

TRAFFIC OPERATIONS PROGRAM UPDATE

 E. Kevin Gregg
Chief of Maintenance and Operations

April 19, 2022

Traffic Operations Technology Enabling Roadway Operations



Cameras



Message Signs



Portable Message Signs



Weather Stations



Shoulder/Lane Control



Traffic Detectors



Ramp Meters



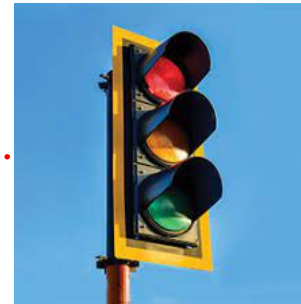
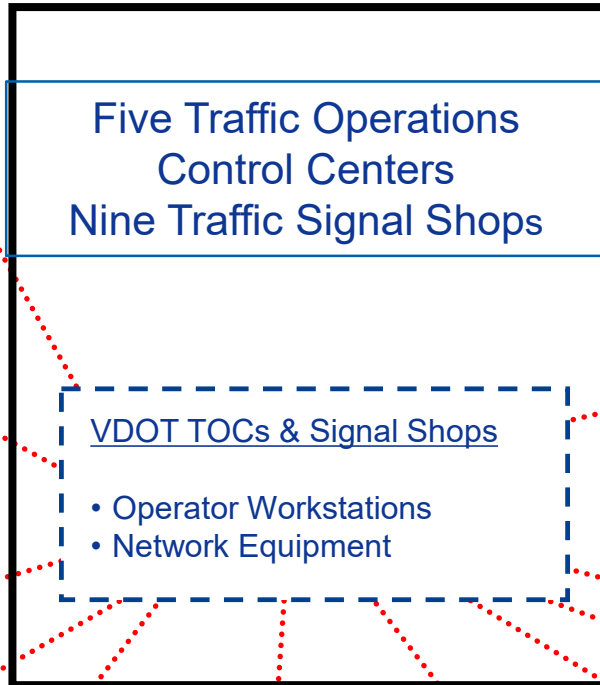
HOV Gates



Overheight Detection



Highway Advisory Radio (HAR)



Device/Component	Approx. #
IP addresses	30,000+
Total field devices	7,500+
Edge device control cabinets	6,000
Miles of fiber	5,500
Traffic signals	3,137
Traffic detectors	1,500
Highway traffic cameras	1,150
Message boards	464
PaaS servers	200+
Weather stations	96
HOV gates	50
Ramp meters	21
Tier-3 data centers	3

Traffic Operations Strategy:

- **Traffic Operations Program is customer focused and service oriented**
- **Address current demands and prepares for the future**
- **Use data and technology to improve roadway operations and incident responsiveness**
- **Partner with industry, leverage expertise, deliver high quality customer service**
- **Attract and empower highly skilled Subject Matter Experts to improve programs and processes**
- **Use Data Science and Robotic Process Automations to support agency personnel in all aspects of traffic and congestion management**
- **Improve locality coordination with consistent Memorandum of Understanding and secure technical network connections**

Align Organizations to be Traffic Operations Focused

- **Elevate Traffic Operations as the third pillar of transportation, on par with Construction and Maintenance in All Districts and Central Office**
- **Establish District Traffic Operations Director/Engineers in all 9 Districts**
- **Central Office organizations aligned to provide focused attention to Traffic Operations**
 - **Establish Central Office Transportation Systems Strategy Office**
 - **Establish Central Office Traffic Operations Division**
 - **Establish Central Office Operations Technology Division**
- **Consolidate operations support systems technical staff under the Operations Technology Division, to provide focused and consistent technology and security solutions**
- **Provide coordinated services from TOCs and TOSC to all Districts and CO**
- **Provide targeted budgets to Traffic Operations programs, separate from Maintenance**

Operations Technology Leadership Team - Transformation and Future State

Statewide consistent Defense-in-Depth solutions have been implemented successfully



Operations Technology is secure, resilient, and compliant with applicable polices and standards

OT staff are fully trained and are using new tools and services effectively



VDOT has consistent responsiveness to VITA services for the OT environment



Approved product lists, Road & Bridge Specifications, and related artifacts have been updated



Statewide Fiber Network is secure, operational, and connected to the cloud













Organizational ownership, process sustainment, and accountability model has been designed



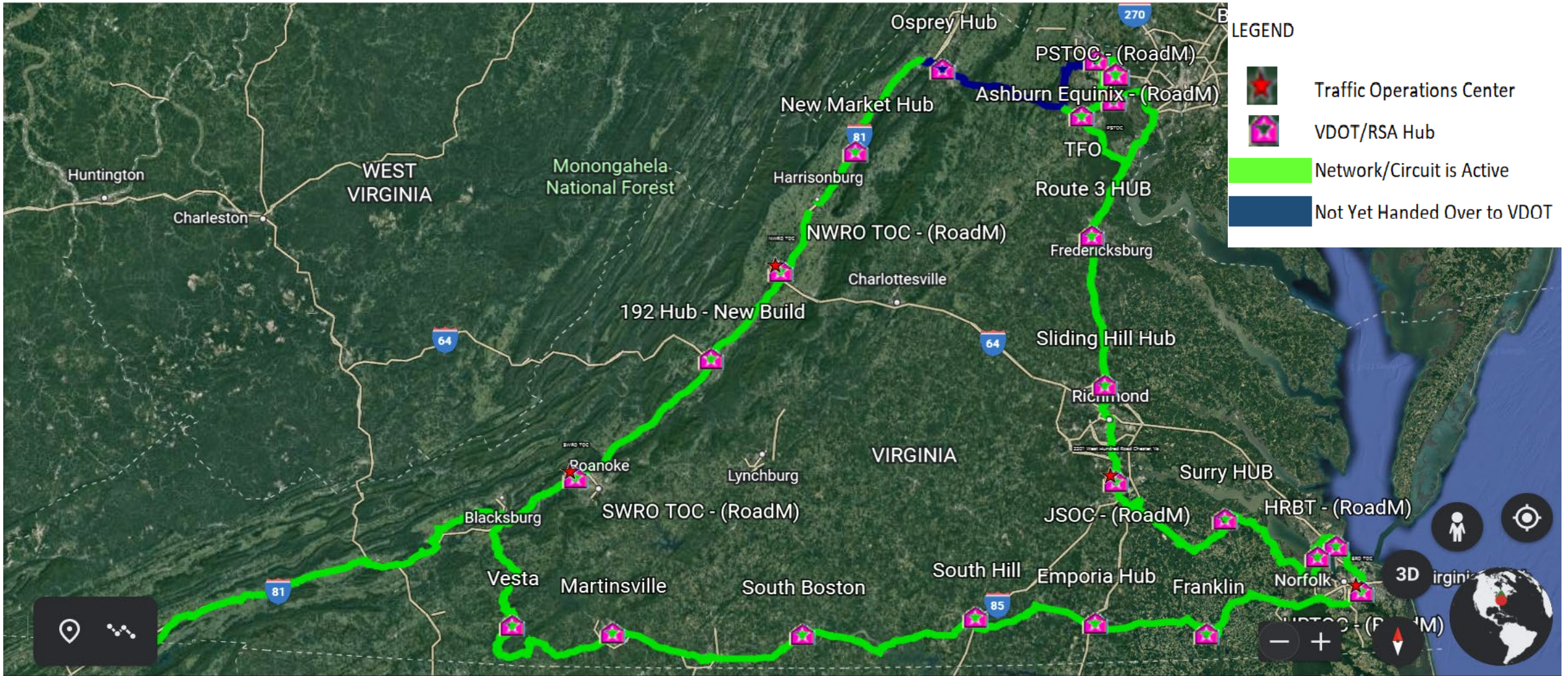
OT solutions are delivered using common platforms and services, increasing efficiency and reliability



Operations Technology Leadership Team Projects & Initiatives Status Report

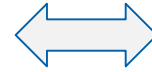
	Initiatives	Target 30 Apr '22	Comments
1	Statewide Fiber Network		Fault tolerant resilient self-healing architecture to support current needs and designed to vastly expand bandwidth on demand
2	Cloud Connections		Comply with Executive Directive 19 – move to cloud
3	Statewide Fiber Management Program		Fiber management tool, training, and support services
4	Security Operations Management		Defense in depth architecture
5	Identity and Access Management		Facilitates all access requests
6	Cloud Services (VITA)		VITA/Unysis providing support
7	Cabinet Digital Lock		Implementation underway across the state. (NoVa June 30)
8	OT Service and Asset Management		Operations Technology digital assets management
9	Traffic Operations Support Center & Dashboard		Statewide traffic operations support
10	Statewide Traffic Signal System		Statewide traffic signal software, communication, and support
11	ATMS Cloud migration		Advanced traffic management system
12	Traffic Operations Sustainment Org implementation		Planning for the future

Projected Status on 04/30/2022



Traffic Operations Support Center & Dashboard

Traffic Operations Service Center (TOSC)
Integrated Network Operations 24 x 7 x 365
VDOT Security Operations Center



Traffic Operations Center (TOC)

**OT Network
Operations
Center (NOC)**

**OT Security
Operations
Center (SOC)**

**Emergency
Operations
Center (EOC)**

**Traffic Operation
s Center (TOC)**

- Tiered support: life-safety, operational integrity, security focus
- 24 x 7 x 365 NOC/SOC monitoring and alerts to TOC
- Assets monitoring and support:
 - ITS, signals, and TOC devices asset data
 - Communication network asset data
- Integrated Service Desk
- Business Unit Define
 - Streamlined support processes
 - Standard Operating Procedure playbook
 - Staffing and support plan
 - Funding and Investment management
- Applications and Technology Toolset
 - Common across all services
 - Security and compliance requirement

- 24 x 7 x 365 operations
- Situational Awareness
- Support District Leadership and Traffic Operations SMEs
- Support Travel / Incident management
- Assigned District / Corridor OT Services management.
 - Break fix coordination
 - Restoration of service

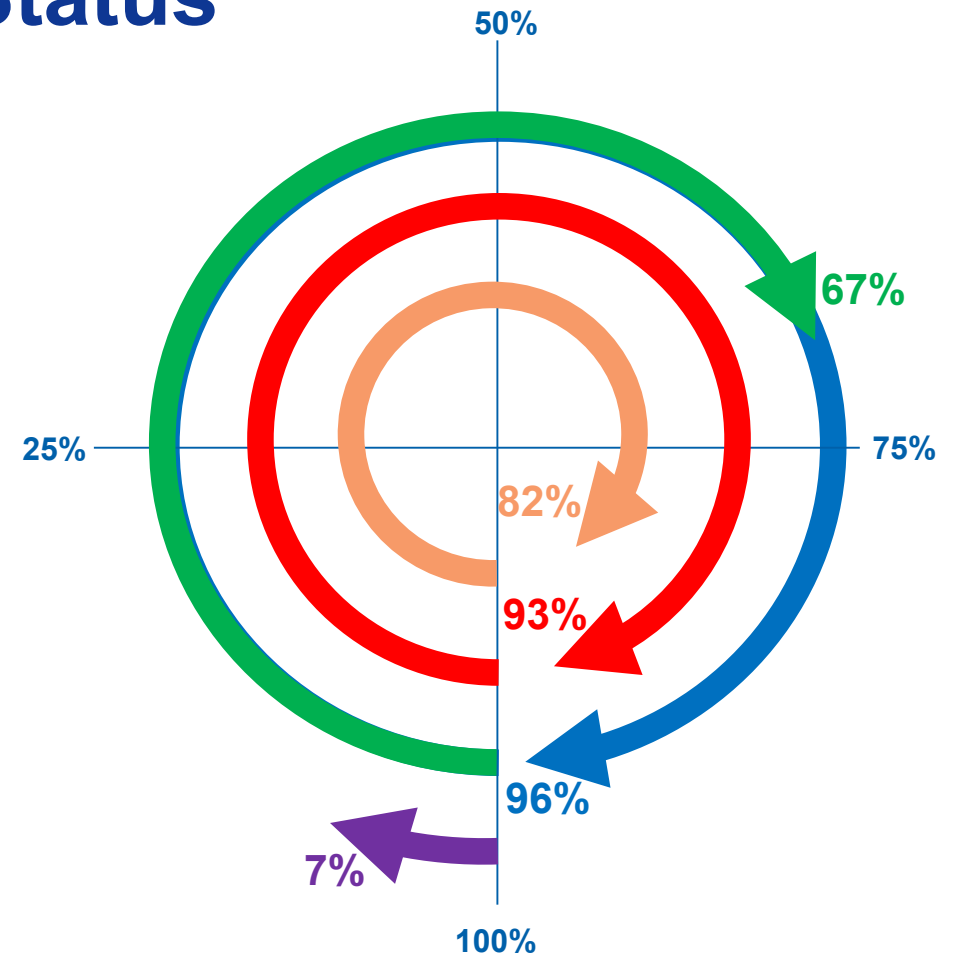
Cyber Security Tools & Services Implementation

- **Server/Endpoint Device Monitoring**
 - *antivirus, anti-malware*
 - Operational in TOCs
- **Network Detection & Response**
 - *network level monitoring for anomalous / malicious traffic*
- **Vulnerability Management**
 - *scans for compliance with security updates*
- **Security Incident Event Management**
 - *scans logs from OT environment for indications of potential security breaches / malicious activity*
- **Identity Management**
 - *OT access request/approval provisioning tool*

Statewide Traffic Signal System Status

3,139 Traffic Signals Statewide

- High Speed Communications (2577 – 82%)
- ATC / D4 Migration (2916 – 93%)
- KITS Deployment (Configured – 2997 – 96%)
- KITS Deployment (Live – 2100 – 67%)
- ATSPM (Active – 210 – 7%)



ATC/D4 – Advanced Traffic Controllers / 4th Generation
ATSPM - Automated Traffic Signal Performance Matrix

TRAFFIC OPERATIONS PROGRAM END OF PRESENTATION

 E. Kevin Gregg
Chief of Maintenance and Operations

April 19, 2022