

FY16

PSAP GRANT PROGRAM APPLICATION



VIRGINIA INFORMATION
TECHNOLOGIES AGENCY
Integrated Services Division



FY16 PSAP GRANT PROGRAM APPLICATION

HOW TO APPLY/DEADLINE

The grant application is available and accessible from VITA's Integrated Services Program's website

(<http://www.vita.virginia.gov/isp/default.aspx?id=8578>). Upon completion of the application, it is to be submitted to your Regional Coordinator. Any supporting documentation must also be submitted along with the application, including mandatory budgets for projects (if applicable).

After the close of the grant application cycle, a Grant ID and email receipt notification will be sent to the e-mail address listed on the application received.

All funding requests must be submitted using the grant application. Technical assistance is available from VITA's Public Safety Communications (PSC) staff throughout the grant process. The FY16 PSAP Grant Application Cycle starts July 1, 2014 and concludes on September 30, 2014 at 5:00 pm.

ALL APPLICABLE SECTIONS MUST BE COMPLETED IN ITS ENTIRETY OR THE APPLICATION WILL BE CONSIDERED INCOMPLETE AND NOT ACCEPTED FOR CONSIDERATION.



FY16 PSAP GRANT APPLICATION

PROJECT TITLE

Southwest Project CPE Wise/Norton

GRANT APPLICANT PROFILE/PROJECT CONTACT

PSAP/HOST PSAP NAME: Wise County

CONTACT TITLE: Geographic Information Officer

CONTACT FIRST NAME: Jessica

CONTACT LAST NAME: Swinney

ADDRESS 1: PO Box 570

ADDRESS 2:

CITY: Wise

ZIP CODE: 24293

CONTACT EMAIL: gio@wisecounty.org

CONTACT PHONE NUMBER: 2763287110

CONTACT MOBILE NUMBER: 2762191793

CONTACT FAX NUMBER: 2763289780

REGIONAL COORDINATOR: Tim Addington

HOST PSAP AND PARTICIPATING PSAPS/LOCALITIES

Wise County (host)

City of Norton

GRANT TYPE

Individual PSAP

Regional Initiative

Secondary Consolidation

Shared Services

Consolidation



GRANT PROGRAM TYPE

Continuity and Consolidation

Enhancement

TIER

Out of Service

Non-Vendor Supported*

Technically Outdated*

Strengthen

Not Applicable

If technically outdated or non-vendor supported, application MUST include age and/or version of hardware/software.

VERSION:

YEARS of HARDWARE/SOFTWARE:

Windows XP/Windows Server 2003

1

PRIORITY/PROJECT FOCUS CPE

If "Other" selected, please specify:

FINANCIAL DATA

Amount Requested: \$ 350,000

Total Project Cost: \$ 877,800

STATEMENT OF NEED



This statement should reference the relationship to the current funding priorities established by the Grant Committee and include evidence of any financial need, along with additional information on the impact on operational services; consequences of not receiving funding; inclusion of project in a long-term or a strategic plan; and local sustainability:

This project is designed to mitigate the limitations and costs of our current legacy 911 system. This will be accomplished via the A911 network solution and a shared services vendor hosted CPE, utilizing an Emergency Service IP network (ESInet) without the GIS applications and its related management. Intrado is offering this as an upgrade to our existing dual node Viper solution, replacing several components that are and will soon be no longer vendor supported. Furthermore, it will reduce Point to Point connectivity cost and remove the necessity of "Data Center" style back room equipment, thus eliminating our most critical single points of failure. Currently, the backroom equipment is running on servers that were put into place in 2008. These servers have around 52,000 hours of up time. All related workstations have operating systems that are no longer supported by Microsoft; the servers' will likewise be un-supported come July 2015. Other benefits to this solution are the PSAP's ability to reroute calls regardless of the local access and transport area (LATA), and the restraints of using Network Control Modems during outages, as well as providing a real time online backup with overflow to each PSAP.

Describe how the grant will be maintained and supported in the future, if applicable.

Each locality included in the Southwest Virginia 911 Group will be anticipating ongoing costs associated with maintenance and support of the established A911 network and the hosted CPE solution. These costs of support and maintenance will be funded locally as needed, but other funding opportunities will be explored as well. Under the current proposed solution, support and maintenance will be accomplished by Intrado and their certified technicians.

COMPREHENSIVE PROJECT DESCRIPTION



Provide a thorough, concise, and complete description of the project, including an outline of the goals and objectives, implementation strategy, and a work plan.

The project is to replace the current legacy CPE system with a robust mission critical, fully NENA i3 NextGen911 solution with an Emergency Services IP backbone. Currently we are using a mixture of Verizon T1s', Microwave and Commercial ISP services in a manner that is neither effective nor cost efficient to connect the PSAP's. Each center is paying upwards of \$2,500 a month in interconnectivity. With this solution, we will have the ability to receive calls for services from any means currently in use today. Furthermore, by using Intrados' A9-1-1 network we will continually be first and forefront with technology standards as they evolve, placing our PSAP's in a "Long Term Evolution" solution. By including a hosted shared services component to this implementation, each locality will further reduce cost and liabilities by housing usual backroom equipment in dual redundant separate geographical location data centers completely hosted and serviced by the vendor. This will also replace network control modems and provide a real time call influx handling solution. We currently have an integrated CAD, GIS solution, and by utilizing the RIOS system, we have access to radio systems of each jurisdiction; each PSAP would have backups. Also this creates the possibility to deploy onsite call handling; if a PSAP has to "Bug Out" by and through the use of the shared services via the ESInet backbone. The workstations will be replaced with a purpose built device engineered for call handling only using an imbedded OS to forever eliminate issues with operating system releases and updates. Implementation will be less intensive with all the heavy lifting handled by the vendor and its contractors; likewise the work plan will be developed with the vendor and the PSAP's to accomplish a smooth, trouble-free implementation.

FOR CONTINUITY AND CONSOLIDATION OR ENHANCEMENT PROJECTS:

PROJECT TIMELINE – Select each applicable phase of the project and indicate the estimated completion date. Sample activities for each phase can be found in the PSAP Grant Program Guidelines as well as on the addendum to this form.

PROJECT PHASE	ESTIMATED COMPLETION DATE
<input type="checkbox"/> INITIATION (Project approved by appropriate stakeholders)	05 / 22 / 2014
<input type="checkbox"/> DESIGN/PLANNING (Project, system, or solution requirements are developed)	08 / 01 / 2015
<input type="checkbox"/> ACQUISITION (Selected system or solution is procured)	09 / 01 / 2015



<input type="checkbox"/> IMPLEMENTATION (Selected system or solution is configured and installed)	07 / 01 / 2016
<input type="checkbox"/> TESTING/COMPLETION (Selected system or solution is tested and put in production)	08 / 01 / 2016

Identify the longevity or sustainability of the project.

This will be a continuance of the Pilot Project that was started in 2008, when the Southwest Virginia Standards Committee was in its infancy. Moving forward using a solution that utilizes a vendor ESInet, we will be capable and ready to migrate with the state towards the state wide network when it's developed. In addition, by utilizing the vendor's hosted CPE solution and moving away from locally maintained legacy backroom equipment, we increase the sustainability of providing 911 services at the local level by transferring the costs and liabilities associated with such hardware installation and purchases.

Describe how this project supports the Virginia Statewide Comprehensive 9-1-1 Plan.

This project will meet the following aspects of the Virginia Statewide Comprehensive 9-1-1 Plan

2.2 Strategic Goals

Goal A

Continues to provide a standard of 911 dispatch services to the public.

Initiative 4

Begins the enabling of next generation services by connecting all 911 centers into a shared services solution, with the ability to prepare for a state wide IP backbone.



SHARED SERVICES/REGIONAL INITIATIVE (if applicable)

The relationship of the initiative to the participating PSAPs:

The Southwest Standards Committee meets regularly and each PSAP shares a portion of the maintenance costs for all the shared equipment. The equipment maintenance and support is already a part of the group. The group serves as a great forum for each PSAP to voice concerns or problems with the equipment and software. Vendors regularly conference in to address any issues the group has. Each PSAP will need to budget maintenance in their individual budgets. A cost flow analysis and projections have been created for each piece of equipment, software, and connections in the PSAPs for the Southwest Standard Committee.

Intended collaborative efforts:

It is the mission of the Southwest Virginia Standards Committee to plan, implement, control, maintain and upgrade to meet current and future demands in order to provide our communities with a reliant, interoperable emergency communications system that maximizes resources and provides long term cost savings.



Resource sharing:

The members of the Southwest Virginia Committee currently share dual node CPE equipment provided by Intrado under their Viper platform, Spillman CAD and Records Management platform, Priority Dispatch ProQA, a GeoComm mapping solution, and are connected to the state wide RIOS radio interoperability network.

How does the initiative impacts the operational or strategic plans of the participating agencies:

By using shared services such as CAD, Networking Mapping and CPE, it allows the PSAP's to develop long term policies and funding plans to continue providing the public with the highest levels of 911 services they continually expect. New initiatives on the CPE side alone require us to stay one step ahead of the game. VoIP services and TXT to 911 are but a few examples of the evolution of 911 services. By strategically aligning our PSAPs' together, the resources we share allow us to better address advances yet to be discussed in the field of emergency communications.

CONSOLIDATION (Primary or Secondary) - (if applicable)

How would a consolidation take place and provide improved service:

Click here to enter text

How should it be organized and staffed:

Click here to enter text



What services should it perform:

Click here to enter text

How should policies be made and changed:

Click here to enter text

How should it be funded:

Click here to enter text

What communication changes or improvements should be made in order to better support operations:

Click here to enter text



BUDGET AND BUDGET NARRATIVE

List the planned expenditures to be made with grant funds. (NOTE: In lieu of a line item breakdown, an itemized cost schedule or detailed vendor prepared quote may be submitted as an attachment. However, budgetary quotes received from a particular vendor(s) during the application process do not commit the PSAP to use that vendor(s) once the grant is awarded.) Briefly explain the reason for each requested budget item and provide the basis for its cost. In addition, if contingency cost has been added, please identify the amount.

A911 networking monthly service charge for connectivity
Hosted CPE services
Software configurations
CPE hardware modifications and upgrades

2 site object servers
6 A911c (workstations)
5 year maintenance and service
Call accounting
TXT to 911

Please see attached Intrado Proposals for Wise County and the City of Norton.
Total investment for both PSAPs for five years is \$877,800.00

EVALUATION

How will the project be evaluated and measured for achievement and success:

Southwest Group will conduct periodic meetings to review ongoing project and timelines. This project will be monitored in these meetings. Depending on the specific milestones and related deliverables, vendor representatives will be asked to participate in the meetings and provide project updates and status reports.



FINANCIAL AND PROGRAMMATIC REPORT

PROJECT PHASES

SAMPLE ACTIVITIES

PHASE

SAMPLE ACTIVITIES

INITIATION

(Project approved by appropriate stakeholders)

- Project concept is documented
- Local Board or governing authority approval or endorsement is received
- PSAP grant application is filed
- Local budgets are obtained
- Appropriated grant funds are approved
- Budgetary estimates are obtained

DESIGN/PLANNING

(Project, system, or solution requirements are developed)

- Requirements are documented
- Components to be purchased are identified
- General design is documented

ACQUISITION

(Selected system or solution is procured)

- RFP (or other bid related processes) are drafted
- Proposals are evaluated
- Contract is signed
- Purchase orders are issued
- Quotes are obtained/grant funds draw down

IMPLEMENTATION

(Selected system or solution is configured and installed)

- Purchased components are delivered and installed
- Training is performed

TESTING/COMPLETION

(Selected system or solution is tested and put in production)

- Performance of system/solution is validated
- System/solution goes "live"



Intrado
A9-1-1[®] ALI Management,
A9-1-1[®] Routing, and A9-1-1 VIPER
Proposal

Southwest Virginia Region 4
City of Norton, Virginia





**A9-1-1 ALI Management,
A9-1-1 Routing, and VIPER Proposal**

prepared for

***Southwest Virginia, Region 4
City of Norton***

September 26, 2014

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Open Records Act Request

Customer will immediately advise Intrado in writing of any Open Records Act requests as it may relate to this proposal or any information contained herein.

Evaluation Purposes Only

Intrado's evaluation herein is based on its 9-1-1 knowledge and expertise, but is dependent upon information provided to Intrado on behalf of the Customer. As such, the information contained herein is intended for Customer evaluation purposes only.

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1. EXECUTIVE SUMMARY

1.1. Introduction

As citizens move toward telecommunication technologies that transcend the fixed wireline model, policy and operational changes are needed to keep 9-1-1 delivery a success. Norton can continue to meet citizens' evolving 9-1-1 expectations and protect the City from technical obsolescence by upgrading to NextGen9-1-1, which enables the network to expand beyond traditional 9-1-1 services. A NextGen9-1-1 network facilitates new life saving applications, eliminates single points of failure, and supports new technology access and new data types allowing interoperability between public safety answering points (PSAPs).

In support of Norton's strategic direction, Intrado is pleased to provide this NextGen9-1-1 proposal for Intrado[®] Advanced 9-1-1[®] (A9-1-1[®]) services to include A9-1-1 Location Data Management and A9-1-1 Routing, as provided through the Intrado[®] Emergency Services IP Network (ESInet), a fully managed solution offering next generation emergency call delivery and data management services over an Internet Protocol (IP) network.

The Intrado ESInet is designed to work with existing legacy equipment through NENA i3 functions, such as the Legacy Network Gateway (LNG) and the Legacy PSAP Gateway (LPG). These NENA i3 defined functions are integrated, operated, and maintained to the public safety class standards required of a life-critical application. The Intrado ESInet lays a foundation for the development and implementation of innovative applications and services that will advance the capabilities of public safety communications and eliminate many of the challenges.

As mobile technology continues to advance with texting, multi-media, and data applications available to the consumer market, Norton's 9-1-1 constituents will expect support of such services for 9-1-1. As a result, the City requires a new technology that blends voice, data, and multi-media from a variety of trusted sources. This technology must get the right data to the right user at the right time during an emergency and facilitate data delivery beyond the call taker to the first responder. In addition to consumer expectations, support of these technologies introduces changes in how calls need to be delivered and possibly managed at the PSAP. The PSAP must be running at optimal efficiency. With Intrado's A9-1-1 services, Norton can meet City 9-1-1 constituent's expectations while balancing operational efficiency at the PSAP.

1.2. Need for NextGen9-1-1

In times of disasters, the inherent limitations and failures in the current E9-1-1 system prevent the public safety community from achieving their charter, which is to save lives and property. An IP-based, packet switched NextGen9-1-1 system mitigates many of the limitations of the legacy 9-1-1 system. When enabled with a nationwide IP network for call routing and delivery, PSAPs have the ability to reroute calls to any PSAP on the network regardless of local access and transport area (LATA) or geopolitical boundaries. For example, should a Norton PSAP be disabled by a storm, the City will have the ability to call the Intrado NOC and reroute all, or a portion of, incoming 9-1-1 calls to an unaffected PSAP.

While NextGen9-1-1 provides solutions for disaster recovery, there are day-to-day applications where an IP packet switched network can be utilized to solve inefficiencies of the current E9-1-1 system. For instance, should one of Norton's neighboring PSAPs, which is not serviced by the same tandem servicing the City, receive a misrouted wireless call of an overturned vehicle inside the city of Norton, the only way to transfer the call would be on a ten-digit administrative

line and not on a native 9-1-1 trunk. A9-1-1 solves this problem by allowing transfer of 9-1-1 calls to the correct PSAP on a native 9-1-1 line.

The legacy E9-1-1 network has traditionally left much of the changes in the system outside the control of the PSAP, whether it is the need to reroute 9-1-1 calls in the case of a “bugout” or the ability to run reports on demand. The A9-1-1 Routing solution from Intrado enables the PSAP to take greater control of their system and operations. For example, the routing solution allows the PSAP to pre-provision multiple call routes in the event of a disaster and provides the ability to enact these disaster routes on demand.

1.3. Key Drivers for Norton

- Maximizing system flexibility and user-definable rules for enhanced call delivery queue management and optimization of call handler productivity
- Enabling enhanced management information reporting for supervisors to monitor call taker staffing and performance at any given time
- Transitioning from an analog network with CPE integration issues
- Outsourcing to a single solution provider for a NextGen9-1-1 solution and minimizing system support personnel
- Eliminating vendor expense for configurable parameters such as call distribution
- Facilitating system administration training for balancing internal and external support
- Minimizing risk and investment with predictable and value-added payments
- Leveraging local partner team to support transitional interim facilities, backup, and overflow support

1.4. Benefits of Intrado Advanced 9-1-1

In today’s demanding PSAP environment, manual processes consume valuable personnel time that could be devoted to saving lives. The need for increased automation in the PSAP during periodic events or major emergencies further enforces the need to modernize. Key benefits of Intrado Advanced 9-1-1 are:

- Continue to meet citizens’ evolving 9-1-1 expectations
- Improve interoperability
- Improve survivability
- Gain advanced reporting and metrics
- Prevent technical obsolescence of 9-1-1 operations
- Maintain the integrity of the network

A9-1-1 Routing provides a flexible architecture that provides Norton with multiple paths to NENA i3. A9-1-1 Routing includes i3 Legacy Network Gateway (LNG) and Emergency Services Routing Proxy (ESRP) services where the LNG determines the location information of the caller and converts ingress 9-1-1 calls to i3 SIP for hand off to the ESRP. Intrado’s ESRP processes the i3 call using the location information contained within the SIP PIDF-LO message to query the Intrado emergency call routing function (ECRF) (that contains GIS boundary information) via

the Location-to-Service Translation (LoST) protocol to obtain information about where to route the call too. The Intrado ESRP routes the i3 call to the appropriate PSAP.

1.4.1. Meeting 9-1-1 Expectations of Norton Citizens

Norton's citizens expect their 9-1-1 calls to go to the right PSAP in the event of an emergency and that the call taker will know who they are, where they are, and their telephone number in case the call is interrupted and they need to be re-contacted. They also expect to receive help from emergency responders, even in cases where the caller cannot convey their location and/or the nature of their problem or hear due to age, circumstances, or disability.

Intrado Advanced 9-1-1 helps Norton meet citizen expectations and alleviate the issues and challenges identified, positioning the City's PSAPs to effectively respond to the next generation of communication technologies as they become available, such as the broad reach of text messaging in the hearing-impaired community. With three decades of involvement in nearly every aspect of 9-1-1, Intrado understands that the NextGen9-1-1 initiative needs to rapidly move the City to a secure, efficient, and cost-effective emergency communication system.

1.4.2. Interoperability

Additionally, with Intrado Advanced 9-1-1, interoperability is no longer constrained by phone company boundaries. Norton can readily transfer and share emergency calls to neighboring legacy network served PSAPs with Automatic Number Identification (ANI) and Automatic Location Identification (ALI) information, as well as call specific information with an expanded set of authorized agencies, including first responders, neighboring PSAPs, medical facilities, and other public safety mutual aid agencies for improved emergency response.

Intrado Advanced 9-1-1 applications manage automatic retrieval and delivery of contextually relevant information to communication center personnel and enables access to that same information by officers in the field. This supports event resolution more efficiently and enables interoperability with other PSAPs outside the City's jurisdictions.

1.4.3. Survivability

An example of survivability is similar to the interoperability example above. A 9-1-1 communications center is flooded during a storm, but they can move their operations to their backup facility in a neighboring city that has similar resources. This backup center serves as their temporary communications center during the storm; the move to the backup center is seamless due to the IP connection. The flooded PSAP's 9-1-1 operations are still up and running and even assisting neighboring communications centers overwhelmed by the storm. With Intrado A9-1-1 Routing, public safety officials can continue to offer life-saving 9-1-1 services by expanding disaster recovery capabilities.

1.4.4. Reporting and Metrics

For supervisors to optimize operations for Norton, they require in-depth management reports and metrics. These needs are paramount to optimizing resources. PSAPs traditionally have had to rely on their legacy 9-1-1 service provider for reports and metrics. Often the reports are not timely and the information provided lacks the depth needed by many PSAP managers to efficiently run their organizations.

With Clear View Reporting, a standard feature of Intrado A9-1-1 Routing and Location Data Management, Norton gains on-demand report access to information within the A9-1-1 Routing

complex and the ALI database to support management decisions and improve operations. Borrowing from Intrado's 9-1-1 database management experience and National Emergency Number Association (NENA) guidelines, Intrado has developed a set of standard metric performance reports. These reports establish benchmarks for Intrado's overall performance as well as the quality of data Intrado receives from Customers. Intrado tracks all data transactions processed through Intrado systems. Norton PSAPs have access to the comprehensive metric reports detailing call and data transactions, the number of records processed, and the number of errors. With Clear View Reports and 9-1-1 Net[®], the City can streamline processes and reduce present and potential errors.

The reporting package from Intrado utilizes powerful business intelligence engines that give PSAP managers actionable data to effectively make decisions concerning their organization. In addition, Intrado's standard metric reports can assist in risk management by allowing the PSAP to query and view audit trails of all calls that come into the network either destined for their center, or transferred from another PSAP. The following is a call count example.

IEN Voice Event Counts By Call Type

Frequency : Weekly End Date : 06/12/2013 State : Test PSAP Name : ALL

TIMES ARE DISPLAYED IN GREENWICH MEAN TIME

DATE	Call Type	Click on a Header for hourly breakout			
		Total Events	Initial Calls	Transferred Out Calls	Transferred In Calls
06JUN2013	VoIP	95	94	4	1
06JUN2013	Wireless	1056	1051	135	5
06JUN2013	Wireline	513	513	18	0
07JUN2013	VoIP	85	85	3	0
07JUN2013	Wireless	1124	1111	140	13
07JUN2013	Wireline	473	473	16	0
08JUN2013	VoIP	110	109	2	1
08JUN2013	Wireless	1065	1051	128	14
08JUN2013	Wireline	526	526	13	0
09JUN2013	VoIP	97	96	7	1
09JUN2013	Wireless	985	977	136	8
09JUN2013	Wireline	443	441	26	2
10JUN2013	VoIP	111	110	5	1
10JUN2013	Wireless	1145	1111	166	34
10JUN2013	Wireline	521	516	41	5
11JUN2013	VoIP	95	95	3	0
11JUN2013	Wireless	950	946	103	4
11JUN2013	Wireline	518	516	15	2
12JUN2013	VoIP	98	98	1	0
12JUN2013	Wireless	1086	1071	145	15
12JUN2013	Wireline	503	502	18	1
GRAND TOTAL		11599	11492	1125	107

Figure 1: Clear View Weekly Report

1.4.5. Prevent Technical Obsolescence

Norton's existing E9-1-1 infrastructure and PSAP equipment are designed with multiple single-purpose point-to-point voice and data networks that have been patched over a long period of time. This infrastructure is expensive and cannot be easily upgraded, making it difficult to add new applications and data sources.

Intrado A9-1-1 Routing is the City's solution to bridging the gap between legacy and NextGen9-1-1, providing an ESInet that scales to meet NENA i3 standards and improves capabilities for

public safety communications. Intrado A9-1-1 Routing protects the City's investment from technical obsolescence by providing a hosted operating environment built to predictable public safety class levels of reliability, redundancy, and security.

1.4.6. Maintain Integrity of the Norton Network

Intrado understands that the integrity of Norton's network cannot be compromised during and after the migration to a NextGen9-1-1 solution. Intrado maintains the City's network integrity by deploying a Legacy Network Gateway (LNG) that provides a backwards compatible industry compliant interface to the carrier-facing network. Intrado and its subsidiaries provide industry standard interfaces to telecommunications service providers to deliver their end user's 9-1-1 calls in the same manner performed in the current environment with the ability to hand off calls over an IP based interface. Similarly, within the PSAP environment, Intrado A9-1-1 can also deliver 9-1-1 calls to the appropriate PSAP, using a Legacy PSAP Gateway (LPG) or direct IP. The LPG uses packet technology and converts to centralized automatic message accounting (CAMA) at the PSAP. PSAPs who are IP capable, can receive native IP based 9-1-1 calls. Along with standards based voice interfaces, Intrado uses industry standard 9-1-1 data interfaces for ALI transactions. The support of these interfaces provides backward compatibility with today's ALI databases, but enables the PSAP to bid for ALI over an IP based interface using the same circuit as the voice, thus eliminating additional dedicated data links necessary in the legacy environment. When Norton is ready with GIS data, Intrado can work with the City to support GIS-based routing that places the City in full compliance with NENA i3 standards.

Intrado also ensures security is maintained at that highest level by following strict network-to-network integration best practices, such as protecting the public safety network from carrier networks via session border control devices and technologies. Intrado's end-to-end technologies bridge the gap between the new and old call and data routing solutions, fulfilling the interoperable needs that exist between the NextGen9-1-1 enabled and legacy environments.

1.5. Corporate Overview

For over 30 years, Intrado has been designing and deploying public safety products and services based on the needs of the industry and our forward-looking view of 9-1-1. Intrado provides the core of the nation's 9-1-1 network and has played a key role in defining, building, and maintaining the complex emergency communications infrastructure.

We listen to public safety officials, we monitor new technology development, and we participate in industry standards bodies to understand these needs and develop products that revolutionize the public safety industry. Intrado was founded with a core understanding of PSAP operations; our co-founders came directly from the PSAP environment and a majority of our employees are highly experienced in PSAP operations.

Intrado systems and services support over 95 percent of 9-1-1 calls placed each day, totaling over 240 million calls to 9-1-1 each year. Intrado customers include all major U.S. wireline, wireless, Voice over IP (VoIP), Satellite, and Telecommunication Relay Services carriers, large international operators, and a growing number of public safety agencies and municipalities in the U.S. and abroad.

Intrado is leading the nation in the deployment of Next Generation 9-1-1 systems with customers across the United States. On August 5, 2009, Intrado brought the first 9-1-1 text messaging service live in Blackhawk City, Iowa with the advanced technology of the Intelligent

Emergency Network, Intrado VIPER, and Intrado Power 911. At the National APCO Conference in Las Vegas, Nevada, Intrado demonstrated the ability to send cell phone pictures to a Power 911 IWS, further demonstrating Intrado's experience and expertise in Next Generation 9-1-1.

Intrado currently employs over 1200 public safety and communications professionals. The majority of the employees are located at Intrado corporate headquarters in Longmont, Colorado. Other Intrado locations include Lisle, Illinois; Austin, Texas; and Montreal, Quebec.

Built on a belief in work worth doing, Intrado touches millions of lives every day and takes that responsibility very seriously.

1.5.1. Intrado History

Intrado began in 1979 under the name SCC Communications. With backgrounds in law enforcement, our founders saw the potential for using technology to more effectively protect the public. This clarity of vision led them to start SCC Communications, now Intrado, and to redesign the telephone switches dedicated to 9-1-1 call delivery and the Computer-Aided Dispatch (CAD) systems used to dispatch emergency responders.

SCC then began working with the Incumbent Local Exchange Carriers (ILECs) or "Baby Bells," who managed the data associated with 9-1-1 (location, name, telephone number) to improve the accuracy of the 9-1-1 data, introducing the 9-1-1 industry's first hosted 9-1-1 database management service. This service—along with other 9-1-1 database management systems and the 9-1-1 solutions Intrado pioneered for wireless carriers and Internet telephony providers—serves as the foundation of the U.S. 9-1-1 network.

In May of 2001, Intrado acquired Lucent Public Safety Systems (LPSS). LPSS was responsible for significant contributions to public safety in this country, with origins going back to Bell Labs and the original invention and deployment of the first 9-1-1 system. The combination of Intrado and LPSS helped to accelerate the introduction, standardization, and broad deployment of new technology as well as speed the development of new industry standards.

In April of 2006, Intrado was acquired by West Corporation, a leading provider of outsourced communication solutions. Joining the West family provided Intrado with expanded resources, the means to accelerate a number of key initiatives, strengthen its existing market position, and execute new opportunities.

In the past five years, Intrado has made several key acquisitions to expand their scope and capabilities in the public safety industry and provide more advanced solutions for their customers.

- April 2008 - Intrado acquired HBF Group, an emergency communications company headquartered in Austin, Texas. The transaction expanded Intrado's 9-1-1 footprint and provided increased opportunities to deliver Advanced 9-1-1 services to the public safety community.
- December 2008 - West Corporation acquired IPC's Command Systems segment, Positron Public Safety Systems (PPSS), a leader in fully-integrated, premises-based public safety solutions for more than 20 years. Together, the two companies build upon their respective expertise in network and premises-based solutions to deliver fully-integrated 9-1-1 solutions for public safety.
- June 2011 - Intrado acquired Contact One, a leading company in integrated 9-1-1 geographic information system (GIS) data management solutions for public safety. This transaction allows Intrado to provide customers with an MSAG management tool,

expanded enterprise mapping and data services, and to deliver enhanced dispatch mapping support, which is critical to saving lives in an increasingly mobile world.

- August 2011 - Intrado acquired PivotPoint Solutions, a leader in wireless location accuracy compliance reporting, analysis, and optimization. The addition of PivotPoint's location accuracy reporting and measurement solution enables Intrado to offer wireless carriers a more comprehensive set of fully integrated analytical and reporting services, help our customers meet revised FCC required location accuracy reporting rules, and offer robust reporting and analytics for wireless 4G, LTE, future networks, and our advanced Next Generation 9-1-1 services.

2. NORTON SOLUTION AND SERVICE OVERVIEW

2.1. Introduction

To meet City of Norton's requirements for its NextGen9-1-1 initiative, Intrado Advanced 9-1-1 Routing and Location Data Management is a complete, end-to-end hosted NextGen9-1-1 solution that provides an ESInet that is fully interoperable with legacy networks. Since Intrado Advanced 9-1-1 applications are modular and flexible, Norton and associated public safety entities and responders, can customize the service implementation in consideration of the service areas and financial and technological constraints. In addition, a staged approach to a network-based service implementation minimizes the impact on existing 9-1-1 operations.

Intrado Advanced 9-1-1 uses the LNG to connect to legacy, non-traditional networks and offers core managed network services to support NextGen9-1-1 call routing and location data management. Standards-based interfaces provide connectivity to traditional ALI and allow quick deployment of new applications, enabling integration with future data sources and eliminating "forklift" upgrades. Intrado further supports a robust ESRP and PRF that enable for flexible routing algorithms that can be dictated by the 9-1-1 authority.

Intrado's ESInet provides the key elements of security and reliability that extend to all layers of the system, providing the foundation for deploying third-party services that can then leverage the reliability and security in the most cost-effective manner. This mitigates the challenges faced when introducing change into the system and increases the value of 9-1-1 through improved flexibility that can be both tailored at the onset of a project, as well as provide the foundation for future applications that Norton may want to add at the appropriate time.

Intrado Advanced 9-1-1 provides 9-1-1 voice and data services to authorized users in an open architecture enabling a multitude of suppliers, authenticated information services, and content providers to easily integrate their services for emergency communications.

Intrado ESInet, ESRP, and LNG are part of a fully diverse and redundant infrastructure for managing connectivity from telecommunications service providers as well as to each of the PSAPs within the City. This also allows for complete interoperability between the PSAPs in the City, as well as any neighboring PSAPs that may or may not be part of a NextGen9-1-1 network.

Intrado Advanced 9-1-1 also offers the following features:

- Provides a secure managed IP network and application-based framework for delivering highly reliable, robust, secure, and efficient emergency services.
- Replaces decades-old selective routers and point-to-point circuitry with modern IP technology with LNG, ESRP, and LPG services.
- Supplies a single-vendor solution for simplified vendor management.
- Provides the capability to connect via SIP to CPE for improved call set-up times.
- Provides the capability to transfer calls natively to neighboring PSAPs, regardless of LATA or telephone service provider boundaries.
- Provides the capability to quickly and dynamically setup remote operating centers or positions for answering 9-1-1 calls in the event the primary answering centers are rendered out of service for any reason.

- Utilizes a design based on NENA i3 standards; supports the transition from legacy to NextGen9-1-1.
- Allows quick and effective development and deployment of new applications with minimal or no impact on users or their operational activities.
- Connects to both legacy emergency networks and non-traditional networks such as VoIP.
- Establishes the foundation to support future public emergency service-requesting devices using various emerging multi-media protocols.
- Provides access for additional data sources.
- Delivers current and future emergency services to a variety of users—including PSAPs, dispatchers, and other public safety agencies—without compromising the integrity and security of the emergency services infrastructure.

2.1.1. Routing Enhancements

In addition to the call types and routing rules supported above, optional routing enhancements are available from Intrado for an additional fee. These routing enhancements are available only if Intrado is providing A9-1-1 Routing.

Coordinate-Based Routing

Intrado Advanced 9-1-1 Coordinate-Based Routing for wireline calls aids your PSAP to safely transition to Next Generation 9-1-1. It uses industry standard i3 elements, including the Emergency Services Routing Proxy (ESRP) and Emergency Call Routing Function (ECRF) to route wireline calls spatially. When Intrado A9-1-1 Routing is enabled for wireline coordinate-based routing, a wireline 9-1-1 call is received by the Intrado Legacy Network Gateway (LNG). Then, the provisioned geodetic location is retrieved from the location database, using the i3 specified HELD interface. The ESRP uses the industry standard Location to Service Translation (LoST) protocol to query the Intrado ECRF for routing instructions. The ECRF geospatially locates the routing polygon associated with the location and returns routing instructions to the ESRP for call delivery to the appropriate PSAP or next hop ESRP.

Intrado uses the Authoritative GIS Data Provider's data as the source for routing wireline calls. Intrado utilizes this data to associate geodetic locations with the validated civic location, which are provisioned into the location database. The authoritative data is also utilized to provision the ECRF with the PSAP routing polygons provided to Intrado via our Spatial Information Function (SIF).

Locate Before Route

Locate Before Route is a routing enhancement specifically designed to reduce the number of call transfers from one PSAP or jurisdiction to another PSAP or jurisdiction by first determining a more accurate location of the caller before routing the call. Calls from cell sectors that span multiple jurisdictional boundaries are often sent to a single jurisdiction to handle or transfer. Locate Before Route identifies the caller's location within the cell sector and routes the call to the appropriate PSAP or jurisdiction reducing call handling and dispatch time.

2.1.2. Network Infrastructure

A Managed Emergency Services IP Network connects voice and data complexes with open, standards-based interfaces from the PSAP to authorized agencies, ALI, and other public safety

data sources. The network initially supports converged voice and data with the capacity to add incremental data sources and the flexibility to grow with Norton, adding the ability to keep pace with evolving public safety applications.

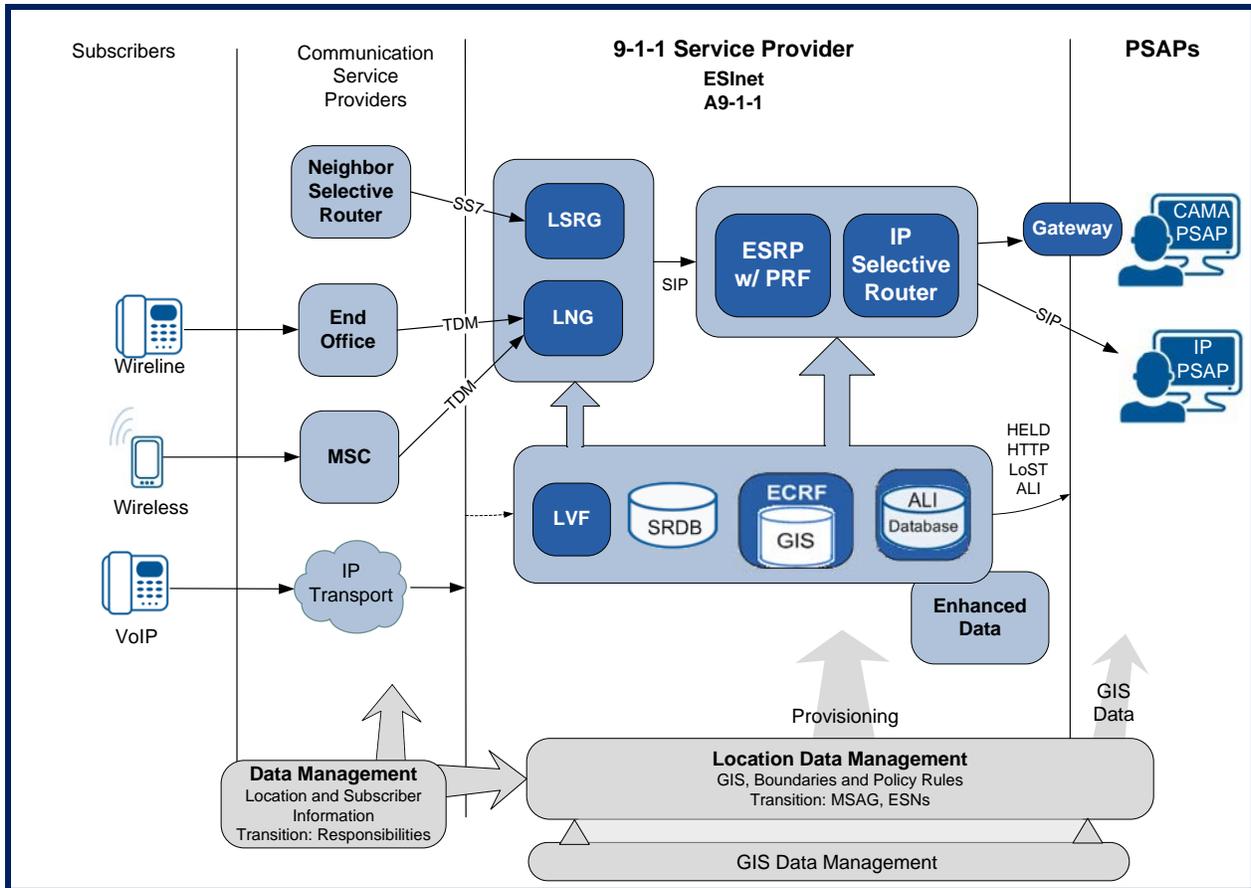


Figure 2: Intrado Advanced 9-1-1 Connectivity

As Figure 2 illustrates, Intrado Advanced 9-1-1 supports legacy and next generation functionality with A9-1-1 Routing and A9-1-1 Location Data Management. As outlined above in Figure 2, the Intrado solution provides for i3 LNG functionality to convert TDM traffic to SIP for hand off to Intrado’s i3 ESRP, or, if the PSAP still leverages legacy technology, SIP traffic is handed off to Intrado’s IPSR. The Intrado i3 LNG, i3 ESRP, and IPSR comprise the A9-1-1 Routing Solution. All components are supported by Intrado personnel 24x7x365. These integrated platforms use private Internet Protocol (IP) links to replace existing legacy selective router voice and ALI data circuits. Intrado coordinates the implementation from concept design to installation and testing, providing technical consulting and maintenance support for the City’s mission-critical operating environment.

Intrado Advanced 9-1-1 deploys on a redundant, secure, public safety-class IP network, with geographically diverse platforms that allow for continuous operation and highly reliable disaster recovery. The deployment involves minimal impact and disruption to the existing systems because it is based off premises and is not constrained by daily operations or activities in the call centers. The core network upon which Intrado Advanced 9-1-1 applications reside, the

Intrado Intelligent Emergency Network, is robust and flexible, and may be leveraged to support other public safety applications and data such as:

- GIS data distribution
- Public safety mobile radio (regardless of frequency band)
- Data access such as criminal justice database
- Public safety automatic crash notification and vehicle location tracking
- Notification services
- Incident management
- Chemical, biological, and nuclear network sensors

This interconnected, secure, IP-based system provides Norton with:

- Quick deployment of additional virtual PSAPs or PSAP positions to support specific situations, such as a drastic increase in call volume, large public events, and emergency incidents
- Quick remote access to voice and data for any authorized non-PSAP-based personnel, including call takers, dispatchers, first responders, law enforcement, incident commanders, and medical staff
- On-the-fly call management modifications including routing of incident-specific calls (based on caller location) to specific call takers
- Ability to “push” data from dispatchers to first responders’ mobile data terminals or even radio screens
- Access to expanded data sources such as real-time maps, building blueprints, public safety databases, and medical records via secured Internet

Intrado takes pride in being a leader in assessing technology trends as well as providing new and emerging tools for monitoring, managing, securing, and supporting multi-agency operations. We recognize the value of leveraging national industry efforts together with state and local initiatives to derive hardened, secure, and technology-neutral operating platforms. Norton can depend on Intrado to deliver and support the City’s next generation of 9-1-1 services to the level the industry has come to expect from a leader.

2.1.3. A9-1-1 VIPER Option

A9-1-1 VIPER services provide hosted call handling functionality over a system that includes VIPER, Power 911®, and Power MIS® servers, paired with Power 911 servers and workstations installed at each Norton PSAP. Intrado provides and maintains redundant, regionally diverse systems and facilities for A9-1-1 VIPER Call Handling, including hosted VIPER and Power 911 servers.

As Intrado assists the PSAP transitioning from legacy functionality to i3, the A9-1-1 VIPER hosted call handling solution will ensure the call handling equipment and software is at the version level needed to support i3 terminating ESRP functions. These terminating ESRP functions support the ability to query a CIDB for additional information about a call, and the ability to query a LIS for caller location information updates. VIPER services will also support the system to query an ECRF for police, fire, and EMS information.

A9-1-1 VIPER is a **hosted**, highly available, geographically diverse network-based call handling service. The call handling, redundant Voice over IP for Emergency Response (VIPER) servers are deployed in geographically diverse data centers to ensure high availability. The VIPER backroom equipment with the latest generation Power 911, a computerized emergency call-answering system, will be deployed to meet Norton NG9-1-1 call handling requirements now and in the future. Power 911 is the Intrado call-taking solution, engineered to deliver the most comprehensive set of E9-1-1 call-handling modules to public safety agencies. It provides an advanced feature set that includes sophisticated line handling capabilities and integrated telephony functionality.

VIPER leverages the power of Voice over IP (VoIP) technology for public safety applications. Provisioned for NG9-1-1 capabilities, it delivers state-of-the-art E9-1-1 call handling and allows remote answering positions to use the IP protocol as the sole carrier of voice and data. The solution is based on the use of the non-proprietary Session Initiation Protocol (SIP) for the delivery of voice services, reflecting the Intrado commitment to developing solutions that provide the most flexible offering from a technical and cost effective standpoint.

Intrado VIPER addresses PSAP demands for a scalable solution that allows them to move easily and efficiently onto a single physical network by integrating data, voice, and NG9-1-1 traffic while at the same time benefiting from next generation PBX or Call Server services.

VIPER allows PSAPs to:

- Scale to virtually any size
- Move to a networked model that integrates data, voice, and NG9-1-1 traffic
- Maximize next generation IP-based PBX services
- Implement call queues to meet call to call taker distribution needs
- Implement extended data services by selection of caller and responder information from the CIDB and ECRF.
- Benefit from emerging technologies as standards evolve such as supplemental data, Automatic Crash Notification (ACN), and external data sources

Power 911 Intelligent Work Stations (IWS) provide a powerful, proven front-end to Intrado VIPER for delivering advanced 9-1-1 call handling using open, industry-standard protocols. Implemented via a reliable fault-tolerant architecture, VIPER integrates fully with the Power 911 intelligent workstation and allows for fully functional remote answering positions. Intrado VIPER provides the most flexible call handling solution from a technical and cost-effective standpoint.

A9-1-1 Integrated Map View

Power 911 is offered with a MapFlex map viewer providing automatic display and management of calls, text messages, and other A9-1-1 Data services that correlate to an emergency call location.

2.2. Norton Implementation Strategy

Intrado provides a coordinated and secure staged implementation approach to each project deployment. This approach minimizes risk because each stage is planned, implemented, and tested independently for functional and operational efficiencies. Within each implementation stages, certain activities are coordinated through the Program Management Office (PMO). Stages can vary based on the City’s requirements, but Intrado recommends the following order of implementation for Norton.

2.2.1. Implementation Stages

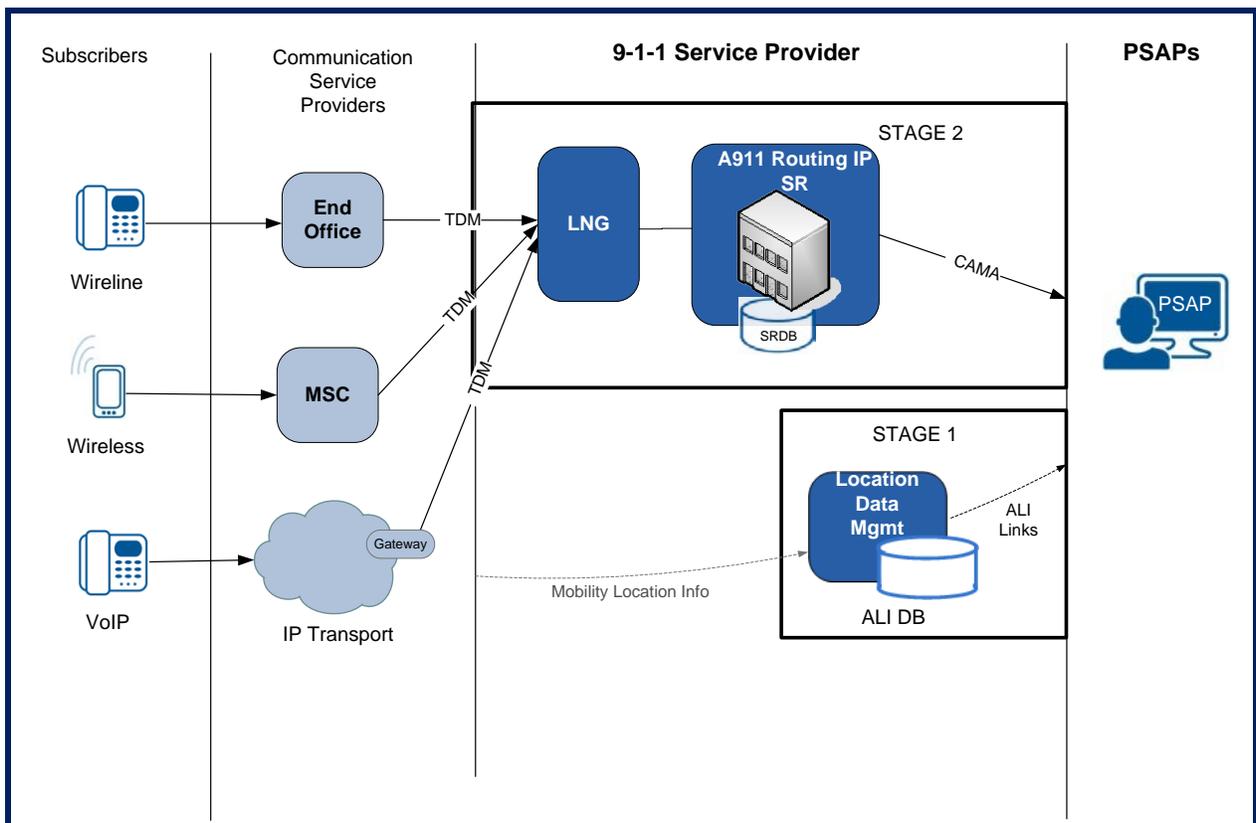


Figure 3: Staged Approach to Implementation

Stage 1 – A9-1-1 Location Data Management

ALI is provisioned in concert with the Master Street Address Guide (MSAG) and existing ALI data. Intrado installs the IP network to the PSAP(s) and connects the PSAP(s) to the Intrado ALI databases. A9-1-1 Location Data Management supports IP and XML based access to the ALI databases. After these initial tasks are complete, the existing legacy ALI service is disconnected. Ultimately, this system can be enhanced to provide extended data transfers between the Intelligent Emergency Network and legacy PSAPs. ALI steering or dual loading between A9-1-1 Location Data Management and the Local Exchange Carrier (LEC) system can support call transfers with agencies on traditional ALI data and is dependent upon LEC cooperation.

Stage 2 – A9-1-1 Routing

Robust and reliable, A9-1-1 Routing is carrier grade and incorporates traditional network elements for voice transport while taking advantage of the IP infrastructure to support non-traditional network elements. The initial deployment of this new voice platform allows for interoperation with the existing 9-1-1 selective routers for continuous operation during the rehome of all of the supporting end offices and provides interoperability with other PSAPs served by traditional E9-1-1 services.

The continuation of this stage systematically moves interconnected selective router circuits from incumbent local exchange carrier (ILEC), competitive local exchange carrier (CLEC), and wireless end offices to A9-1-1 Routing; leveraging Intrado’s i3 LNG service. Once this process is complete, the 9-1-1 calls route through to A9-1-1 Routing via Intrado’s i3 LND and all 9-1-1 trunks from the LEC selective routers to the PSAP(s) will be disconnected. Intrado will establish connectivity with the appropriate selective routers for enabling interoperability with other neighboring agencies served in by legacy selective routers. Native delivery of VoIP 9-1-1 calls directly to the PSAP is of immediate value with this next generation configuration.

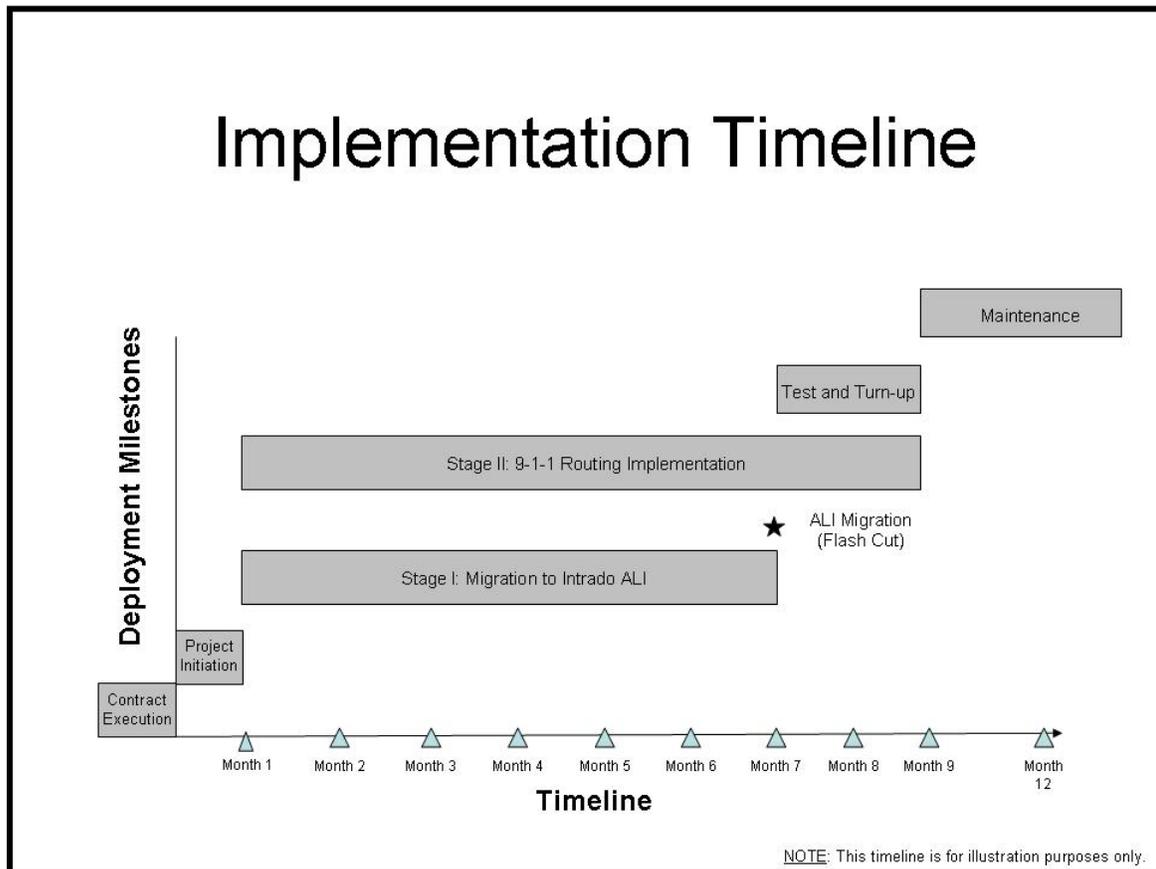


Figure 4: Intrado Advanced 9-1-1 Implementation Activities

Intrado will work with Norton to design a project schedule for each City PSAP before contract signing.

In summary, Intrado Advanced 9-1-1 supplies the benefits of a managed ESInet that provides, an integrated, managed, secure IP network that connects its PSAPs and enables much-needed configurability and performance monitoring. By deploying these network-based Intrado Advanced 9-1-1 LNG and ESRP, Norton gains assurances of high reliability, geographically diverse network elements, and a fully integrated and managed system, while also positioning themselves well for the incorporation of future NextGen9-1-1 capabilities as required.

As a hosted service model, this solution minimizes the need for Norton to constantly maintain, upgrade, and administer a complex hardware and software solution and maximizes the City's ability to focus on public safety, optimizing its 9-1-1 operations. This "evergreen" 9-1-1 hosted services model consistently renews key network-based components to enable Norton to operate on the most modern communication technology and eliminates the service development and deployment bottlenecks present in today's voice-centric and circuit-switched emergency networks. Intrado's staged approach and implementation plan meets the City's immediate needs, while also increasing the capacity for change and simplifying monitoring and maintenance.

3. SUPPORT AND SOLUTION MANAGEMENT

Intrado A9-1-1 operates from a single public safety class platform, not multiple and isolated technology silos found in legacy 9-1-1 systems. Interoperability challenges are minimized, operational complexity is reduced, potential points of failure decrease, economies of scale are realized, and the set of authorized agencies that can meaningfully interact with 9-1-1 expands.

3.1. System Level Availability

Intrado prides itself on maintaining the highest system availability. Intrado creates all of its offerings upon a "no single point of failure" principle, using a fully redundant, multi-carrier, multi-protocol network linking all Intrado network elements and PSAPs. Intrado facilities and nodes are equipped with physically redundant data communications and power equipment such that any component can be maintained without overall service impact. Buildings and supporting facilities such as generators, fuel, and entrance demarcations require card access and are monitored 24 hours a day by security personnel.

3.2. System Support and Monitoring

Intrado provides continuous system support and monitoring 24 hours a day, seven days a week, 365 days a year to each network element and application supplied by Intrado. Intrado's support staff identifies network outages and notifies Norton when corrective action is required. Intrado also maintains on-site spare parts and test equipment immediately available to our network operations and engineering staff.

The "no single point of failure" model extends to all aspects of our infrastructure. Primary and secondary support and on-call resources are equipped with wireless smart phones from different companies, on different networks, served by different base stations and transmitters. Intrado allows Norton to contact Intrado customer support through a fully redundant, corporate private branch exchange (PBX). Each main Intrado facility is provided dial tone by multiple wireline carriers as well as satellite links.

Intrado is a member of the Government Emergency Telecommunications Service (GETS) that is used in the event our core communications cannot be used. Intrado personnel sit on the board of the telecommunication industry and government's National Coordination Counsel, which is the coordinating group for cyber threats and terrorism. This allows us to stay abreast of national and international threats that may affect the E9-1-1 infrastructure and mitigate changes as necessary.

Intrado is committed to developing and utilizing standards that facilitate consistency across next generation 9-1-1 infrastructure and services and actively supports and participates with the following industry associations:

- 9-1-1 Industry Alliance (9IA)
- Alliance for Telecommunications Industry Solutions (ATIS)
- Association of Public-Safety Communications Officials International (APCO)
- Canadian Wireless Telecommunications Association (CWTA)
- Cellular Telecommunications Industry Association (CTIA)
- National Emergency Number Association (NENA)

- Personal Communications Industry Association (PCIA)
- Telecommunications Industry Association (TIA)

3.3. Service Standards

Distributed and component-based architecture scales with growing demands as well as with increased usage of the core 9-1-1 services. New network components can address capacity issues without disruption of service. New functionality can be added with additional emergency service components.

Guided by a set of public safety class service standards, and recognizing that opportunities continually arise to introduce new features and functionality into our 9-1-1 systems, the distributed architecture used by Intrado Advanced 9-1-1 offers increased ability to accommodate growing and varied workloads in a modular fashion. New system features offer compelling advantages, such as access to new information, increased interoperability, higher efficiency, or expected cost savings. Proposed system changes and new features are stringently evaluated in the public safety context so as not to introduce weakness, inefficiency, or unpredictability into the systems. Each feature is designed, implemented, and operated in a manner befitting 9-1-1's critical role in the safety of the general public.

With Intrado Advanced 9-1-1, capacity enhancement, traffic model mix, and load balancing happen without reconfiguring the physical connectivity of the Intelligent Emergency Network and are implemented and operated in a manner considered "public safety class."

3.4. Security and Confidentiality

Security deters outside influences from adversely affecting system operation and permits only appropriate access to the system's information. Intrado operates the largest 9-1-1 network in the world. Intrado has operated 9-1-1 ALI databases on behalf of major U.S. ILECs for a number of years and supports a nationwide near real-time messaging network for wireless E9-1-1 for over 70 wireless carriers. In addition, Intrado created the 9-1-1 solution for VoIP and has been delivering IP-based 9-1-1 calls into the native 9-1-1 network since 2006. Intrado's security policies, standards, and guidelines are compliant with industry best practices as defined by ISO-17799 and CoBIT. Intrado's expertise and commitment to E9-1-1 network security are evidenced by our active participation in the Network Reliability and Interoperability Council (NRIC) 7 focus group 2B Cyber-Security.

The Intrado Intelligent Emergency Network utilized by Intrado Advanced 9-1-1 is a secured and private IP-managed network. All inbound and outbound traffic is through well defined and controlled access points. Call processing and real-time data delivery are implemented through specialized subnets. Secure points of interconnection allow TSPs to interact with Intrado A9-1-1 Routing.

Secure Access

Intrado systems that are accessible through the Internet, including the Subscriber Record Management data exchange portal, database management interface tool, and metrics tool are protected by a secure access process that requires authentication through a unique user name, unique user password, and a code randomly generated at time of access via a Secure ID token. The use of this Secure ID restricts users to their own data, protecting confidentiality. Passwords are force changed and monitored on regular intervals.

Firewalls and network infrastructure are always in an N+1 configuration with network intrusion detection in place to warn dedicated network security personnel of abnormal traffic patterns as well as providing the needed forensics to follow up on any attempted attack. Intrado network security personnel are highly trained individuals, certified in cyber security. They work solely on keeping the networks that support 9-1-1 traffic secure. The Information Security team constantly stays in tune with any change in the cyber community by monitoring alerts from the SANS (SysAdmin, Audit, Network, Security) Institute and other security communities. Virus pattern checks are handled at the edge of the network and are kept current with the latest pattern files often within minutes of their release. All edge network Wide Area Network (WAN) routers maintain access control lists as a first line of defense with packet rate threshold monitoring. All critical circuits supporting the infrastructure are Telecommunication Service Provider (TSP) registered to maintain service level priority with the carriers.

Reliability

Reliability is the system's ability to continue to operate under severe, adverse conditions and component failures. Intrado Advanced 9-1-1 is deployed on redundant systems, across diverse facilities, using diverse carriers. A9-1-1 system platforms are deployed to separate geographic locations so that A9-1-1 service is not interrupted in the event of system failure at any one location. End office facilities are connected to the A9-1-1 network over separate geographically located facilities to minimize the potential for A9-1-1 call failure as a result of any one facility path. Carrier diversity provides that no single vendor network failure can interrupt overall A9-1-1 call processing service (e.g., cable/fiber cuts, termination equipment failure, etc.).

As the 9-1-1 service provider, Intrado has established defined and reasonable restoration plans, including complex disaster and PSAP evacuation contingencies, and conducts annual reviews to confirm adequacy of the plans. Hardware spares are readily accessible, and Intrado maintains adequate spare quantities on hand to enable attainment of reliability and mean time between failure objectives. Power infrastructure and environmental systems are deployed such that a commercial power failure does not result in an interruption of A9-1-1 service.

Accuracy

Accuracy is the timeliness, quality, and traceability of the data moved by the system to public safety end-users. Intrado Location Data Management services require a minimum of 95% Service Order Input match rate to our Customer's MSAG prior to implementation. Additionally, Intrado does not allow for provisional posting of ALI records to ensure consistency and accuracy.

Maintainability

Maintainability is the system's ability to accommodate maintenance, troubleshooting, and repairs efficiently and with minimal impact to operations. Intrado monitors and manages its mission critical solutions 24x7x365. Intrado trained personnel monitor numerous components of the solution's use and periodically review, make recommendations, and perform actions so that the systems and customer solutions are functioning at optimum efficiency.

When changes to the system are required, the scope of these changes typically falls under one of the following maintenance scenarios:

- Configuration changes
- Software hot fix introduction
- Software upgrade (for example, service packs providing enhancements or new features)

For each of the above scenarios, the maintenance procedure may be applicable to:

- A specific facility or application component
- All facilities and application components

Please note that in each of the above scenarios there is no reduction in telephony functionality or call capacity to Norton during the maintenance events.

Robustness

Robustness is the system's capability to meet long-term needs and work under real-world conditions as well as support growing and evolving features. The solution is built on a nationwide voice network that enables advanced disaster recovery options specifically designed for the public safety community. Calls can be immediately rerouted through direct connectivity, secure IP connectivity, or the public switched telephone network (PSTN) anywhere in the nation. The fault tolerant system architecture is designed such that an individual component failure encountered during call processing does not result in a lost call. System architecture is designed such that a major disaster (natural or unnatural) does not result in a total loss of call processing.

3.5. Support Approach

Intrado considers proactive maintenance to be the most essential component to providing reliable and efficient 9-1-1 system operation. Intrado has traditionally placed a strong emphasis on our maintenance and support program, constantly adapting to the ever-changing advances in technology and the needs of our Customers.

In evaluating our approach to maintaining Intrado Advanced 9-1-1 for Norton, Intrado placed particular importance on the situations and components with the potential to affect the system's availability. Intrado has identified the following key points to achieving maximum success:

- Help Desk/Call Center support
- Remote monitoring
- Problem escalation (identification, notification, escalation, resolution)
- Service Management (Incident Administration, Event Administration, and Change Management)
- Technical staff redundancy
- Support communications and tracking

3.6. Technical Support

Proactive support and monitoring is provided for Norton by the Intrado Systems Operations Center (ISOC), which fields all issues related to system and network operations. The ISOC team members support the core value of excellence in all they do and understand the key role their care and attention to detail play in the delivery of emergency products and services.

The ISOC, staffed 24 hours a day, seven days a week, 365 days a year, monitors the entire Intrado network including PSAP circuits and batch processing. To provide consistent levels of service, the ISOC maintains a full suite of operations metrics and statistics. The ISOC tests and implements new products as well as updates to existing products and is responsible for creating and archiving production system backups.

When a potential or actual customer-affecting issue is defined and determined to be an incident, the Incident Administration team is engaged. The team uses established Intrado processes that are ISO 9001:2000-compliant for immediate escalation, notification, and reporting. The Service Management team coordinates internal communication and documents items including root cause analysis, customer impacts, countermeasures, and improvements. Service Management offers 24x7x365 on-call availability and has the appropriate tools to escalate any problem within the company and with associated vendors. Intrado provides onsite support to resolve problems with Intrado Advanced 9-1-1 that cannot be otherwise addressed through remote access.

3.6.1. Emergency Support

The Emergency Call Relay Center (ECRC) is an inbound call center, staffed 24 hours a day, seven days a week, and 365 days a year, handling emergency customer support calls. Because the ECRC handles emergency calls, all of the ECRC telecommunication staff members are required to have prior 9-1-1 dispatching and emergency call handling experience.

3.6.2. Emergency Voice Paths and Escalation Options

Support and contact procedures vary depending on whether Norton experiences a Severity Level 1, Level 2, or Level 3 service disruption. Severity levels determine the appropriate contact procedure and the actions taken by Intrado for response time, resolution time, and resolution procedure. Following are service disruption definitions and procedures for each severity level:

SEVERITY LEVEL 1

A9-1-1 Routing or Location Data Management is completely inoperative or severely impacted where critical network or data communication problems on the Intrado system that prevent Intrado from routing 9-1-1 calls.

Examples: PSAP not receiving calls, audio is working on only one side of incoming calls, End Office traffic not able to reach PSAP. Critical network or data communications problem on an Intrado system that prevents Intrado from returning ALI bids, and/or network hardware, circuit, sustained non-delivery of voice or ANI, or failure of Intrado's link to ALI.

Notification Time: Intrado will provide initial notification of the issue by contacting the appropriate or designated Customer contact within one (1) hour of identification of the service disruption. Regular status updates will be provided until the issue is resolved.

Intrado will apply immediate and sustained effort until a resolution is in place. If a resolution cannot be readily identified, Intrado will initiate internal escalation procedures to assure resources are appropriately assigned for problem resolution efforts.

Resolution Procedure: Intrado will correct the service disruption or provide a procedure for the Customer to bypass or work around such disruption in order to continue operations if possible. If a bypass procedure is utilized, Intrado will provide the Customer with an action plan for the development of the final resolution, and Intrado will continue resolution activity until full service is restored to the Customer.

SEVERITY LEVEL 2

A9-1-1 Routing or Location Data Management services are severely and critically impaired, where major functions are inoperative and those major functions are critical to the operation of the A9-1-1 Routing services.

Examples: Reduced incoming trunk capacity, intermittent non-delivery of voice or ANI, sustained line noise or interference. Location Data Management system failure that prohibits the processing of service order files within the contractually defined response times; system response time problems; single sided ALI node.

Notification Time: Intrado will provide initial notification of the issue by contacting the appropriate or designated Customer contact within two (2) hours of identification of the service disruption. Regular status updates will be provided until the issue is resolved.

Intrado will apply sustained effort until a resolution is in place. If a resolution cannot be readily identified, Intrado will initiate internal escalation procedures to assure resources are appropriately assigned for problem resolution efforts.

Resolution Procedure: Intrado will correct the service disruption or provide a procedure for the Customer to bypass or work around such disruption in order to continue operations if possible. If a bypass procedure is utilized, Intrado will provide the Customer with an action plan for the development of the final resolution, and Intrado will continue resolution activity until full service is restored to the Customer.

SEVERITY LEVEL 3

A9-1-1 Routing or Location Data Management services are impaired and some functions are not operating, but those functions are not mandatory or critical to 9-1-1 call delivery.

Examples: Intermittent noise on the line, partial trunk capacity reduction, reduced TSP end office connectivity to A9-1-1 Routing service. ALI data communications are reaching PSAP but not all fields are in correct format.

Notification Time: Intrado will provide initial notification of the issue by contacting the appropriate or designated Customer contact within one (1) business day of identification of the service disruption. Regular status updates will be provided until the issue is resolved.

3.6.3. Notification

The ISOC maintains alternate communication message services for maintaining open communication paths in the event of widespread outages or other communication service interruptions. There are multiple entry points to access operations group staff in the event of normal communication path outages.

3.6.4. Remote Monitoring

For proactive remote monitoring, Intrado uses a suite of products specifically designed to diagnose and troubleshoot hardware and software components. These monitoring tools, in conjunction with other performance management tools, generate capacity and performance management reports. Customized as well as out-of-the-box alarming provides for monitoring performance, availability, connectivity, and hardware-related issues of the components.

Four primary severity groups categorize alarms:

- Critical
- Major
- Minor
- Warning

All alarms receive an appropriate criticality, which dictates the actionable response from Intrado. The monitoring tools will automatically send pages and emails and will generate trouble tickets to the Help Desk ticketing system; the criticality of the alert/alarm further dictates the response levels. The 24x7x365 Intrado Tier 1 support will engage in verbal and email contact with Tier 2 and Tier 3 support personnel to advise of high-priority tickets.

Remote monitoring of network and computer performance is managed to provide statistical data on the number of alarms received based on severity. Intrado uses the monitoring tools to capture the elements of a complex end-to-end service environment, such as network elements, computer systems, databases, and the applications themselves. The Intrado ISOC staff can monitor the complex dependencies among these managed elements and alert the appropriate group for interpretation. This provides a method to immediately notify designated personnel of any system failures or performance degradations.

Remote monitoring features include:

- Dedicated staff
- Dedicated monitoring platforms
- Automatic processing of all alarm messages
- Automatic escalation of alarms according to a pre-established severity scale
- Automatic generation of emails, trouble-tickets, faxes, pages, and other messages
- Automatic switchovers, re-initialization of circuits, and database recovery procedures

Monthly reports detail the equipment, the date and time of alarms, and a record of the actions performed in response to the alarms.

3.6.5. Routine Support

Intrado's suite of routine support elements includes system health checks, application of patches, code upgrades, and hardware upgrades when needed.

4. IMPLEMENTATION METHODOLOGY

4.1. Overview

Over the past 30 years, Intrado has developed an unparalleled track record, expertly managing the massive and complex databases that make it possible to transmit and retrieve vital information in seconds. Intrado's state-of-the-art infrastructure and real-world experience uniquely prepare us to manage the vital connections between people and the critical information on which they depend.

The Intrado approach to plan, configure, network engineer, implement, test, document, train, and support Intrado Advanced 9-1-1 implementation follows Intrado's recommended and time-proven solution lifecycle progression methodology for projects of this type. To date, Intrado has used this methodology for Wireless Phase II customer deployments in over 3,929 primary PSAP jurisdictions with an average of five wireless service providers per jurisdiction, equating to 18,876 implementation projects over the past eight years.

Using this proven methodology most recently with the VoIP offering, Intrado worked with each major ILEC to gain access to 359 selective routers to enable VoIP 9-1-1 call routing, providing the first VoIP 9-1-1 solution in 2003. Intrado has since successfully implemented over 60 VoIP service providers leveraging this implementation solution.

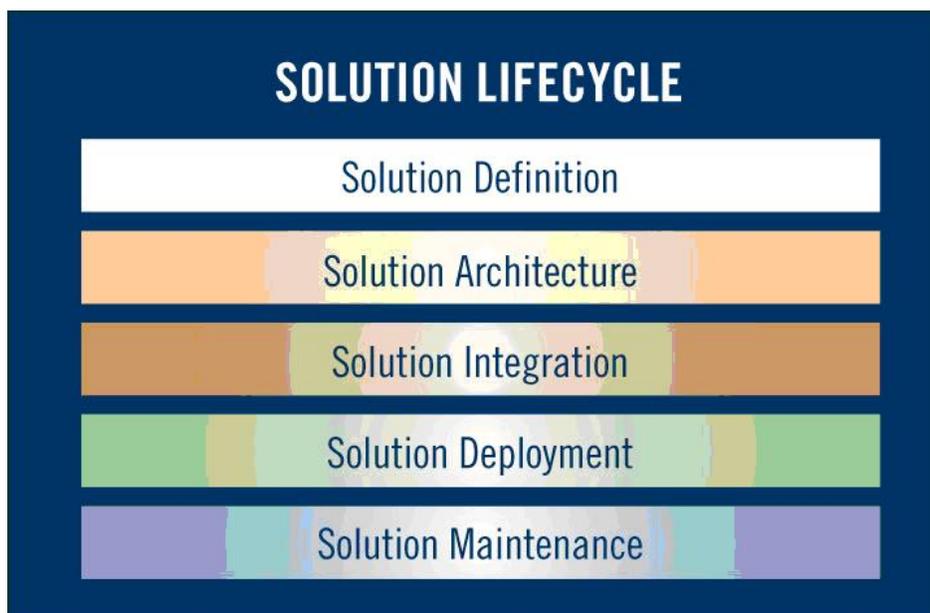


Figure 5: Solution Lifecycle

This solution lifecycle begins with solution definition and architecture activities. During these initial phases, the joint Intrado and Norton team members verify system application and implementation requirements, refine the solution architecture, and finalize the plan for solution deployment. Following definition and architecture phases, Intrado orders, installs, configures, tests, and trains users on customer-facing solution components as part of solution integration and deployment efforts. Following successful deployment, the maintenance phase begins. The

primary goal of the lifecycle methodology is that the project aligns with overall customer expectations, and is tailored to fit the needs of Norton.

4.2. Program Management Approach

Delivery Team Organization

Intrado recognizes that there is no one cookie-cutter solution for the technological needs of every business, and as such, there can be no singular implementation plan. Our approach to implementation is focused on assembling a team of service oriented employees who are recognized as the industry's elite. From this expert workforce, select individuals are assigned to the implementation and ongoing support of the Intrado Advanced 9-1-1 implementation for Norton. Except in the most unavoidable of circumstances, the project team will retain member continuity throughout the life of the contract. In addition, our team approach provides a cross-trained network resource pool to assure that the loss of any key individual would not jeopardize the quality or level of service provided to the City.

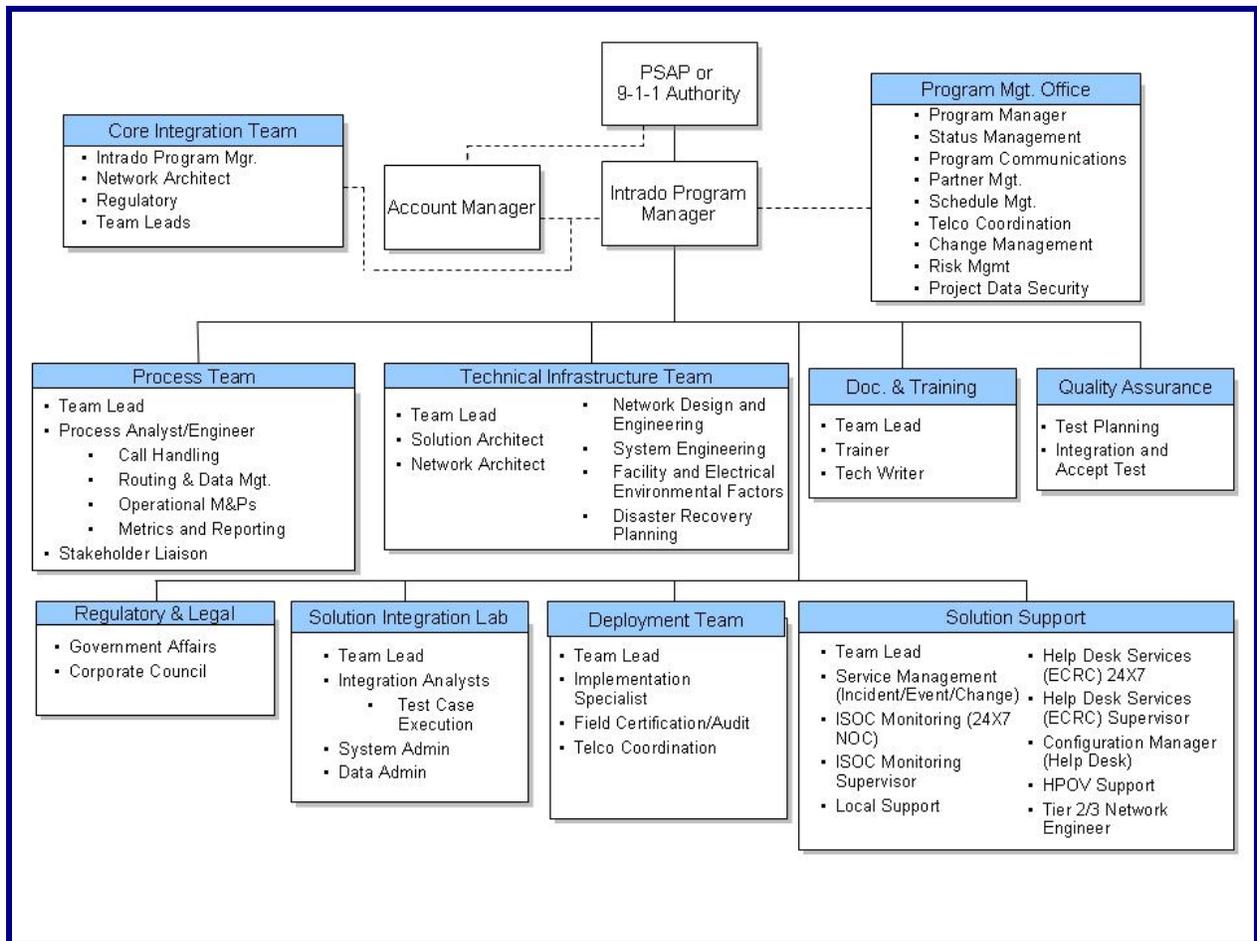


Figure 6: Delivery Team Organization

4.2.1. Integrated Delivery Team

The Intrado Program Management Office (PMO) coordinates, facilitates, and monitors all aspects of the implementation and resolves inter and intra-project issues with the support of the Core Integration Team. It maintains a strategic-level perspective of all components of the project. In support of the Program Manager, the PMO coordinates and monitors the progress of the project and all of its related implementation sub-teams. This includes status report compilation, time reporting, TSP management, and intra-project-level communications.

This project's PMO must strongly manage coordination, problem solving, and risk management, and must creatively enable the new system to accurately deliver 9-1-1 calls and bring immense value to Norton. Intrado's track record and experience, including the transition of thousands of PSAPs and over 20 million telephone numbers to outsourced services, brings unique experience to the City's Intrado Advanced 9-1-1 implementation.

Drawing on our experience and expertise, Intrado's PMO will support Norton, working closely to manage interlocked dependencies, coordinate schedules, manage risk, and solve problems to enhance project success.

4.3. Project Schedule

Intrado works with Norton to design a project schedule for each City PSAP. Implementation is closely managed by the Intrado implementation Project Manager and follows the solution lifecycle methodology previously described. The implementation process is designed for efficiency and allows accurate, public safety class support and attention to detail to provide proper operation and reliability of the solution.

During the solution definition and architecture stages, the detailed implementation project plan (IPP) is developed. The IPP defines the specific tasks, objectives, roles, responsibilities, and services that are provided and identifies milestone dates and events such as the site assessment and data collection activities. Critical path items are identified and risk management plans are put in place for any areas of exposure, such as TSP coordination and management, which could delay the implementation timeline.

4.4. Training

Intrado provides application training to support the rollout of Intrado Advanced 9-1-1 and course materials are tailored to suit the E9-1-1 system's end users.

Training sessions are designed to allow trainees to understand and effectively interact with Intrado and the web-based tools to maximize benefits of the system and tools for Norton. This is achieved by integrating well-designed technical documentation, practice exercises, and instruction into the overall training experience and is normally conducted via telephone conference call.

Training sessions cover 9-1-1 Net, Clear View Reports, and PSAP and TSP Information Sessions that include an overview of A9-1-1 Routing and Location Data Management and covers details such as reporting problems to Intrado and Customer escalation procedures.

Intrado is committed to maintaining current training activities and documentation and providing additional training as needed. As technology continues to develop over the duration of the contract, supplemental training is critical to introduce users to new and enhanced services. Intrado views the City as a partner in overseeing the quality of the training and making ongoing recommendations for improvement.

5. NORTON PRICING

5.1. Intrado A9-1-1 Routing and A9-1-1 Location Data Management Fees

The following pricing proposal contains monthly recurring fees and one-time fees for a one PSAP deployment for a five (5) year term.

Offer is valid until December 23, 2014.

Fee and Payment Schedule for A9-1-1 Routing, Location Data Management services, and A9-1--1 VIPER are as follows:

A9-1-1 Routing and Location Data Management Services	Fee
One Time Fees	
A9-1-1 Routing and Location Data Management – Total One Time Fees	Waived
IP Connectivity – One Time Fee <ul style="list-style-type: none"> • Covers installation of IP circuits 	Waived
Total One Time Fees	Waived
Monthly Recurring Fees	
A9-1-1 Routing and Location Data Management - Monthly Recurring Fee	\$320
Managed IP Network – Monthly Recurring Fee <ul style="list-style-type: none"> • Redundant IP connectivity from Intrado to Norton 	\$1,315
A9-1-1 Hosted VIPER - Monthly Recurring Fee*	\$3,150
Includes: <ul style="list-style-type: none"> • A9-1-1 Voice Routing (IP Call Delivery) • A9-1-1 Data Management (ALI DB Management) • A9-1-1 Hosted VIPER <ul style="list-style-type: none"> • Multi-Node VIPER (Longmont, CO and Miami, FL) • Power9-1-1 Call Handling Positions • SVN for Local Admin Lines • MapFlex ALI Map Viewer • Maintenance and Support 	

• Software Upgrade and KBs	
Total Monthly Recurring Fees	\$4,785

NOTES:

A9-1-1 Routing and A9-1-1 Location Data Management Base Monthly Recurring Fee covers up to 2,100 TN records under management. Additional TNs above 2,100 TNs are charged at \$0.1525 per TN.

Hosted VIPER Call Handling includes up to two (2) Call Taking positions.



Intrado
A9-1-1[®] ALI Management,
A9-1-1[®] Routing, and A9-1-1 VIPER
Proposal
Southwest Virginia Region 4
Wise County, Virginia





**A9-1-1 ALI Management,
A9-1-1 Routing, and VIPER Proposal**

prepared for

***Southwest Virginia, Region 4
Wise County***

September 30, 2014

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Open Records Act Request

Customer will immediately advise Intrado in writing of any Open Records Act requests as it may relate to this proposal or any information contained herein.

Evaluation Purposes Only

Intrado's evaluation herein is based on its 9-1-1 knowledge and expertise, but is dependent upon information provided to Intrado on behalf of the Customer. As such, the information contained herein is intended for Customer evaluation purposes only.

Intrado Legal Notice

Intrado Inc. provides the unregulated elements of the proposed service offering as set forth herein and in accordance with the final executed agreement between the parties. Intrado Communications Inc. provides the regulated elements of the service offering as set forth herein and in accordance with the applicable Intrado Communications Inc. Tariff, service offering, or other similar document governing the regulated elements in the subject state.

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1. EXECUTIVE SUMMARY

1.1. Introduction

As citizens move toward telecommunication technologies that transcend the fixed wireline model, policy and operational changes are needed to keep 9-1-1 delivery a success. Wise County can continue to meet citizens' evolving 9-1-1 expectations and protect the County from technical obsolescence by upgrading to NextGen9-1-1, which enables the network to expand beyond traditional 9-1-1 services. A NextGen9-1-1 network facilitates new life saving applications, eliminates single points of failure, and supports new technology access and new data types allowing interoperability between public safety answering points (PSAPs).

In support of Wise County's strategic direction, Intrado is pleased to provide this NextGen9-1-1 proposal for Intrado[®] Advanced 9-1-1[®] (A9-1-1[®]) services to include A9-1-1 Location Data Management and A9-1-1 Routing, as provided through the Intrado[®] Emergency Services IP Network (ESInet), a fully managed solution offering next generation emergency call delivery and data management services over an Internet Protocol (IP) network.

The Intrado ESInet is designed to work with existing legacy equipment through NENA i3 functions, such as the Legacy Network Gateway (LNG) and the Legacy PSAP Gateway (LPG). These NENA i3 defined functions are integrated, operated, and maintained to the public safety class standards required of a life-critical application. The Intrado ESInet lays a foundation for the development and implementation of innovative applications and services that will advance the capabilities of public safety communications and eliminate many of the challenges.

As mobile technology continues to advance with texting, multi-media, and data applications available to the consumer market, Wise County's 9-1-1 constituents will expect support of such services for 9-1-1. As a result, the County requires a new technology that blends voice, data, and multi-media from a variety of trusted sources. This technology must get the right data to the right user at the right time during an emergency and facilitate data delivery beyond the call taker to the first responder. In addition to consumer expectations, support of these technologies introduces changes in how calls need to be delivered and possibly managed at the PSAP. The PSAP must be running at optimal efficiency. With Intrado's A9-1-1 services, Wise County can meet County 9-1-1 constituent's expectations while balancing operational efficiency at the PSAP.

1.2. Need for NextGen9-1-1

In times of disasters, the inherent limitations and failures in the current E9-1-1 system prevent the public safety community from achieving their charter, which is to save lives and property. An IP-based, packet switched NextGen9-1-1 system mitigates many of the limitations of the legacy 9-1-1 system. When enabled with a nationwide IP network for call routing and delivery, PSAPs have the ability to reroute calls to any PSAP on the network regardless of local access and transport area (LATA) or geopolitical boundaries. For example, should a Wise County PSAP be disabled by a storm, the County will have the ability to call the Intrado NOC and reroute all, or a portion of, incoming 9-1-1 calls to an unaffected PSAP.

While NextGen9-1-1 provides solutions for disaster recovery, there are day-to-day applications where an IP packet switched network can be utilized to solve inefficiencies of the current E9-1-1 system. For instance, should one of Wise County's neighboring PSAPs, which is not serviced by the same tandem servicing the County, receive a misrouted wireless call of an overturned

vehicle on a stretch of highway inside Wise County, the only way to transfer the call would be on a ten-digit administrative line and not on a native 9-1-1 trunk. A9-1-1 solves this problem by allowing transfer of 9-1-1 calls to the correct PSAP on a native 9-1-1 line.

The legacy E9-1-1 network has traditionally left much of the changes in the system outside the control of the PSAP, whether it is the need to reroute 9-1-1 calls in the case of a “bugout” or the ability to run reports on demand. The A9-1-1 Routing solution from Intrado enables the PSAP to take greater control of their system and operations. For example, the routing solution allows the PSAP to pre-provision multiple call routes in the event of a disaster and provides the ability to enact these disaster routes on demand.

1.3. Key Drivers for Wise County

- Maximizing system flexibility and user-definable rules for enhanced call delivery queue management and optimization of call handler productivity
- Enabling enhanced management information reporting for supervisors to monitor call taker staffing and performance at any given time
- Transitioning from an analog network with CPE integration issues
- Outsourcing to a single solution provider for a NextGen9-1-1 solution and minimizing system support personnel
- Eliminating vendor expense for configurable parameters such as call distribution
- Facilitating system administration training for balancing internal and external support
- Minimizing risk and investment with predictable and value-added payments
- Leveraging local partner team to support transitional interim facilities, backup, and overflow support

1.4. Benefits of Intrado Advanced 9-1-1

In today’s demanding PSAP environment, manual processes consume valuable personnel time that could be devoted to saving lives. The need for increased automation in the PSAP during periodic events or major emergencies further enforces the need to modernize. Key benefits of Intrado Advanced 9-1-1 are:

- Continue to meet citizens’ evolving 9-1-1 expectations
- Improve interoperability
- Improve survivability
- Gain advanced reporting and metrics
- Prevent technical obsolescence of 9-1-1 operations
- Maintain the integrity of the network

A9-1-1 Routing provides a flexible architecture that provides Wise County with multiple paths to NENA i3. A9-1-1 Routing includes i3 Legacy Network Gateway (LNG) and Emergency Services Routing Proxy (ESRP) services where the LNG determines the location information of the caller and converts ingress 9-1-1 calls to i3 SIP for hand off to the ESRP. Intrado’s ESRP processes the i3 call using the location information contained within the SIP PIDF-LO message to query the Intrado emergency call routing function (ECRF) (that contains GIS boundary information) via

the Location-to-Service Translation (LoST) protocol to obtain information about where to route the call too. The Intrado ESRP routes the i3 call to the appropriate PSAP.

1.4.1. Meeting 9-1-1 Expectations of Wise County Citizens

Wise County's citizens expect their 9-1-1 calls to go to the right PSAP in the event of an emergency and that the call taker will know who they are, where they are, and their telephone number in case the call is interrupted and they need to be re-contacted. They also expect to receive help from emergency responders, even in cases where the caller cannot convey their location and/or the nature of their problem or hear due to age, circumstances, or disability.

Intrado Advanced 9-1-1 helps Wise County meet citizen expectations and alleviate the issues and challenges identified, positioning the County's PSAPs to effectively respond to the next generation of communication technologies as they become available, such as the broad reach of text messaging in the hearing-impaired community. With three decades of involvement in nearly every aspect of 9-1-1, Intrado understands that the NextGen9-1-1 initiative needs to rapidly move the County to a secure, efficient, and cost-effective emergency communication system.

1.4.2. Interoperability

Additionally, with Intrado Advanced 9-1-1, interoperability is no longer constrained by phone company boundaries. Wise County can readily transfer and share emergency calls to neighboring legacy network served PSAPs with Automatic Number Identification (ANI) and Automatic Location Identification (ALI) information, as well as call specific information with an expanded set of authorized agencies, including first responders, neighboring PSAPs, medical facilities, and other public safety mutual aid agencies for improved emergency response.

Intrado Advanced 9-1-1 applications manage automatic retrieval and delivery of contextually relevant information to communication center personnel and enables access to that same information by officers in the field. This supports event resolution more efficiently and enables interoperability with other PSAPs outside the County's jurisdictions.

1.4.3. Survivability

An example of survivability is similar to the interoperability example above. A 9-1-1 communications center is flooded during a storm, but they can move their operations to their backup facility in a neighboring County that has similar resources. This backup center serves as their temporary communications center during the storm; the move to the backup center is seamless due to the IP connection. The flooded PSAP's 9-1-1 operations are still up and running and even assisting neighboring communications centers overwhelmed by the storm. With Intrado A9-1-1 Routing, public safety officials can continue to offer life-saving 9-1-1 services by expanding disaster recovery capabilities.

1.4.4. Reporting and Metrics

For supervisors to optimize operations for Wise County, they require in-depth management reports and metrics. These needs are paramount to optimizing resources. PSAPs traditionally have had to rely on their legacy 9-1-1 service provider for reports and metrics. Often the reports are not timely and the information provided lacks the depth needed by many PSAP managers to efficiently run their organizations.

With Clear View Reporting, a standard feature of Intrado A9-1-1 Routing and Location Data Management, Wise County gains on-demand report access to information within the A9-1-1 Routing complex and the ALI database to support management decisions and improve operations. Borrowing from Intrado's 9-1-1 database management experience and National Emergency Number Association (NENA) guidelines, Intrado has developed a set of standard metric performance reports. These reports establish benchmarks for Intrado's overall performance as well as the quality of data Intrado receives from Customers. Intrado tracks all data transactions processed through Intrado systems. Wise County PSAPs have access to the comprehensive metric reports detailing call and data transactions, the number of records processed, and the number of errors. With Clear View Reports and 9-1-1 Net[®], the County can streamline processes and reduce present and potential errors.

The reporting package from Intrado utilizes powerful business intelligence engines that give PSAP managers actionable data to effectively make decisions concerning their organization. In addition, Intrado's standard metric reports can assist in risk management by allowing the PSAP to query and view audit trails of all calls that come into the network either destined for their center, or transferred from another PSAP. The following is a call count example.

IEN Voice Event Counts By Call Type

Frequency : Weekly End Date : 06/12/2013 State : Test PSAP Name : ALL

TIMES ARE DISPLAYED IN GREENWICH MEAN TIME

DATE	Call Type	Click on a Header for hourly breakout			
		Total Events	Initial Calls	Transferred Out Calls	Transferred In Calls
06JUN2013	VoIP	95	94	4	1
06JUN2013	Wireless	1056	1051	135	5
06JUN2013	Wireline	513	513	18	0
07JUN2013	VoIP	85	85	3	0
07JUN2013	Wireless	1124	1111	140	13
07JUN2013	Wireline	473	473	16	0
08JUN2013	VoIP	110	109	2	1
08JUN2013	Wireless	1065	1051	128	14
08JUN2013	Wireline	526	526	13	0
09JUN2013	VoIP	97	96	7	1
09JUN2013	Wireless	985	977	136	8
09JUN2013	Wireline	443	441	26	2
10JUN2013	VoIP	111	110	5	1
10JUN2013	Wireless	1145	1111	166	34
10JUN2013	Wireline	521	516	41	5
11JUN2013	VoIP	95	95	3	0
11JUN2013	Wireless	950	946	103	4
11JUN2013	Wireline	518	516	15	2
12JUN2013	VoIP	98	98	1	0
12JUN2013	Wireless	1086	1071	145	15
12JUN2013	Wireline	503	502	18	1
GRAND TOTAL		11599	11492	1125	107

Figure 1: Clear View Weekly Report

1.4.5. Prevent Technical Obsolescence

Wise County's existing E9-1-1 infrastructure and PSAP equipment are designed with multiple single-purpose point-to-point voice and data networks that have been patched over a long period of time. This infrastructure is expensive and cannot be easily upgraded, making it difficult to add new applications and data sources.

Intrado A9-1-1 Routing is the County's solution to bridging the gap between legacy and NextGen9-1-1, providing an ESInet that scales to meet NENA i3 standards and improves capabilities for public safety communications. Intrado A9-1-1 Routing protects the County's investment from technical obsolescence by providing a hosted operating environment built to predictable public safety class levels of reliability, redundancy, and security.

1.4.6. Maintain Integrity of the Wise County Network

Intrado understands that the integrity of Wise County's network cannot be compromised during and after the migration to a NextGen9-1-1 solution. Intrado maintains the County's network integrity by deploying a Legacy Network Gateway (LNG) that provides a backwards compatible industry compliant interface to the carrier-facing network. Intrado and its subsidiaries provide industry standard interfaces to telecommunications service providers to deliver their end user's 9-1-1 calls in the same manner performed in the current environment with the ability to hand off calls over an IP based interface. Similarly, within the PSAP environment, Intrado A9-1-1 can also deliver 9-1-1 calls to the appropriate PSAP, using a Legacy PSAP Gateway (LPG) or direct IP. The LPG uses packet technology and converts to centralized automatic message accounting (CAMA) at the PSAP. PSAPs who are IP capable, can receive native IP based 9-1-1 calls. Along with standards based voice interfaces, Intrado uses industry standard 9-1-1 data interfaces for ALI transactions. The support of these interfaces provides backward compatibility with today's ALI databases, but enables the PSAP to bid for ALI over an IP based interface using the same circuit as the voice, thus eliminating additional dedicated data links necessary in the legacy environment. When Wise County is ready with GIS data, Intrado can work with the County to support GIS-based routing that places the County in full compliance with NENA i3 standards.

Intrado also ensures security is maintained at that highest level by following strict network-to-network integration best practices, such as protecting the public safety network from carrier networks via session border control devices and technologies. Intrado's end-to-end technologies bridge the gap between the new and old call and data routing solutions, fulfilling the interoperable needs that exist between the NextGen9-1-1 enabled and legacy environments.

1.5. Corporate Overview

For over 30 years, Intrado has been designing and deploying public safety products and services based on the needs of the industry and our forward-looking view of 9-1-1. Intrado provides the core of the nation's 9-1-1 network and has played a key role in defining, building, and maintaining the complex emergency communications infrastructure.

We listen to public safety officials, we monitor new technology development, and we participate in industry standards bodies to understand these needs and develop products that revolutionize the public safety industry. Intrado was founded with a core understanding of PSAP operations; our co-founders came directly from the PSAP environment and a majority of our employees are highly experienced in PSAP operations.

Intrado systems and services support over 95 percent of 9-1-1 calls placed each day, totaling over 240 million calls to 9-1-1 each year. Intrado customers include all major U.S. wireline, wireless, Voice over IP (VoIP), Satellite, and Telecommunication Relay Services carriers, large international operators, and a growing number of public safety agencies and municipalities in the U.S. and abroad.

Intrado is leading the nation in the deployment of Next Generation 9-1-1 systems with customers across the United States. On August 5, 2009, Intrado brought the first 9-1-1 text messaging service live in Blackhawk County, Iowa with the advanced technology of the Intelligent Emergency Network, Intrado VIPER, and Intrado Power 911. At the National APCO Conference in Las Vegas, Nevada, Intrado demonstrated the ability to send cell phone pictures to a Power 911 IWS, further demonstrating Intrado's experience and expertise in Next Generation 9-1-1.

Intrado currently employs over 1200 public safety and communications professionals. The majority of the employees are located at Intrado corporate headquarters in Longmont, Colorado. Other Intrado locations include Lisle, Illinois; Austin, Texas; and Montreal, Quebec.

Built on a belief in work worth doing, Intrado touches millions of lives every day and takes that responsibility very seriously.

1.5.1. Intrado History

Intrado began in 1979 under the name SCC Communications. With backgrounds in law enforcement, our founders saw the potential for using technology to more effectively protect the public. This clarity of vision led them to start SCC Communications, now Intrado, and to redesign the telephone switches dedicated to 9-1-1 call delivery and the Computer-Aided Dispatch (CAD) systems used to dispatch emergency responders.

SCC then began working with the Incumbent Local Exchange Carriers (ILECs) or "Baby Bells," who managed the data associated with 9-1-1 (location, name, telephone number) to improve the accuracy of the 9-1-1 data, introducing the 9-1-1 industry's first hosted 9-1-1 database management service. This service—along with other 9-1-1 database management systems and the 9-1-1 solutions Intrado pioneered for wireless carriers and Internet telephony providers—serves as the foundation of the U.S. 9-1-1 network.

In May of 2001, Intrado acquired Lucent Public Safety Systems (LPSS). LPSS was responsible for significant contributions to public safety in this country, with origins going back to Bell Labs and the original invention and deployment of the first 9-1-1 system. The combination of Intrado and LPSS helped to accelerate the introduction, standardization, and broad deployment of new technology as well as speed the development of new industry standards.

In April of 2006, Intrado was acquired by West Corporation, a leading provider of outsourced communication solutions. Joining the West family provided Intrado with expanded resources, the means to accelerate a number of key initiatives, strengthen its existing market position, and execute new opportunities.

In the past five years, Intrado has made several key acquisitions to expand their scope and capabilities in the public safety industry and provide more advanced solutions for their customers.

- April 2008 - Intrado acquired HBF Group, an emergency communications company headquartered in Austin, Texas. The transaction expanded Intrado's 9-1-1 footprint and provided increased opportunities to deliver Advanced 9-1-1 services to the public safety community.
- December 2008 - West Corporation acquired IPC's Command Systems segment, Positron Public Safety Systems (PPSS), a leader in fully-integrated, premises-based public safety solutions for more than 20 years. Together, the two companies build upon

their respective expertise in network and premises-based solutions to deliver fully-integrated 9-1-1 solutions for public safety.

- June 2011 - Intrado acquired Contact One, a leading company in integrated 9-1-1 geographic information system (GIS) data management solutions for public safety. This transaction allows Intrado to provide customers with an MSAG management tool, expanded enterprise mapping and data services, and to deliver enhanced dispatch mapping support, which is critical to saving lives in an increasingly mobile world.
- August 2011 - Intrado acquired PivotPoint Solutions, a leader in wireless location accuracy compliance reporting, analysis, and optimization. The addition of PivotPoint's location accuracy reporting and measurement solution enables Intrado to offer wireless carriers a more comprehensive set of fully integrated analytical and reporting services, help our customers meet revised FCC required location accuracy reporting rules, and offer robust reporting and analytics for wireless 4G, LTE, future networks, and our advanced Next Generation 9-1-1 services.

2. WISE COUNTY SOLUTION AND SERVICE OVERVIEW

2.1. Introduction

To meet Wise County's requirements for its NextGen9-1-1 initiative, Intrado Advanced 9-1-1 Routing and Location Data Management is a complete, end-to-end hosted NextGen9-1-1 solution that provides an ESInet that is fully interoperable with legacy networks. Since Intrado Advanced 9-1-1 applications are modular and flexible, Wise County and associated public safety entities and responders, can customize the service implementation in consideration of the service areas and financial and technological constraints. In addition, a staged approach to a network-based service implementation minimizes the impact on existing 9-1-1 operations.

Intrado Advanced 9-1-1 uses the LNG to connect to legacy, non-traditional networks and offers core managed network services to support NextGen9-1-1 call routing and location data management. Standards-based interfaces provide connectivity to traditional ALI and allow quick deployment of new applications, enabling integration with future data sources and eliminating "forklift" upgrades. Intrado further supports a robust ESRP and PRF that enable for flexible routing algorithms that can be dictated by the 9-1-1 authority.

Intrado's ESInet provides the key elements of security and reliability that extend to all layers of the system, providing the foundation for deploying third-party services that can then leverage the reliability and security in the most cost-effective manner. This mitigates the challenges faced when introducing change into the system and increases the value of 9-1-1 through improved flexibility that can be both tailored at the onset of a project, as well as provide the foundation for future applications that Wise County may want to add at the appropriate time.

Intrado Advanced 9-1-1 provides 9-1-1 voice and data services to authorized users in an open architecture enabling a multitude of suppliers, authenticated information services, and content providers to easily integrate their services for emergency communications.

Intrado ESInet, ESRP, and LNG are part of a fully diverse and redundant infrastructure for managing connectivity from telecommunications service providers as well as to each of the PSAPs within the County. This also allows for complete interoperability between the PSAPs in the County, as well as any neighboring PSAPs that may or may not be part of a NextGen9-1-1 network.

Intrado Advanced 9-1-1 also offers the following features:

- Provides a secure managed IP network and application-based framework for delivering highly reliable, robust, secure, and efficient emergency services.
- Replaces decades-old selective routers and point-to-point circuitry with modern IP technology with LNG, ESRP, and LPG services.
- Supplies a single-vendor solution for simplified vendor management.
- Provides the capability to connect via SIP to CPE for improved call set-up times.
- Provides the capability to transfer calls natively to neighboring PSAPs, regardless of LATA or telephone service provider boundaries.
- Provides the capability to quickly and dynamically setup remote operating centers or positions for answering 9-1-1 calls in the event the primary answering centers are rendered out of service for any reason.

- Utilizes a design based on NENA i3 standards; supports the transition from legacy to NextGen9-1-1.
- Allows quick and effective development and deployment of new applications with minimal or no impact on users or their operational activities.
- Connects to both legacy emergency networks and non-traditional networks such as VoIP.
- Establishes the foundation to support future public emergency service-requesting devices using various emerging multi-media protocols.
- Provides access for additional data sources.
- Delivers current and future emergency services to a variety of users—including PSAPs, dispatchers, and other public safety agencies—without compromising the integrity and security of the emergency services infrastructure.

2.1.1. Routing Enhancements

In addition to the call types and routing rules supported above, optional routing enhancements are available from Intrado for an additional fee. These routing enhancements are available only if Intrado is providing A9-1-1 Routing.

Coordinate-Based Routing

Intrado Advanced 9-1-1 Coordinate-Based Routing for wireline calls aids your PSAP to safely transition to Next Generation 9-1-1. It uses industry standard i3 elements, including the Emergency Services Routing Proxy (ESRP) and Emergency Call Routing Function (ECRF) to route wireline calls spatially. When Intrado A9-1-1 Routing is enabled for wireline coordinate-based routing, a wireline 9-1-1 call is received by the Intrado Legacy Network Gateway (LNG). Then, the provisioned geodetic location is retrieved from the location database, using the i3 specified HELD interface. The ESRP uses the industry standard Location to Service Translation (LoST) protocol to query the Intrado ECRF for routing instructions. The ECRF geospatially locates the routing polygon associated with the location and returns routing instructions to the ESRP for call delivery to the appropriate PSAP or next hop ESRP.

Intrado uses the Authoritative GIS Data Provider's data as the source for routing wireline calls. Intrado utilizes this data to associate geodetic locations with the validated civic location, which are provisioned into the location database. The authoritative data is also utilized to provision the ECRF with the PSAP routing polygons provided to Intrado via our Spatial Information Function (SIF).

Locate Before Route

Locate Before Route is a routing enhancement specifically designed to reduce the number of call transfers from one PSAP or jurisdiction to another PSAP or jurisdiction by first determining a more accurate location of the caller before routing the call. Calls from cell sectors that span multiple jurisdictional boundaries are often sent to a single jurisdiction to handle or transfer. Locate Before Route identifies the caller's location within the cell sector and routes the call to the appropriate PSAP or jurisdiction reducing call handling and dispatch time.

2.1.2. Network Infrastructure

A Managed Emergency Services IP Network connects voice and data complexes with open, standards-based interfaces from the PSAP to authorized agencies, ALI, and other public safety

data sources. The network initially supports converged voice and data with the capacity to add incremental data sources and the flexibility to grow with Wise County, adding the ability to keep pace with evolving public safety applications.

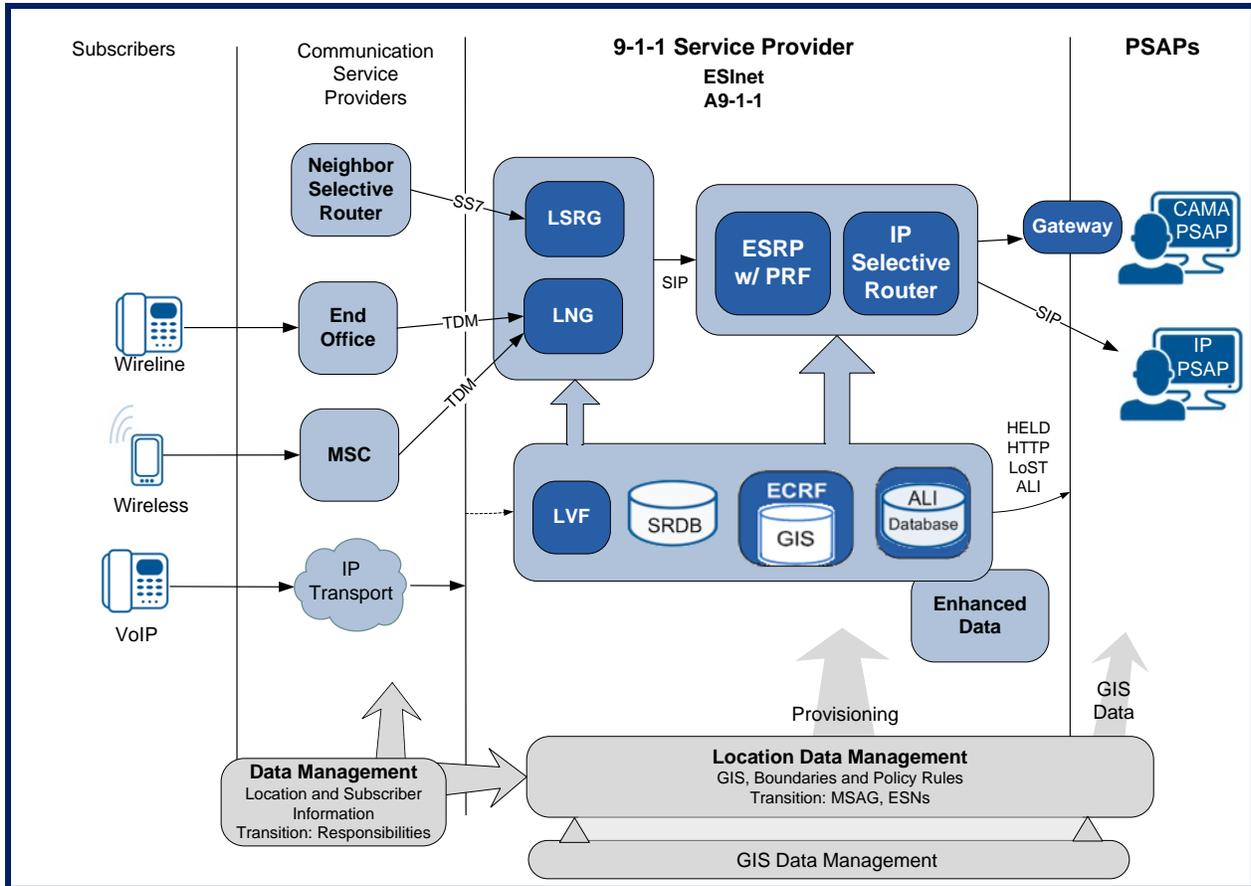


Figure 2: Intrado Advanced 9-1-1 Connectivity

As Figure 2 illustrates, Intrado Advanced 9-1-1 supports legacy and next generation functionality with A9-1-1 Routing and A9-1-1 Location Data Management. As outlined above in Figure 2, the Intrado solution provides for i3 LNG functionality to convert TDM traffic to SIP for hand off to Intrado’s i3 ESRP, or, if the PSAP still leverages legacy technology, SIP traffic is handed off to Intrado’s IPSR. The Intrado i3 LNG, i3 ESRP, and IPSR comprise the A9-1-1 Routing Solution. All components are supported by Intrado personnel 24x7x365. These integrated platforms use private Internet Protocol (IP) links to replace existing legacy selective router voice and ALI data circuits. Intrado coordinates the implementation from concept design to installation and testing, providing technical consulting and maintenance support for the County’s mission-critical operating environment.

Intrado Advanced 9-1-1 deploys on a redundant, secure, public safety-class IP network, with geographically diverse platforms that allow for continuous operation and highly reliable disaster recovery. The deployment involves minimal impact and disruption to the existing systems because it is based off premises and is not constrained by daily operations or activities in the call centers. The core network upon which Intrado Advanced 9-1-1 applications reside, the

Intrado Intelligent Emergency Network, is robust and flexible, and may be leveraged to support other public safety applications and data such as:

- GIS data distribution
- Public safety mobile radio (regardless of frequency band)
- Data access such as criminal justice database
- Public safety automatic crash notification and vehicle location tracking
- Notification services
- Incident management
- Chemical, biological, and nuclear network sensors

This interconnected, secure, IP-based system provides Wise County with:

- Quick deployment of additional virtual PSAPs or PSAP positions to support specific situations, such as a drastic increase in call volume, large public events, and emergency incidents
- Quick remote access to voice and data for any authorized non-PSAP-based personnel, including call takers, dispatchers, first responders, law enforcement, incident commanders, and medical staff
- On-the-fly call management modifications including routing of incident-specific calls (based on caller location) to specific call takers
- Ability to “push” data from dispatchers to first responders’ mobile data terminals or even radio screens
- Access to expanded data sources such as real-time maps, building blueprints, public safety databases, and medical records via secured Internet

Intrado takes pride in being a leader in assessing technology trends as well as providing new and emerging tools for monitoring, managing, securing, and supporting multi-agency operations. We recognize the value of leveraging national industry efforts together with state and local initiatives to derive hardened, secure, and technology-neutral operating platforms. Wise County can depend on Intrado to deliver and support the County’s next generation of 9-1-1 services to the level the industry has come to expect from a leader.

2.1.3. A9-1-1 VIPER Option

A9-1-1 VIPER services provide hosted call handling functionality over a system that includes VIPER, Power 911®, and Power MIS® servers, paired with Power 911 servers and workstations installed at each Wise County PSAP. Intrado provides and maintains redundant, regionally diverse systems and facilities for A9-1-1 VIPER Call Handling, including hosted VIPER and Power 911 servers.

As Intrado assists the PSAP transitioning from legacy functionality to i3, the A9-1-1 VIPER hosted call handling solution will ensure the call handling equipment and software is at the version level needed to support i3 terminating ESRP functions. These terminating ESRP functions support the ability to query a CIDB for additional information about a call, and the ability to query a LIS for caller location information updates. VIPER services will also support the system to query an ECRF for police, fire, and EMS information.

A9-1-1 VIPER is a hosted, highly available, geographically diverse network-based call handling service. The call handling, redundant Voice over IP for Emergency Response (VIPER) servers are deployed in geographically diverse data centers to ensure high availability. The VIPER backroom equipment with the latest generation Power 911, a computerized emergency call-answering system, will be deployed to meet Wise County NG9-1-1 call handling requirements now and in the future. Power 911 is the Intrado call-taking solution, engineered to deliver the most comprehensive set of E9-1-1 call-handling modules to public safety agencies. It provides an advanced feature set that includes sophisticated line handling capabilities and integrated telephony functionality.

VIPER leverages the power of Voice over IP (VoIP) technology for public safety applications. Provisioned for NG9-1-1 capabilities, it delivers state-of-the-art E9-1-1 call handling and allows remote answering positions to use the IP protocol as the sole carrier of voice and data. The solution is based on the use of the non-proprietary Session Initiation Protocol (SIP) for the delivery of voice services, reflecting the Intrado commitment to developing solutions that provide the most flexible offering from a technical and cost effective standpoint.

Intrado VIPER addresses PSAP demands for a scalable solution that allows them to move easily and efficiently onto a single physical network by integrating data, voice, and NG9-1-1 traffic while at the same time benefiting from next generation PBX or Call Server services.

VIPER allows PSAPs to:

- Scale to virtually any size
- Move to a networked model that integrates data, voice, and NG9-1-1 traffic
- Maximize next generation IP-based PBX services
- Implement call queues to meet call to call taker distribution needs
- Implement extended data services by selection of caller and responder information from the CIDB and ECRF.
- Benefit from emerging technologies as standards evolve such as supplemental data, Automatic Crash Notification (ACN), and external data sources

Power 911 Intelligent Work Stations (IWS) provide a powerful, proven front-end to Intrado VIPER for delivering advanced 9-1-1 call handling using open, industry-standard protocols. Implemented via a reliable fault-tolerant architecture, VIPER integrates fully with the Power 911 intelligent workstation and allows for fully functional remote answering positions. Intrado VIPER provides the most flexible call handling solution from a technical and cost-effective standpoint.

A9-1-1 Integrated Map View

Power 911 is offered with a MapFlex map viewer providing automatic display and management of calls, text messages, and other A9-1-1 Data services that correlate to an emergency call location.

2.2. Wise County Implementation Strategy

Intrado provides a coordinated and secure staged implementation approach to each project deployment. This approach minimizes risk because each stage is planned, implemented, and tested independently for functional and operational efficiencies. Within each implementation stages, certain activities are coordinated through the Program Management Office (PMO). Stages can vary based on the County’s requirements, but Intrado recommends the following order of implementation for Wise County.

2.2.1. Implementation Stages

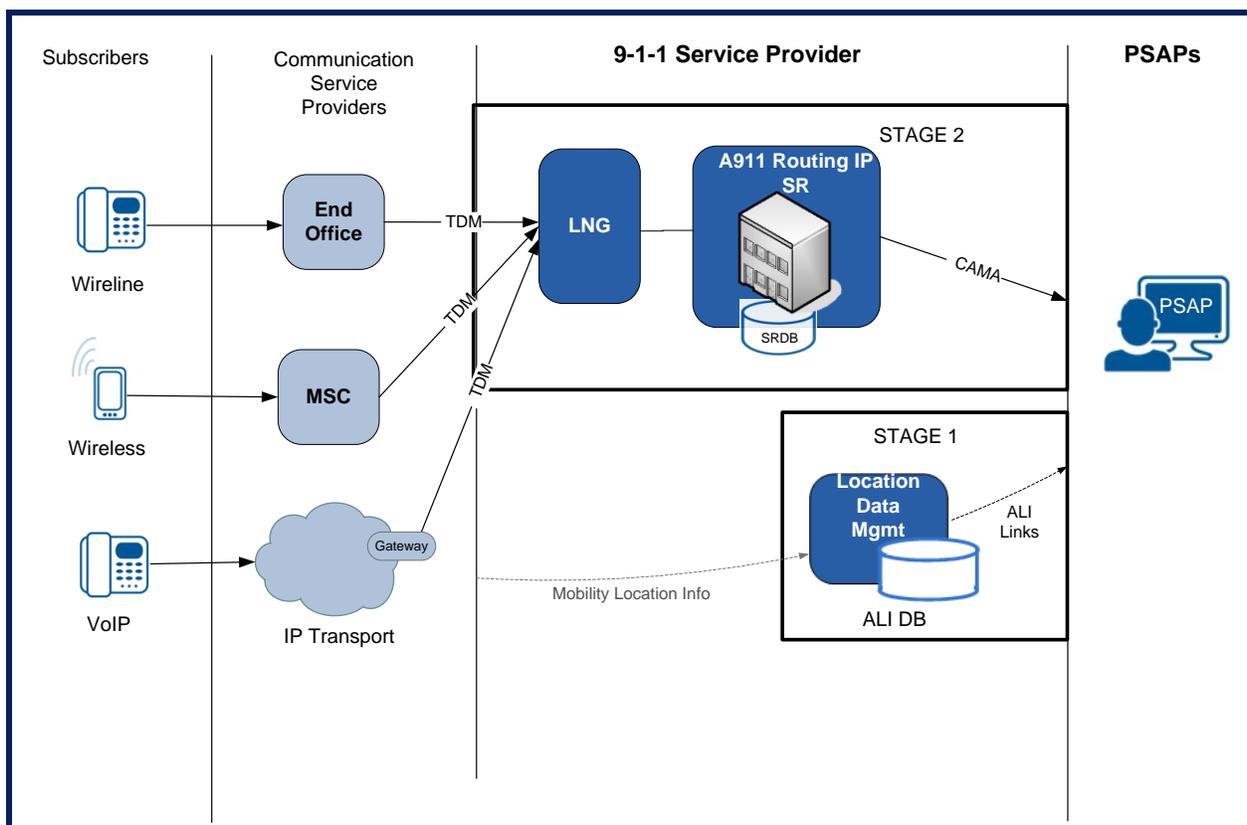


Figure 3: Staged Approach to Implementation

Stage 1 – A9-1-1 Location Data Management

ALI is provisioned in concert with the Master Street Address Guide (MSAG) and existing ALI data. Intrado installs the IP network to the PSAP(s) and connects the PSAP(s) to the Intrado ALI databases. A9-1-1 Location Data Management supports IP and XML based access to the ALI databases. After these initial tasks are complete, the existing legacy ALI service is disconnected. Ultimately, this system can be enhanced to provide extended data transfers between the Intelligent Emergency Network and legacy PSAPs. ALI steering or dual loading between A9-1-1 Location Data Management and the Local Exchange Carrier (LEC) system can support call transfers with agencies on traditional ALI data and is dependent upon LEC cooperation.

Stage 2 – A9-1-1 Routing

Robust and reliable, A9-1-1 Routing is carrier grade and incorporates traditional network elements for voice transport while taking advantage of the IP infrastructure to support non-traditional network elements. The initial deployment of this new voice platform allows for interoperation with the existing 9-1-1 selective routers for continuous operation during the rehome of all of the supporting end offices and provides interoperability with other PSAPs served by traditional E9-1-1 services.

The continuation of this stage systematically moves interconnected selective router circuits from incumbent local exchange carrier (ILEC), competitive local exchange carrier (CLEC), and wireless end offices to A9-1-1 Routing; leveraging Intrado’s i3 LNG service. Once this process is complete, the 9-1-1 calls route through to A9-1-1 Routing via Intrado’s i3 LND and all 9-1-1 trunks from the LEC selective routers to the PSAP(s) will be disconnected. Intrado will establish connectivity with the appropriate selective routers for enabling interoperability with other neighboring agencies served in by legacy selective routers. Native delivery of VoIP 9-1-1 calls directly to the PSAP is of immediate value with this next generation configuration.

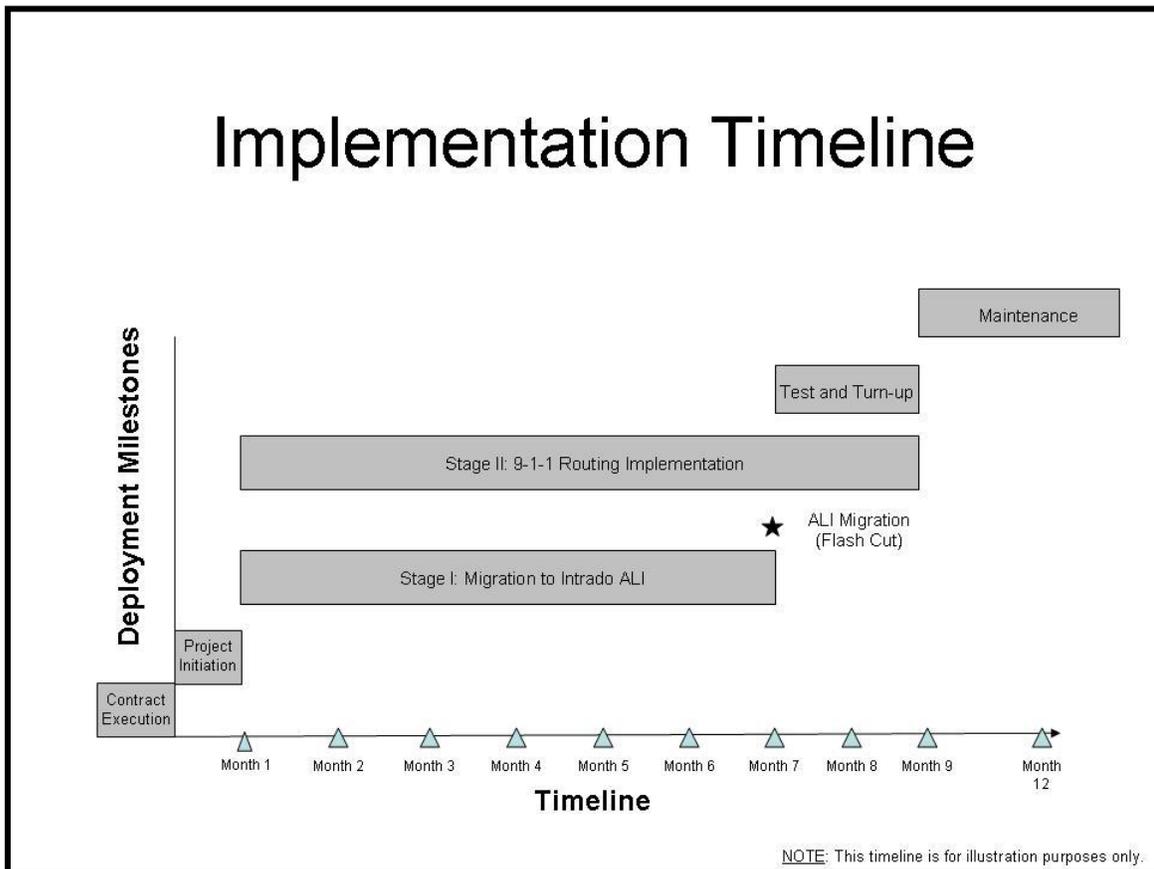


Figure 4: Intrado Advanced 9-1-1 Implementation Activities

Intrado will work with Wise County to design a project schedule for each County PSAP before contract signing.

In summary, Intrado Advanced 9-1-1 supplies the benefits of a managed ESInet that provides, an integrated, managed, secure IP network that connects its PSAPs and enables much-needed configurability and performance monitoring. By deploying these network-based Intrado Advanced 9-1-1 LNG and ESRP, Wise County gains assurances of high reliability, geographically diverse network elements, and a fully integrated and managed system, while also positioning themselves well for the incorporation of future NextGen9-1-1 capabilities as required.

As a hosted service model, this solution minimizes the need for Wise County to constantly maintain, upgrade, and administer a complex hardware and software solution and maximizes the County's ability to focus on public safety, optimizing its 9-1-1 operations. This "evergreen" 9-1-1 hosted services model consistently renews key network-based components to enable Wise County to operate on the most modern communication technology and eliminates the service development and deployment bottlenecks present in today's voice-centric and circuit-switched emergency networks. Intrado's staged approach and implementation plan meets the County's immediate needs, while also increasing the capacity for change and simplifying monitoring and maintenance.

3. SUPPORT AND SOLUTION MANAGEMENT

Intrado A9-1-1 operates from a single public safety class platform, not multiple and isolated technology silos found in legacy 9-1-1 systems. Interoperability challenges are minimized, operational complexity is reduced, potential points of failure decrease, economies of scale are realized, and the set of authorized agencies that can meaningfully interact with 9-1-1 expands.

3.1. System Level Availability

Intrado prides itself on maintaining the highest system availability. Intrado creates all of its offerings upon a "no single point of failure" principle, using a fully redundant, multi-carrier, multi-protocol network linking all Intrado network elements and PSAPs. Intrado facilities and nodes are equipped with physically redundant data communications and power equipment such that any component can be maintained without overall service impact. Buildings and supporting facilities such as generators, fuel, and entrance demarcations require card access and are monitored 24 hours a day by security personnel.

3.2. System Support and Monitoring

Intrado provides continuous system support and monitoring 24 hours a day, seven days a week, 365 days a year to each network element and application supplied by Intrado. Intrado's support staff identifies network outages and notifies Wise County when corrective action is required. Intrado also maintains on-site spare parts and test equipment immediately available to our network operations and engineering staff.

The "no single point of failure" model extends to all aspects of our infrastructure. Primary and secondary support and on-call resources are equipped with wireless smart phones from different companies, on different networks, served by different base stations and transmitters. Intrado allows Wise County to contact Intrado customer support through a fully redundant, corporate private branch exchange (PBX). Each main Intrado facility is provided dial tone by multiple wireline carriers as well as satellite links.

Intrado is a member of the Government Emergency Telecommunications Service (GETS) that is used in the event our core communications cannot be used. Intrado personnel sit on the board of the telecommunication industry and government's National Coordination Counsel, which is the coordinating group for cyber threats and terrorism. This allows us to stay abreast of national and international threats that may affect the E9-1-1 infrastructure and mitigate changes as necessary.

Intrado is committed to developing and utilizing standards that facilitate consistency across next generation 9-1-1 infrastructure and services and actively supports and participates with the following industry associations:

- 9-1-1 Industry Alliance (9IA)
- Alliance for Telecommunications Industry Solutions (ATIS)
- Association of Public-Safety Communications Officials International (APCO)
- Canadian Wireless Telecommunications Association (CWTA)
- Cellular Telecommunications Industry Association (CTIA)
- National Emergency Number Association (NENA)

- Personal Communications Industry Association (PCIA)
- Telecommunications Industry Association (TIA)

3.3. Service Standards

Distributed and component-based architecture scales with growing demands as well as with increased usage of the core 9-1-1 services. New network components can address capacity issues without disruption of service. New functionality can be added with additional emergency service components.

Guided by a set of public safety class service standards, and recognizing that opportunities continually arise to introduce new features and functionality into our 9-1-1 systems, the distributed architecture used by Intrado Advanced 9-1-1 offers increased ability to accommodate growing and varied workloads in a modular fashion. New system features offer compelling advantages, such as access to new information, increased interoperability, higher efficiency, or expected cost savings. Proposed system changes and new features are stringently evaluated in the public safety context so as not to introduce weakness, inefficiency, or unpredictability into the systems. Each feature is designed, implemented, and operated in a manner befitting 9-1-1's critical role in the safety of the general public.

With Intrado Advanced 9-1-1, capacity enhancement, traffic model mix, and load balancing happen without reconfiguring the physical connectivity of the Intelligent Emergency Network and are implemented and operated in a manner considered "public safety class."

3.4. Security and Confidentiality

Security deters outside influences from adversely affecting system operation and permits only appropriate access to the system's information. Intrado operates the largest 9-1-1 network in the world. Intrado has operated 9-1-1 ALI databases on behalf of major U.S. ILECs for a number of years and supports a nationwide near real-time messaging network for wireless E9-1-1 for over 70 wireless carriers. In addition, Intrado created the 9-1-1 solution for VoIP and has been delivering IP-based 9-1-1 calls into the native 9-1-1 network since 2006. Intrado's security policies, standards, and guidelines are compliant with industry best practices as defined by ISO-17799 and CoBIT. Intrado's expertise and commitment to E9-1-1 network security are evidenced by our active participation in the Network Reliability and Interoperability Council (NRIC) 7 focus group 2B Cyber-Security.

The Intrado Intelligent Emergency Network utilized by Intrado Advanced 9-1-1 is a secured and private IP-managed network. All inbound and outbound traffic is through well defined and controlled access points. Call processing and real-time data delivery are implemented through specialized subnets. Secure points of interconnection allow TSPs to interact with Intrado A9-1-1 Routing.

Secure Access

Intrado systems that are accessible through the Internet, including the Subscriber Record Management data exchange portal, database management interface tool, and metrics tool are protected by a secure access process that requires authentication through a unique user name, unique user password, and a code randomly generated at time of access via a Secure ID token. The use of this Secure ID restricts users to their own data, protecting confidentiality. Passwords are force changed and monitored on regular intervals.

Firewalls and network infrastructure are always in an N+1 configuration with network intrusion detection in place to warn dedicated network security personnel of abnormal traffic patterns as well as providing the needed forensics to follow up on any attempted attack. Intrado network security personnel are highly trained individuals, certified in cyber security. They work solely on keeping the networks that support 9-1-1 traffic secure. The Information Security team constantly stays in tune with any change in the cyber community by monitoring alerts from the SANS (SysAdmin, Audit, Network, Security) Institute and other security communities. Virus pattern checks are handled at the edge of the network and are kept current with the latest pattern files often within minutes of their release. All edge network Wide Area Network (WAN) routers maintain access control lists as a first line of defense with packet rate threshold monitoring. All critical circuits supporting the infrastructure are Telecommunication Service Provider (TSP) registered to maintain service level priority with the carriers.

Reliability

Reliability is the system's ability to continue to operate under severe, adverse conditions and component failures. Intrado Advanced 9-1-1 is deployed on redundant systems, across diverse facilities, using diverse carriers. A9-1-1 system platforms are deployed to separate geographic locations so that A9-1-1 service is not interrupted in the event of system failure at any one location. End office facilities are connected to the A9-1-1 network over separate geographically located facilities to minimize the potential for A9-1-1 call failure as a result of any one facility path. Carrier diversity provides that no single vendor network failure can interrupt overall A9-1-1 call processing service (e.g., cable/fiber cuts, termination equipment failure, etc.).

As the 9-1-1 service provider, Intrado has established defined and reasonable restoration plans, including complex disaster and PSAP evacuation contingencies, and conducts annual reviews to confirm adequacy of the plans. Hardware spares are readily accessible, and Intrado maintains adequate spare quantities on hand to enable attainment of reliability and mean time between failure objectives. Power infrastructure and environmental systems are deployed such that a commercial power failure does not result in an interruption of A9-1-1 service.

Accuracy

Accuracy is the timeliness, quality, and traceability of the data moved by the system to public safety end-users. Intrado Location Data Management services require a minimum of 95% Service Order Input match rate to our Customer's MSAG prior to implementation. Additionally, Intrado does not allow for provisional posting of ALI records to ensure consistency and accuracy.

Maintainability

Maintainability is the system's ability to accommodate maintenance, troubleshooting, and repairs efficiently and with minimal impact to operations. Intrado monitors and manages its mission critical solutions 24x7x365. Intrado trained personnel monitor numerous components of the solution's use and periodically review, make recommendations, and perform actions so that the systems and customer solutions are functioning at optimum efficiency.

When changes to the system are required, the scope of these changes typically falls under one of the following maintenance scenarios:

- Configuration changes
- Software hot fix introduction
- Software upgrade (for example, service packs providing enhancements or new features)

For each of the above scenarios, the maintenance procedure may be applicable to:

- A specific facility or application component
- All facilities and application components

Please note that in each of the above scenarios there is no reduction in telephony functionality or call capacity to Wise County during the maintenance events.

Robustness

Robustness is the system's capability to meet long-term needs and work under real-world conditions as well as support growing and evolving features. The solution is built on a nationwide voice network that enables advanced disaster recovery options specifically designed for the public safety community. Calls can be immediately rerouted through direct connectivity, secure IP connectivity, or the public switched telephone network (PSTN) anywhere in the nation. The fault tolerant system architecture is designed such that an individual component failure encountered during call processing does not result in a lost call. System architecture is designed such that a major disaster (natural or unnatural) does not result in a total loss of call processing.

3.5. Support Approach

Intrado considers proactive maintenance to be the most essential component to providing reliable and efficient 9-1-1 system operation. Intrado has traditionally placed a strong emphasis on our maintenance and support program, constantly adapting to the ever-changing advances in technology and the needs of our Customers.

In evaluating our approach to maintaining Intrado Advanced 9-1-1 for Wise County, Intrado placed particular importance on the situations and components with the potential to affect the system's availability. Intrado has identified the following key points to achieving maximum success:

- Help Desk/Call Center support
- Remote monitoring
- Problem escalation (identification, notification, escalation, resolution)
- Service Management (Incident Administration, Event Administration, and Change Management)
- Technical staff redundancy
- Support communications and tracking

3.6. Technical Support

Proactive support and monitoring is provided for Wise County by the Intrado Systems Operations Center (ISOC), which fields all issues related to system and network operations. The ISOC team members support the core value of excellence in all they do and understand the key role their care and attention to detail play in the delivery of emergency products and services.

The ISOC, staffed 24 hours a day, seven days a week, 365 days a year, monitors the entire Intrado network including PSAP circuits and batch processing. To provide consistent levels of service, the ISOC maintains a full suite of operations metrics and statistics. The ISOC tests and

implements new products as well as updates to existing products and is responsible for creating and archiving production system backups.

When a potential or actual customer-affecting issue is defined and determined to be an incident, the Incident Administration team is engaged. The team uses established Intrado processes that are ISO 9001:2000-compliant for immediate escalation, notification, and reporting. The Service Management team coordinates internal communication and documents items including root cause analysis, customer impacts, countermeasures, and improvements. Service Management offers 24x7x365 on-call availability and has the appropriate tools to escalate any problem within the company and with associated vendors. Intrado provides onsite support to resolve problems with Intrado Advanced 9-1-1 that cannot be otherwise addressed through remote access.

3.6.1. Emergency Support

The Emergency Call Relay Center (ECRC) is an inbound call center, staffed 24 hours a day, seven days a week, and 365 days a year, handling emergency customer support calls. Because the ECRC handles emergency calls, all of the ECRC telecommunication staff members are required to have prior 9-1-1 dispatching and emergency call handling experience.

3.6.2. Emergency Voice Paths and Escalation Options

Support and contact procedures vary depending on whether Wise County experiences a Severity Level 1, Level 2, or Level 3 service disruption. Severity levels determine the appropriate contact procedure and the actions taken by Intrado for response time, resolution time, and resolution procedure. Following are service disruption definitions and procedures for each severity level:

SEVERITY LEVEL 1

A9-1-1 Routing or Location Data Management is completely inoperative or severely impacted where critical network or data communication problems on the Intrado system that prevent Intrado from routing 9-1-1 calls.

Examples: PSAP not receiving calls, audio is working on only one side of incoming calls, End Office traffic not able to reach PSAP. Critical network or data communications problem on an Intrado system that prevents Intrado from returning ALI bids, and/or network hardware, circuit, sustained non-delivery of voice or ANI, or failure of Intrado's link to ALI.

Notification Time: Intrado will provide initial notification of the issue by contacting the appropriate or designated Customer contact within one (1) hour of identification of the service disruption. Regular status updates will be provided until the issue is resolved.

Intrado will apply immediate and sustained effort until a resolution is in place. If a resolution cannot be readily identified, Intrado will initiate internal escalation procedures to assure resources are appropriately assigned for problem resolution efforts.

Resolution Procedure: Intrado will correct the service disruption or provide a procedure for the Customer to bypass or work around such disruption in order to continue operations if possible. If a bypass procedure is utilized, Intrado will provide the Customer with an action plan for the development of the final resolution, and Intrado will continue resolution activity until full service is restored to the Customer.

SEVERITY LEVEL 2

A9-1-1 Routing or Location Data Management services are severely and critically impaired, where major functions are inoperative and those major functions are critical to the operation of the A9-1-1 Routing services.

Examples: Reduced incoming trunk capacity, intermittent non-delivery of voice or ANI, sustained line noise or interference. Location Data Management system failure that prohibits the processing of service order files within the contractually defined response times; system response time problems; single sided ALI node.

Notification Time: Intrado will provide initial notification of the issue by contacting the appropriate or designated Customer contact within two (2) hours of identification of the service disruption. Regular status updates will be provided until the issue is resolved.

Intrado will apply sustained effort until a resolution is in place. If a resolution cannot be readily identified, Intrado will initiate internal escalation procedures to assure resources are appropriately assigned for problem resolution efforts.

Resolution Procedure: Intrado will correct the service disruption or provide a procedure for the Customer to bypass or work around such disruption in order to continue operations if possible. If a bypass procedure is utilized, Intrado will provide the Customer with an action plan for the development of the final resolution, and Intrado will continue resolution activity until full service is restored to the Customer.

SEVERITY LEVEL 3

A9-1-1 Routing or Location Data Management services are impaired and some functions are not operating, but those functions are not mandatory or critical to 9-1-1 call delivery.

Examples: Intermittent noise on the line, partial trunk capacity reduction, reduced TSP end office connectivity to A9-1-1 Routing service. ALI data communications are reaching PSAP but not all fields are in correct format.

Notification Time: Intrado will provide initial notification of the issue by contacting the appropriate or designated Customer contact within one (1) business day of identification of the service disruption. Regular status updates will be provided until the issue is resolved.

3.6.3. Notification

The ISOC maintains alternate communication message services for maintaining open communication paths in the event of widespread outages or other communication service interruptions. There are multiple entry points to access operations group staff in the event of normal communication path outages.

3.6.4. Remote Monitoring

For proactive remote monitoring, Intrado uses a suite of products specifically designed to diagnose and troubleshoot hardware and software components. These monitoring tools, in conjunction with other performance management tools, generate capacity and performance management reports. Customized as well as out-of-the-box alarming provides for monitoring performance, availability, connectivity, and hardware-related issues of the components.

Four primary severity groups categorize alarms:

- Critical
- Major
- Minor
- Warning

All alarms receive an appropriate criticality, which dictates the actionable response from Intrado. The monitoring tools will automatically send pages and emails and will generate trouble tickets to the Help Desk ticketing system; the criticality of the alert/alarm further dictates the response levels. The 24x7x365 Intrado Tier 1 support will engage in verbal and email contact with Tier 2 and Tier 3 support personnel to advise of high-priority tickets.

Remote monitoring of network and computer performance is managed to provide statistical data on the number of alarms received based on severity. Intrado uses the monitoring tools to capture the elements of a complex end-to-end service environment, such as network elements, computer systems, databases, and the applications themselves. The Intrado ISOC staff can monitor the complex dependencies among these managed elements and alert the appropriate group for interpretation. This provides a method to immediately notify designated personnel of any system failures or performance degradations.

Remote monitoring features include:

- Dedicated staff
- Dedicated monitoring platforms
- Automatic processing of all alarm messages
- Automatic escalation of alarms according to a pre-established severity scale
- Automatic generation of emails, trouble-tickets, faxes, pages, and other messages
- Automatic switchovers, re-initialization of circuits, and database recovery procedures

Monthly reports detail the equipment, the date and time of alarms, and a record of the actions performed in response to the alarms.

3.6.5. Routine Support

Intrado's suite of routine support elements includes system health checks, application of patches, code upgrades, and hardware upgrades when needed.

4. IMPLEMENTATION METHODOLOGY

4.1. Overview

Over the past 30 years, Intrado has developed an unparalleled track record, expertly managing the massive and complex databases that make it possible to transmit and retrieve vital information in seconds. Intrado's state-of-the-art infrastructure and real-world experience uniquely prepare us to manage the vital connections between people and the critical information on which they depend.

The Intrado approach to plan, configure, network engineer, implement, test, document, train, and support Intrado Advanced 9-1-1 implementation follows Intrado's recommended and time-proven solution lifecycle progression methodology for projects of this type. To date, Intrado has used this methodology for Wireless Phase II customer deployments in over 3,929 primary PSAP jurisdictions with an average of five wireless service providers per jurisdiction, equating to 18,876 implementation projects over the past eight years.

Using this proven methodology most recently with the VoIP offering, Intrado worked with each major ILEC to gain access to 359 selective routers to enable VoIP 9-1-1 call routing, providing the first VoIP 9-1-1 solution in 2003. Intrado has since successfully implemented over 60 VoIP service providers leveraging this implementation solution.



Figure 5: Solution Lifecycle

This solution lifecycle begins with solution definition and architecture activities. During these initial phases, the joint Intrado and Wise County team members verify system application and implementation requirements, refine the solution architecture, and finalize the plan for solution deployment. Following definition and architecture phases, Intrado orders, installs, configures, tests, and trains users on customer-facing solution components as part of solution integration and deployment efforts. Following successful deployment, the maintenance phase begins. The

primary goal of the lifecycle methodology is that the project aligns with overall customer expectations, and is tailored to fit the needs of Wise County.

4.2. Program Management Approach

Delivery Team Organization

Intrado recognizes that there is no one cookie-cutter solution for the technological needs of every business, and as such, there can be no singular implementation plan. Our approach to implementation is focused on assembling a team of service oriented employees who are recognized as the industry’s elite. From this expert workforce, select individuals are assigned to the implementation and ongoing support of the Intrado Advanced 9-1-1 implementation for Wise County. Except in the most unavoidable of circumstances, the project team will retain member continuity throughout the life of the contract. In addition, our team approach provides a cross-trained network resource pool to assure that the loss of any key individual would not jeopardize the quality or level of service provided to the County.

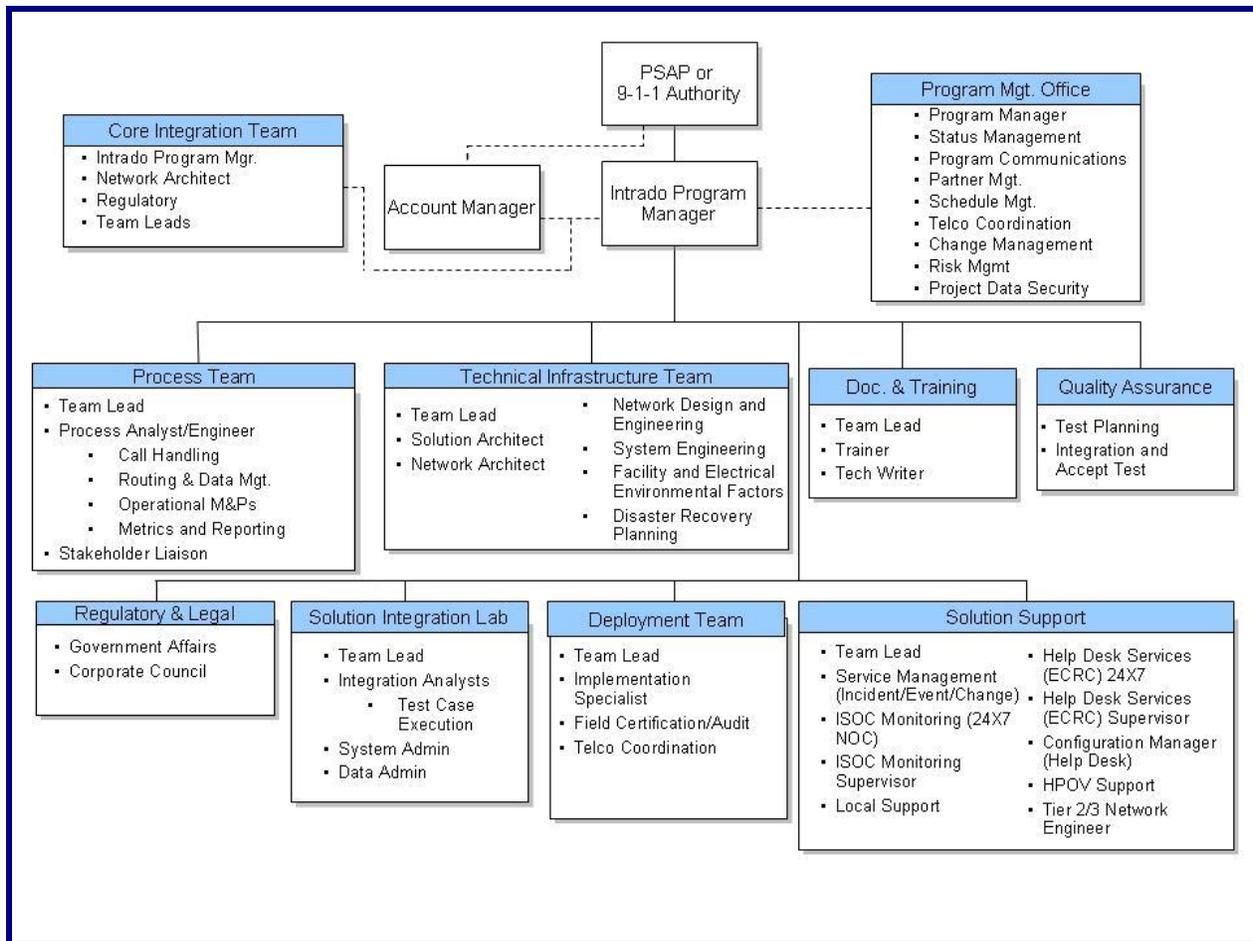


Figure 6: Delivery Team Organization

4.2.1. Integrated Delivery Team

The Intrado Program Management Office (PMO) coordinates, facilitates, and monitors all aspects of the implementation and resolves inter and intra-project issues with the support of the Core Integration Team. It maintains a strategic-level perspective of all components of the project. In support of the Program Manager, the PMO coordinates and monitors the progress of the project and all of its related implementation sub-teams. This includes status report compilation, time reporting, TSP management, and intra-project-level communications.

This project's PMO must strongly manage coordination, problem solving, and risk management, and must creatively enable the new system to accurately deliver 9-1-1 calls and bring immense value to Wise County. Intrado's track record and experience, including the transition of thousands of PSAPs and over 20 million telephone numbers to outsourced services, brings unique experience to the County's Intrado Advanced 9-1-1 implementation.

Drawing on our experience and expertise, Intrado's PMO will support Wise County, working closely to manage interlocked dependencies, coordinate schedules, manage risk, and solve problems to enhance project success.

4.3. Project Schedule

Intrado works with Wise County to design a project schedule for each County PSAP. Implementation is closely managed by the Intrado implementation Project Manager and follows the solution lifecycle methodology previously described. The implementation process is designed for efficiency and allows accurate, public safety class support and attention to detail to provide proper operation and reliability of the solution.

During the solution definition and architecture stages, the detailed implementation project plan (IPP) is developed. The IPP defines the specific tasks, objectives, roles, responsibilities, and services that are provided and identifies milestone dates and events such as the site assessment and data collection activities. Critical path items are identified and risk management plans are put in place for any areas of exposure, such as TSP coordination and management, which could delay the implementation timeline.

4.4. Training

Intrado provides application training to support the rollout of Intrado Advanced 9-1-1 and course materials are tailored to suit the E9-1-1 system's end users.

Training sessions are designed to allow trainees to understand and effectively interact with Intrado and the web-based tools to maximize benefits of the system and tools for Wise County. This is achieved by integrating well-designed technical documentation, practice exercises, and instruction into the overall training experience and is normally conducted via telephone conference call.

Training sessions cover 9-1-1 Net, Clear View Reports, and PSAP and TSP Information Sessions that include an overview of A9-1-1 Routing and Location Data Management and covers details such as reporting problems to Intrado and Customer escalation procedures.

Intrado is committed to maintaining current training activities and documentation and providing additional training as needed. As technology continues to develop over the duration of the contract, supplemental training is critical to introduce users to new and enhanced services. Intrado views the County as a partner in overseeing the quality of the training and making ongoing recommendations for improvement.

5. WISE COUNTY PRICING

5.1. Intrado A9-1-1 Routing and A9-1-1 Location Data Management Fees

The following pricing proposal contains monthly recurring fees and one-time fees for a one PSAP deployment for a five (5) year term.

Offer is valid until December 23, 2014.

Fee and Payment Schedule for A9-1-1 Routing, Location Data Management services, and A9-1-1 VIPER are as follows:

A9-1-1 Routing and Location Data Management Services	Fee
One Time Fees	
A9-1-1 Routing and Location Data Management – Total One Time Fees	Waived
IP Connectivity – One Time Fee <ul style="list-style-type: none"> • Covers installation of IP circuits 	Waived
Total One Time Fees	Waived
Monthly Recurring Fees	
A9-1-1 Routing and Location Data Management - Monthly Recurring Fee	\$3,904
Managed IP Network – Monthly Recurring Fee <ul style="list-style-type: none"> • Redundant IP connectivity from Intrado to Wise County 	\$1,216
A9-1-1 Hosted VIPER - Monthly Recurring Fee*	\$4,725
Includes: <ul style="list-style-type: none"> • A9-1-1 Voice Routing (IP Call Delivery) • A9-1-1 Data Management (ALI DB Management) • A9-1-1 Hosted VIPER <ul style="list-style-type: none"> ▪ Multi-Node VIPER (Longmont, CO and Miami, FL) ▪ Power9-1-1 Call Handling Positions ▪ SVN for Local Admin Lines ▪ MapFlex ALI Map Viewer ▪ Maintenance and Support ▪ Software Upgrade and KBs 	

Total Monthly Recurring Fees	\$9,845
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NOTES:

A9-1-1 Routing and A9-1-1 Location Data Management Base Monthly Recurring Fee covers up to 25,600 TN records under management. Additional TNs above 25,600 TNs are charged at \$0.1525 per TN.

Hosted VIPER Call Handling includes up to three (3) Call Taking positions.