

JOINT COMMITTEE ON KANSAS SECURITY

Briefing

October 2, 2019

Good afternoon Mr. Chairman and members of the Committee. I am Scott Ekberg, NG911 Administrator for the Kansas 911 Coordinating Council (Council). Thank you so much for the opportunity to be here this afternoon to provide a briefing on Kansas Next Generation 911 (NG911). I am very proud to say that Kansas continues to be a national leader in the implementation of NG911 and I believe that the Kansas Legislature should share that pride. The creation of the 911 Coordinating Council, with the passage of the Kansas 911 Act in 2011, has proven to be a nimble, cost effective governance structure for this implementation and has allowed Kansas to move much more quickly towards full NG911 capabilities.

What is NG911? In the most simple of terms, NG911 is the replacement of the antiquated, analog communications network; the legacy 911 network; with an all-digital, high-speed, data centric, network; the next generation 911 network. NG911 is an evolving technological ecosystem that accounts for the technologies of today but that also provides a foundation for new technologies of tomorrow. This upgrade will allow callers to communicate with 911 centers in the ways in which they are accustomed and expect, while speeding response times to emergency events. NG911 allows for the delivery of increased data to the 911 center including pictures, video, and text.

To provide background, I thought that it would be helpful to review a timeline of major milestones of the NG911 project. Those milestones include:

- 2011 - Council Created with passage of the Act
- 2012 - The Act becomes effective
Governance, Security, IcM and Strategic Plans created
- 2013 - GIS Enhancement Project Launched
RFP for hosted system process begins
- 2014 - GIS Enhancement complete – all PSAPS in maintenance mode
Award of hosted system contract
- 2015 – Hosted data centers constructed
First ten PSAPs go live on system
- 2016 - 40 additional PSAPs go live – Total of 50
- 2017 - 33 additional PSAPs go live – Total of 83
SMS Text-to-911 goes live – First success story comes within one week.
- 2018 - 14 additional PSAPs go live – Total 97
Migration of system to Nationwide ESInet – (First in the nation)

- 2019 – 3 additional PSAPs go live, 2 additional planned – Total 102
All PSAPs on the system migrated to ESInet in RFAI config.
Geospatial Routing based on PIDF-Io planned by year's end

As you are aware, HB2084 was introduced and passed this year, amending the Kansas 911 Act. The changes made were needed to ensure that the progress towards full NG911 could continue. Major changes to the Act made by HB2084 include:

- Increase of the 911 fee on every subscriber account from \$.60 to \$.90
 - Of the \$.90 fee, \$.66 of every fee payment goes directly to PSAPs
 - This \$.66 is distributed to the PSAPs by the Local Collection Point Administrator (LCPA) based on a population-based formula
 - *Population of county over 80,000..... 82% to PSAP*
 - *65,000 to 79,999..... 85% to PSAP*
 - *55,000 to 64,999..... 88% to PSAP*
 - *45,000 to 54,999..... 91% to PSAP*
 - *35,000 to 44,999..... 94% to PSAP*
 - *25,000 to 34,999..... 97% to PSAP*
 - *Less than 25,000..... 100% to PSAP*
 - Monies retained from the PSAP distributions are used to fund minimum payments to provide a minimal level of funding for all PSAPs
 - \$.23 of every fee goes to the State Operations Fund, which pays for the NG911 system and Council administrative expenses (1.62% of total revenue in 2018)
 - Estimated to generate approximately \$8.1M annually
 - Balance of the fund capped at 15% of total revenue over the prior 3 years
 - \$.01 of every fee goes to the State Grant Fund, to provide grants to individual PSAPs for emergency equipment replacement
 - Estimated to generate approximately \$354,000 annually
 - Balance of the fund capped at \$2M
- The Act provides that every PSAP receives a minimum level of funding. HB2084 increased that minimum from \$50,000 to \$60,000 annually.
 - PSAPs are provided minimum payments quarterly from the retained 911 fee fund disbursements to ensure that every PSAP receives at least \$60,000 by the end of the year.
- Authority to require GIS data maintenance to standard and authorizing the Council to hire the maintenance done and bill the cost back to the PSAP if maintenance not performed for a year.
- Cleans up language on training standards, providing authority for Council to mandate training for the statewide system, but only recommending training for general PSAP operations

sufficient to provide this backup. In those instances, a point-to-point T1 circuit is utilized for redundancy. Figure 2 below depicts the network topology.

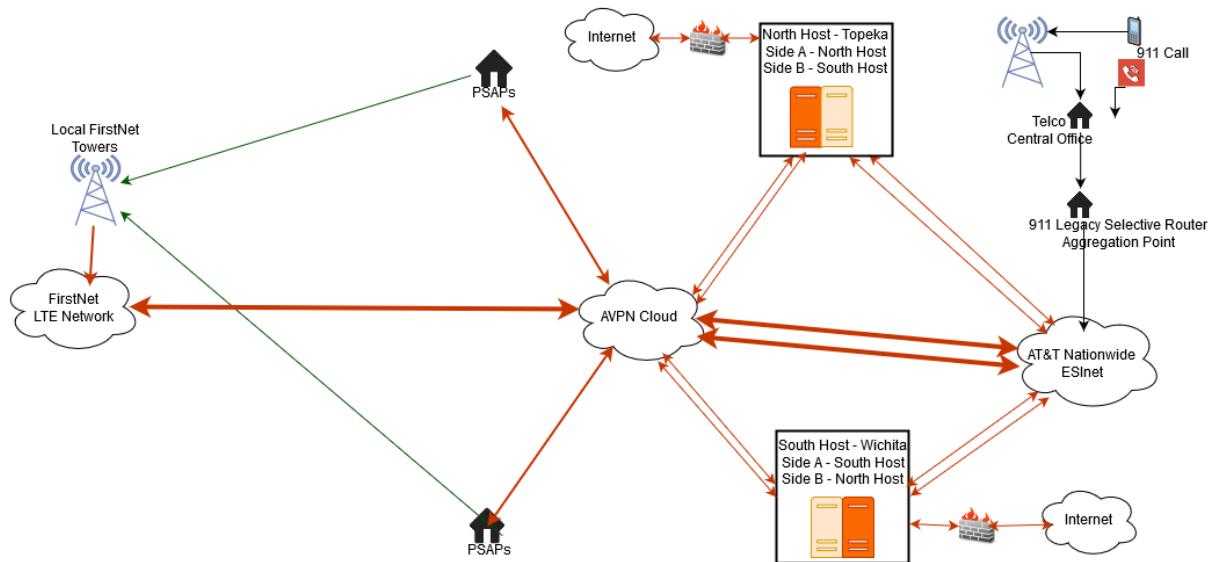


Figure 2- Network Architecture

This system design is very cost effective, as all of the PSAPs utilizing the system share the cost of the host systems as a service. In the legacy world of 911, each PSAP would have purchased that host equipment, the connectivity of that host to the 911 network, and maintenance and refresh of all equipment. With the statewide system, we purchase 911 as a service, which includes all maintenance and equipment refresh during the pendency of the contract. Table 1 shows the cost disparity between the legacy standalone type system as opposed to the statewide system for a PSAP with five call answering positions.

Item	Standalone System	Hosted System
Call Handling System Annual Cost	\$32,000	\$90,000
Text Control Center Service	\$6,000	Included
ESInet Service	\$91,000	Included
Project Management Services	\$338,796	Included
Service Management Services	\$174,996	Included
Call Handling Maintenance	\$20,000	Included
Total	\$662,792	\$90,000

Table 1 - Cost Comparison

In the legacy 911 environment, the project management and service management elements would most likely not have been purchased by the PSAP. These additional services provide a much more robust 911 platform but were beyond the financial means of individual PSAPs. By cost sharing these costs, all PSAPs can reap the benefits of the services. Removing those two services from the above cost comparison, still results in an annual savings of \$27,000 with the statewide system.

One of the foundational elements of the migration to NG911 is ESInet. ESInet replaces the legacy analog network with an IP network. The legacy network was voice centric and incapable of carrying the volume of data that people have come to expect in their communications technologies. The ESInet provides the capability to carry voice and tremendous amounts of data and revolutionizes the way that 911 calls are routed.

In 2018, we migrated the first PSAP in the nation onto the AT&T nationwide ESInet. The nationwide aspect of the ESInet is very attractive to the Council, as it will reduce the cost of interfacing with other states to allow 911 call transfers, with associated data, across state boundaries. This can be especially important to communities with colleges and universities. Many times, when a child is attending one of these institutions, in an emergency they call home, rather than 911. The parent then makes a 911 call on their behalf. With nationwide ESInet that 911 call would be transferred to the 911 Center handling the response to the call.

Saving time is the foundation of 911 service. Every second that can be saved in the receiving, processing and dispatching of a 911 call improves the outcome of the call exponentially. In a major bleeding event or heart attack, seconds saved can literally be the difference between life and death. Call setup time on ESInet has shown a six to twelve second time savings on every 911 call. This savings also is realized with call transfers to other PSAPs. An additional immediate benefit of ESInet is the ability to transfer across the Local Access and Transport (LATA) line between the different area codes within the State. Prior to ESInet, a PSAP in the 620-area code that abutted a PSAP jurisdiction in the 785-area code was unable to transfer a 911 call with the data associated with that call. Rather, those calls had to be transferred to a ten-digit number. With the migration to ESInet, that is no longer the case and calls can be transferred with all associated data with the touch of a single button.

The migration to ESInet has moved quite rapidly. Since August of 2018, when the first PSAP migrated, we have been able to migrate all of the PSAPs on the system to ESInet. At this point, when a PSAP migrates to the system, they do so with ESInet and Text-to-911 enabled. Figure 3 shows the status of ESInet migration in the State.

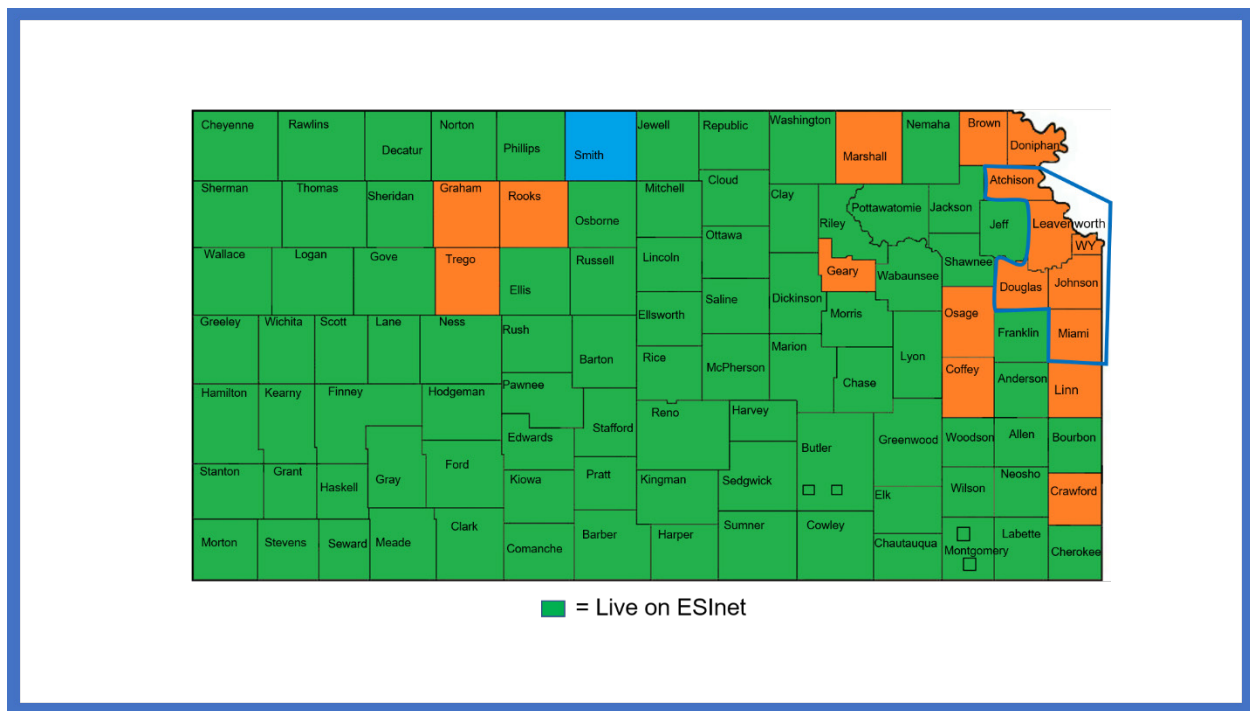


Figure 3 - ESNet Status - 10/01/2019

Simple Message Service (SMS) Text-to-911 was the first step towards NG911 that was undertaken once the statewide system was in place. Text-to-911 for the first PSAP on the system was implemented on October 16, 2017. By November 1, 2017, all 77 PSAPs that were on the system at that time had been text enabled. Since that time, any PSAP that has come live on the system has been text enabled on go-live. The first success story came one week after text was enabled on the system. This was a domestic disturbance situation where a woman was held at knife point by her spouse and was unable to make a voice call. This situation was resolved without incident and the spouse was arrested without incident.

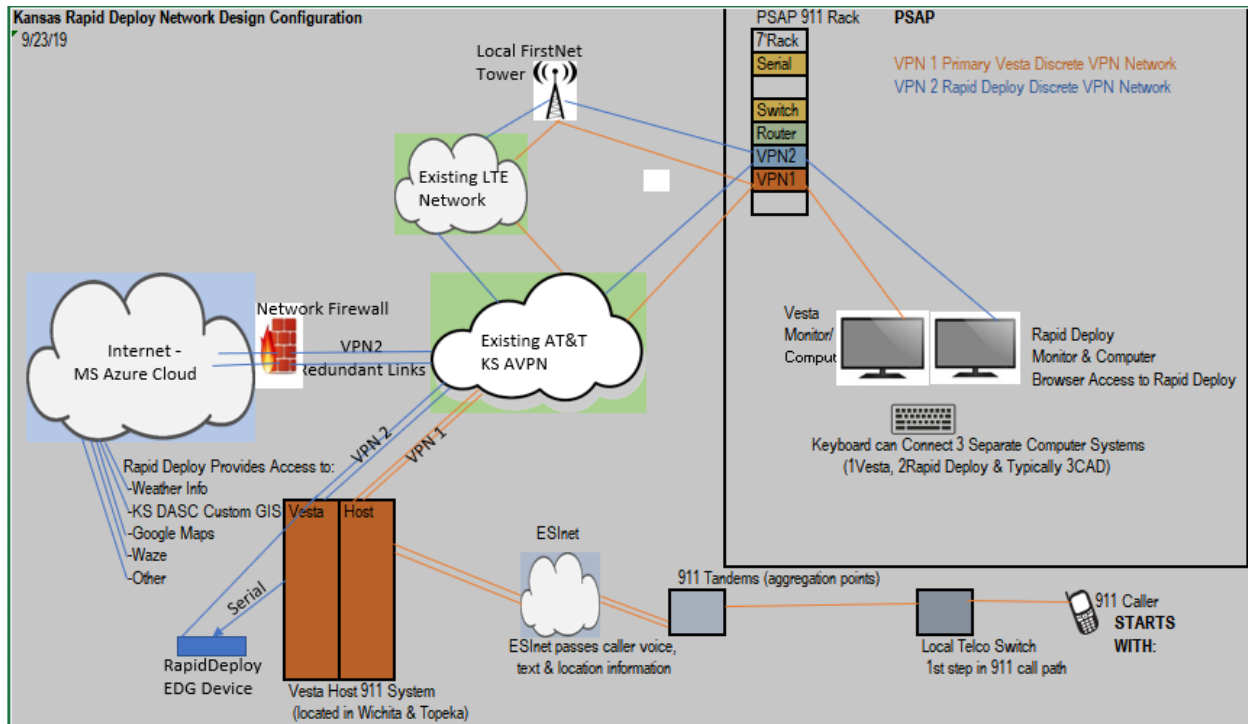
Text-to-911 is not perfect, by any stretch of the imagination. It is based on SMS technology, which was never intended to be a primary means of communication. We have all experienced the delay that can be experienced with delivery of a text message and all of the problems associated with SMS text are present with text-to-911 as well. Some of those problems are compounded by the fact that a text to 911 needs to provide location information to the PSAP. To provide location information with the text, the carrier network must be able to “see” the device, which requires sufficient signal reaching the device. In many instances, a text to a family member or friend would succeed, where a text-to-911 would fail, based on insufficient signal to locate the device. The Council has promoted text-to-911 as a contingency option, utilizing the “Call if you can, text if you can’t” theme.

The Council currently has several pending or future projects planned. One of these projects is the migration to full geospatial call routing. Geospatial call routing determines the correct PSAP for routing based on the location of the caller. In today’s world, wireless calls are routed based on the location of the cellular tower utilized to complete the call, not the location of the caller. This results in wireless calls often being routed to a PSAP other than the one that will be

responsible for dispatching the call to responders. Currently wireless calls account for about 82% of all calls on the statewide system. The ability to route wireless calls to the correct PSAP, based on the location of the caller will enhance 911 service and save time for processing and dispatch of 911 calls. The migration to geospatial call routing is an active project that expected to complete by the end of this year. Upon completion of the project, the system will be fully ready to route all calls based on the location of the caller, however, we will not be able to do so until such time as the wireless carriers provide handset location as a part of the call setup. Apple just released information indicating that their devices will be capable of providing this data as a part of call setup with the implementation of iOS13, which is available now. Android devices are likely to follow suit in the very near future. Once the device is capable of handing off handset location to the wireless service provider at the onset of the call, and the provider then presents that handset location to the ESInet as a part of the call setup, the ESInet will be able to make the routing decision based on that handset location.

Replacing the current mapping application on the system, which has been manufacturer discontinued and became non-supported at the end of September, is another project that is underway. Two products were offered by AT&T as replacements for the existing mapping product. These products were evaluated by the Council's GIS, Technical and Security Committees and RapidDeploy Nimbus was selected as the mapping replacement. Nimbus is a full featured, cloud-based, computer aided dispatch type application that offers excellent call mapping, but also offers feature sets well beyond a call mapping platform. These features include, integration of public domain data such as real-time weather and traffic information, traffic cameras and warning signs, and USGS water information system data. Additionally, it provides the ability for the 911 Operator to request handset location information from the caller's device and request that the caller share their phone's camera to provide video from the caller's location. It also offers two-way, text capabilities with language translation services.

Nimbus will be deployed on a separate VPN tunnel through the existing LTE path on the call handling network. By utilizing a separate VPN tunnel, we can ensure that the Nimbus network cannot corrupt the voice network and vice versa. Figure 4 depicts the network topology of the Nimbus network.



Nimbus will deploy with a Dell micro form factor workstation, running Google Chrome® for access to Nimbus. Nimbus runs in the Microsoft Azure Government™ cloud. Public domain websites for additional content are white listed for access. Only those white listed sites are allowed through the network firewall to ensure protection of the network and workstations. A four-port keyboard/mouse switch will be installed at each PSAP to provide a single keyboard and mouse for the Vesta call handling workstation, the Nimbus workstation, and two additional PSAP systems such as CAD and radio.

The implementation of Nimbus is currently underway. The implementation plan calls for a three-phase execution. The first phase is the deployment of RapidDeploy RadiusPlus™. This is a sister product to Nimbus and will be deployed at all hosted PSAPs by the middle of the first quarter of 2020. Phase II will be a migration to the full Nimbus product, which is scheduled to be complete by the end of the first quarter of 2020. Phase III is an optional phase of the project, in which PSAPs desiring to utilize Nimbus as their primary CAD system will work with RapidDeploy to customize the configuration of Nimbus to provide PSAP specific unit data and response plans. Phase III projects will be individual sub-projects that will occur over the coming months in 2020.

Another planned project is the implementation of Real Time Text (RTT). RTT is a new technology being introduced to replace SMS text-to-911. RTT provides full duplex communication via text. The design of RTT is such that the text session is handled more in line with the way that a voice call is handled on the ESInet, so enhanced location information and reliability of communication should be realized. RTT implementation is currently planned for third quarter of 2020.

FirstNet and other public safety broadband wireless networks are developing very quickly and bring many opportunities for expanding PSAP to responder communications as well as delivering new data capabilities directly to the PSAP. As the synergy between NG911 and FirstNet develop, it will be incumbent on the Council to ensure that interconnection between the two networks is completed in a secure and reliable manner. The Council has formed a Broadband Interconnection Committee to work on this important project.

Other planned projects include completion of our annual security audits for both the voice and data networks, Incident Management Plan updates to incorporate both networks into our response plans for network incidents, and the development and continued maintenance of a PSAP troubleshooting and problem reporting guide for both networks.

The future holds many possibilities, some known and some not, that will challenge the Council to incorporate in the most cost effective and efficient manner possible. The internet of things (IoT) offers the possibility of machine to machine communications being initiated with the PSAPs. IoT devices such as smart alarms, health monitors, gunshot spotters, and others are currently being marketed by a number of vendors. These devices have the capability of generating calls for service from the local response agencies and interface into the NG911 network for these devices will be necessary. The Council believes that we are well positioned, with the RapidDeploy network, to consume these types of services as they develop and are deployed.

Thank you for this opportunity, I truly appreciate it and I would stand for any questions.



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Historical Timeline of Major Events

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Legislative Changes

- Fee increase from \$.60 to \$.90 per subscriber account
 - \$.66 of every fee goes directly to PSAPs based on population-based formula
 - *Population of county over 80,000..... 82% to PSAP*
 - *65,000 to 79,999..... 85% to PSAP*
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 - *\$.23 of every fee goes to State Operations Fund*
 - *Funds the statewide NG911 system and Council administrative costs*
 - *\$.01 of every fee goes to State Grant Fund*

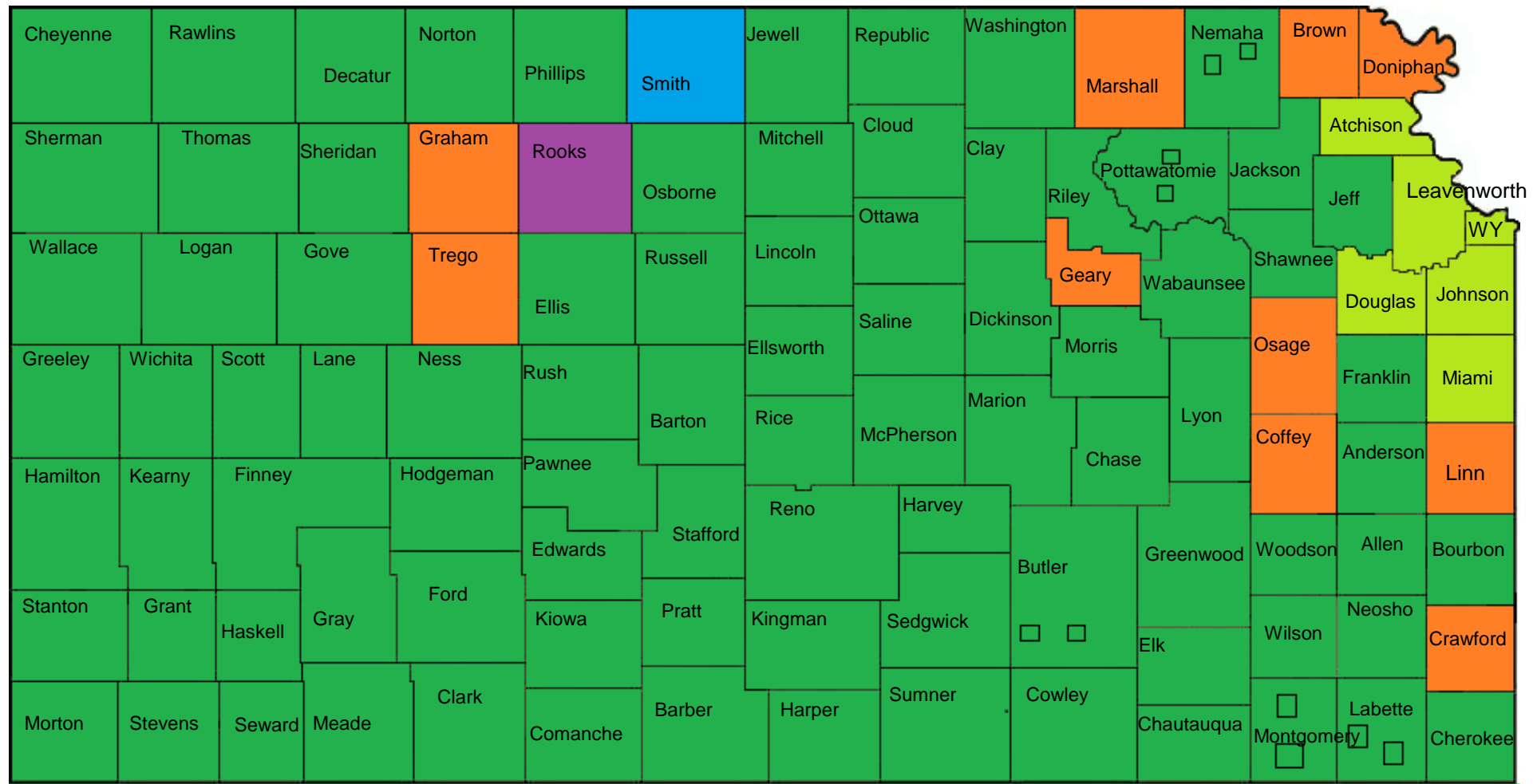
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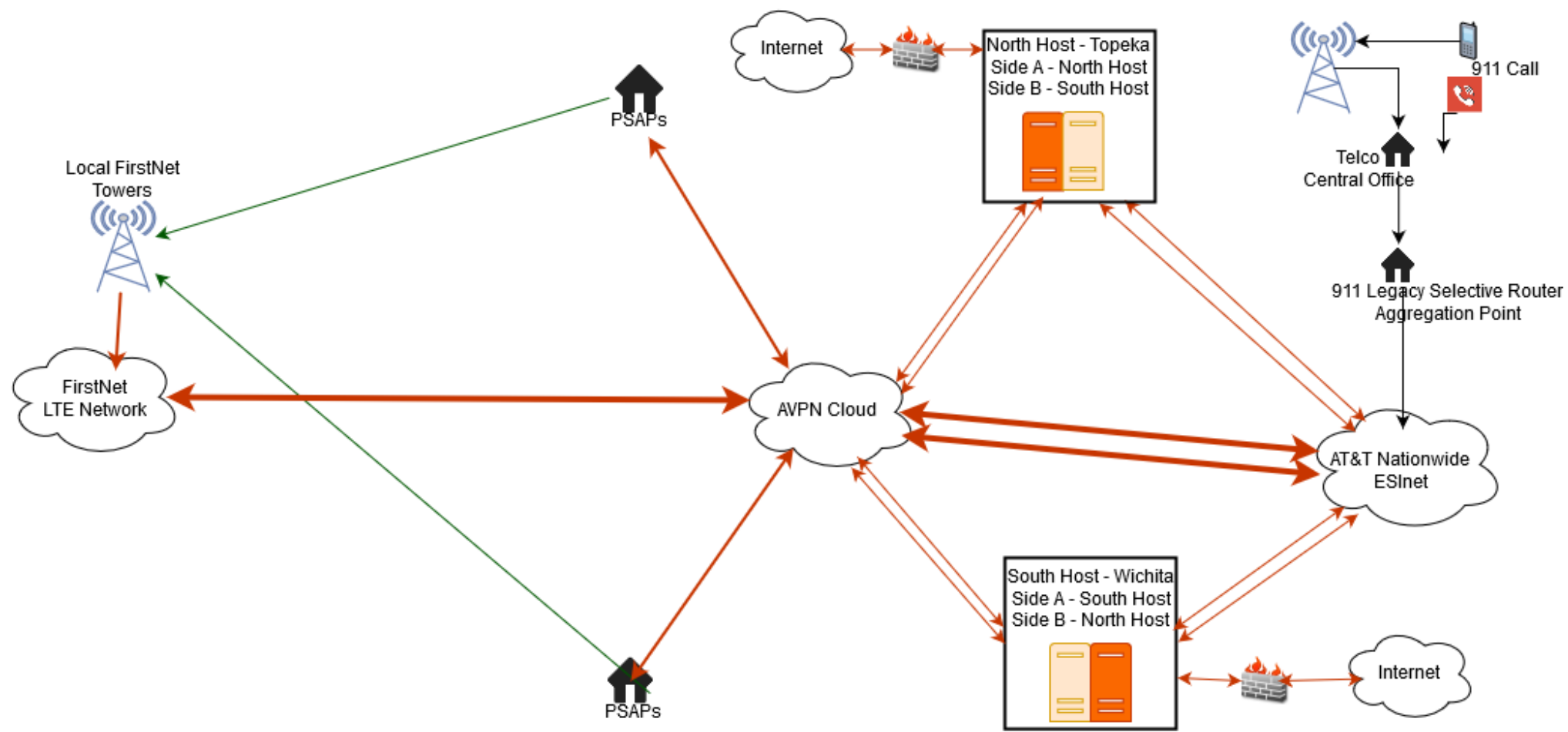
- The following additional changes were made by adoption of HB2084:
 - Authority to require GIS data maintenance to standard and authorizing the Council to hire the maintenance done and bill the cost back to the PSAP if maintenance not performed for a year.
 - Cleans up language on training standards, providing authority for Council to mandate training for the statewide system, but only recommending training for general PSAP operations
 - Prohibits the Council from creating administrative regulations creating a mandatory certification program for PSAP operations or personnel

Legislative Changes

- Authorizes the Council to withhold 10% of PSAP 911 fee distribution each month until a PSAP has filed the required expenditure report and supporting documentation each year.
- Changes the language around misspending 911 funds to require repayment of the expenditure to the PSAP's 911 account and allowing the Council discretion to impose a \$500 or 10%, whichever is less, penalty if the Council determines the misspending is intentional violation of the Act.

Statewide Hosted Call Handling System

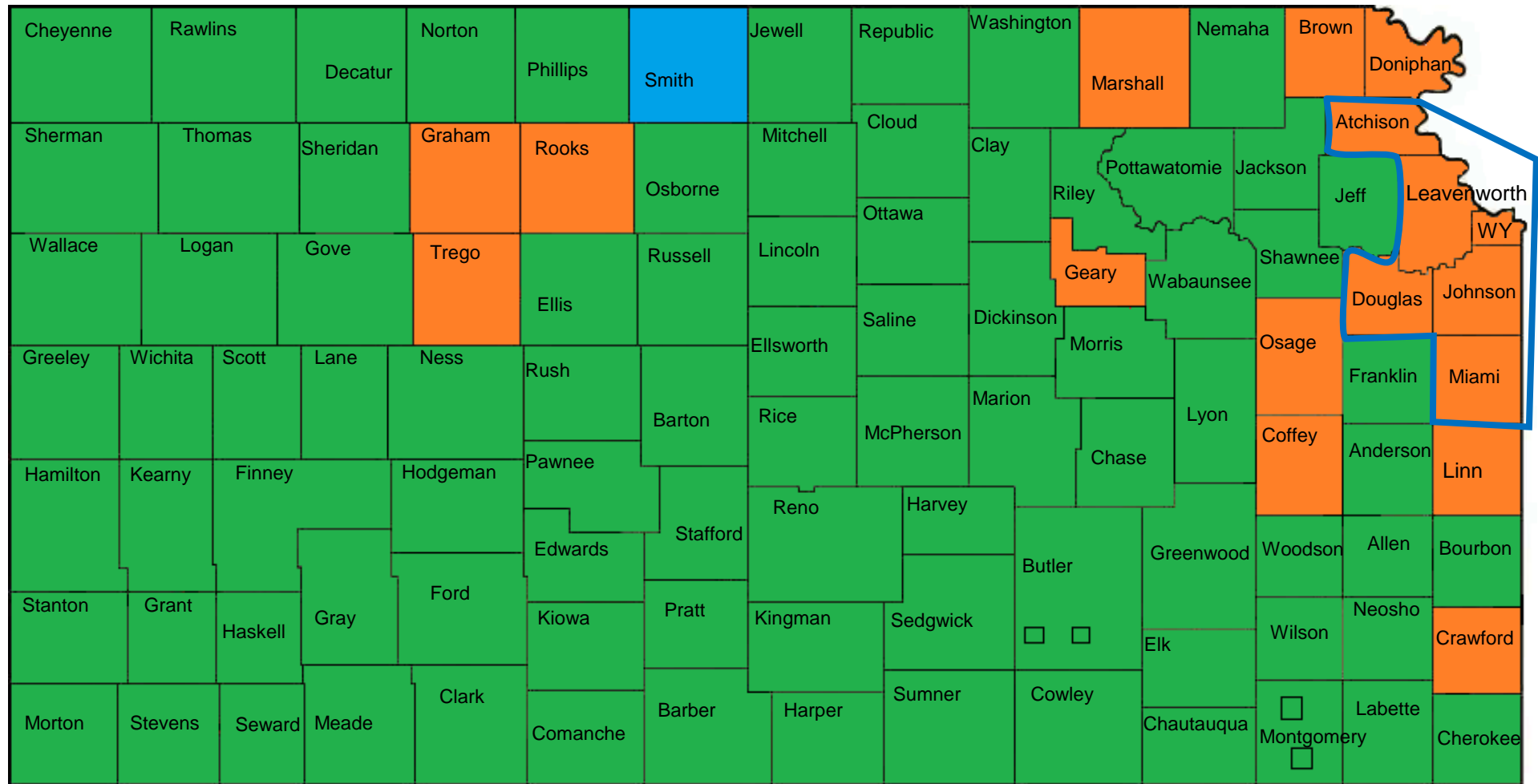




Efficient and Economical (annual costs)

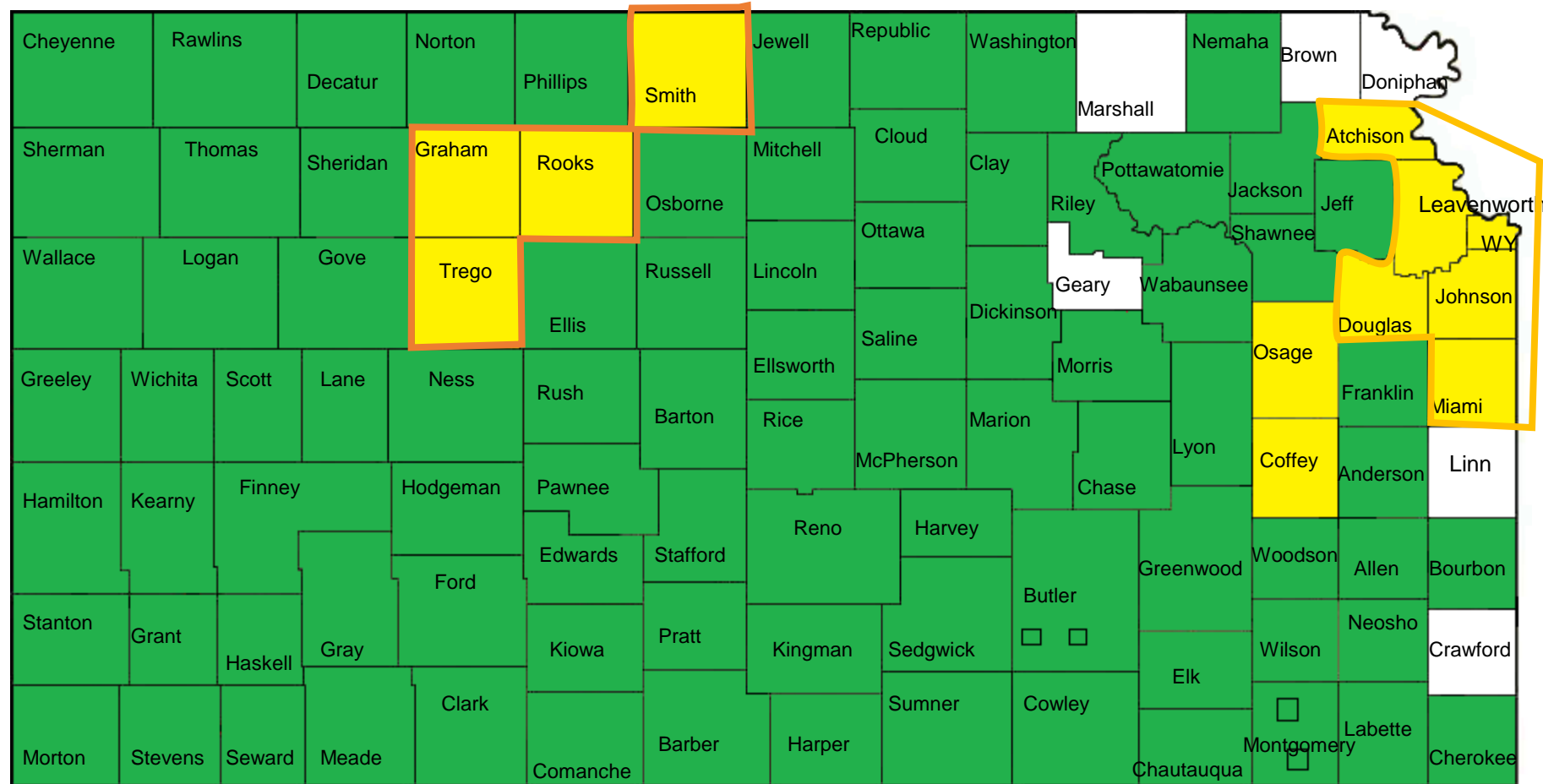
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ESInet Migration – October, 2019



■ = Live on ESInet

Kansas Text-To-911 Status

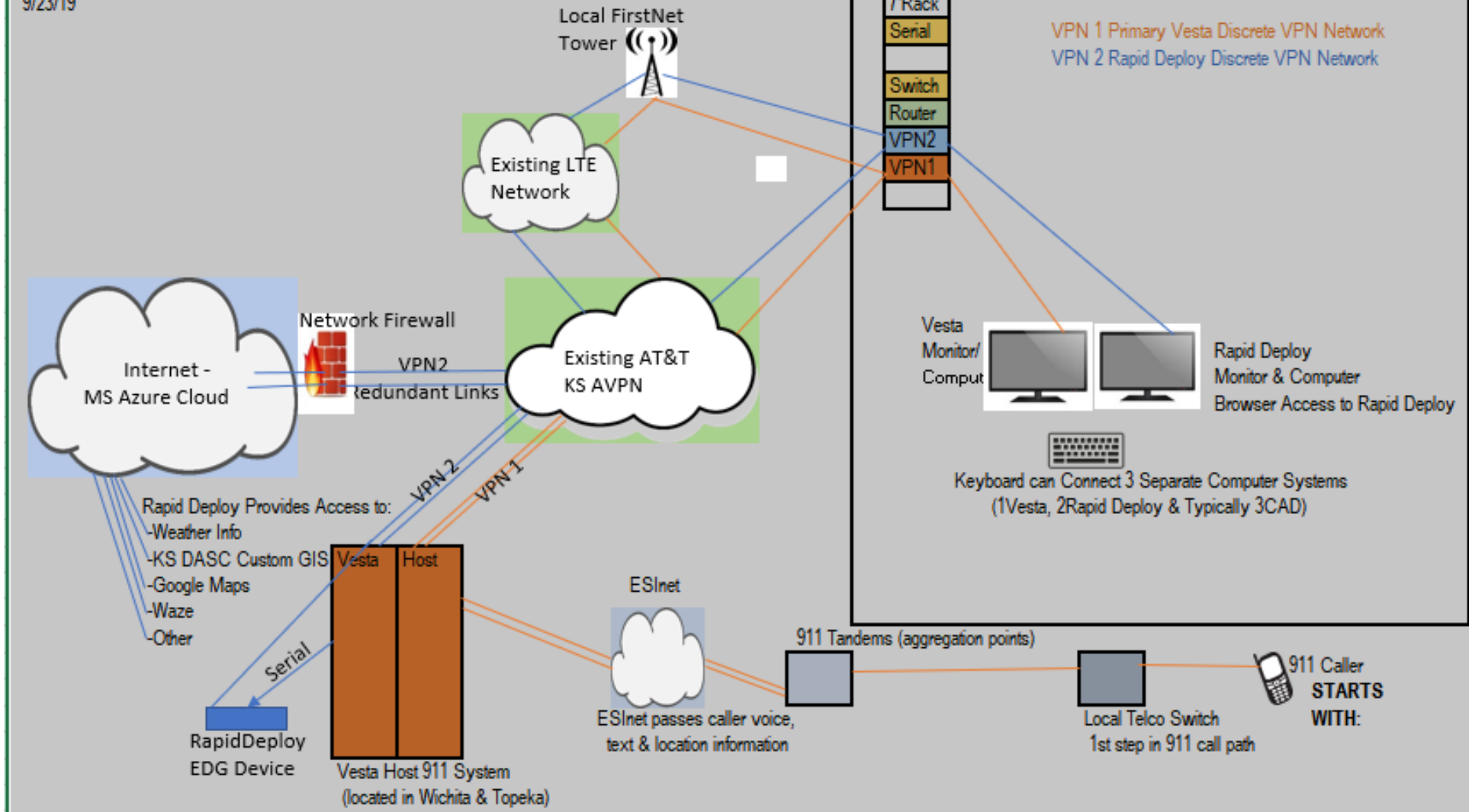


Projects Currently In Process or Planning

- Migration to i3 Geospatial Call Routing – Improved routing accuracy
- RapidDeploy Radius Plus Implementation and training – Replacement of existing mapping product, provides advanced features
- RapidDeploy Nimbus Implementation and training – Provides call data sharing capabilities, some i3 enhancements and gateway to future i3 implementation
- Real-Time Text (RTT) implementation and training – provides more accurate location information for text callers and real time communication

Kansas Rapid Deploy Network Design Configuration

9/23/19



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Projects Currently In Process or Planning

- FirstNet and other broadband network interface projects
- Annual security audit – both voice and data networks
- IcM Plan updates, revisions – will be presented to Council for approval
- PSAP troubleshooting and problem reporting guide development