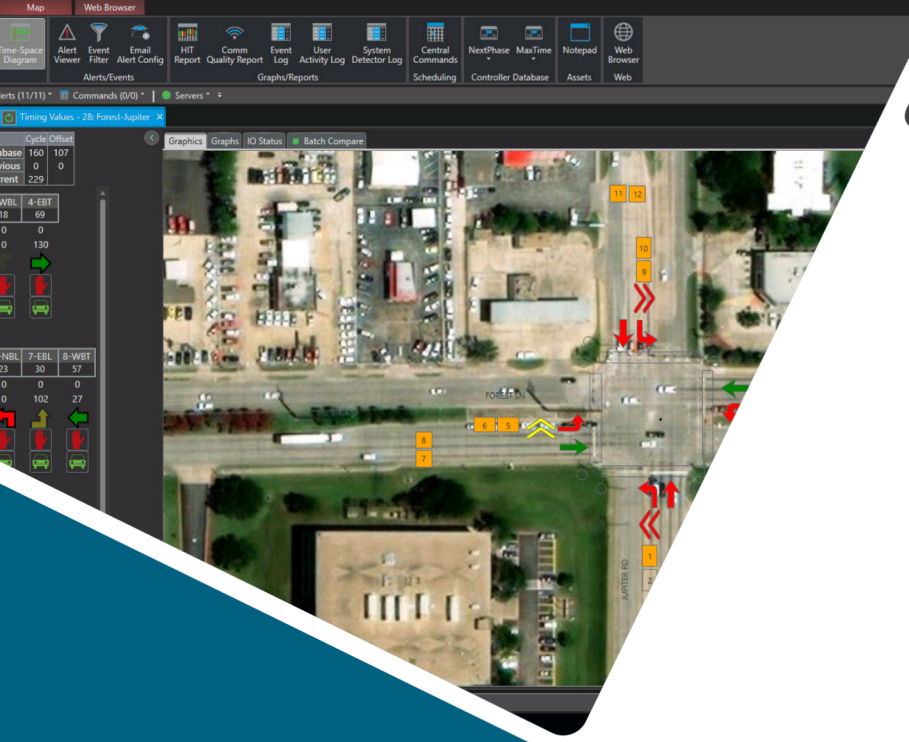
LEARN • COLLABORATE • SHARE • ENERGIZE



Kimley»Horn

SMART CITIES TECHNOLOGY FORUM

Cloud Lessons Learned

»KITS
A Kimley-Horn Software Solution

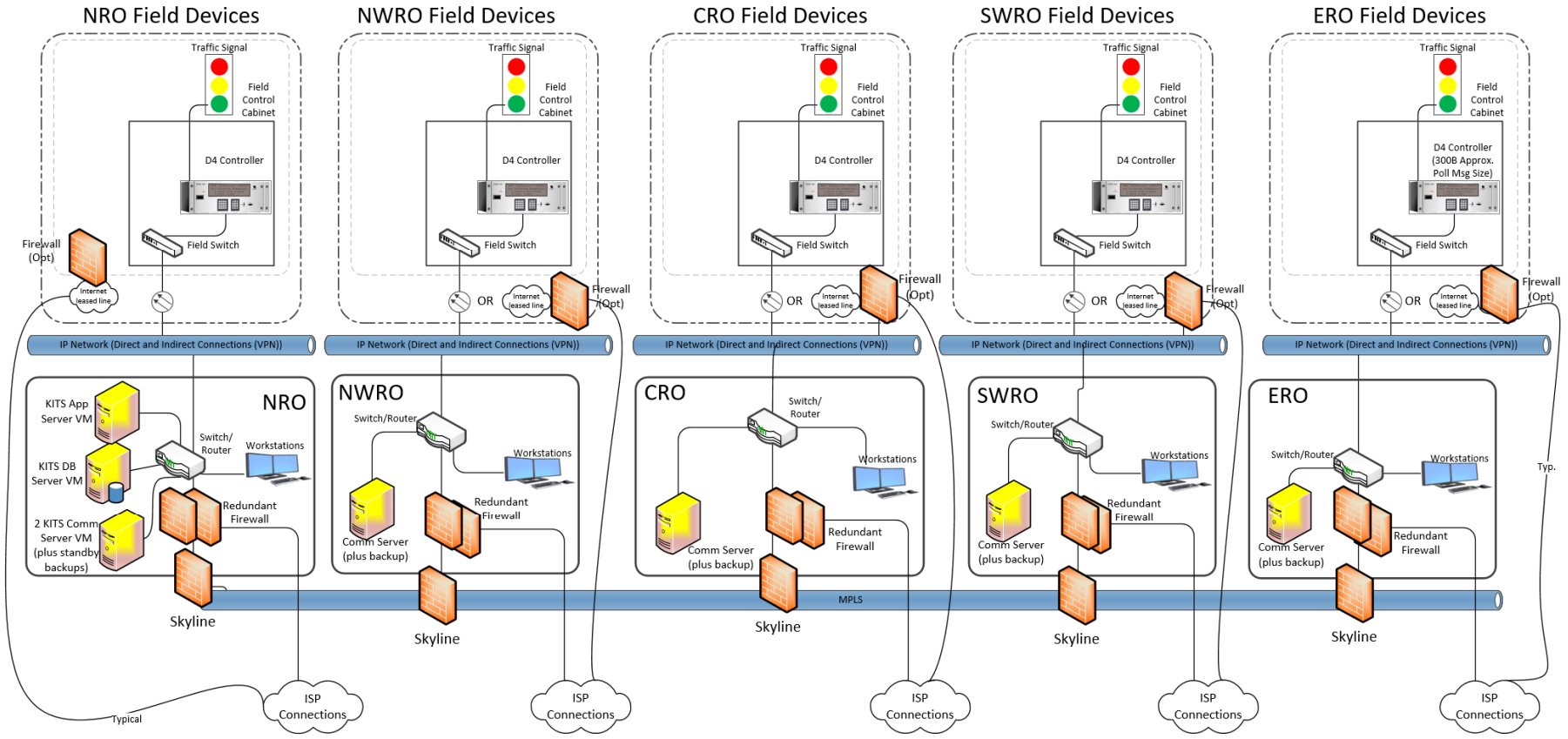
»Kadence
A Kimley-Horn Software Solution

»Traction
A Kimley-Horn Software Solution

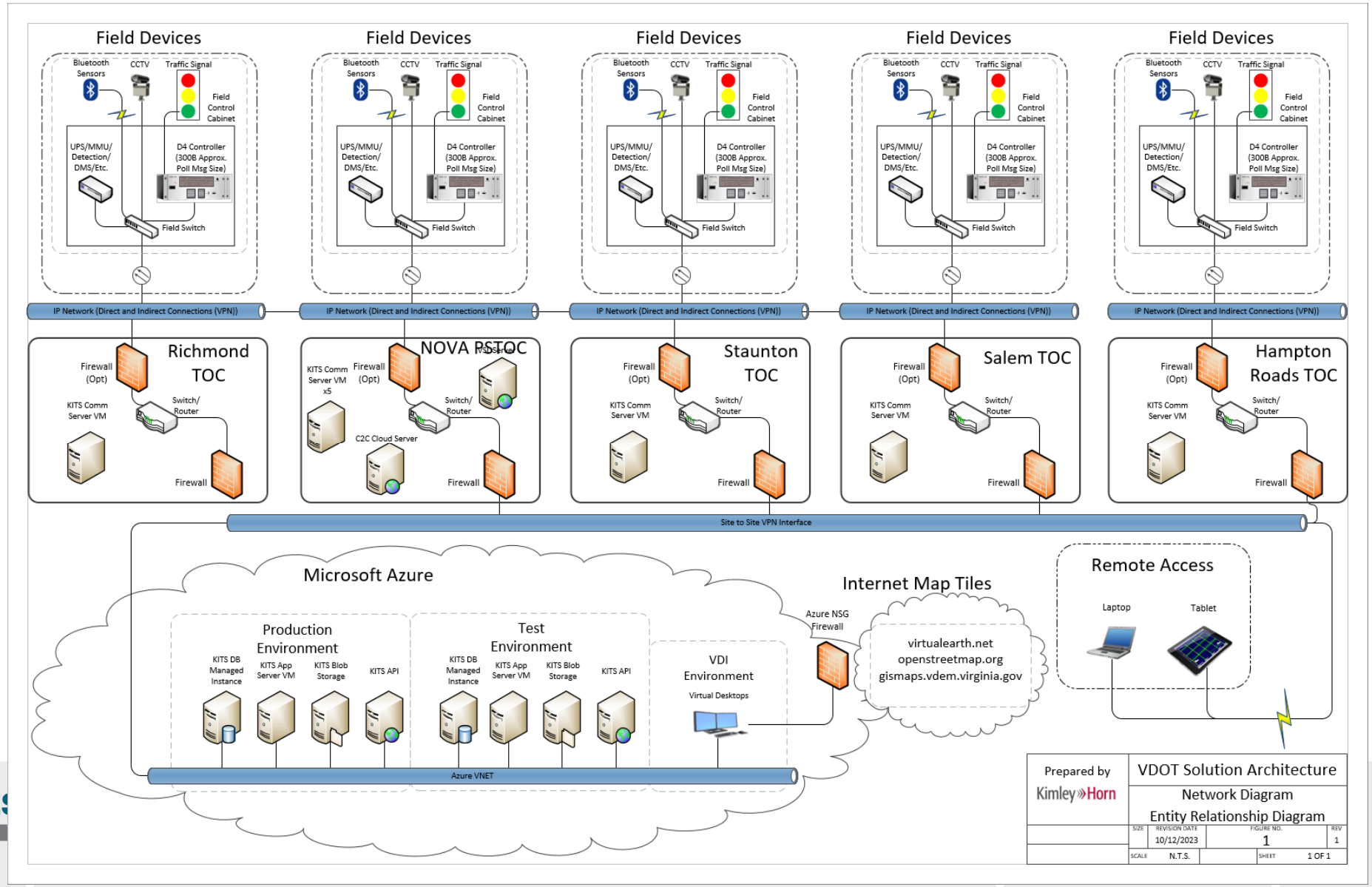
Agenda

- VDOT
  - On Premise
  - Move to Azure
- IndyGo
  - SaaS
- TxDOT
  - Azure
  - Pivot to Citrix

VDOT – Interim Architecture



VDOT – Current Architecture



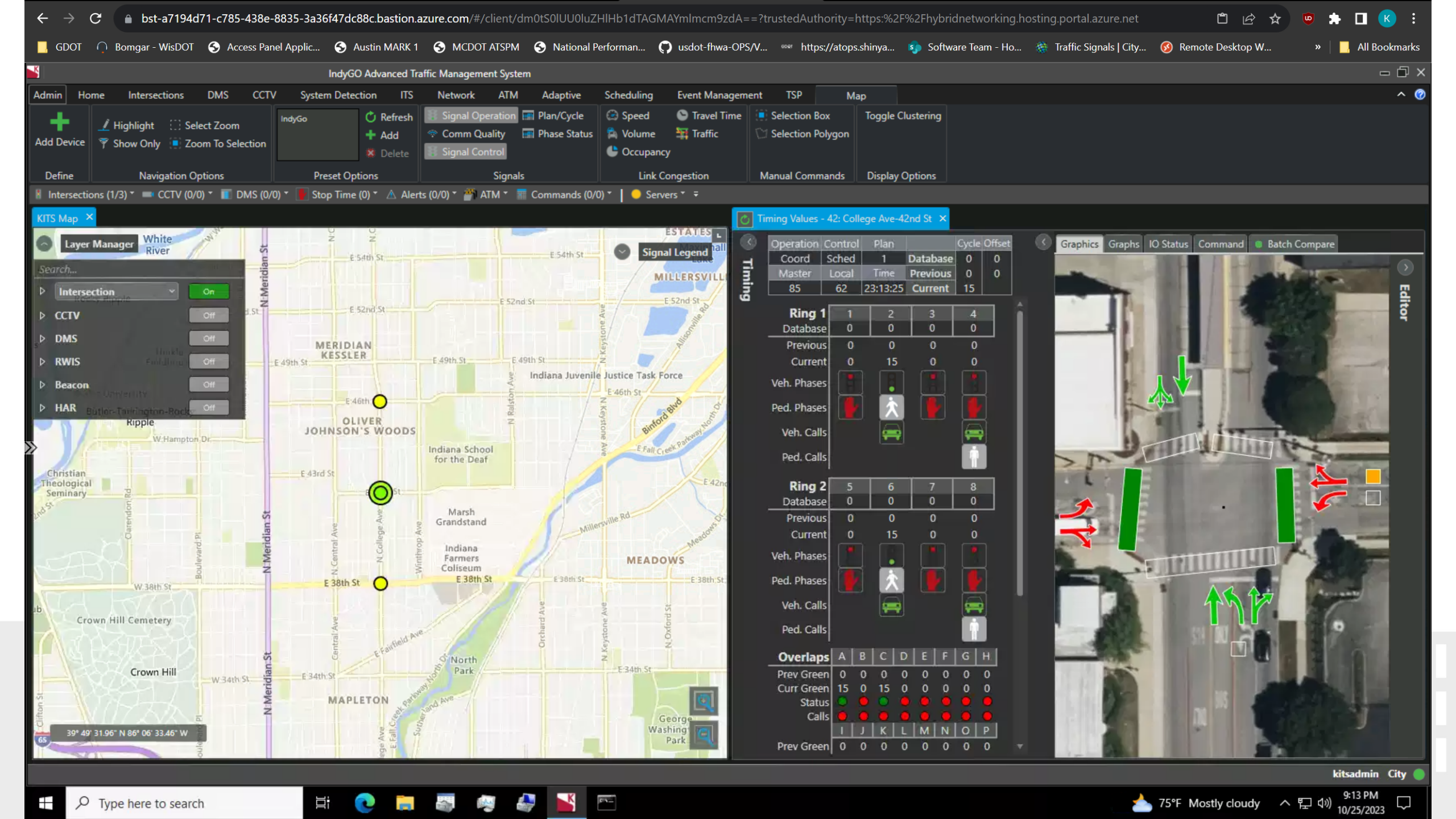
Kimley»Horn SMART CITIES

VDOT – Lessons Learned

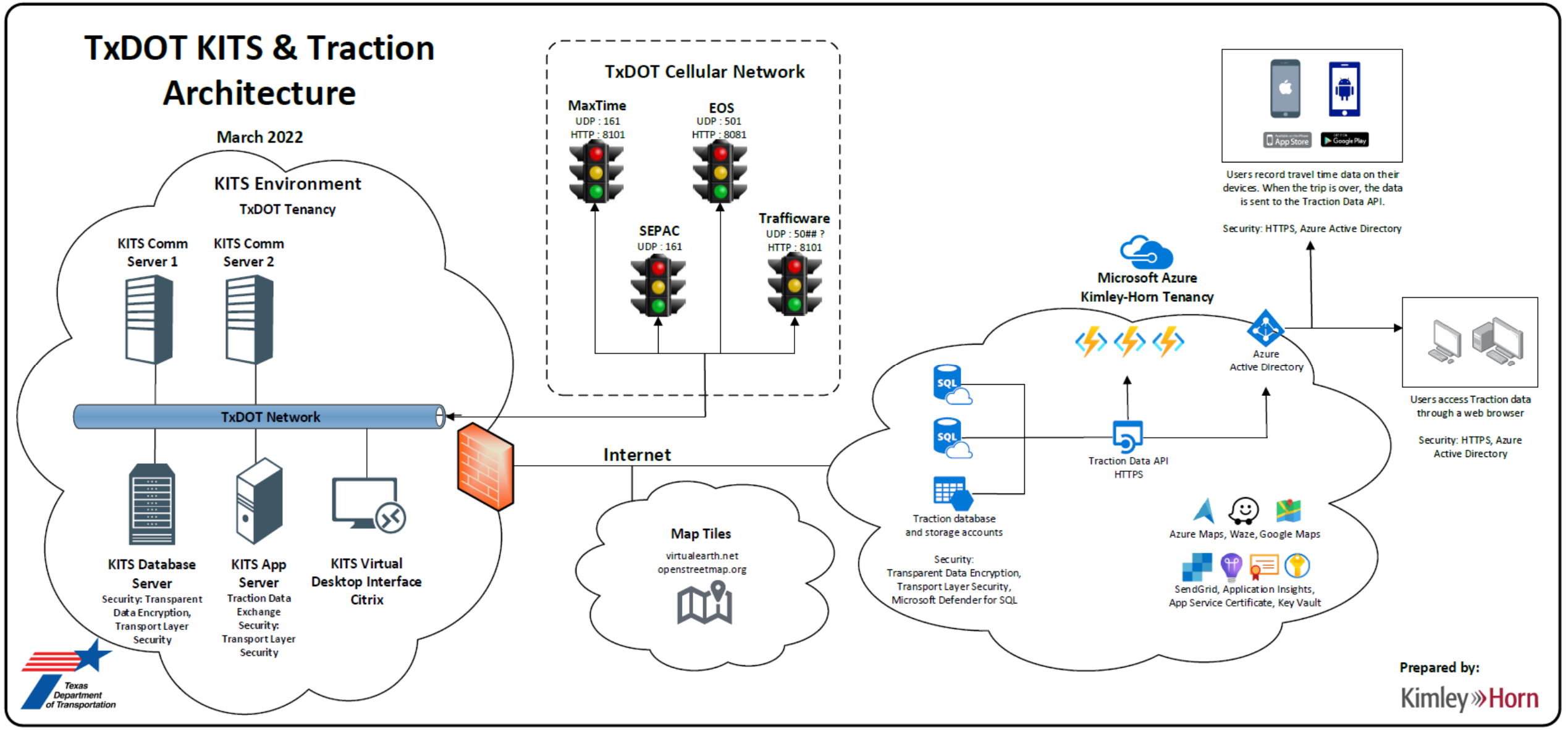
- Coordination with all parties
- Azure familiarity – learning experience for many
- Networking and security considerations
- VDI pros and cons

IndyGo

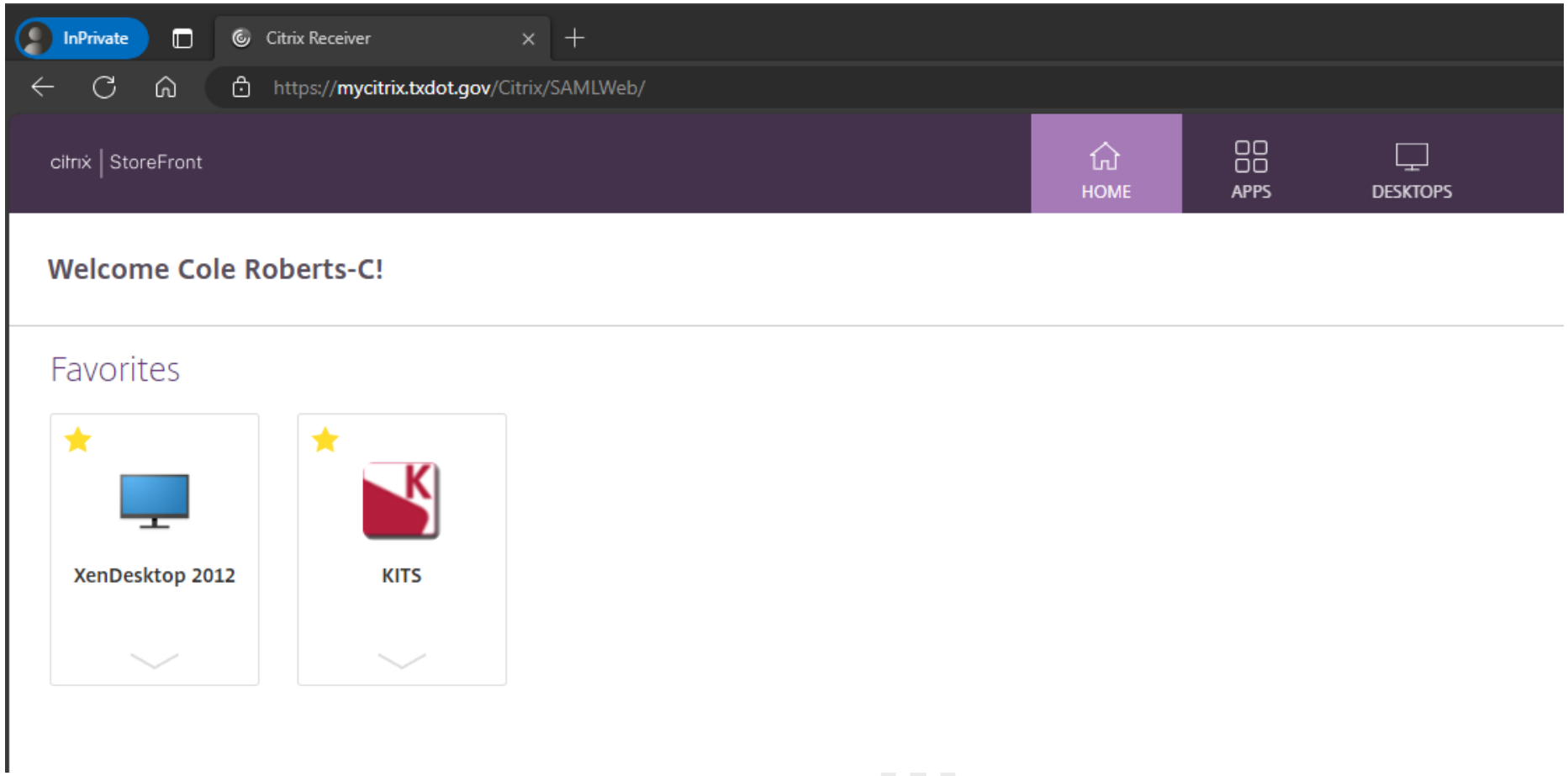
- Contained within KH Azure tenancy
- Access through Azure Bastion
- Connect to signals via cell modems


bst-a7194d71-c785-438e-8835-3a36f47dc88c.bastion.azure.com/#/client/dm0tS0lUU0luZHlHb1dTAGMAYmlmcm9zdA==?trustedAuthority=https:%2F%2Fhybridnetworking.hosting.portal.azure.net
GDOT
Bomgar - WisDOT
Access Panel Applic...
Austin MARK 1
MCDOT ATSPM
National Performan...
usdot-fhwa-OPS/V...
https://atops.shinya...
Software Team - Ho...
Traffic Signals | City...
Remote Desktop W...
All Bookmarks
IndyGO Advanced Traffic Management System
Admin
Home
Intersections
DMS
CCTV
System Detection
ITS
Network
ATM
Adaptive
Scheduling
Event Management
TSP
Map
Add Device
Define
Highlight
Select Zoom
Show Only
Zoom To Selection
Navigation Options
IndyGo
Refresh
Add
Delete
Preset Options
Signal Operation
Plan/Cycle
Comm Quality
Phase Status
Signal Control
Signals
Speed
Travel Time
Volume
Traffic
Occupancy
Link Congestion
Selection Box
Selection Polygon
Manual Commands
Toggle Clustering
Display Options
Intersections (1/3)
CCTV (0/0)
DMS (0/0)
Stop Time (0)
Alerts (0/0)
ATM
Commands (0/0)
Servers
KITS Map
Layer Manager
Search...
Intersection
CCTV
DMS
RWIS
Beacon
HAR
On
Off
Signal Legend
MERIDIAN KESSLER
OLIVER JOHNSON'S WOODS
Indiana Juvenile Justice Task Force
Indiana School for the Deaf
Marsh Grandstand
Indiana Farmers Coliseum
MEADOWS
MILLERSVILLE
MAPLETON
Crown Hill Cemetery
Crown Hill
North Park
Christian Theological Seminary
Ripple
White River
39° 49' 31.96" N 86° 06' 33.46" W
Timing Values - 42: College Ave-42nd St
Timing
Operation
Control
Plan
Cycle
Offset
Coord
Sched
Database
Master
Local
Time
Previous
Current
85
62
23:13:25
Ring 1
Ring 2
Database
Previous
Current
Veh. Phases
Ped. Phases
Veh. Calls
Ped. Calls
Overlaps
Prev Green
Curr Green
Status
Calls
Graphics
Graphs
IO Status
Command
Batch Compare
Editor
kitsadmin
City
Type here to search
75°F Mostly cloudy
9:13 PM
10/25/2023

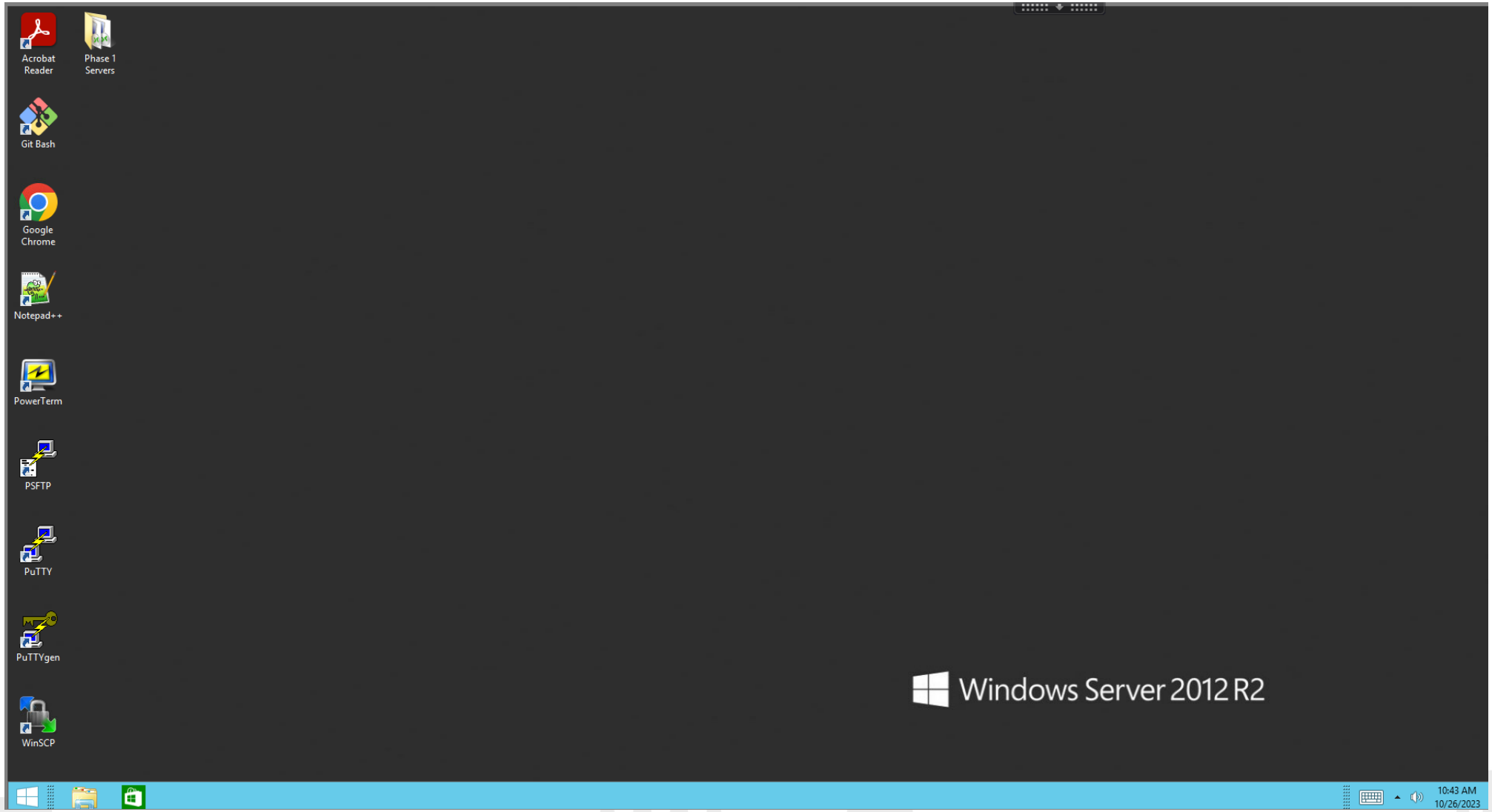
TxDOT


TxDOT KITS & Traction Architecture
March 2022
KITS Environment
TxDOT Tenancy
KITS Comm Server 1
KITS Comm Server 2
TxDOT Network
KITS Database Server
Security: Transparent Data Encryption, Transport Layer Security
KITS App Server
Traction Data Exchange Security: Transport Layer Security
KITS Virtual Desktop Interface Citrix
TxDOT Cellular Network
MaxTime
UDP : 161
HTTP : 8101
EOS
UDP : 501
HTTP : 8081
SEPAC
UDP : 161
Trafficware
UDP : 50## ?
HTTP : 8101
Internet
Map Tiles
virtualearth.net
openstreetmap.org
Microsoft Azure
Kimley-Horn Tenancy
Traction database and storage accounts
Security: Transparent Data Encryption, Transport Layer Security, Microsoft Defender for SQL
Traction Data API
HTTPS
Azure Active Directory
Azure Maps, Waze, Google Maps
SendGrid, Application Insights, App Service Certificate, Key Vault
App Store
Google Play
Users record travel time data on their devices. When the trip is over, the data is sent to the Traction Data API.
Security: HTTPS, Azure Active Directory
Users access Traction data through a web browser
Security: HTTPS, Azure Active Directory
Texas Department of Transportation
Prepared by:
Kimley»Horn

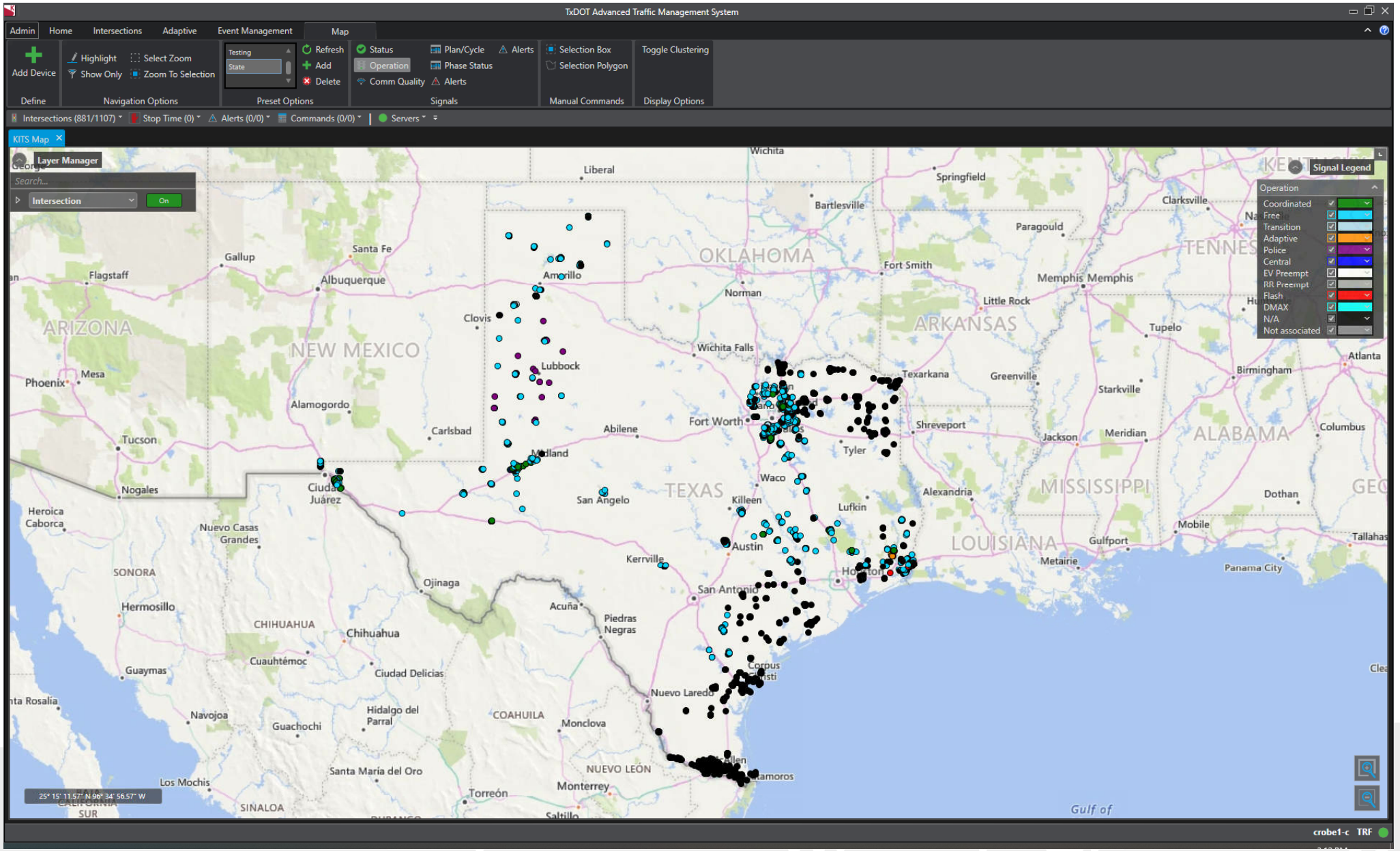
TxDOT


InPrivate
Citrix Receiver
https://mycitrix.txdot.gov/Citrix/SAMLWeb/
citrix | StoreFront
HOME
APPS
DESKTOPS
Welcome Cole Roberts-C!
Favorites
XenDesktop 2012
KITS

TxDOT


Acrobat Reader
Phase 1 Servers
Git Bash
Google Chrome
Notepad++
PowerTerm
PSFTP
PuTTY
PuTTYgen
WinSCP
Windows Server 2012 R2
10:43 AM
10/26/2023

TxDOT



TxDOT Advanced Traffic Management System
Admin
Home
Intersections
Adaptive
Event Management
Map
Add Device
Define
Highlight
Show Only
Select Zoom
Zoom To Selection
Navigation Options
Testing
State
Refresh
Add
Delete
Preset Options
Status
Operation
Comm Quality
Plan/Cycle
Phase Status
Alerts
Signals
Selection Box
Selection Polygon
Manual Commands
Toggle Clustering
Display Options
Intersections (881/1107)
Stop Time (0)
Alerts (0/0)
Commands (0/0)
Servers
KITS Map
Layer Manager
Search...
Intersection
On
Signal Legend
Operation
Coordinated
Free
Transition
Adaptive
Police
Central
EV Preempt
RR Preempt
Flash
DMAX
N/A
Not associated
ARIZONA
NEW MEXICO
OKLAHOMA
ARKANSAS
TEXAS
LOUISIANA
MISSISSIPPI
ALABAMA
TENNES
SONORA
CHIHUAHUA
COAHUILA
NUEVO LEÓN
SINALOA
Liberal
Wichita
Springfield
Bartlesville
Paragould
Clarksville
Santa Fe
Gallup
Flagstaff
Albuquerque
Amarillo
Norman
Fort Smith
Memphis
Little Rock
Clovis
Wichita Falls
Tupelo
Lubbock
Texarkana
Greenville
Atlanta
Birmingham
Phoenix
Mesa
Alamogordo
Starkville
Carlsbad
Abilene
Fort Worth
Shreveport
Jackson
Meridian
Columbus
Tucson
Midland
Tyler
Waco
Nogales
Ciudad Juárez
San Angelo
Killeen
Lufkin
Alexandria
Dothan
Heroica Caborca
Nuevo Casas Grandes
Austin
Mobile
Gulfport
Tallahas
Kerrville
Metairie
Panama City
Ojinaga
San Antonio
Hermosillo
Acuña
Piedras Negras
Chihuahua
Cuauhtémoc
Guaymas
Ciudad Delicias
Corpus Christi
Nuevo Laredo
Navojoa
Guachochi
Hidalgo del Parral
Monclova
Santa María del Oro
Los Mochis
Torreón
Monterrey
Saltillo
Gulf of
25° 15' 11.57" N 96° 34' 56.57" W
crobe1-c
TRF

TxDOT - Lessons Learned

- Red tape procurement issues for Azure components
- Pivot to existing Citrix environment
- Coordination with IT to install on hosted Citrix machine
- Published application exceeded expectations for performance and functionality
- All users source user interface from same host image
- Simplifies workstation updates

Open Discussion
Questions?