Is the WSPP specification complete and accurate?

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Introduction

Background
What is WSPP, where did it come from?

Requirements specification issues
General discussion

The Monitoring Trustee work

Time-line

June 04 EC found MS Guilty (Article 82)
    Required to license compete and accurate specifications

Nov 05 Monitoring Trustee appointed
    Technical oversight

May 06 I was hired

Sep 07 CfI rules Microsoft does not have to pay
                                     for Advisors, etc.

Feb 08 WSPP documents public download
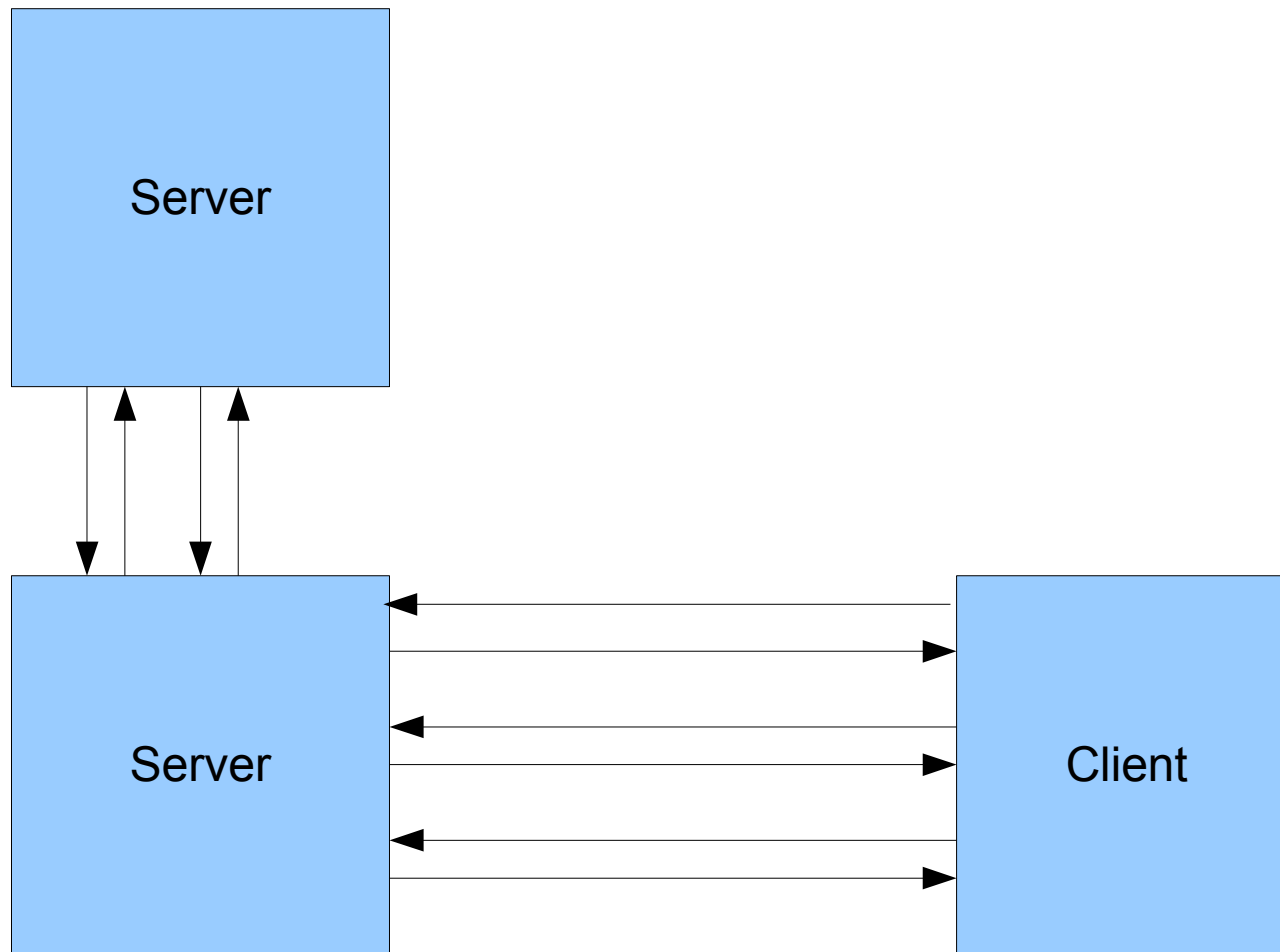
US-MS Case

DOJ anti-trust (Sherman act)

Client protocols
  MCPP

The Technical Committee

Ongoing
  Extended to May 2011

Windows Domain

Forms of Specification

Specify requirements/behavior

Stylized English
Mathematics

Source code
PERL

Skilled in the Art

Have to assume some level of knowledge
Switch of if water level above 100m for 4 seconds

Assume some level of intellectual ability

Specification Attributes

Complete

Accurate

Timely
ASAP

Usable

Complete

Nothing missing
For person skilled in the art

Traceability
Between specification and source code

Implement/Test

Accurate

Traceability

Implement/Test

Internally consistent

Unambiguous

Consistent/Unambiguous

Internal consistency

Multiple parses of same sentence
Lexical: *bank*
Syntactic: *young man and woman*

Stylized English

Create basis for
Resolving different wording interpretations
Required tests
Cost estimation
Optional constructs

Existing terminology
ISO (shall)
RFC 2119   (must)

The WSPP project

File, print, group and user administration services

Resources
People
Documents

What we did

Testing

What Commission wanted

Competitive market in server software

Licensees able to build drop-in replacements
Specifications available NOW

Document background

Did not exist

Microsoft initially offered source code

Resources: People

Microsoft
Documentation 40-50 man years (end of 2007)
Testing 200+ man years (end of 2008)

Monitoring Trustee
Technical Advisors: 5 full time
Support staff

Others
European Commission
TAUS

Resources: Documentation

Feb 2008

134 documents

98.1 protocol pages per document (92.4 standard deviation)

12,065 protocol document pages

3,823 support document pages

15,887 total pages

Feb 2009

27 additional documents

Trade-offs have to be made

Not getting 100% of anything

Trustee team acted in a quality assurance role

Method of working

```
        agree_template();
Start:  wait_for_document_release();
        get_documents()
        distribute_to_advisors()

        . . .
          {
          review_document();
          return_to_microsoft();
          }

        . . .
        if (not_finished())
          goto Start;
```

Sources of information

Network traffic

Other documents and implementations

Windows source code

Checking activities

Accuracy

  Gold, Silver, Bronze, the rest

Completeness

Follows template

Reads like a specification

Reads like a specification

Core
Every implementation MUST support

Optional/Variable
Can vary between implementations

Use of RFC 2119 terms
MUST   (34,957, mean 277.4 sd 355.8)
SHOULD (3,022, mean   22.9 sd   32.4)

On-the-wire monitoring tools

Wireshark

1+ MLOC

Netmon

WSPP not originally supported

Testing

Testing: a restricted form of implementation

Test Suites

Don't seem to exist for communication protocols

Not commercially viable?

Compiler testing

Ada, Cobol, Fortran: Government sponsored
Java: Written by language owner
C/C++: Two commercial suites

Linux Test Project

Plug-Fests

Vendors get together and connect their equipment

Microsoft started hosting such events

Model based testing

Model-based testing

A model is essential a finite state machine

C#+extensions/SpecExplorer

Disadvantages

Combinatorial explosion of states

More expensive that 'traditional' testing?

Test report

Only just started when MT closed down

TC reports show testing continuing

200+ man years so far

No negative testing

Non-goals
Implementation testing
Licensee testing

Conclusions

Did commission achieve its goals?

Are WSPP specifications complete and accurate?
Commission did not ask MT for an opinion

Used to create viable implementations?
Little/no experience implementing WSPP specifications

Who accrued the greatest benefit?
Microsoft

The DOJ still monitoring MS compliance

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