stationary (Core and Backup) Sites with TDM capabilities;

4.2 Deployable IP PBX equipment for the Deployable Sites with TDM capabilities for DND's on-going Operational and Mission requirements

4.3 Deployable IP PBX equipment for the Deployable Sites for DND's on-going Operational and Mission requirements.

4.4 PBX equipment for the Core and Backup Sites that must be 100% redundant.

4.5 PBX equipment that must be able to support Analog users (FXS), Digital users, IP SIP users, PRI interfaces (T1/E1), Analog trunk (FXO) interfaces, and SIP trunks.

4.6 Configuration and Management Platform for the supplied PBX equipment, that must allow DND administrators to configure the PBX via Command Line Interface (CLI) and Graphical User Interface (GUI);

4.7 'Administrator and Maintainer' and 'Train the Trainer' Training Courses.

5. Mandatory PBX Specifications

5.1 General Requirements:

The Contractor supplied PBX equipment must:

5.1.1 have Multi-Level Precedence and Pre-emption (MLPP) functionality;

5.1.2 support Assured Services – Session Initiation Protocol (AS-SIP).

5.1.3 be capable of voice compression to a min of 8K;

5.1.4 be able to operate in a survivable mode for a min of 30 Days;

5.1.5 be provided with perpetual licenses with no subscription fees;

5.1.6 allow DND to have the ability to self-administer and transfer of licensing between PBX equipment;

5.1.7 be manageable remotely when on-site or deployed; and

5.1.8 be administrable by DND administrators with Contractor provided training.

5.2 Certification Requirements:

The Contractor supplied PBX equipment must:

5.2.1 Be certified by Joint Interoperability Test Command (JITC) of United States Department of Defence (DOD).

5.2.2 be listed on the Approved Products List (APL) of the Defense Information Systems Agency (DISA).

5.2.3 be compliant with Defense Information Systems Agency (DISA) Unified Capabilities Requirements (UCR) 2013 CHANGE 2.

5.2.4 have Original Equipment Manufacturer (OEM) supplied security certificates valid for minimum ten (10) years from date of equipment receipt.

5.3 Physical Characteristics:

The Contractor supplied PBX equipment must:

5.3.1 be able to fit into 19’ rack mountable as per International Electro-technical Commission (IEC) 60297;

5.4 Temperature and Power Requirements:

The Contractor supplied PBX equipment must:

5.4.1 meet the following operating environment limits outlined below such as temperature, humidity and altitude for each PBX component;

5.4.1.1 Operating Temperatures: 32 to 104 deg. F / 0 to 40 deg. C;

5.4.1.2 Operating Humidity: 10% to 90%;

5.4.1.3 Operating Elevation: 3,000 meters; and

5.4.1.4 Storage Temperatures: -40 to 158 deg. F/ -40 to 70 deg. C.

5.4.2 support 110VAC – 240VAC 60Hz:

5.4.2.1 have power receptacle accepting IEC C13;

5.5 Interface and Configuration Requirements:

The Contractor supplied PBX equipment must:

5.5.1 support software and configuration backup locally.

5.5.2 support off-box backup to standard media such as PCMCIA, Compact Flash or USB device.

5.5.3 support Foreign eXchange Subscriber (FXS) interfaces specifically to RJ11, RJ45, DB-9, DB-15 or DB-25 connectors.

5.5.4 support Foreign eXchange Office (FXO) interfaces specifically to RJ11, RJ45, DB-9, DB-15 or DB-25 connectors.

5.5.5 support Primary Rate Interfaces (PRI) by providing Integrated Services Digital Network (ISDN).

5.5.6 support PRI for trunk-type connections. (Protocols include DMS 100, NI1, 4ESS, 5ESS, and Euro ISDN).

5.5.6.1 Specifically RJ45 or DB-15 connectors.

5.5.7 support RJ 45 Ethernet Interfaces as per IEEE specifications:

5.5.7.1 The Controller Board must provide an Ethernet interface (standard RJ-45), that meets IEEE 802.3;

5.5.7.2 10/100BASE-T Ethernet specifications;

5.5.7.3 Support IEEE 802.1Q VLAN tagging.

5.5.8 support IP as per IETF specifications:

5.5.8.1 Must support IPv4 as per IETF; and

5.5.8.2 Must support QOS IP Differentiated Services (Diff Serv) marking as per IETF.

5.6 Codecs Requirements:

The Contractor supplied PBX equipment must:

5.6.1 support voice codecs listed below:

5.6.1.1 G.711A;

5.6.1.2 G.723.1;

5.6.1.3 G.726 (16,24,32,40 kb/s); and

5.6.1.4 G.729 A&B.

5.6.2 support ITU V.150.1 Modem over IP.

5.7 IP Signalling Requirements:

The Contractor supplied PBX equipment must:

5.7.1 support Session Initiation Protocol (SIP) IP signalling as per IETF and defined in UCR 2013 Change 2.

5.7.2 provide a RS-232 serial or Ethernet interface management port(s) specifically with DB-9, DB-25 or RJ45 connectors.

5.8 Compatibility Requirements:

The Contractor supplied PBX equipment must:

5.8.1 be interoperable with Avaya Aura release 7.1 (JITC).

5.8.2 be interoperable with Avaya Aura systems via IP using Session Initiation Protocol (SIP).

5.8.3 be interoperable with Avaya Aura systems via PRI (T1 and E1).

5.8.4 be interoperable with Avaya Aura systems via ISDN protocols such as 4ESS, 5ESS, DMS-100, NI1, NI2, or Q. Sig. *(Specific requirement only for IP PBX with TDM Capabilities)*

5.8.5 be interoperable with Avaya Communication Manager, Session Manager, and G-series Media Gateways. *(Specific requirement only for IP PBX with TDM Capabilities)*

5.8.6 be interoperable with Avaya CS1000 Release 5.0 (DSN).

5.8.7 be interoperable with Avaya CS1000 Release 5.0 (DSN) systems via PRI (T1 and E1). *(Specific requirement only for IP PBX with TDM Capabilities)*

5.8.8 be interoperable with Avaya CS1000 Release 5.0 (DSN) systems via ISDN protocols such as 4ESS, 5ESS, DMS-100, NI1, NI2, or Q. Sig. *(Specific requirement only for IP PBX with TDM Capabilities)*

5.8.9 be interoperable with Avaya CS1000 Release 5.0 (DSN) systems via IP using Session Initiation Protocol (SIP).

5.8.10 be able to route all PSTN and CSN/DSN calls via Workplace Communication Service (WCS).

5.8.11 be Interoperable with common radio systems such as:

5.8.11.1 Motorola TETRA; Hytera TETRA systems;

5.8.11.2 Motorola P25, Harris P25, Tait P25 systems;

5.8.11.3 Support radios as the extensions of the PBX;

5.8.12 Be plug and play capable;

5.8.13 Be able to accommodate minimum of 3 radios listed under 5.8.11.

5.8.14 be Interoperable with public systems via FXS port and SIP as per the following:

5.8.14.1 Bogen systems;

5.8.14.2 TAO systems; and

5.8.14.3 Algo SIP Horn.

5.9 Encryption Requirements:

The Contractor supplied PBX equipment must:

5.9.1 have encrypted VoIP media and signalling traffic capabilities and must be able to support the following:

5.9.1.1 SRTP as per IETF;

5.9.1.2 TLS as per IETF;

5.9.1.3 Minimum encryption of AES256 for VoIP media;

5.9.1.4 Minimum encryption of AES128 (AES256 preferred) for VoIP signalling.

5.10 DND National Dial Plan Requirements:

The Contractor supplied PBX equipment must:

5.10.1 support telephony call trunking and routing conforming with the Defence Telephone Network (DTN) National Dialing Plan as provided by DND/SSC in Appendix B3:

5.10.1.1 Be able to accommodate a Uniform Dial Plan;

5.10.1.2 Must be able to accommodate a Coordinated Dial Plan; and

5.10.1.3 Must support E.164 dialing (15 digit dialling).

5.10.2 support telephony features/functions and user class of services as per Appendix B3.

5.11 Telephone Requirements:

The Contractor supplied PBX equipment must:

5.11.1 support Dual-tone multi-frequency signaling (DTMF).

5.11.2 support analog telephones with a Minimum 2 line display with 16 characters each line and Visual ring indication.

5.11.3 support digital telephones with a Minimum 2 line display with 16 characters each line, Visual ring indication, Call: Hold, Call Pickup, Transfer, Conference Call, Call Forwarding for Busy/No Answer; and Call Forwarding.

5.11.4 support VoIP telephones with a Minimum 2 line display with 16 characters each line, Dual-tone multi-frequency signaling (DTMF), Power over Ethernet (POE), Secure real time protocol (SRTP) with AES-256, visual ring indication, SIP without hardware modification.

5.11.5 support Committee on National Security Systems Instruction (CNSSI) VOIP telephones (CNSSI 5000 and CNSSI 5006 (TSG6) certified) as per APL list (https://aplits.disa.mil/processAPList.action) with Minimum 2 line display with 16 characters each line, Dual-tone multi-frequency signaling (DTMF), Power over Ethernet (POE), Secure real time protocol (SRTP) with AES-256, visual ring indication, SIP without hardware modification.

5.11.6 support VoIP Conference Telephone with a Minimum 2 line display with 16 characters each line, Dual-tone multi-frequency signaling (DTMF), Power over Ethernet (POE), Secure real time protocol (SRTP) with AES-256, visual ring indication, SIP without hardware modification.

5.11.7 support SCIP telephone devices as per the following:

a. Sectera VIPER telephones in SIP mode; and
b. Sectera VIPER/STE telephones in PSTN mode. *(Specific requirement only for IP PBX with TDM Capabilities)*

5.12 Automatic Call Distribution (ACD) Requirements:

The Contractor supplied PBX equipment must:

5.12.1 provide Automatic Call Distribution (ACD) as defined below:

a. Minimum of twelve (12) independent ACD call flows.
b. Route incoming calls based on:
   (i) Called number information; and
   (ii) Calling number information.
c. Capable to distribute calls in the following manners:
   (i) Linear Call Distribution;
   (ii) Circular/Rotary Call Distribution; and
   (iii) Simultaneous Call Distribution.
   (iv) ACD calls reporting.
d. Multilevel administration interface as defined by DND/SSC in the following bullets:
   (i) ACD system configuration (network & PBX connectivity, admin setup);
   (ii) ACD administration for creation and deletion of ACD call flows; and
   (iii) ACD administration for ACD call flow activation and deactivation.

5.13 Emergency Call Requirements:

The Contractor supplied PBX equipment must:

5.13.1 provide onsite notification to a minimum two designated telephones of emergency calls;

a. Notification to include minimum of emergency caller name, extension and time.

5.14 Voicemail Requirements:

The Contractor supplied PBX equipment must:

5.14.1 provide voicemail as defined below:

a. Each designated phone, user or position must have a voicemail box:
   (i) Each individual voicemail box must store a minimum 60 minutes of voice; and
   (ii) Each individual voicemail box must support minimum two recorded greetings (busy and away) of one minute minimum for each greeting.
b. Message waiting indication to the connected PBX:
   (i) Message waiting indication to networked PBXs.
c. Multilevel administration interface as defined by DND/SSC:
   (i) Voicemail system configuration (network & PBX connectivity, admin setup);
   (ii) Voicemail administration for creation and deletion of voicemail boxes; and
   (iii) Voicemail password resets (self-administration option welcome).

6. Stationary Core and Backup Sites Requirements (Site Number 1 to 2)

6.1 The Contractor supplied PBX equipment for the Core and Backup Sites must:

6.1.1 provide PBX equipment for two stationary sites that must consist of T1's, Sip Trunks and users.

6.1.2 have a main and a 100% redundant PBX equipment.

6.1.3 be capable of Internet Protocol (IP) and Time-division multiplexing (TDM) standards.

6.1.4 not exceed a size of 6U rack space.

6.2 The supplied equipment should be smaller than 6U rack space.

6.3 be able to support a minimum of:

a. 24 Analog users (FXS);

b. 100 IP SIP users,

c. 20 PRI interfaces (T1/E1);

d. 24 Analog trunk (FXO) interfaces; and

e. 200 SIP trunks.

6.4 Include the following licences:

a. 24 Analog users (FXS);

b. 25 IP SIP users,

c. 20 PRI interfaces (T1/E1);

d. 24 Analog trunk (FXO) interfaces; and

e. 200 SIP trunks.

7. Stationary Training Sites Requirements (Site Number 3 to 5)

The Contractor must provide PBX equipment for three classroom setups to simulate the operational PBX connectivity and functionality. These sites are mainly used to train DND personnel.

7.1 Supplied PBX equipment must have IP PBX with TDM capabilities.

7.2 Each training facility must be supplied with one stationary core PBX with specifications listed below.

7.2.1 The supplied equipment must not exceed a size of 6U rack space.

7.2.2 The supplied equipment should be smaller than 6U rack space.

7.2.3 The supplied equipment must be able to accommodate a minimum of:

a. 24 Analog users (FXS);

b. 100 IP SIP users,

c. 20 PRI interfaces (T1/E1);

d. 24 Analog trunk (FXO) interfaces; and

e. 200 SIP trunks.

7.2.4 The supplied equipment must include the following licences:

a. 12 Analog users (FXS);

b. 16 IP SIP users,

c. 16 PRI interfaces (T1/E1);

d. 16 Analog trunk (FXO) interfaces; and

e. 36 SIP trunks.

8. Deployable Sites Requirements (Site Number 6 to 32)

8.1 The extent of the PBX equipment quantity is based on plausible future needs of DND, which will fluctuate based on the simultaneous on-going missions in Canada and overseas. However, at this stage, twenty-seven (27) deployable sites with assortment of users and capability types have been estimated to fulfill mission requirements.

8.2 The Contractor may propose PBX equipment as per its design configuration to meet the number and type of users specified in this document.

8.3 The Contractor must provide the PBX equipment for 27 Deployable sites (**Site Number** 6 to 32) listed below.

8.3.1 Large Deployable Sites (Site Number 6 to 12) Requirements

8.3.1.1 The supplied equipment must be deployable IP PBX with TDM capabilities.

8.3.1.2 The supplied equipment must not exceed a size of 6U rack space.

8.3.1.3 The supplied equipment should be smaller than 6U rack space.

8.3.1.4 The supplied equipment must be able to accommodate a minimum of:

a. 200 Analog users (FXS);
b. 2000 IP SIP users,
c. 12 PRI interfaces (T1/E1);
d. 24 Analog trunk (FXO) interfaces; and
e. 200 SIP trunks.

8.3.1.5 The supplied equipment must include the following licences:

a. 200 Analog users (FXS);
b. 200 IP SIP users,
c. 12 PRI interfaces (T1/E1);
d. 24 Analog trunk (FXO) interfaces; and
e. 100 SIP trunks.

8.3.2 Medium Deployable Sites (Site Number 13 to 24) Requirements

8.3.2.1 The supplied equipment must be deployable IP PBX with TDM capabilities.

8.3.2.2 The supplied equipment must not exceed:

a. A size of 2U rack space.
b. A weight of 20 lbs.

8.3.2.3 The supplied equipment should

a. Be smaller than 2U rack space.
b. Weigh less than 20 lbs.

8.3.2.4 The supplied equipment must be able to accommodate a minimum of:

a. 36 Analog users (FXS);
b. 500 IP SIP users,
c. 6 PRI interfaces (T1/E1);
d. 12 Analog trunk (FXO) interfaces; and
e. 100 SIP trunks.

8.3.2.5 The supplied equipment must include the following licences:

a. 36 Analog users (FXS);
b. 50 IP SIP users,
c. 6 PRI interfaces (T1/E1);
d. 12 Analog trunk (FXO) interfaces; and

e. 20 SIP trunks.

8.3.3 Small Deployable Sites (Site Number 25 to 32) Requirements

8.3.3.1 The supplied equipment must be deployable IP PBX with TDM capabilities.

8.3.3.2 The supplied equipment must not exceed:

a. A size of 2U rack space.

b. A weight of 10 lbs.

8.3.3.3 The supplied equipment should

a. Be than 2U rack space.

b. Weigh less than 20 lbs.

8.3.3.4 The supplied equipment must be able to accommodate a minimum of:

a. 12 Analog users (FXS;

b. 100 IP SIP users;

c. 2 PRI interfaces (T1/E1);

d. 4 analogue trunk (FXO) interfaces; and

e. 20 IP SIP trunks.

8.3.3.5 The supplied equipment must include the following licences:

a. 12 Analog users (FXS);

b. 12 IP SIP users,

c. 2 PRI interfaces (T1/E1);

d. 4 Analog trunk (FXO) interfaces; and

e. 5 SIP trunks.

8.3.4 Medium Deployable Sites - Optional Requirements

8.3.4.1 The supplied equipment must be deployable IP PBX.

8.3.4.2 The supplied equipment must not exceed:

a. A size of 2U rack space.

b. A weight of 10 lbs.

8.3.4.3 The supplied equipment should

a. Be smaller than 2U rack space.

b. Weigh less than 20 lbs.

8.3.4.4 The supplied equipment must be able to accommodate a minimum of:

a. 200 IP SIP users;

b. 30 IP SIP trunks.

8.3.4.5 The supplied equipment must include the following licences:

a. 100 IP SIP users,

b. 20 SIP trunks.

8.3.4.6 The supplied equipment must be able to accommodate a minimum of two (2) 10/100 RJ45 Ethernet ports.

9. Configuration and Management Platform Requirements

9.1 The Contractor supplied PBX equipment must have Configuration and Management Platform, including Graphical User Interface (GUI) and Command Line Interface (CLI) functionality.

9.2 PBX management platform must be inclusive of all supplied components and must:

9.2.1 be listed on DISA APL and JITC certified.

9.2.2 include a multilevel administration interface including:

9.2.2.1 System configuration (network & PBX connectivity, admin & user setup);

9.2.2.2 Administration for creation and deletion of PBX components, services and management users; and

9.2.2.3 Administration of management abilities on a management user group or individual management user basis.

9.2.3 provide central management capability including:

9.2.3.1 a visual view of the entire PBX system and components (Graphic User Interface -- GUI); and

9.2.3.2 to remotely manage in real-time deployed PBX systems;

9.2.4 provide a local management capability including:

9.2.4.1 a visual view of the entire local PBX system(s) and components GUI; and

9.2.4.2 network isolated operation (must have drill down capability

9.2.5 provide the ability to display the following information both graphically and in tabular format:

9.2.5.1 Configuration management;

9.2.5.2 Fault management;

9.2.5.3 Performance management;

9.2.5.4 Change management;

9.2.5.5 Inventory management; and

9.2.5.6 Security and Accounting management.

9.2.6 support English language.

10. Rated PBX Requirements

The supplied PBX equipment should:

10.1. support IPv6 as per IETF.

10.2. support ITU T.38 Fax over IP.

10.3. support IP signalling listed below:

a. H.323 as per ITU.

10.4. provide Auto Attendant (AA) as defined below;

a. Minimum of two independent Auto Attendant trees;
b. A features list such as:

(ii) Call List;

(iii) Dial By Name;

(iv) Disconnect;

(v) Replay Greetings / Menu;

(vi) Transfer to User / Group; and

(vii) Transfer to Operator.

c. Multilevel administration interface as defined by DND/SSC at a minimum as follows:

(ii) AA system configuration (network & PBX connectivity, admin setup);

(iii) AA administration for creation and deletion of menu trees; and

(iv) AA administration for recorded announcements and tree activation.

10.5. provide Session Border Controller capabilities for interworking with foreign exchanges.

10.6. support 110VAC 50Hz, 220VAC 50Hz, and 240VAC 50Hz; and

10.7. support redundant load balancing hot swappable power supplies with separate feeds.

10.8. support system redundancies and resiliencies.

10.9. support hot swappable hardware items as following:

i. fans.

ii. Filters.

iii. Interface cards - TDM cards.

iv. Interface cards - CNTL cards.

11. Recommended Spare Parts List

The Contractor must provide the Recommended Spare Part List (RSPL) such as:

a. Power supplies ;

b. Fan assembly;

c. Analog user (FXS) interface cards;

d. Analog trunk (FXO) interface cards;

e. Digital interface Cards;

f. PRI Interface (T1/E1) cards;

g. SIP User Interface cards; and

h. SIP trunking interface cards;

DND reserves the rights to buy the recommended spare parts at the later date.

12. Factory Acceptance Test

12.1 The Contractor must schedule and host a Factory Acceptance Test (FAT) by setting up a scale model of the PBX equipment.

12.2 The FAT must be setup such that the network performance characteristics of jitter, latency, packet loss and bandwidth between the radio sites and the core can be readily adjusted in order to simulate the satellite links that will be used in the real world application.

12.3 The Contractor must submit a draft Factory Acceptance Test Plan (FATP) for review and acceptance by the TA at least fourteen (14) calendar days prior to the FAT.

12.4 Canada reserves the right to modify the proposed test plan before providing approval.

12.5 The testing must demonstrate full system conformance with all published technical standards and documents.

12.6 If the FAT reveals non-conformance to the performance specifications, then the necessary changes and corrective actions must be taken in order to achieve full conformance within 14 days.

12.7 The Contractor must not ship any equipment to DND until the TA has granted FAT approval.

12.8 Following successful completion of the FAT, the TA will grant acceptance for the supplied equipment that is subject to FAT.

12.9 The FAT must occur no later than thirty days after the contract award.

12.10 The Contract Authority and Technical Authority will witness the FAT.

13. Training

13.1. Administrator and Maintainer Training Courses

13.1.1 The Contractor must provide two (2) Administrator and Maintainer training courses during the Contract Period for DND personnel.

13.1.2 The Contractor must provide each course for up to ten (10) trainees at the DND's facilities either within Canada's National Capital Region, or CFJSR Kingston or CFB Trenton, as determined by the TA.

13.1.3 The Contractor must coordinate and finalize the delivery dates and locations for the courses with the TA or its delegate.

13.1.4 At a minimum, the Administrator and Maintainer Training Courses must instill the attendees with the requisite skill and technical knowledge to meet with the following objectives:

a. System set-up
b. Programming equipment features
c. Software management
d. Management of Graphical User Interface

13.2. Train the Trainer Training Courses

13.2.1 The Contractor must provide one (1) "Train the Trainer" training courses during the Contract Period for DND's personnel.

13.2.2 The Contractor must provide each course for up to five attendees at the DND's facilities either within Canada's National Capital Region, or CFJSR Kingston, or CFB Trenton or at the Contractor's facility, as determined by the TA.

13.2.3 The Contractor must coordinate and finalize the delivery dates and locations for the courses with the TA or its delegate.

13.2.4 At a minimum, the "Train the Trainer" Training Courses must instill the attendees with the requisite skill and technical knowledge to meet with the following objectives:

a. System set-up
b. Programming equipment features
c. Software management
d. Management of Graphical User Interface

13.3. For each training course, the Contractor must provide:

a. Course outlines and training manuals (MS Word, MS PowerPoint, or PDF format) in English or French as requested by the TA; and

b. Each attendee with a copy of the training manuals (as required) in hard copy or in electronic format (MS Word, MS PowerPoint, or PDF format).

13.4. For training course to be held at DND facilities, the Contractor must provide the list of essential aid to the TA at least ten days in advance that DND must furnish at the training facility to help run the training course.

14. Documentation and Publications

14.1 The Contractor must deliver the following documentations 30 calendar days after Contract award to the TA:

14.1.1 System Operating Handbook;

14.1.2 Detailed maintenance Handbook;

14.1.3 Quick reference guides;

14.1.4 User Guides;

14.1.5 Maintenance Warranty/Report

14.2 The Contractor must supply and provide APL List of supplied equipment;

14.3 The Contractor must supply and provide IO Certification;

14.4 The Contractor should supply and provide any Military Unique Deployment Guide (MUDG), if applicable;

14.5 The Contractor must supply and provide all necessary documentations, including but not limited to;

14.5.1 Installation manual(s);

14.5.2 Administration manual(s);

14.5.3 Maintenance manual(s); and

14.5.4 Application Notes as available.

14.6 The documentation must be provided in electronic format: MS Word, MS PowerPoint, or PDF format as agreed upon by the TA.

15. Kick-Off Meeting

15.1 Within 30 days after Contract award, the Contractor must host a kick-off meeting at the Contractor's facility or at a location mutually agreed to between Canada and the Contractor.

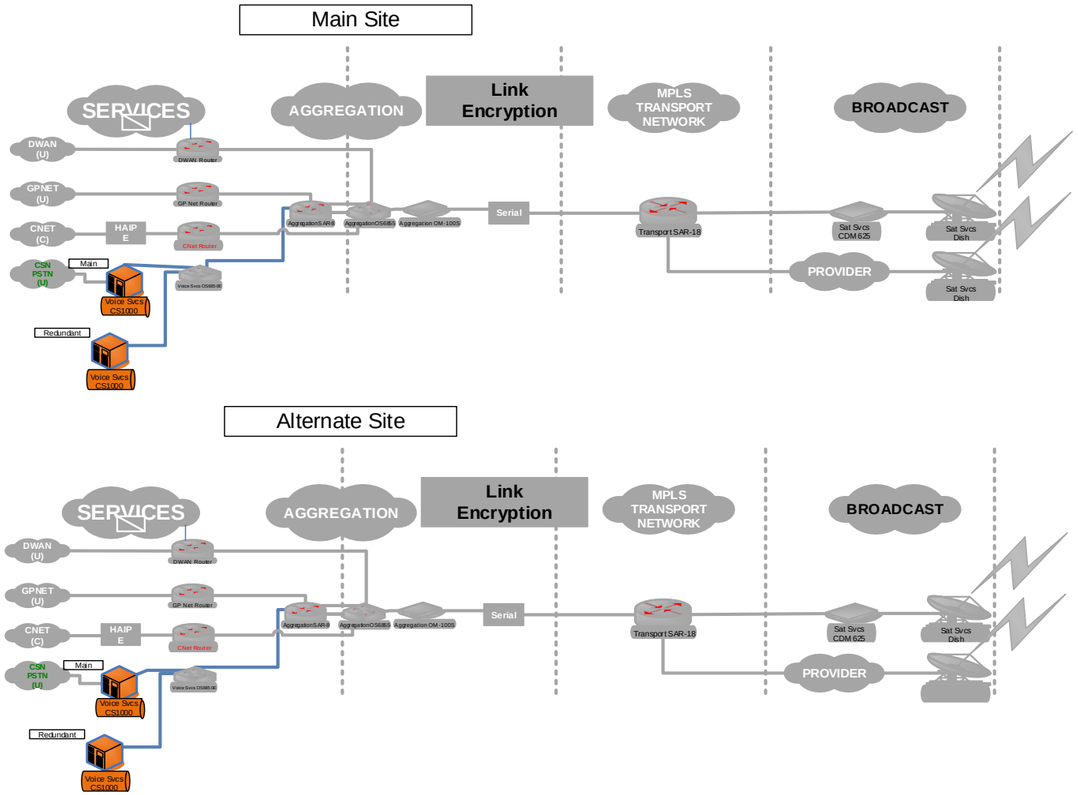
15.2 The Contractor must provide a meeting agenda at least 10 business days in advance of the meeting.

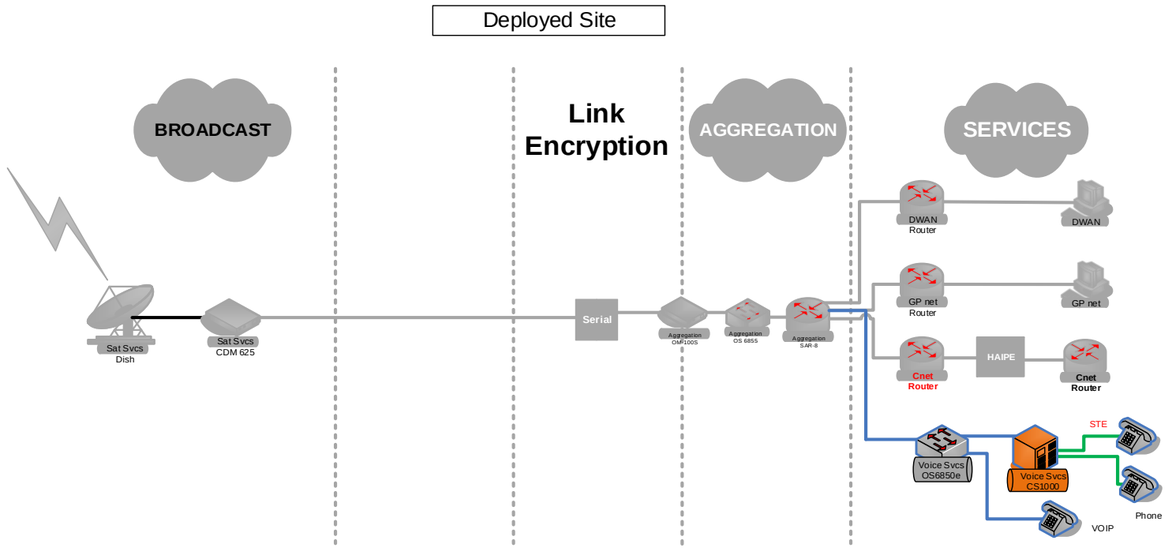
15.3 The Contractor must provide Meeting Minutes for Technical Authority approval 10 business days after kick-off meeting.

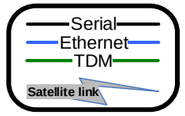
15.4 The Contractor must host Progress Review Meetings as and when requested by Canada.

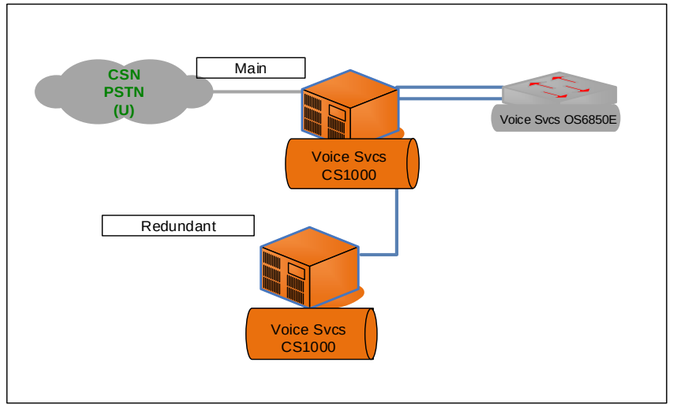
Appendix B1 - *Current Network Configuration*

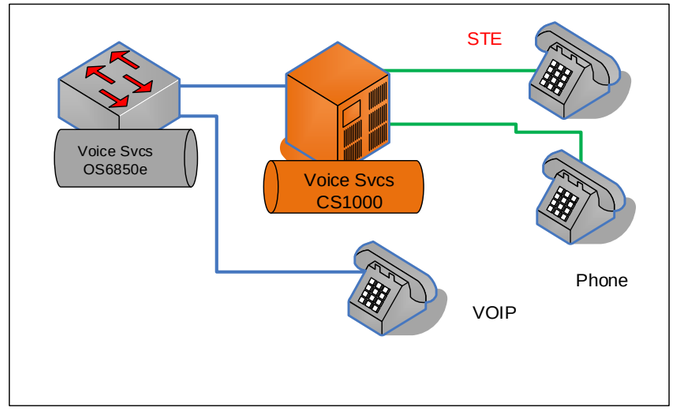
Deployed Operations Gateway SYSTEM OVERVIEW





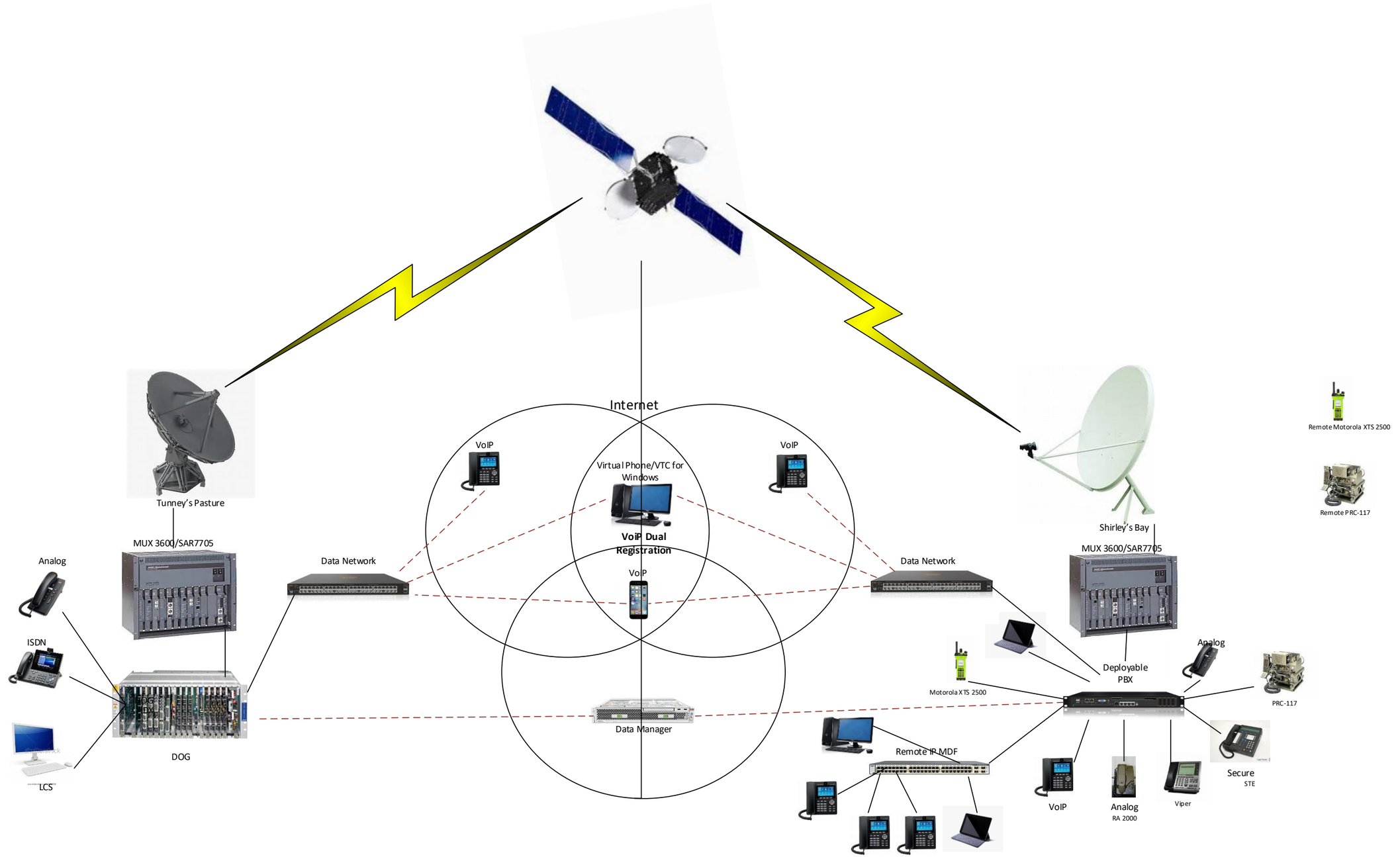






Appendix B2 - Overview intended use of the new system

PBX Requirement Outlined below is an overview of our intended use of the new system. This is a highly technical solution that would be used in military application in various parts of the world.



Appendix B3 – DND National Dial Plan

	DNDCF National Dial Plan (Dec 2011)				User Profile												
	Functions	Access Code (as applicable)	Public Phone	Conf Room	Basic User	Help Desk	Adv User Routine	Adv User Priority	Adv User Immediate	Adv User Flash	Adv User Flash Overide	Exec User Routine	Exec User Priority	Exec User Immediate	Exec User Flash	Exec User Flash Overide
Set/Call Requirements	Call Hold			x	x	x	x	x	x	x	x	x	x	x	x	x
	911 Emergency		x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Music on Hold			x	x	x	x	x	x	x	x	x	x	x	x	x
	Call Waiting				x	x	x	x	x	x	x	x	x	x	x	x
	Voicemail				x	x	x	x	x	x	x	x	x	x	x	x
	Speed Dialing			x	x	x	x	x	x	x	x	x	x	x	x	x
	Last Number Redial			x	x	x	x	x	x	x	x	x	x	x	x	x
	Call Forward All				x	x	x	x	x	x	x	x	x	x	x	x
	Call Forward No Answer				x	x	x	x	x	x	x	x	x	x	x	x
	Call Forward Busy				x	x	x	x	x	x	x	x	x	x	x	x
	Call Forward Unregistered				x	x	x	x	x	x	x	x	x	x	x	x
	Enterprise Directory Access			x	x	x	x	x	x	x	x	x	x	x	x	x
	Dial-in Directory Access (PSTN)				x	x	x	x	x	x	x	x	x	x	x	x
	Call Logs				x	x	x	x	x	x	x	x	x	x	x	x
	Mute		x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Call Reject			x	x	x	x	x	x	x	x	x	x	x	x	x
	Caller ID			x	x	x	x	x	x	x	x	x	x	x	x	x
	Click to Dial (GAL)				x	x	x	x	x	x	x	x	x	x	x	x
	Do Not Disturb			x	x	x	x	x	x	x	x	x	x	x	x	x
	Vertical Service Code			x	x	x	x	x	x	x	x	x	x	x	x	x
	Unattended Call Transfer				x	x	x	x	x	x	x	x	x	x	x	x
	Attended Call Transfer				x	x	x	x	x	x	x	x	x	x	x	x
	Ad-hoc Video Conference			x	x	x	x	x	x	x	x	x	x	x	x	x
	Blocking Caller ID				x	x	x	x	x	x	x	x	x	x	x	x
	Ring Again			x	x	x	x	x	x	x	x	x	x	x	x	x
	Hands Free Capacity			x	x	x	x	x	x	x	x	x	x	x	x	x
	Message Waiting				x	x	x	x	x	x	x	x	x	x	x	x
	Presence				x	x	x	x	x	x	x	x	x	x	x	x
	Call Pick-up Group					x	x	x	x	x	x					
	MeetMe Audio Conferencing											x	x	x	x	x
	Multiple Directory Number Appearances											x	x	x	x	x
	Shared Line Features											x	x	x	x	x
	Preset Audio Conference											x	x	x	x	x
	ACO					x										
	Extension Mobility			x		x	x	x	x	x	x	x	x	x	x	x
DND Access Codes	Local (PSTN)	89	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Long Distance (PWGSC)	89		x	x	x	x	x	x	x	x	x	x	x	x	x
	International (PWGSC)	89					x	x	x	x	x	x	x	x	x	x
	CSN/DSN	86		x	x	x	x	x	x	x	x	x	x	x	x	x
	Local Site (Building Base)		x	x	x	x	x	x	x	x	x	x	x	x	x	x
	NAC (Nato core Network)	81				x		x	x	x	x	x	x	x	x	x
	GAC (Global Affairs Canada)	83				x		x	x	x	x		x	x	x	x
	DOG (CSN)	86				x		x	x	x	x		x	x	x	x
MLPP	MLPP Routine		x	x	x	x	x					x				
	MLPP Priority	82						x					x			
	MLPP Immediate	85							x					x		
	MLPP Flash	88								x					x	
	MLPP Flash Overide	80									x					x

DND User Class of Service