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Network Operations Center
Best Practices

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Introduction

Network Operation Centers (NOCs) are always under a great pressure to meet both technical and business services demands. In the past several years NOCs have become a more crucial part of the organization, taking on more tasks and responsibilities.

In NOCs, technological challenges arrive at unexpected times, and unforeseen problems always pop up. In fact, the only part you can count on is shrinking resources.

So what's the best you can do? Make sure you're employing the best practices, using the most appropriate tools, and optimizing your processes and knowledge.

This is what this e-book is all about.

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Part 1: Tools

You know tools are an essential element in NOC management. But they are also a key element for improvement. So what are the tools that will give you the top return of investment? How do you keep your team aligned with the most updated information? And how can tools help your team gain control over all tasks, while positioning the NOC as an exclusive IT resource?

5 essential tools

Ticketing system

A ticketing system will enable you to keep track of all open issues, according to severity, urgency and the person assigned to handle each task. Knowing all pending issues will help you to prioritize the shift's tasks and provide the best service to your customers.

Knowledge base

Keep one centralized source for all knowledge and documentation that is accessible to your entire team. This knowledge base should be a fluid information source, so make sure you continuously update it with experiences and lessons learned for future reference and improvements.

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Reporting and measurements

Create reports on a daily and monthly basis. A daily report should include all major incidents of the past 24 hours and a root cause for every resolved incident. This report is useful and essential for the shift leaders and NOC managers.

It also keeps the rest of the IT department informed about the NOC activities and of major incidents. Compiling the daily reports into a monthly report will help measure the team's progress. It will also show areas where improvements can be made or indicate any positive or negative trends in performance.

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Monitoring

There are two types of monitoring processes relevant to NOC:

- **Infrastructure monitoring**, which can consist of the servers, the network or the data center environment.

- **User experience monitoring**, which simulates user behavior and activities in order to replicate problems and find the most effective solutions.

Implementing a service tree model that connects the infrastructure monitoring with an affected service will allow your team to handle other areas that may be affected by the problems experienced.

IT Process Automation

[IT Process Automation](#) can save significant time on repetitive, daily tasks, and frees up time for more strategic projects.

It empowers a Level-one team to deal with tasks that otherwise may require a Level-two team. Some examples include password reset, disk space clean-up, restart services etc.

IT Process Automation also helps reducing mean time to recovery (MTTR) in case of critical incidents. For example, specific workflows can be triggered during off hours for handling critical system events.

Part 2: Knowledge & skills

By 'knowledge and skills' we don't mean the obvious technical knowledge and network 'know-how' your team members must hold to run day-to-day operations, but rather –

How you can ensure your team's skills are used to their best potential, and how to keep those skills up to date over time.
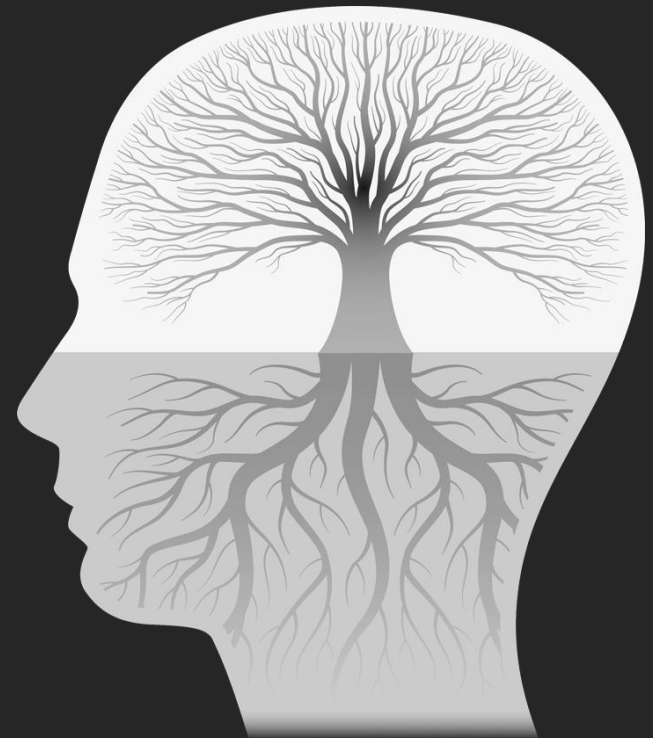
Clearly defined roles

Definition of roles may vary between data centers and will depend on team size, the IT environment and tasks. Still, there should be a clear distinction between the roles and responsibilities of operators vs. shift supervisors in the NOC.

Why does it matter?

Mostly because it affects decisions making. Without clearly defined roles and responsibilities, disagreements between operators lead to late decisions and actions, or to no decisions taken at all. This can affect customers, critical business services, and urgent requests during off hours.

It should be clearly defined, therefore, that a shift manager makes the final decisions.

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Tasks & responsibilities

Another potential problem caused by the absence of a clear role definition is the division of tasks between operators and the shift leader.

A shift manager should be responsible for: prioritizing tasks, assigning work to operators based on their skills, verifying that tickets are opened properly and that relevant personnel are notified when required, escalating problems, communicating with management during important NOC events, sending notifications to the entire organization, preparing reports, and making critical decisions that impact many services, such as shutting down the data center in case of an emergency.

Operators, on the other hand, should be responsible for handling the technical aspect of incidents – either independently or by escalating to another team member with the required skills. Operators are also responsible for following up and keeping tickets up to date.

While it might sound as if operators lack independence and responsibility, this is not the case. When faced with technical challenges, operators' input and skills are probably the most critical for resolution and smooth NOC operation. Operators provide additional insights into problems, and can provide creative solutions when the standard procedures fail to work.

NOC employee training

How often have you started a new job, without receiving any orientation, mentoring or guided training?

A new NOC operator may not know where to find a procedure or how to execute it, or in a more severe case - take a decision that causes equipment damage or results in critical downtime.

Make sure to put in place an extensive training program for new NOC employees. Ideally, such a program would consist of one week of classroom training followed by three weeks of hands-on training under the supervision of a designated trainer.

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Make sure experienced NOC members, preferably shift leaders, train new employees. Release trainers from all other duties to ensure that the training does not gradually fade between all the urgent tasks.

Update the training program on an ongoing basis, and make sure it includes topics such as required users and permissions, known problems, troubleshooting, teams and important contacts.

Communication & Collaboration

A good communication flow between NOC members and other IT teams has many advantages. It propels professional growth, provides opportunities for advancement in the organization, and makes it easier to approach other teams when requiring assistance. But most importantly – it allows NOC personnel to see the larger picture. NOC members that are aware of projects, services and customers' needs, simply provide better service.

How can you improve communication? Here are a few ideas:

- Make sure a member of the NOC attends weekly change management meetings and communicate issues or upcoming activities, such as planned downtime, to the rest of the team.

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- Define NOC members as focal points for important IT areas, such as NT, UNIX, Network, or a specific project. These members attend the meetings of the relevant teams, deliver new information and knowledge to the rest of the NOC, and handle specific professional challenges.

- Encourage and promote collaboration between NOC team members. When your team members are willing to help each other, information is shared more easily, and problems are resolved more quickly and efficiently. If the NOC team is geographically spread out or is located in different countries, you should spend even more efforts on communication and collaboration, to overcome cultural and language barriers.

Part 3: Processes

What are the operational, structured processes that you should implement for effective and repeatable results?

Here are our top ones.
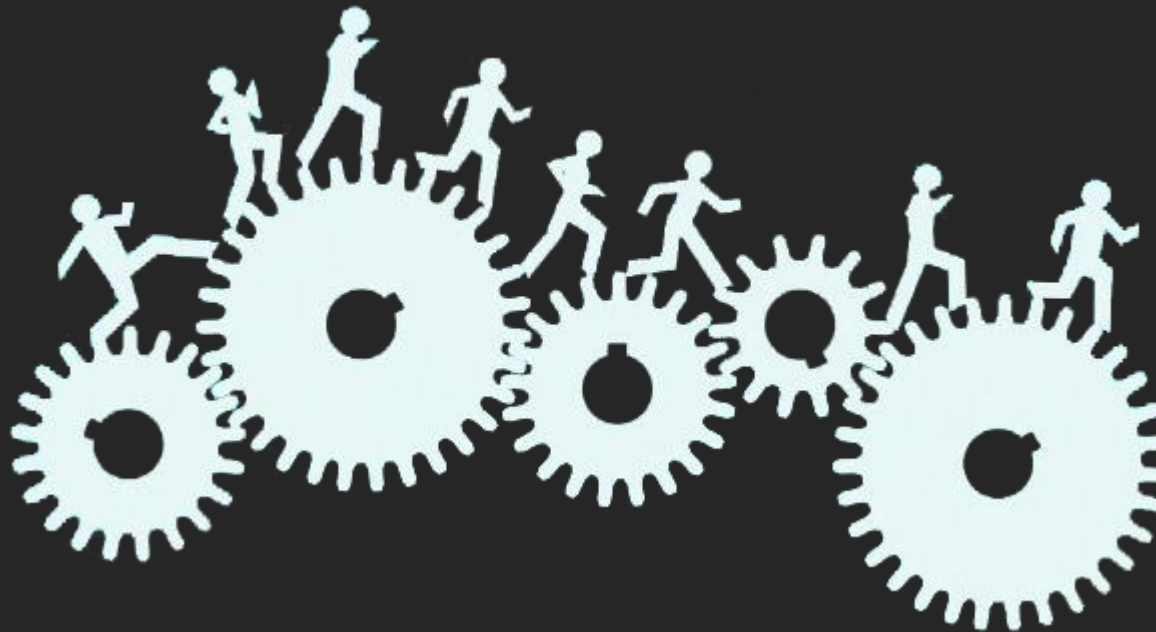
Escalation

You want to establish a clear cut escalation process. One method is an escalation table, which outlines the protocol, channels for escalating issues and contact personnel with the appropriate expertise.

For example, see the table below defining the escalation procedures for DB related problems.

Time Frame	Escalate To	Method
0+15 min	DB on call	SMS
0+30 min	DB on call	Phone
0+60 min	DB Group Leader	Phone
0+90 min	UNIX & DB Project Manager	SMS
0+120 min	UNIX & DB Director	SMS

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Prioritization

The process of prioritizing incidents is different in each NOC, and therefore should be clearly defined. Incidents should never be handled on a first come, first served basis. Instead, the shift manager should prioritize incidents and cases based on the importance and impact on the business.

The entire team should be familiar with the NOC "Top 10" projects, and have an understanding of what signifies a critical incident – whether it is the temperature rising in the data center, a major network cable breaking, service 'x' going down, or anything else.

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Incident Handling

Both NOC operators and shift managers should be familiar with the specific process of handling incidents.

The incident handling process should cover issues such as:

- Full technical solution, if available.

- Escalation to appropriate personnel.

- Notification of other users who may be directly or indirectly affected.

- 'Quick solution' procedures or temporary workarounds for complex problems that may take longer to be resolved.

- Incident reporting.

Conclusion

Employing the proper tools, skills and processes in your NOC will allow you to run more efficient network operations and ensure smooth day to day operations.

The purpose of these NOC best practices is not only to enable smooth ongoing operations. It is also to advance your team with a better understanding business needs, the IT department and the customers; it is to encourage progress and growth among team members; and most important, it is to make a healthy and supporting work environment that will enable providing superior service.

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