



## TR-069 Testing Issues

*Meeting the TR-069 Testing Challenge Requires New Tools*



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### **Summary**

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The TR-069 specification from the DSL Forum defines a new protocol for remote management of CPE devices. The new CPE WAN Management protocol (CWMP) provides an interface for ISPs to manage and monitor CPE devices in a vendor neutral fashion instead of proprietary solutions.

Adding support for CWMP to an existing CPE product involves supporting several new network technologies including XML and SOAP. The new CWMP interface for configuration and management must be integrated with the underlying implementation currently in place. This paper examines some of the new CWMP testing challenges and the need for new testing tools including the CDRouter TR-069 test suite from QA Cafe.

### **The Need for Test Automation**

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Many CPE vendors will be adding a great deal of new code to their products to support CWMP. This may include developing their own CWMP stack or integrating a third party CWMP stack into their implementation. With the volume of new and changing code, the test process needs automated tools in order to quickly test and retest often.

Regardless of the development process that is employed, the CWMP test team will need to retest several CPE firmware images during any release cycle. Since the TR-069 specification was finalized in May 2004, several new updates and clarifications to TR-069 have been made in additional Working-Text (WT) documents from the DSL Forum (WT-121, etc). As TR-069 matures, it is likely that other changes will still occur and drive the need to retest CWMP implementations.

Automated test tools have a huge advantage over a manual test process during the initial deployment phases of TR-069. With an automated process, developers and quality assurance teams can be confident that the same tests are being performed the same way each time, leading to consistent and accurate results.

## **The Need for In-house Tools**

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Most ACS vendors have certification tools and labs for CPE devices. However, long before CPE devices reach this level of formal testing, the CPE development staff needs the ability to quickly test against an ACS. It is important to detect defects as quickly as possible to minimize time lost. If the CPE vendor relies solely on the ACS vendor certification process, the risk of catching a simple defect at a late stage increases.

While CDRouter TR-069 does not replace the interoperability testing between an ACS vendor and the CPE, it does provide a practical way to offer in house ACS testing capabilities. CDRouter TR-069 gives the CWMP development and test team a tool for running through the core functionality of CWMP much faster than manual testing. Not only does this allow testing early and often in the development cycle, but it also reduces the time and overhead of sending new code off site to a third-party for validation.

## **The Need for Robustness**

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QA Cafe's own test results for TR-069 implementations already on the market show that the biggest problem is not interoperability. Current TR-069 implementations suffer from robustness issues. Heavy usage of the CWMP interface leads to crashes and resource leaks on the CPE that result in partial or complete failure of CWMP.

CDRouter TR-069 and the CDRouter testing framework directly address this issue by providing tools for robustness testing. CDRouter TR-069 can be configured to constantly repeat a battery of CWMP tests against the CPE device. In a short period of time, CDRouter TR-069 can subject the CPE to a higher number of CWMP sessions to help determine if memory leaks or resource issues exist.

## **The Solution**

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QA Cafe's CDRouter TR-069 test suite provides an automated testing environment for TR-069 and CWMP. With the release of CDRouter TR-069, CPE vendors now have the tools to help speed up the development and testing of TR-069.

CDRouter TR-069 offers over 70 unique test cases including an automated version of PD-128 Interoperability Test Plan for TR-069 Plugfests. More details on CDRouter TR-069 can be found at <http://qacafe.com/show/tr069>.

## **More Information / References**

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CDRouter TR-069 <http://www.qacafe.com/show/tr069>

TR-069 on Wikipedia - <http://en.wikipedia.org/wiki/TR-069>

[TR-069] <http://www.dslforum.org/techwork/tr/TR-069.pdf>

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## **Additional Information**

For additional information, contact:

QA Cafe  
155 Fleet Street  
Portsmouth, NH 03801  
Tel: (877) 332 0784  
Email: [info@qacafe.com](mailto:info@qacafe.com)