

GO COMMITTEE #3  
January 22, 2015

**MEMORANDUM**

January 20, 2015

TO: Government Operations and Fiscal Policy Committee

FROM: Dr. Costis Toregas, Council IT Adviser *CTM*

SUBJECT: Special Appropriation to the County Government's FY15 Operating Budget, Department of Technology Services -- \$360,000 to establish a Network Operations Center (NOC) to monitor FiberNet (Source: General Fund Reserves)

The Committee is scheduled to consider the subject special appropriation, which the Council introduced on January 20.

The purpose of this special appropriation is to provide the initial funding for a Network Operations Center (NOC) that will help ensure the operational integrity of the County's FiberNet. The memorandum on ©1 from Councilmember Navarro, Committee Chair, and Councilmember Riemer, Lead for Digital Government, outlines important information about the NOC.

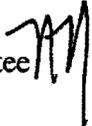
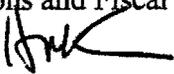
FiberNet provides essential connectivity for the six agencies represented on the Interagency Technology Policy and Coordination Committee (ITPCC): County Government, MCPS, Montgomery College, M-NCPPC, HOC, and WSSC. The CIO Subcommittee of the ITPCC has strongly advocated the creation of a NOC that can proactively scan the system for impending problems and help manage necessary repair and recovery. The ITPCC principals discussed this initiative on December 2, 2014, including the August 13, 2014 memo from DTS CIO Sonny Segal on ©4-6, and requested information on possible options.

The January 12, 2015 memo from the Montgomery College Office of Information Technology on ©7-11 outlines these options. The CIO Subcommittee reviewed this information on January 9, 2015 and unanimously recommended the approach proposed by Mr. Segal. This approach is reflected in the subject special appropriation. If the Committee recommends approval of the special appropriation, it is tentatively scheduled for public hearing and action at the January 27 Council session.

**MEMORANDUM**

January 16, 2015

TO: Councilmembers

FROM: Nancy Navarro, Chair, Government Operations and Fiscal Policy Committee   
Hans Riemer, Lead for Digital Government 

SUBJECT: Special Appropriation to the County Government's FY15 Operating Budget.  
Department of Technology Services -- \$360,000 to establish a Network  
Operations Center (NOC) to monitor FiberNet (Source: General Fund Reserves)

We recommend that the Council approve a special appropriation to the FY15 operating budget of the Department of Technology Services (DTS) in the amount of \$360,000 to promptly establish a FiberNet Network Operations Center (NOC).

As you know, FiberNet provides critical County infrastructure and service where availability and continuity of communications and services to all ITPCC agencies is essential.<sup>1</sup> The expansion of FiberNet increases exposure to faults and failures and drives the compelling need for a NOC that is equipped to monitor network operations and identify component failures proactively where prompt response to failures exceeds the current "best effort" environment. When completed, FiberNet will consist of about 700 miles of county owned, operated, and maintained fiber optic infrastructure servicing 534 sites and 1600 traffic cameras.

In its review of the FY15 operating budget for DTS on April 7, 2014, the Government Operations and Fiscal Policy Committee expressed strong interest in the establishment of a NOC. The compelling need for a NOC was set forth clearly in the attached August 13, 2014 memorandum from DTS CIO Sonny Segal. On December 2, 2014 the ITPCC principals discussed the establishment of a NOC and requested information on possible options. On January 9, 2015 the CIO Subcommittee reviewed this information and unanimously recommended the approach proposed by Mr. Segal. That approach is reflected in this special appropriation. The implementing resolution is attached.

In our view, there should be no further delay in moving forward with this critically important initiative in FY15. The full-year cost in FY16 is currently projected at \$910,000. We appreciate your prompt consideration of this special appropriation.

Attachments: Special Appropriation—FiberNet Network Operations Center (NOC)  
NOC Funding Request Memorandum, Segal to OMB, August 13, 2014

cc: Isiah Leggett, County Executive  
ITPCC Principals and CIO Subcommittee

---

<sup>1</sup> The agencies represented on the Interagency Technology Policy and Coordination Committee (ITPCC) are County Government, MCPS, Montgomery College, M-NCPPC, HOC, and WSSC.

Resolution No: \_\_\_\_\_  
Introduced: \_\_\_\_\_  
Adopted: \_\_\_\_\_

COUNTY COUNCIL  
FOR MONTGOMERY COUNTY, MARYLAND

---

By: Councilmembers Navarro and Riemer

---

SUBJECT: Special Appropriation to the County Government's FY15 Operating Budget, Department of Technology Services (DTS) -- \$360,000 to establish a Network Operations Center (NOC) to monitor FiberNet (Source: General Fund Reserves)

**Background**

1. Section 308 of the Montgomery County Charter provides that a special appropriation: (a) may be made at any time after public notice by news release; (b) must state that the special appropriation is necessary to meet an unforeseen disaster or other emergency, or to act without delay in the public interest; (c) must specify the revenues necessary to finance it; and (d) must be approved by no fewer than six members of the Council.
2. FiberNet provides critical County infrastructure and service where availability and continuity of communications and services to the six agencies represented on the Interagency Technology Coordination and Policy Committee -- County Government, MCPS, Montgomery College, M-NCPPC, HOC, and WSSC -- is essential. The expansion of FiberNet increases exposure to faults and failures and drives the compelling need for a NOC that is equipped to monitor network operations and identify component failures proactively where prompt response to failures exceeds the current "best effort" environment. When completed, FiberNet will consist of about 700 miles of county owned, operated, and maintained fiber optic infrastructure servicing 534 sites and 1600 traffic cameras.
3. In its review of the FY15 operating budget for DTS on April 7, 2014, the Government Operations and Fiscal Policy Committee expressed strong interest in the establishment of a NOC. The compelling need for a NOC was set forth clearly in an August 13, 2014 memorandum from DTS CIO Sonny Segal. On December 2, 2014 the ITPCC principals discussed the establishment of a NOC and requested information on possible options. On January 9, 2015 the CIO Subcommittee reviewed this information and unanimously recommended the approach proposed by Mr. Segal. That approach is reflected in this special appropriation.
4. Public notice of this special appropriation has been made by news release.
5. A public hearing was held on January 27, 2015.

Action

The County Council for Montgomery County, Maryland approves the following action:

A special appropriation to the FY15 Operating Budget of the Department of Technology Services is approved as follows:

<u>Personnel Services</u>	<u>Operating Expenses</u>	<u>Capital Outlay</u>	<u>Total</u>	<u>Source of Funds</u>
\$0	\$360,000	\$0	\$360,000	General Fund Reserves

It is in the public interest to act without delay to approve this special appropriation.

This is a correct copy of Council action.

---

Linda M. Lauer, Clerk of the Council



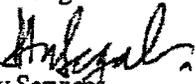
DEPARTMENT OF TECHNOLOGY SERVICES

Isiah Leggett  
County Executive

Harash (Sonny) Segal  
Chief Information Officer

August 13, 2014

TO: Jenifer Hughes, Director  
Office of Management and Budget

FROM: Sonny Segal, Director   
Department of Technology Services

SUBJECT: FiberNet Network Operations Center – Request for Funding

The purpose of this memorandum is to request \$360,000 in FY15 funds to implement a Network Operations Center (NOC) for the County's FiberNet network, with operations starting on January 1, 2015. Please see the attachment for a description of the proposed NOC.

The NOC is urgently needed for the following reasons:

1. FiberNet is in critical service. The NOC will improve FiberNet availability thereby ensuring the continuity of critical communications and services throughout government and the ITPCC agencies (MCPS, MC, M-NCPPC, HOC, and WSSC).
2. As FiberNet has grown, so too has exposure to faults increased. The NOC will significantly reduce the time to fault detection and therefore accelerate response, remediation and/or restoration. Currently, faults and interruptions in service are reported by FiberNet customers, typically after service has been down for an extended period of time. DTS' Network Services team responds to after-hours calls on a best effort basis as there is no formal 'stand-by' schedule. A NOC will be equipped to monitor network operations and identify component failures proactively and respond to faults promptly.
3. FiberNet is being upgraded to FiberNet II, and work continues to implement FiberNet hub re-builds to take advantage of the ARRA fiber additions. During this time, the NOC would be instrumental in coordinating network moves, adds and changes and maintaining continuity of operations.
4. The NOC is needed to encourage continued transitioning of mission-critical services from commercial networks to FiberNet in all participating agencies. This has the potential of significantly reducing costs to the County over the long term.
5. A NOC is strategic to the success of the County Executive's UltraMontgomery program to jump start and sustain economic development through the implementation of Gigabit networks in the Great Seneca Science Corridor (GSSC) and the White Oak Science Gateway (WOSG).
6. A NOC is a pre-requisite for opening up FiberNet leasing to non-County entities to generate revenue. Recent discussions with public-private sector focus groups regarding delivering very high speed networks in the White Oak Science Gateway and the Great Seneca Science Corridor have confirmed that, without a NOC, FiberNet is a "best effort" network and as such is not attractive to outside entities.

Office of the CIO

101 Monroe Street, 13th Floor • Rockville, Maryland 20850 • 240-777-2900

Background

DTS had requested funding in FY15 to fund a Network Operations Center (NOC) to strengthen FiberNet operations. To accommodate fiscal constraints, the request was postponed until FY16.

In FY15 budget reviews, County Council's GO Committee expressed desire for the establishment of a NOC as soon as possible. This is consistent with the determination by the ITPOC CIOs that a NOC was needed immediately to improve FiberNet operations and offer an alternative or back up to commercial or agency networks. Council then moved, in concept, to 'fund' approximately \$270,000 needed to staff a NOC in FY15 (starting on January 1, 2015) by approving a funds swap with Takoma Park. Dennis Hetman of OMB attended a meeting of the ITPCC and clarified that the funds from Takoma Park were not fungible. However, he requested that DTS provide justification to fund a NOC starting January 1, 2015. This memorandum is in response to Mr. Hetman's request.

Funding Request

If implemented on January 2, 2015, the costs of setting up, staffing and operating the proposed NOC for six months through July 31, 2015 is estimated to be \$360,000 as detailed in Attachment 1. I am requesting this amount in additional FY15 funding by October 1, 2015 so DTS and DOT can prepare to implement the NOC on January 2, 2015.

I am requesting to meet to answer any questions you may have. I can be reached at 7-2822.

HS:dln

Attachment

c: Dieter Klinger, DTS  
John Castner, DTS  
Al Roshdieh, DOT  
Dennis Hetman, OMB

**Attachment**  
**FiberNet Network Operations Center**  
**Funding Request**

FiberNet is the County's fiber network backbone. It represents approximately \$50M in investment and has grown into a large county-wide, multi-tenant interagency network in critical service with approximately 450 service points implemented or planned in FY15. FiberNet is in 24x7x365 use and requires a Network Operations Center (NOC) for the reasons listed in the cover memo. DTS, in conjunction with FiberNet users, has determined that FiberNet urgently needs a NOC to lower fault detection times and meet Service Level Agreements (SLAs) for existing and future customers.

**Proposed Concept of Operations (CONOPS)**

The NOC will initially be responsible for network monitoring and fault detection. However, the plan is to mature the NOC to include other network operations responsibilities by the end of FY16 to include many, if not all, of the following functions of a NOC conforming to the International Standards Organization (ISO)'s FCAPS<sup>1</sup> Telecommunication Management Network Model:

- Troubleshooting
- Capacity Planning
- Utilization Reporting
- Service Provisioning
- Status Information
- Maintenance Activities
- Configuration Management
- Inventory Control & Reporting
- Disaster Recovery Activation

As such, the proposed FiberNet NOC will be the operational hub for the County's critical communications infrastructure. In order to fulfill fault management responsibilities, the following changes to FiberNet's current operations are required:

1. Establish after-hours, weekend and holiday network engineering coverage by the Network Services team in DTS' Enterprise Telecommunication Services Division (ETSD).
2. Establish a NOC co-located within the PSCC/Traffic Management Center (TMC) and jointly operated by DTS/ETSD and DOT/Traffic Management. DTS and DOT staff has met and agreed in concept to this co-location arrangement. Final arrangements must be made prior to the proposed January 2, 2015 NOC implementation date.
3. Execute a new SLA with each Participating Agency that clearly identifies the responsibilities of each agency in a CONOPS document.

The NOC will operate within a broad SLA framework specifically customized and operationalized for each agency's CONOPS document.

For sustainability and efficiency, the NOC's contribution to shortening the fault management life cycle will be logged as a part of its performance measurement metric and regularly reviewed by DTS management.

---

<sup>1</sup> FCAPS – Fault, Configuration, Accounting, Provisioning and Security – ISO Telecommunication Management Network Model

**BACKGROUND BRIEF AND RECOMMENDATION**  
**FiberNet Network Operations Center**  
**January 12, 2015**

---

**Background**

Montgomery County's FiberNet network currently operates on a "best effort" basis without the advanced network management services typically associated with a Network Operations Center (NOC).

At a meeting of the Principals of the Interagency Technology Policy and Coordination Committee (ITPCC) on December 2, 2014, Dr. Pollard requested that Montgomery College prepare an analysis of the potential use of the College's existing NOC to determine if the College NOC could meet the requirements associated with the operations of a NOC for the County FiberNet network.

**Options Explored**

In addition to the existing proposal for the County to establish, fund and operate a full-service FiberNet NOC, three possible alternatives were explored:

- Outsource to a commercial third party NOC service provider
- Outsource to Montgomery College
- Outsource to DC-NET (*Washington DC's Fiber Network*)

**Option 1 - County Managed NOC**

The proposal to create a County funded NOC is based on a partnership with the Department of Transportation, which already has responsibility for physical maintenance of the network fiber plant across the County.

The County Managed NOC overview and costs associated with this option were presented to the ITPCC CIO's as well as the ITPCC Principals at two meetings in December 2014.

The table below summarizes the proposal.

Montgomery College / Office of Information Technology

ORIGINAL PROPOSAL - DTS/DOT INTEGRATION							
Item	# Needed	\$/Item	Benefits @ (30%)	Total	Impact	Notes	Managing Party
1 New Tier II Engineer	1	\$100,000	\$130,000	\$130,000	Increased carrier cost avoidance/ROI through faster migration of sites to FiberNet	Provides enhanced coverage M-F 8am - 5pm	County
5 New Tier II NOC Technicians	5	\$85,000	\$110,500	\$552,500	Improved Government/Agency operations through faster issue resolution	5am-10pm Mon-Fr (3) 8 hour shifts (2) 12 hour shifts Sat/Sun Includes one "floater" for vacation/holiday	County
NOC Supervisor	1	\$100,000	\$130,000	\$130,000	Improved Government/Agency operations through faster issue resolution	Working Supervisor - 6th NOC person	County
Customer Care - Project Support	1.5	\$50,000	\$65,000	\$97,500	Increased carrier cost avoidance/ROI through improved projects/migrations to FiberNet	One full time, one part time. Admin and project support	County
<b>TOTALS</b>				<b>\$910,000</b>			

**Benefits:** Expansion of the NOC to serve the proposed "Ultra Montgomery" project and other agencies is very affordable – the NOC team is tightly integrated with the FiberNet engineering team and the agency technology teams. This proposal will utilize existing and unused investments made by the County in NOC management software and will provide resources to build NOC maps and provide asset management assistance and improved customer support.

**Issue:** Most costly of the options being considered.

**Option 2 – Outsource to a Commercial Third Party**

A cost estimate from a third party firm (iGLASS) to provide remote NOC services in cooperation with a small increase in County engineering and customer care/project staff was obtained.

OUTSOURCE NOC TO 3rd PARTY							
Item	# Needed	\$/item	Benefits @ (30%)	Total	Impact	Notes	Managing Party
1 New Tier II Engineer	1	\$100,000	\$130,000	\$130,000	Increased carrier cost avoidance/ROI through faster migration of sites to FiberNet	Provides enhanced coverage M-F 8am - 5pm	County
24x7 NOC Service from iGLASS				\$325,000	Improved Government/Agency operations through faster issue resolution	Monitoring, Tier-1 Remediation, Inbound Calls 24x7	iGLASS
Customer Care - Project Support	1.5	\$50,000	\$65,000	\$97,500	Increased carrier cost avoidance/ROI through improved projects/migrations to FiberNet	One full time, one part time. Admin and project support	County
<b>TOTALS</b>				<b>\$552,500</b>			

**Benefits:** Expandable solution – less costly to start.

**Issue:** The overall price is lower, but the services provided by the vendor will not be as technically robust as the services provided by an in-house team that is tightly integrated with the FiberNet engineering team. Cost savings will decrease as additional network hardware and building sites are added. Coordination of physical repair work and diagnostic efforts will likely be more challenging.

**Option 3 – Outsource to Montgomery College**

The College operates a NOC to support its data center and networking operations at the Takoma Park / Silver Spring campus. It is staffed at all times except Friday and Saturday nights and Sunday evenings using 5.5 FTE staff. In addition to monitoring functions, the

Montgomery College / Office of Information Technology

presence of the staff provides a measure of physical security for the data center and a small degree of "hands on" support with computing and infrastructure equipment.

Operationally, the College NOC does not provide the advanced services that will provide the value and services required by ITPCC agencies and identified in the County's own NOC proposal for FiberNet. It functions primarily as a monitoring facility, without the in depth technical expertise needed to troubleshoot, repair and resolve incidents. In its present form, the College NOC would require additional investment in personnel, tools and training to develop the deeper expertise required.

MONTGOMERY COLLEGE - OUTSOURCE PROPOSAL							
Item	# Needed	\$/item	Benefits @ (30%)	Total	Impact	Notes	Managing Party
1 New Tier II Engineer	1	\$100,000	\$130,000	\$130,000	Increased carrier cost avoidance/ROI through faster migration of sites to FiberNet	Provides enhanced coverage M-F 8am - 5pm	County
5 New Tier II NOC Technicians	5	\$85,000	\$110,500	\$552,500	Improved Government/Agency operations through faster issue resolution	Leverages MC existing NOC. Adds technical staff, provides 24x7 NOC Coverage	College
Customer Care - Project Support	1.5	\$50,000	\$65,000	\$97,500	Increased carrier cost avoidance/ROI through improved projects/migrations to FiberNet	One full time, one part time. Admin and project support	County
<b>TOTALS</b>				<b>\$780,000</b>			

**Benefits:** Will become 24x7x365 with additional County support. Leverages the existing College NOC facility, people, tools and management structure.

**Issue:** Will require almost as much investment as the County owned / managed option, and may distract from the College's core functions.

**Option 4 – Outsource to DC-Net**

Several conversations occurred between DC-Net and FiberNet participants in December and January. Both teams agreed that shared NOC services, or potentially back-up NOC services could be provided and should be explored. However, it was agreed that there were several interim steps that must occur (e.g., discussions regarding physical connections, firewalls, service level agreements) before any outsourcing or true partnership could occur. Neither side was ready to move forward at this juncture.

Both parties assigned representatives to work on a project to connect the two networks, and agreed that providing back-up or integrated NOC services should be explored in FY'16.

**Recommendation**

The best option for the future management of a FiberNet NOC, especially taking into consideration the aspirations of the Ultra Montgomery project, is to centrally fund the County Department of Technology Services proposal. This approach has the support of the ITPCC CIOs.