

Network Infrastructure Language

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Introduction

In large companies a network can be very complex, which can lead to computers or smaller networks being lost and forgotten. Having a simple visual overview of your entire network can help ease the job of the IT maintenance staff. It can also be shown to managers and customers who do not need to go beyond a high-level understanding. Expanding and moving networks can be simulated and visualized before any commitment to action is made. This saves time and money by choosing projects that makes sense and has funding.

Another thing large companies need are numbers and reports on the network, which controls productivity. By having reports, management can locate spots where you need more staff to maintain a network, or see the cost at building a network. These reports can help justify a much needed network, and also shows accountability for the equipment the company paid for. You could create a simulated network and get a rough estimate on the amount of supplies and cost would be. This will also help with any annual inventory updates and generating reports of the number of computers on a certain network.

Language Description

Network Infrastructure Language (NIL) is a language meant to get a visual representation of a network, and generate reports about that network. The concept is simple, where we create a network and descriptions about that network. The descriptions described can then be used as data to generate reports.

Implementation

The implementation of this language will be similar to that of Matlab or Python. There will be a command prompt that will take in the NIL code. The parameter settings are similar to that of tcl. Many parameters will have default values, to make it easier to create simple networks.

Where this language is useful

- Large companies
- Security companies (can help identify inherent risks in a network)
- IT/Maintenance staff
- Managers
- Finance
- System Administrators

Creating a network

In this language, one of the first things you will need to create is a network. Here is the general syntax:

```
[Name_of_Network [parameters / network]]
```

Networks are grouped by square-brackets followed by the name of that network. After that, the user can describe that network through parameters or define a new network within the previously named network.

Here is an example of how you would create a simple network:

```
>[Columbia_University -computers 5]
```

Here we have defined a network named "Columbia_University" consisting of 5 computers.

Information about our network

There are certain things we need to know about our network:

- Number of computers
- Connectivity speed between computers (100mb/Gigabit)
- Connecting hardware (hub, routers, switches)
- Type of Security (Open network, Classified, etc.)
- General Cost of Equipment
- etc.

The above descriptions would be the parameters used to describe the network.

Operations on a network

Once we have a network created, there are a list of operations we can do with this network:

- Add to a network

Ex. Adding a network "Room_101" to network "Columbia_University":

```
>Columbia_University -add Room_101
```

- Set the parameters used to describe the network

Ex. Changing the number of computers on network "Room_101" to 10:

```
>Room_101 -configure -computers 10
```

- Generate a visual overview of a network.

Ex. Get a visual over view of network "Columbia_University"

```
>Columbia_University -draw
```

- Create reports about a network.

Ex. Get a report about network "Columbia_Univeristy":

```
>Columbia_University -report (networks, computers, cost)
```

- Etc.

Sample Code

This code will create a network and print it out:

```
>[Building_1 [Room_100 -computers 10]]
```

```
>[Room_101 -computers 12]
```

```
>Building_1 -configure -add Room_101
```

```
>Building_1 -print
```

Print command would show something like this:

