



Cisco IOS Service Diagnostics



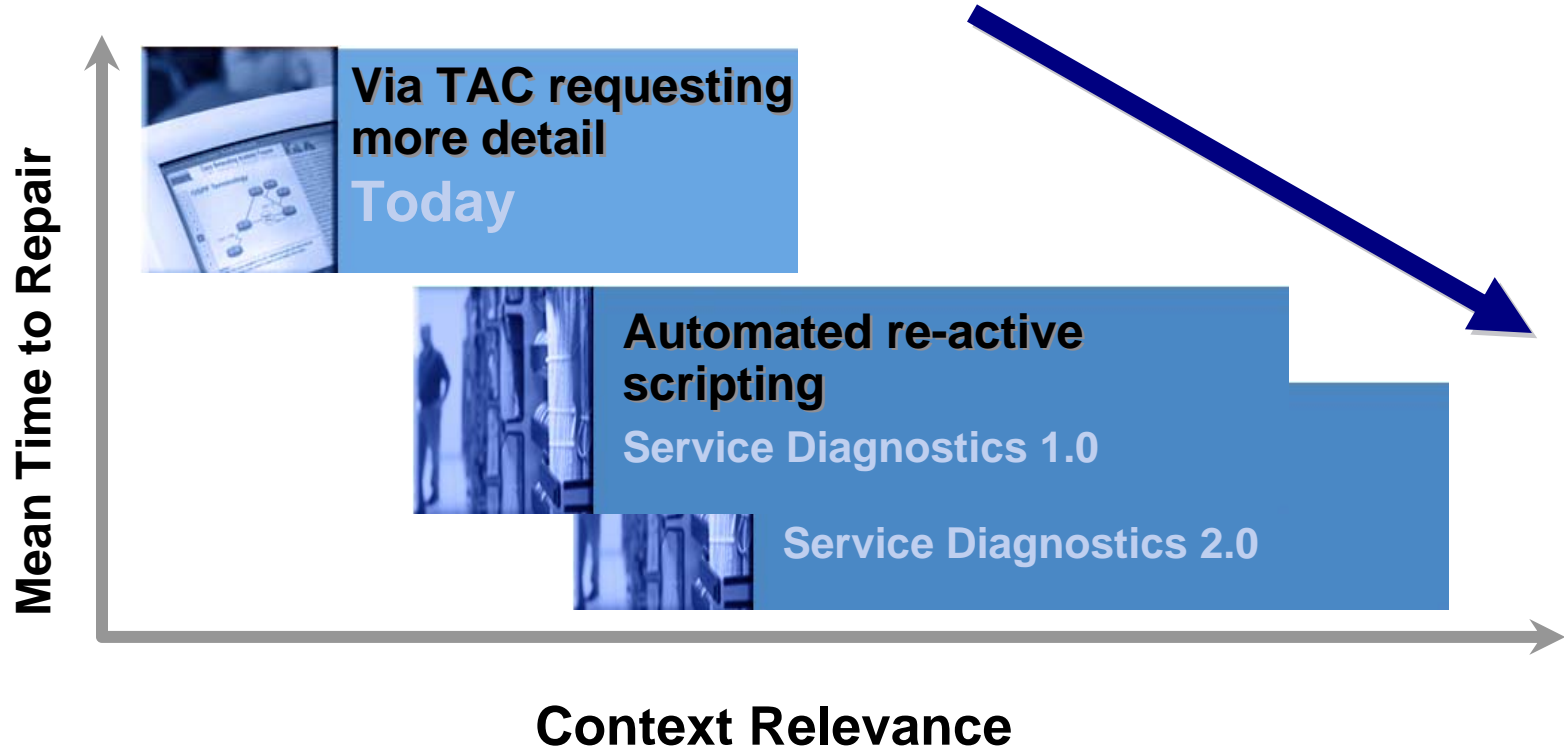
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Service Diagnostics – Introduction

- **Designed to help solve diagnostics issues using an **event-based embedded** network management approach**
 - Focused on “service” domain experience
 - Scenario’s seeded by Cisco’s TAC for OSPF, QoS and BGP
 - Embedded Resource Manager (ERM) CPU, memory, and buffer monitoring scripts
- **Provide infrastructure to facilitate the deployment of customized diagnostics functionality**
- **Provides a set of scripts addressing specific diagnostics scenarios**
- **Scripts available for editing and use by customers on the Cisco Beyond – Product Extension Community**

<http://cisco.com/go/ciscobeyond>

Diagnostic's View

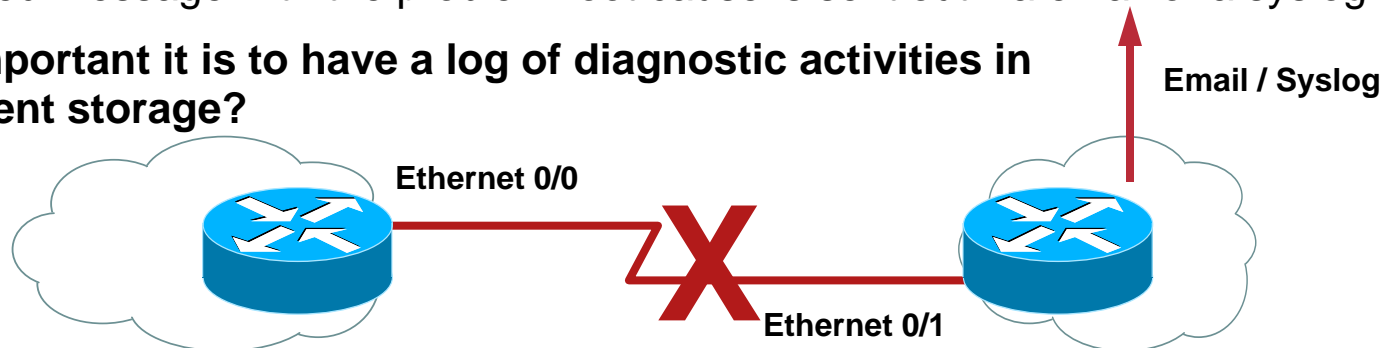


1.0 - Key Features

- 12 scripts for OSPF, BGP, QoS, and ERM
- Ability to run scripts proactively and in reaction to network events
- A rich set of general reusable libraries
- Script management made easy with utility scripts
- Scripts are platform independent; can run on all Cisco devices supporting Tcl, EEM
- Digitally Signed Tcl scripts
- Email and Syslog notification of diagnostic results
- Optional administration via Embedded Menu Manager (EMM) Menu Definition File (MDF)

Example OSPF Diagnosis

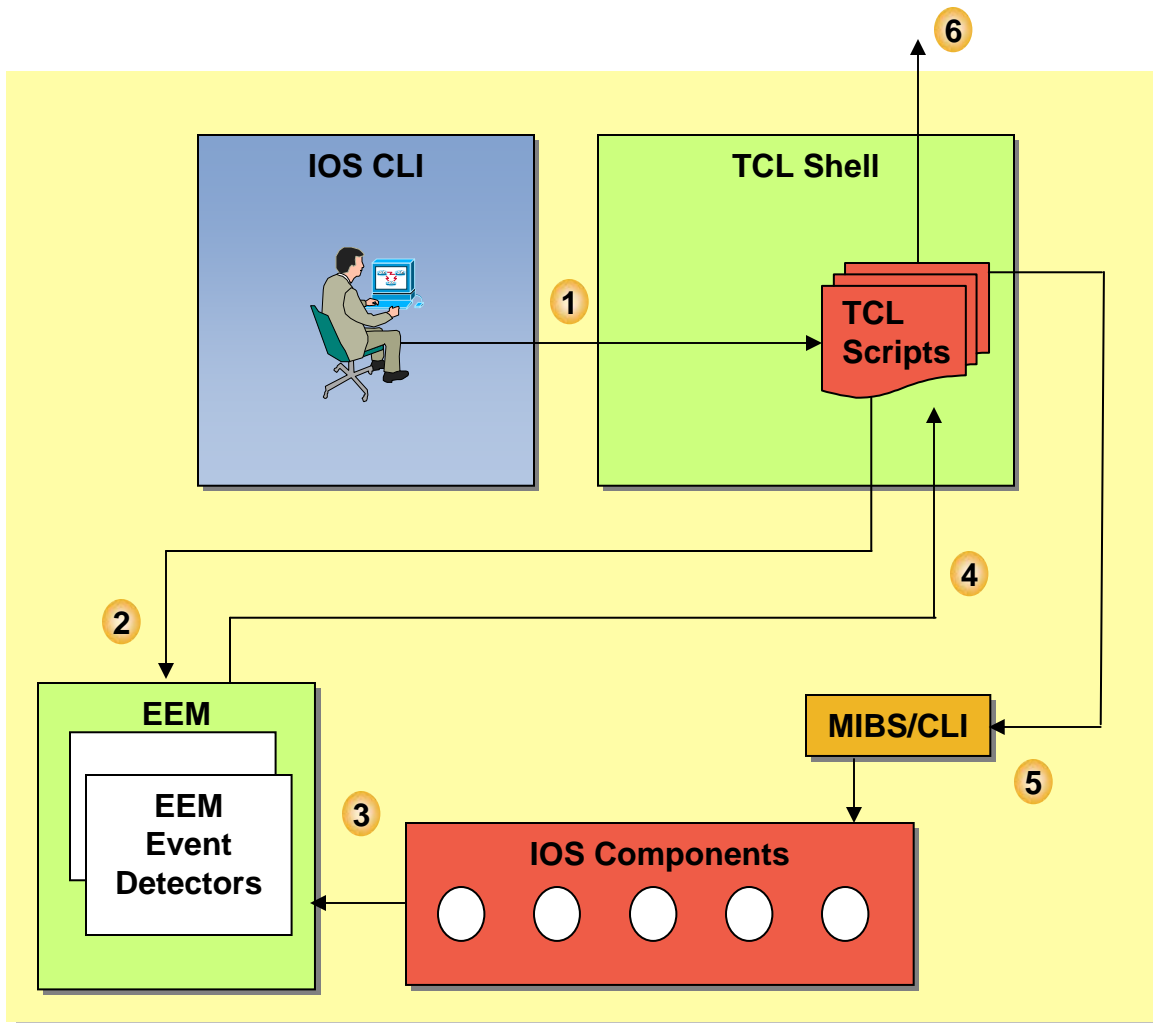
- PROBLEM: OSPF neighbor state goes from FULL to DOWN
- TRIGGER: Syslog message indicating “OSPF neighbor state going from FULL to DOWN” triggers OSPF diagnostic script
- ACTION: Diagnostic script checks OSPF and other configuration to identify the root cause
- Problem could be:
 - a. Mismatch area ids
 - b. Incorrectly configured passive interfaces
 - c. Incorrectly configured “network” command
 - d. Incorrectly configured interfaces (link status is DOWN)
 - e. Blocking access lists
 - f. Other
- A detailed message with the problem root cause is sent out via email or a syslog message
- **How important it is to have a log of diagnostic activities in persistent storage?**



Example OSPF Diagnosis Workflow

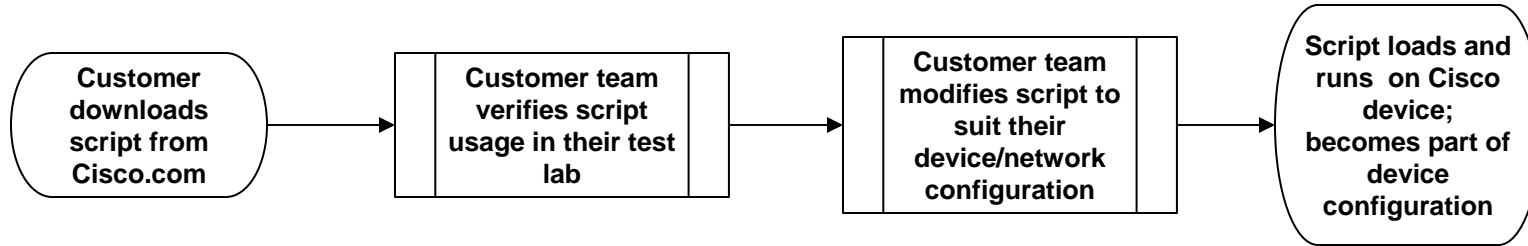
For OSPF neighbor problem :

1. From IOS CLI, user runs appropriate Tcl script to deploy OSPF policies
2. This script sets up EEM policy to be triggered when a syslog message indicating OSPF neighbor problem is generated
3. EEM event detector detects the syslog message on the event
4. EEM invokes registered policy script
5. The script probes the configuration and status of OSPF using CLI/MIBS and diagnoses the root cause
6. A notification is sent out (email or syslog etc.) as configured

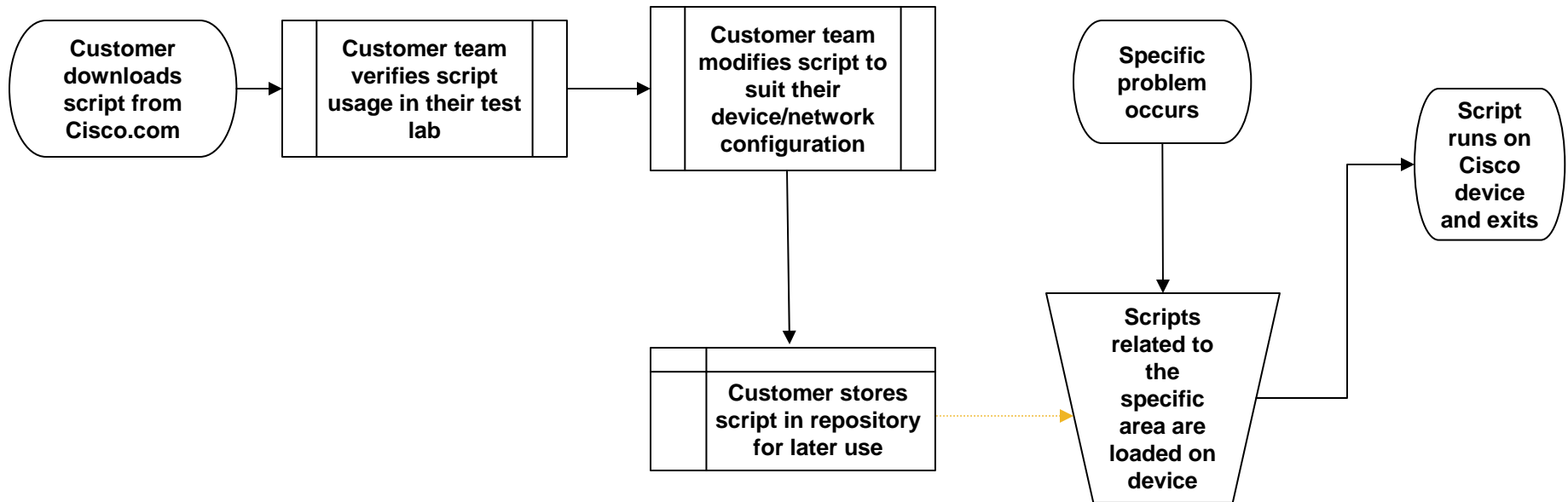


Typical Work Flow

Customer Use Case 1: Script is always running on device



Customer Use Case 2: Script is loaded to troubleshoot specific area



Benefits

- **Cost savings (reduced MTTR)**
- **Increased network uptime**
- **Automatically identify the most common root causes for the most common failure scenarios related to BGP, OSPF, QoS**
- **Automatically collect additional context information that is relevant to diagnosing a problem, to accelerate problem resolution**
- **Infrastructure to customize and add additional diagnostics**
- **Enhanced programmable platform capabilities of Cisco IOS Software**



