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## An Alarm Correlation System for SDH Network

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### Summary

- Introduction
- Alarm Correlation
- SDH networks
- Problems & Questions
- How to Solve It
- The System Proposed
- Final Considerations

## Introduction

- **The Telecom equipment evolution**  
More Softwares; New Technologies;  
More Intelligencies;
- **The Focus in Management**  
Functions on the equipments (FCAPS);  
New services; More Quality;
- **The increase of the networks complexity**  
More circuits; More equipments;  
Technology diversity; New services;

## Alarm Correlation

What is it?

- It is a process that provides a minimum set of fail hypothesis, considering a certain alarms set;
- It's multiples alarms interpretation, leading to a new meaning to the original alarms;

What for?

- Decrease the number of alarms;
- Increase the semantic value of alarms;

## Alarm Correlation

Why do it?

- One item creating several notifications;
- Fault intermittent;
- Alarms each time that a item is invoked;
- A unique fault can be detected by different Nes;

## SDH networks

- Alarm with high semantic value;
- Great number of alarms;
- Great number of alarms per events;
- High standard;
- There is a management function built-in;

## Problems & Questions

How identify a event in a SDH network;  
What technique to use;  
The SDH equipment management behaviour;

## How to solve it

Using the SDH equipment characteristics:  
There is no lost of alarms in a SDH network;  
The alarms are standard;  
Does not have alarms delay;  
There's a protection to the SDH network;  
The technique choice:  
Rule-based systems, but;  
Very difficult to write the rules;  
The code approach is easy to write the rules;

## The system proposed

**External Agent**: It collects and put together the alarms created by the SDH network

**Grouping Function**: It groups the alarms using a time criterion

**Correlation Function**: It does a correlation of the grouped alarms;

**Communication Server**: It controls the communication between the two others modules

## Final considerations

- Do not wait for generic solutions;
- There is no solution for all cases;
- A deep knowledge about the network behaviour;
- Use the characteristics of the network;