Predicting Traffic Patterns in Software Defined Networks

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Abstract

Just the prediction part

1 Introduction

We divided the work in four phases

- Observer
- Analyzing
- Plan
- Execute

A graphical representation is given in Figure xyz.
The first module, *Observer*, is implemented as a daemon in the cloud application. Every few minute it launches a python script which query the network controller and it stores the result inside the database.
The information saved is regarding to the network load, switches and flows.
The second one, *Analyzing*, is done looking through the information inside the database. A java application collect the data from the database and converts the knowledge in the Attribute-Relation File Format (ARFF). This format is an ASCII text file that describes a list of instances sharing a set of attributes.

The application depends on the *weka* (Waikato Environment for Knowledge Analysis) package, a well know suite of learning machine algorithms developed by the University of Waikato. The ARFF files are read by the weka package and used to produce the model that is used to make the predictions. The third element, *Plan*, is demanded to the Administrator. He or she can write rules to specify what to do when a particular event occurs. The creation of the rules can be done from the cloud application and they are stored inside the FloodLight controller. The last phase, *Execute*, is done by the controller. It monitors the network and every few minutes it makes predictions using the previously generated model. When it perceives from a forecast that some rules can be applied, it fires them.
Every module is uncoupled from the others. This design decision of modularity gives us the possibility to change or upgrade every module whenever there is the necessity.
This feature is crucial for the prediction phase.

Net -¿ Mininet
Observer -¿ Daemon Analyzer -¿ Weka -¿ Struttura modulare -¿ Cambiare algo quando si vuole Plan -¿ Operator w/ Web Interface config the FloodLight Module Execute -¿ FloodLight Module exe the rules

2 Weka

2.1 Configuration

2.2 DataSet

2.3 Evaluation

2.4 Result

2.5 Discussion

Avere 50% di successo -¿ 10 volte meglio di sparare a caso $1/21 = 4.76\%$