

## **STANDARD TITLE**

Appendix 3F - Wireless Infrastructure Standard

## **AUTHORIZATION**

Technical Architecture and Security

### 1. **Introduction**

This standard describes the requirements for deploying wireless technologies related to data and voice devices in the Fraser Health Authority region. There are 3 main goals of this document: first to protect the Authority's information assets; secondly, to protect the privacy of the individual user; and thirdly, to ensure infrastructure is deployed to ensure the highest possible availability to the end user.

### 2. **Scope**

This standard covers 802.11 based wireless data communication devices currently in use on Authority sites or planned for use within the next 12 months. The technical details included in this standard are based on the requirements as published by the relevant vendors. The standard for infrastructure is structured to ensure wireless networks are able to support data and voice technologies for the foreseeable future.

### 3. **Equipment Standards**

The most current 3Com wireless switch infrastructure available is approved for use at the Authority's sites.

Authority devices currently in use and approved include:

Hewlett Packard laptops and tablets equipped with internal 802.11a/b/g and 2.4Ghz and 5Ghz 802.11n radios, Authority approved handheld computing devices with 802.11a/b/g/n radios, Symbol and Intermec handheld scanners

Voice technologies:

The current Authority standard voice handsets is the Spectralink 8030 push to talk enabled 802.11a/b/g WiFi handset with the 16 port Spectralink Telephony Gateway product and, where required by volume, the Spectralink SVP. A Spectralink OAI gateway may be required to integrate the handsets with nursecall and other remote systems.

### 4. **Infrastructure standard**

#### 4.1. **802.11b/g radios**

New sites will have complete 802.11 2.4Ghz infrastructure internal and external and will adhere to the following standards of service:

- 4.1.1. Signal strength : site RSSI for 802.11b data services will not fall below -70dB at any point at the site between 3 feet and 7 feet from the surface of the floor in the intended coverage area. Site RSSI for 802.11g data services will not fall below -65dB at any point at the site between 3 feet and 7 feet from the surface of the floor in the intended coverage area. Signal strength will not exceed -30dBm in any area it is reasonable that staff will be occupying for extended periods of time.
- 4.1.2. Noise Floor : the site will not have a 2.4Ghz noise floor above -70dB in any area that 802.11b/g wireless devices will be used. Noise floor measurements are to be verified prior to infrastructure deployment.
- 4.1.3. Channel separation : site channel separation will exceed -20dB in 75% or greater of the site.

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- 4.1.4. Channel plan : the site will be configured on a 3 channel plan for b/g coverage, with consideration being taken for the channels used by interfering devices such as microwave ovens.
- 4.2. **802.11a radios**  
New sites will have complete 802.11a 5Ghz infrastructure and will adhere to the following standards of service:
- 4.2.1. Signal strength : RSSI for data services will not fall below -60dB at any point at the site between 3 feet and 7 feet from the surface of the floor in the intended coverage area. Signal strength will not exceed -30dBm in any area it is reasonable that staff will be occupying for extended periods of time.
- 4.2.2. Noise Floor : the site will have a 5Ghz noise floor below -80dB in any area that wireless devices will be used. Noise floor measurements are to be verified prior to infrastructure deployment.
- 4.2.3. Channel separation : site co-channel separation will exceed -20dB in 95% or more of the site.
- 4.2.4. Channel plan : the site will be configured on an 8 channel plan for 802.11a coverage, with consideration being taken for the channels used by interfering devices such as industrial cleaners, radar or electric motors.
- 4.3. **802.11n radios**  
New sites will have complete 802.11n 5Ghz infrastructure and will adhere to the following standards of service;
- 4.3.1. Signal strength : RSSI for data services will not fall below -65dB at any point at the site between 3 feet and 7 feet from the surface of the floor. Signal strength will not exceed -25dBm in any area it is reasonable that staff will be occupying for extended periods of time.
- 4.3.2. Noise Floor : the site will have a 5Ghz noise floor below -70dB in any area that wireless devices will be used. Noise floor measurements are to be verified prior to infrastructure deployment.
- 4.3.3. Channel separation : site co-channel separation will exceed -30dB in 80% or more of the site.
- 4.3.4. Channel plan : the site will be configured on a 5Ghz channel plan for 802.11n coverage, with consideration being taken for the channels used by interfering devices such as industrial cleaners, radar or electric motors. 2.4Ghz 802.11n will not be used.
- 4.4. **Physical Installation**  
All wireless access points shall be flush mount to the ceiling or attached to the ceiling tile using approved mounts. All cabling will be in compliance with Appendix 3E [Cable Infrastructure Standard] and will support PoE to the access point. All access points will have 2 cable runs to allow for redundant switch connection in the closet.

All wireless switches will be mounted in the central wiring closet or data facility in an approved rack or cabinet and be connected into the LAN with a minimum of:  
WX2200 : 2 x 1Gbps interface

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WX1200 : 2 x 100Mbps interface

Without limiting Project Co's obligations to provide UPS in this Agreement, Project Co will connect wireless switches to a UPS approved by the Authority.

**5. Required Documentation**

- 5.1. All wireless LAN deployments must be fully documented.
- 5.2. Project Co will be responsible to document the following components:
  - 5.2.1. Site floor plans with access point locations, cable numbers, closet connections and switch ports noted; and
  - 5.2.2. Site floor plans with noise floor, data rate and signal strength overlays, preferably completed using Ekahau site survey tool, completed prior to site go-live, as a baseline.
- 5.3. Project Co intends to document the following components:
  - 5.3.1. Wireless switch(es) configuration dump;
  - 5.3.2. Site specific wireless application documentation and user group contacts;
  - 5.3.3. List of neighbours and rogue activity for at least 1 full week prior to go-live;
  - 5.3.4. 3Com wireless switch management tool configuration files – complete – and configuration report from same. 3Com wireless switch management tool must have floor plans imported and enable device location;
  - 5.3.5. Client setup and configuration how-to documentation for service desk;
  - 5.3.6. SLA by application;
  - 5.3.7. Troubleshooting guide for service desk;
  - 5.3.8. Ops guide for Operations Group monitoring;
  - 5.3.9. System recovery procedures – bare metal rebuild; and
  - 5.3.10. System upgrade procedures – firmware updates and wireless manager upgrades.

**6. Wireless Encryption and Authentication**

All infrastructure must comply with Appendix 3G [Wireless Data Communications Policy].

**7. Network Access**

All wireless network services configured must have ACLs applied that limit the wireless user's access to only the services required by that user, specific to address, port and protocol. No any-any rules will be permitted in relation to wireless services.

**8. Use of VLANs**

VLANs may be used for services configured on the wireless network. Project Co will obtain the Authority's prior approval for the use of such VLANs. All VLANs must be documented.

**9. System testing**

Infrastructure will be tested completely with syslog detail showing device roaming from each access point installed. System redundancy and recovery procedures will be tested at least once prior to go-live. Any issue or failure in the test process will be documented and the test will be repeated until successful.

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10. **Suitability**

It is understood that wireless is subject to outside interference which may affect the availability of wireless services, but it is Project Co's responsibility to discover these issues prior to go-live. Issues discovered after go-live which are external in nature will be evaluated by an independent 3<sup>rd</sup> party and the Authority and Project Co will work together to find resolution. If it is determined by the 3<sup>rd</sup> party that the issues existed prior to go-live, Project Co will resolve the issue or compensate the Authority accordingly for the services or areas affected. If environmental issues are found to exist which are beyond the control of either the Authority or Project Co, the issues will be documented as exceptions to the standard and signed off by both the Authority and Project Co.

11. **Definitions**

<b>Term</b>	<b>Definition</b>
Cell	An area surrounding a single access point
Client	Any device associating to the wireless or wired network
Go-live	The date in which a system is being used in a production environment and is considered complete
Encryption	A method by which data transferred between two entities is deemed illegible by an intercepting body or individual
TAS	Fraser Health Authority Technical Architecture and Security Group