

Network Working Group
Internet-Draft
Intended status: Informational
Expires: June 16, 2014

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December 13, 2013

Store, Carry and Forward Testing Requirements
draft-ivancic-scf-testing-requirements-01

Abstract

This document provides guidelines and requirements for testing Store, Carry and Forward (SCF) systems and protocols.

The Testing Requirements document is one of three that fully describe the SCF system. The other two are the SCF Problem Statement and the SCF Requirements and Expectations document.

This initial document is currently just a skeletal outline, published so the other two SCF documents can reference it.

Status of This Memo

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[1.](#) Terminology

Detailed terminology is given in the SCF Requirements and Expectations document [[I-D.ivancic-scf-requirements-expectations](#)] and will not be repeated here.

[2.](#) Introduction

As background, the SCF Problem Statement and SCF Requirements and Expectations documents are suggested reading. The SCF Problem Statement describes the core SCF problem and gives an assessment of the ability to use existing technologies as solutions. In addition, it provides a number of SCF deployment scenarios.

In [RFC760](#), one can find what has become known as Postel's Law or the Robustness Principle, "In general, an implementation should be conservative in its sending behavior, and liberal in its receiving

behavior." This rule was originally targeting protocol implementation. A corresponding rule for testing may be, "If you claim the protocol can do it, you have to prove it - test it."

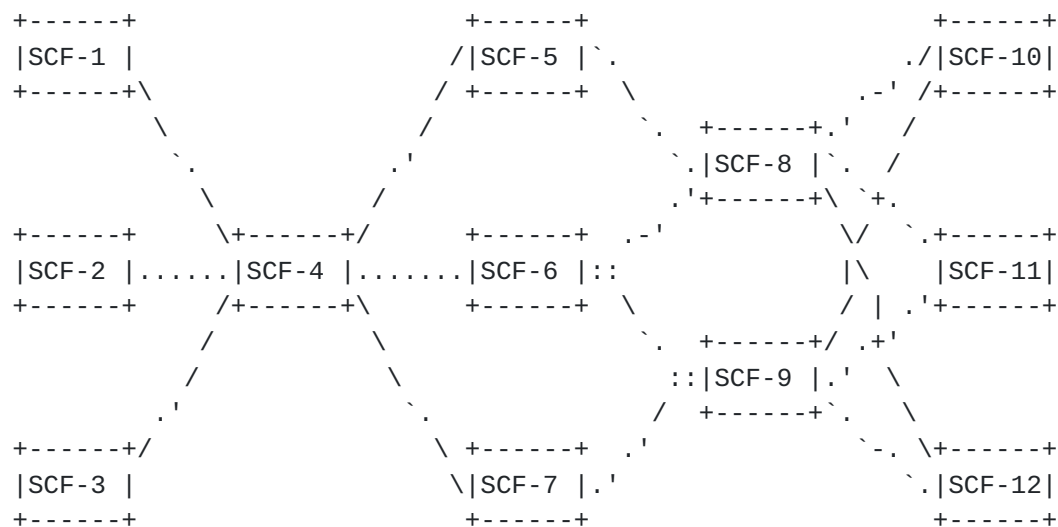
Conversely, being able to simply ping an end system does not indicate the network is fully functional. It just means that there is connectivity and the potential for the network to be fully functional.

The primary motivation for developing this document is to establish thorough, repeatable, tests that will fully exercise a SCF system. Past experience has shown that testing of SCF systems is too often inadequate. For example, tests have been performed on SCF systems in fully-connected, high-bandwidth networks where only forwarding would be exercised, or the traffic would be so minimal as to never tax the storage or queueing. Such tests are valid as a starting point, but insufficient to determine that a protocol or implementation will working properly in a reasonably-scaled deployment.

A secondary motivation is to improve implementations by providing a known test environment. Knowing some possible ways that the protocol and system will be evaluated may help establish how the code is developed, as well as identifying hooks for monitoring particular processes.

3. Test System

Figure 1 illustrates a generic testbed for testing many aspects of the SCF protocol. The system consists of 12 SCF agents and 16 links. Any or all of the links may be disconnected at any given time. Even though the system is simple, some complexity is necessary because the system must accommodate testing of aggregation, deaggregation, and fragmentation with multiple container flows of various sizes and priorities.



SCF Test Network/postamble

Figure 1

4. Test Requirements

List requirements and test for each of the protocol requirements in the "SCF Requirements and Expectations" document .

5. Security Considerations

This document is informative and provides guidelines and Requirements for testing SCF systems and protocols. There are no security considerations.

6. IANA Considerations

This document neither creates nor updates any registries or codepoints, so there are no IANA Considerations.

7. Acknowledgements

Work on this document at NASA's Glenn Research Center was funded by the NASA Glenn Research Center Innovation Funds.

8. Informative References

[I-D.ivancic-scf-problem-statement]

Ivancic, W., Eddy, W., Iannicca, D., and J. Ishac, "Store, Carry and Forward Problem Statement", [draft-ivancic-scf-problem-statement-00](#) (work in progress), July 2012.

[I-D.ivancic-scf-requirements-expectations]

Ivancic, W., Eddy, W., Iannicca, D., and J. Ishac, "Store, Carry and Forward Requirements and Expectations", [draft-ivancic-scf-requirements-expectations-00](#) (work in progress), July 2012.

[RFC4838] Cerf, V., Burleigh, S., Hooke, A., Torgerson, L., Durst, R., Scott, K., Fall, K., and H. Weiss, "Delay-Tolerant Networking Architecture", [RFC 4838](#), April 2007.

[RFC5050] Scott, K. and S. Burleigh, "Bundle Protocol Specification", [RFC 5050](#), November 2007.

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