WHAT DOES A NETWORK OPERATION CENTER (NOC) ENGINEER DO?

My first encounter with a network operation center was during my first formal job as a graduate management engineer for a mobile operator, where I spent two years learning the ropes across all the business units.

The NOC was a hallowed place filled with huge screens on the walls and personnel with multiple screens on their desks. It was the heartbeat of the entire mobile network, running 24/7/365 and providing visibility of what was happening to keep services running and addressing any issues that arise.

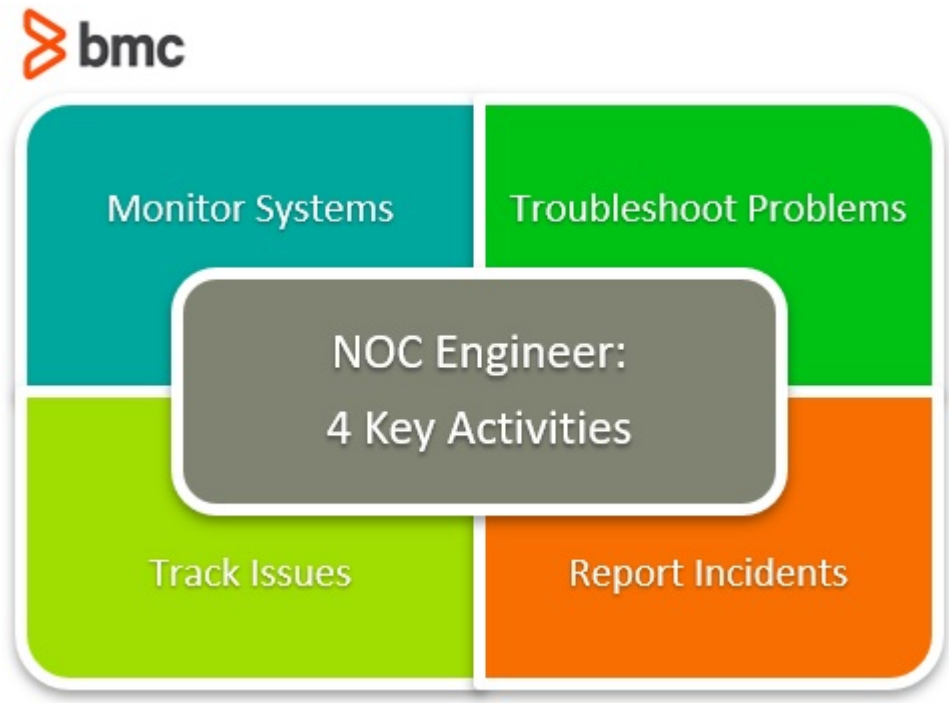
Network Operations Center (Source)

I spent a week there including a night shift, and for the next few years worked closely with the NOC team due to their critical role in ITSM. As a consultant, I have visited quite a number of NOCs and even had the privilege of helping an ISP set up one, so I have intimate knowledge on what is expected from anyone working there.

Functions of a NOC Engineer

The NOC engineer monitors and executes the daily operational activities needed to manage IT services and the supporting IT infrastructure. According to Job Hero, a NOC engineer monitors large computer networks and servers for problems from a central location or remotely. Typical activities for a NOC engineer include:

- Analyze events
- Perform troubleshooting and incident response on the systems
- Communicate with site technicians or third parties responsible for resolution
- Track issues through to resolution



Field Engineer defines four key roles of the NOC Engineer:

1. **Monitor systems.** Using diversified tools to monitor performance and capability of computer systems.
2. **Troubleshoot problems.** Working to triage or troubleshoot the issues within their defined areas.
3. **Track issues.** Tracking and documenting all defects and resolutions in detail through a designated ticketing system.
4. **Report incidents.** Escalating complicated issues to management, other IT resources, third parties and/or vendors, as appropriate.

ITSM activities under a NOC Engineer

Based on these activities, we can reference some of the ITIL 4 practices to outline what the NOC Engineer's role involves. These include:

Monitoring and Event Management

The NOC engineer will be involved in both proactive and reactive monitoring of technology systems within their scope:

- Servers
- Network infrastructure
- Apps
- Databases
- Even data centers

Monitoring involves repeated observation to detect events and to ensure that the current status is known. The event management part focuses on determining significance of events in order to trigger the appropriate response.

Incident Management

The NOC engineer will be involved in first line troubleshooting of incidents arising from monitoring. During this activity, the NOC engineer will:

- Record incidents and correlate them with the events
- Apply appropriate workarounds
- Communicate and coordinate resolution with other support levels including third party partners and vendors.

Problem Management

To support proactive problem management, the NOC engineer will correlate incidents with existing problems and also participate in identification of new problems. As workarounds and known errors are a huge part of the NOC engineer's work, they will work together with a problem analyst to identify and document these.

Deployment Management

To manage deployments, the NOC engineer will support planning and execution of changes in production environments especially deployment of new and changed features as well as patch management.

NOC engineers are an invaluable resource when it comes to identifying both positive and negative impact of changes post-deployment.

Availability, Capacity, and Performance Management

The NOC engineer will support these practices by:

- Proactive and reactive monitoring
- Providing information on components and services availability, capacity, and performance metrics

Service Continuity Management

The NOC engineer will participate in:

- Routine activities, such as backing up and restoration of systems
- Disaster recovery activities, such as executing system failover scripts

Infrastructure and Platform Management

The NOC engineer can be involved in installation and configuration of infrastructure and platforms (whether on-premise or cloud-hosted), where these activities have been defined as routine procedures.

Information Security Management

The NOC engineer can also be equipped with knowledge on identification and first line support for

information security events and incidents.

NOC Engineer skills and competencies

Good eyesight and quick reactions are obvious qualities for someone working at the NOC. Beyond that, of course, the NOC Engineer requires a particular set of capabilities for their role, such as:

- Knowledge of service architecture, design, resource configuration, and business impact of events and symptoms
- Expertise in monitoring tools, ITSM tools, backup and DR tools
- Knowledge of service subject matter and business processes
- Knowledge of incident models, diagnostic tools, methods
- Analytical skills
- Communication skills

This particular role is at the frontline, where speedy detection and analysis of events are critical to speedy identification and resolution of incidents. That's why NOC engineers must take up regular training—to be able to effectively support service delivery, especially when working in a highly dynamic service environment.

The European e-Competence framework defines some required knowledge areas for anyone working in service delivery, and these are key for a NOC engineer including:

- How to interpret ICT service delivery requirements
- Best practices and standards in ICT service delivery
- How to monitor service delivery
- How to record service delivery actions and able to identify failures
- The best practices and standards in information security management
- Web, cloud and mobile technologies

Additional resources

For more on this and related topics, explore these resources:

- BMC Service Management Blog
- BMC Business of IT Blog
- OSI Model: The 7 Layers of Network Architecture
- Building an IT Network for a Remote Facility
- The 2020 Gartner Magic Quadrant for Data Center and Cloud Networking
- What Are Security Operations Centers (SOC)?