



**STATEMENT OF WORK:**  
**NORTON CITY SCHOOL DISTRICT WLAN DESIGN SERVICES**

**Presented to:**

Angie Wagler  
IT Director

**Presented by:**

Shawn O'Leary  
Account Manager

Kevin Cannon  
Solution Architect

MCPc STATE TERM CONTRACT NUMBER 534134

OAKS Contract ID 533163-0-8

**Date:**

March 15<sup>th</sup> 2013

**Version:**

3.1

---

## **DOCUMENT CONDITIONS**

---

### **COPYRIGHT AND CONFIDENTIALITY NOTICE**

Material contained in this document is proprietary to MCPc and is to be treated confidentially by all recipients. Acceptance of delivery of this material constitutes acknowledgement of the confidential relationship under which disclosure and delivery are made. MCPc copyrights this material, and all rights are reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system without permission in writing from:

MCPc, Inc.  
Corporate Counsel Office  
1801 Superior Ave Suite 300  
Cleveland, Ohio 44114

---

### **INFORMATION DISCLAIMER**

Information contained within this document may have been gathered from various sources. For example, manufacturer information may have been gleaned from WWW (World Wide Web) home pages and other product information sources. With this in mind, we have scrutinized the information as best as reasonably possible, however we cannot be held liable for potential misprints, inaccurate information, etc. All logos, trademarks, etc. are property of their respective owners.

---

### **PRICING DISCLAIMER**

Any pricing information that is contained within this document is deemed accurate as of the date of this proposal and is based upon the then current information that has been provided to MCPc by our various vendors and suppliers. Therefore, MCPc is submitting this pricing as "Budgetary", with the understanding that this pricing may change by the time an order is placed. MCPc will review all budgetary pricing and present "Final Pricing" just prior to an order(s) being placed.

---

## REVISION & SIGN-OFF SHEET

Change Record			
Date	Author	Version	Change Reference
06/30/2011	KC	1.0	Revised of RF design deliverables
08/15/2011	KC	1.1	Option for RF Certification added
10/26/2011	KC	2.0	Document finalization
03/15/2013	KC	3.0	Minimization of school facilities
03/15/2013	KC	3.1	Addition of PM

Reviewers			
Name	Version Approved	Position	Date

Distribution	
Name	Position

Document Properties	
Item	Details
Document Title	Norton City School District WLAN Design Services
Author	KC
Creation Date	06/09/2011
Last Updated	03/15/2013
Print Date and Time	

---

## TABLE OF CONTENTS

EXECUTIVE SUMMARY .....	1
MCPC CORPORATION...WHY WE ARE THE WIRELESS NETWORK EXPERTS .....	1
HARDWARE REDUNDANCY .....	2
PROJECT SCHEDULE .....	2
PROJECT GOALS & OBJECTIVES .....	2
ENGAGEMENT SCOPE AND DELIVERABLES .....	3
SCOPE I – SPECTRUM ANALYSIS .....	3
DELIVERABLE I – RF SPECTRUM ANALYSIS .....	3
DELIVERABLE II – SPECTRUM ANALYSIS DOCUMENTATION .....	3
SCOPE II – RF DESIGN .....	4
DELIVERABLE I – SITE SURVEY .....	4
DELIVERABLE II – RF DESIGN DOCUMENTATION .....	5
KEY BUSINESS ASSUMPTIONS .....	5
RESPONSIBILITIES OF THE PARTIES .....	6
MCPC RESPONSIBILITIES.....	6
NORTON CITY SCHOOL DISTRICT RESPONSIBILITIES .....	6
CHANGE MANAGEMENT.....	7
LINE ITEM PRICING SCHEDULE .....	7
NORTON CITY SCHOOL DISTRICT PROJECT BUILDINGS .....	7
MILESTONE INVOICE SCHEDULE.....	7
STANDARD STATEMENT OF WORK TERMS .....	7
AUTHORIZATION TO PROCEED.....	10

---



---

## EXECUTIVE SUMMARY

### **MCPc CORPORATION...WHY WE ARE THE WIRELESS NETWORK EXPERTS**

MCPc Corporation provides a complete suite of professional and technical services to ensure a complete and successful design and deployment of wireless networking technology.

MCPc is hardware and software neutral. We strive to design the very best, most economical solution based on the very best components available. We understand the hidden complexities of selecting and designing systems with today's sophisticated wireless devices. We know the economic drivers and technology solutions shaping the wireless extension of traditional local and wide area networks.

Our management, consulting and technical team understands RF physics, wireless LAN / WAN devices, and various protocols. We have many years of reality-tested and proven experience in wireless technology, assembling the strongest group of technical and business professionals in the wireless services industry.

MCPc staff holds voting privileges on various IEEE 802.11 standards committees, including "n".

MCPc's experience spans all major high-ROI application areas:

- Wireless LAN
  - In-building to complement or replace switched Ethernet connectivity for laptops, mobile VOIP phones, active/passive RFID and other mobile devices
  - Out-of-building mobile computing deployment in industrial / distribution center / logistics control applications
- Wireless WAN:
  - Point-to-Point bridging to facilities with no existing broadband network connectivity
  - Point-to-Point and Point-to-Multipoint bridging to distribute broadband connectivity from central Telco circuit, eliminating separate circuits to secondary facilities
  - Metropolitan coverage to support mobile in-vehicle applications
  - Wireless links for failsafe backup to critical inter-building private network connectivity

We support our designs and deployment with project management delivered under the Project Management Institute Book of Knowledge, insuring on-time, on-budget completion.

This statement of work outlines the methodology MCPc will utilize for this engagement, along with the scope of the project, a description of the project deliverables, responsibilities for all parties, and the associated fees for the project.

MCPc will utilize a myriad of professional RF Survey/Certification tools including but not limited to Cisco's Aironet Desktop Utility, Air Magnet Wi-Fi Analyzer Pro, and Ekahau Professional RF Suite. These tools will be used to ascertain association, signal quality, signal strength, and propagation through an 802.11a/g/n card bus adaptor.

---

## HARDWARE REDUNDANCY

Coverage will be provided such that the failure of a single AP should not cause a large scale service disruption in the area. WLAN Controllers should be installed to have "1+1" redundancy in most implementations, or "n+1" redundancy for very large campus implementations where physical limitations of the number of controllers prevent the installation in a "1+1" configuration. Redundant controllers in the case of the WISM should be installed in separate physical switch chassis to eliminate the possibility of a single switch chassis failure causing a complete wireless outage.

---

## PROJECT SCHEDULE

The project will be scheduled to begin upon receipt of a signed copy of the SOW.

The project will be complete after MCPc has completed the following RF services to Norton City School District (NCSD) satisfaction:

- Spectrum analysis
- RF design
- RF design documentation will be compiled and presented to NCSD for review

Deliverable / Milestone	Start Date	End Date
RF design of the NCSD facilities detailed in this proposal	TBD	TBD
RF design documentation will be completed and presented to NCSD for approval.	TBD	TBD

---

## PROJECT GOALS & OBJECTIVES

Norton City School District has chosen to engage MCPc in this project based on MCPc's successful WLAN projects throughout the United States and foreign countries encompassing tens of thousands of access points.

MCPc, a Cisco Wireless Focus Partner, will work with the Norton City School District and the local Cisco Team to upgrade the existing RF environment in all facilities listed below. MCPc will ensure ubiquitous wireless coverage throughout the buildings included in this proposal allowing for data and voice throughputs necessary to support these clients.

Meeting these network goals will assist Norton City School District Network Staff in continuing to meet the School's WLAN corporate goals and objectives.

The Norton City School District recognizes the need for an 802.11n WLAN in order to continue to remain competitive and provide cutting edge technology to both students and faculty. Education RF utilization rates are projected to triple over the next eighteen months. Because of this the Norton City School District cannot afford to continue to deal with any legacy RF coverage



and/or channelization issues. This project will eliminate the time the Norton City School District has traditionally spent remedying existing WLAN problems.

The following Norton City School District facilities WLAN designs will be completed through this project proposal:

1. High School – 110,512 assignable square feet
2. Middle School – 73,335 assignable square feet

Norton City School District will provide a campus escort at needed for MCPc to gain access to facilities listed above.

---

## ENGAGEMENT SCOPE AND DELIVERABLES

MCPc will provide Cisco certified WLAN engineers for all aspects of this project.

MCPc will utilize a myriad of professional RF Design/Certification tools including but not limited to Cisco's Aironet Desktop Utility, Air Magnet Wi-Fi Analyzer Pro, and Ekahau Professional RF Suite. These tools will be used to ascertain association, signal quality, signal strength, and propagation through an 802.11a/g/n card bus adaptor.

MCPc will perform the wireless services required to build a WLAN that supports voice, data and video traffic.

MCPc Cisco Certified engineers will provide all services required for this project. The RF designs included in this facility will allow for a minimum of 60 concurrent wireless data clients within any given area NCS D facilities.

NCS D desires a WLAN capable of providing indoor and selected outdoor area coverage capable of supporting wireless data, video and voice.

---

## SCOPE I – SPECTRUM ANALYSIS

MCPc will perform a wireless design that will be used to build a WLAN that supports voice, data and video traffic. MCPc, Cisco Certified, engineers will provide all services required for this project. Norton City School District is expected to support and maintain a large amount of wireless clients at all times. The RF design will allow for a minimum of 60 concurrent wireless data clients within any given area of the facility.

---

## DELIVERABLE I – RF SPECTRUM ANALYSIS

MCPc will provide the following for this deliverable:

- Spectrum Analysis will be performed to identify potential sources of WLAN interference, as well as existing WLANs and ad-hoc or rogue access points; Specific corrective recommendations will outlined in the RF design report. These processes will provide the Norton City School District with clear precise documentation detailing best practice guidelines for remediation.
- The spectrum analysis will provide the Norton City School District with the following details:
  - Rogue RF sources and inhibitors
  - Description and location of the RF inhibitors and where applicable a digital photograph of the device(s)
  - Channelization remediation needs that will be addressed during the RF design.

---

## DELIVERABLE II – SPECTRUM ANALYSIS DOCUMENTATION

MCPc will provide the following for this deliverable:

- RF Spectrum analysis documentation detailing
  - Rogue RF sources and inhibitors
  - Description and location of the RF inhibitors and where applicable a digital photograph of the device(s)
  - Channelization remediation needs that will be addressed during the RF design.

---

## SCOPE II – RF DESIGN

MCPc will perform a wireless design that will be used to build a WLAN that supports voice, data and video traffic. Certified personnel will be provided to perform the site survey.

---

## DELIVERABLE I – SITE SURVEY

The MCPc RF design will dictate the number and placement of Cisco CleanAir access points (APs) required for seamless 802.11 b/g/n data/voice wireless radio frequency (RF) propagation throughout the Norton City School District areas detailed in this scope of work.

*The RF design will be conducted based on the following parameters:*

- -67 dBm per VoIP requirements
  - MCPc understands that the Norton City School District anticipates taking advantage of the full 300Mbps 802.11n capabilities and will keep this in consideration when performing the RF designs.
- Overall usable RF propagation and SNR
- Nano cell technology including 20% overlap
- Calculated placement of Cisco CleanAir access points (APs) required for seamless IEEE 802.11a/b/g/n wireless radio frequency (RF) propagation
- MCPc will adhere to the IEEE 802.11 standard which state to use the 2.4-GHz (802.11b and 802.11g) and the 5-GHz (802.11a) bands. In the 2.4-GHz band, there are up to 11 channels available. Each channel offers 11- or 54-Mbps (for 802.11b or 802.11g, respectively) over-the-air data rates.
- Minimization of radio contention by utilizing the three non-overlapping channels in the 2.4 GHz spectrum and 12 non-overlapping channels in the 5 GHz spectrum across the design
  - MCPc will utilize the newly regulated 5 GHz 4 channels in addition to the standard 8 where applicable.
- 1250-byte packets sent continuously targeting 25ms intervals or less with a max tolerance of 50ms between the AP and the testing laptop using Fast Ping Utility
- MCPc will minimize all physically intrusive activities to the best of our ability. If any permanent physical alterations are required for the RF designs MCPc will seek written permission from Norton City School District prior to making these changes.
  - MCPc does not anticipate any physically obstructive activities taking place during the duration of the RF designs.



- MCPc will ensure that any debris or trash created during our survey work will be removed.
- All Norton City School District physical property will be returned to its original state.
- As the facilities included in this project are designed, detailed documentation will be turned over to the project manager in charge of securing the network cabling needs. The documentation will also have a baseline RF map for each AP detailed in an AutoCAD or Visio drawing.

---

## **DELIVERABLE II – RF DESIGN DOCUMENTATION**

Documentation will be provided to Norton City School District detailing the required components of the designed WLAN. This RF design documentation will allow Norton City School District to easily and efficiently manage the WLAN for years to come.

MCPc will provide Norton City School District with RF designs that will provide 10mbps per device up to a maximum of 20-25 clients per AP. Due to the influx of wireless clients, particularly those utilizing video, Norton City School District will be responsible for throttling the bandwidth limitations in the future to ensure this connectivity post RF design.

This document will include the following information for each access point:

- Digital photograph of each AP location
- AP power and channel settings
- Digital heat maps showing the designed RF
- AirMagnet design traces
- Internal antenna configurations

---

## **KEY BUSINESS ASSUMPTIONS**

The following assumptions, together with those detailed elsewhere, were made to create this statement of work. Should any of these assumptions prove to be incorrect or incomplete then MCPc may modify the price, scope of work, or milestones. Any such modifications shall be managed by the Change Management procedure set forth.

- If applicable, Norton City School District will provide MCPc with Wireless Controller login and password credentials throughout the duration of the project.
- If applicable, Norton City School District will confirm to MCPc four business days prior to scheduled deployment that all product is received at each facility.
- Norton City School District will work with MCPc to create a project schedule that will allow MCPc to move seamlessly throughout the two facilities included in this proposal.
- Norton City School District will facilitate MCPc physical access throughout all areas of the two facilities.
- If required, Norton City School District will provide MCPc with an escort for restricted areas.
- The vendor access card provided by Norton City School District will be returned at the end of each day to Norton City School District IT Department.

---

## RESPONSIBILITIES OF THE PARTIES

---

### MCPC RESPONSIBILITIES

- Design, develop, and document an overall, detailed and task oriented implementation.
- In conjunction with Norton City School District, gather existing documentation available about the existing equipment locations, including site addresses, site maps, descriptions of network centers, physical network topology of each location, and any other applicable network architecture information available.
- In conjunction with Norton City School District, gather existing data and infrastructure via the RF design process.
- MCPc's plan will encompass a series of tests that will be completed to ensure systems acceptance of all functions, features, and Norton City School District technical requirements, as defined in this document.

---

### NORTON CITY SCHOOL DISTRICT RESPONSIBILITIES

- Gather and provide MCPc all necessary and applicable network documentation and information required for MCPc to best understand the existing WLAN.
- Provisions for satisfactory testing and verification.
- Final verification of configurations.
- Sign off acceptance upon successful system acceptance testing completion.

---

## CHANGE MANAGEMENT

In the event either party desires to change this Statement of Work, the following procedures shall apply:

1. The party requesting the change will deliver a Project Change Request (PCR) form to the other party.
2. The PCR will describe the nature of the change, the reason for the change, and the effect the change will have on the statement of work, which may include changes to the deliverables and/or the schedule.
3. A PCR may be initiated by either party for any changes to the SOW.
4. The project manager of the requesting party will review the proposed change with his/her counterpart.
5. The parties will evaluate the PCR and negotiate in good faith the changes to the services and the additional charges, if any, required to implement the PCR.
6. If both parties agree to implement the PCR, the appropriate authorized representative of the parties will sign the PCR, indicating the acceptance of the changes by both parties.
7. Upon execution of the PCR, said PCR will be incorporated into, and made a part of, this SOW.
8. MCPc is under no obligation to proceed with the PCR until both parties have agreed to the PCR.

Whenever there is a conflict between the terms and conditions set forth in a fully executed PCR and those set forth in the original SOW, or previous fully executed PCR, the terms and conditions of the most recent fully executed PCR shall prevail.

## PRICING SCHEDULE

This pricing is based on an estimated 183,847 assignable square feet requiring wireless voice, data and video coverage.

## LINE ITEM PRICING

Item	Description	Unit of Measure	QTY.	Unit Cost	Total Cost
Spectrum Analysis	Scope I Deliverable I	Hourly	Inc	\$150.00	\$0.00
Spectrum Analysis Documentation	Scope I Deliverable II	Hourly	Inc	\$150.00	\$0.00
802.11n Data/Voice/Video Design	Scope II Deliverable I	Hourly	40	\$150.00	\$6,000.00
802.11n Data/Voice/Video RF Design Documentation	Scope II Deliverable II	Hourly	8	\$150.00	\$1,200.00
Project Management		Hourly	8	\$110.00	\$880.00
<b>Total</b>	<b>\$8,080.00</b>				

## INVOICE MILESTONES

Invoice	Description	Estimated Invoice Date	Invoice Amount
Milestone I	Scopes I & II	Upon Completion of Scope II	\$8,080.00

## STANDARD STATEMENT OF WORK TERMS

### 1. Services

- 1.1. MCPc shall provide professional services to customer as set forth in this Statement of Work.
- 1.2. Services may be provided by MCPc or individuals or organizations employed by or under contract with MCPc, at the discretion of MCPc.

### 2. Completion

- 2.1. Upon MCPc's completion of a milestone or service, MCPc shall notify customer of completion of a specific said milestone or service.



- 2.2. Upon receipt of Products, you will inspect and/or test the Products. The Products shall be deemed accepted unless you provide MCPc, within five (5) working days of delivery date, notice specifying all defects or discrepancies in the quality or quantity of Products and a request for an RMA.
- 2.3. Customer has five (5) working days from the receipt of the notification to schedule appropriate personnel to review the particular milestone or services performed and approve.
- 2.4. Customer's failure to respond to the notification within the designated five (5) day period signifies customer's acceptance of the milestone and that services have been performed as described notification and in accordance with the SOW.
- 2.5. In order to refuse acceptance of the services performed, customer must provide MCPc with full details that show that services do not conform to the SOW.
- 2.6. MCPc shall address such non-conformance in a timely manner.
- 2.7. MCPc shall compile an action plan to correct any deficiencies and the process for acceptance detailed herein shall be repeated until such time as all deficiencies have been resolved and the services meet the requirements of the SOW.
- 2.8. Acceptance may not be withheld due to defects in services that do not represent a material non-conformance with the requirements of the SOW.

### **3. Pricing and Payment Terms**

#### **3.1. Pricing**

##### **3.1.1. Service Fees**

- 3.1.1.1. The fees for Services are set forth in the section titled "Pricing Schedule".

##### **3.1.2. Product Fees**

- 3.1.2.1. The fees for Products are set forth in the section titled "Pricing Schedule".

##### **3.1.3. Expenses**

- 3.1.3.1. Customer will reimburse MCPc for any reasonable travel, living, and other related project expenses ("T&E") incurred in support of this Statement of Work. Estimated T&E is included in the pricing contained in the section titled "Pricing Schedule". T&E will be invoiced separately and at actual cost. Customer shall include the estimated T&E in the customer purchase order as a separate line item.

### **4. Price Exclusions**

All stated prices are exclusive of any taxes, fees, and duties or other amounts, however designated, and including without limitation value added and withholding taxes which are levied or based upon such charges, or upon this SOW (other than taxes based on the net income of MCPc). Any taxes related to services purchased or licensed pursuant to this SOW shall be paid by customer or customer shall present an exemption certificate acceptable to the taxing authorities. Applicable taxes shall be billed as a separate item on the invoice.

### **5. Purchase Order Issuance**

Customer shall place orders for services by issuing a written, non-cancellable

Purchase order to MCPc for the total amount indicated in the section titled "Pricing Schedule". All purchase orders are subject to MCPc's acceptance. MCPc shall not commence services until a customer purchase order is received and accepted. All purchase orders must be signed by an authorized representative of customer and shall include, at a minimum, the following information:

- SOW/Project ID Number
- Cost of Services by product Code
- Cost of Travel and Expenses, if any

- Total Cost
- Requested Service date
- Bill-to Address
- Service-to Address
- Tax Exemption Certificates, if applicable

The terms and conditions of the SOW prevail regardless of any conflicting terms on the purchase order, other correspondence, and any and all verbal communications.

## 6. Invoicing and Payment

- 6.1. MCPc will invoice customer upon completion of each milestone or service as defined in section 3 above. Services will be invoiced in accordance with the milestone invoice schedule ("MIS") set forth in the section titled "Pricing Schedule". Invoices may contain multiple milestones.
- 6.2. Customer agrees the MIS will supersede any itemization of milestones or services in customer's purchase order provided that the total invoice amounts for milestones or services in the MIS does not exceed the total amount of customer's purchase order.
- 6.3. Any change to the MIS will be managed through the change management procedures specified in this SOW.
- 6.4. Payment shall be due thirty (30) days from date of invoice.

## AUTHORIZATION TO PROCEED

IN WITNESS **WHEREOF**, the parties have caused this Agreement to be executed and represent that the persons whose signatures appear below are duly authorized to execute this Agreement.

I have reviewed the information contained in the Statement of Work and agree to the baseline commitments, Customer Responsibilities, terms, and conditions specified within.

For Norton City School District	For MCPc
<b>NAME</b> _____	<b>NAME</b> _____
<b>TITLE</b> _____	<b>TITLE</b> _____
<b>COMPANY</b> _____	<b>COMPANY</b> _____
<b>SIGNATURE</b> _____	<b>SIGNATURE</b> _____
<b>EFFECTIVE DATE</b> _____	<b>EFFECTIVE DATE</b> _____

