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Firewall Virtualization for Grid Applications
-
Work Group

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Agenda

0.) Agenda, note-taker, IPR statement, Charter discussion
- Ralph Niederberger (FZJ)

1.) Introduction and status of FVGA-WG
- Ralph Niederberger (FZJ)

2.) HPN SCP NONE Cipher Switching (Canceled)
- Chris Rapier (PSC)

3.) FiTP - A protocol draft for dynamic opening of Firewalls
- Ralph Niederberger (FZJ)

4.) Token Based Firewall Support for Firewalls - A proposal for an extensions of the FiTP protocol draft (Canceled)
- Mihai Cristea (UvA)

5.) Group discussions
- All

Introduction and status of FVGA-WG

Administrative Issues

Group Abbreviation:

- fvga-wg

Group Name:

- Firewall Virtualization for Grid Applications - Working Group

Area:

- Infrastructure

Group Summary

- Grid Computing
  - vision of applications having on-demand, ubiquitous access to distributed services running on diverse, managed resources like computation, storage, instruments, and networks among others, that are owned by multiple administrators.
  - dynamic, seamless Virtual Organizations (VOs) using distributed resources
  - application driven transport privileges from the network
  - pre-existing security policies within the network (firewalls, NAT, ALG, VPN-GW)
  - administrator/manual intervention to work.
- fi-rg has documented use cases & issues that Grid applications face (GFD.83) and has documented which cases need additional attention (GFD.142)
- fvga-wg
  - will leverage the application requirements from FI-RG
  - standardize a set of service definitions for a virtualized control interface into firewalls and other midboxes allowing grid applications to securely and dynamically request application/workflow-specific services

Goals/Deliverables

- Produce a standard set of service definitions that provide an abstract interface for an authorized grid application to specify its data-path traversal requirements:
  - Port opening/closing service
  - Data Plane and Service Plane interactions
  - Requests from within and outside the security domain
- A set of security recommendations surrounding the application interacting with the Firewall service at the control and data plane including AAA of the service requests
- A best practices document for the network-administrator and a grid-administrator to understand the architecture and security implications of this deployment including:
  - Deployment scenarios and use-cases
  - Interactions between various Grid components
  - Examples of successful prototype deployments
- The resulting standards from the working-group will enable Grid-Middleware/Network services developers to implement a virtualized firewall service, integrate with Grid-middleware security and provide a dynamic firewall service to the Grid applications.
- The working group will ensure that it is compatible with the OGSA architecture and leverages the security infrastructure and standards for Grid Applications.

Group Milestones

OGF23:	Charter discussion and group volunteers
OGF24:	Discussion on requirements to define the standardized service interface for virtualized Firewalls
OGF25:	Draft on Firewall-Virtualization-Service
	Discussion on Security, AAA and Grid-Security aspects
OGF26:	Firewall Virtualization-Service draft version 2
	First draft on Security recommendations (v1) for FVGA
OGF27:	Finalized Firewall Virtualization-Service draft
	Security Recommendations v2
	Two implementations and demonstration
	Discussion on Best Practices draft
OGF28:	WG-Last-Call for Firewall Virtualization-Service
	Final version of Security Recommendations
	First draft on Best Practices
OGF 29:	WG-Last-Call Security Recommendations
	Finalize Best Practices draft
OGF 30:	WG-Last-Call Best Practices Draft.

Future contributions

- **Mailing list:** fvga-wg@ogf.org
- **Projects page:** https://forge.gridforum.org/sf/projects/fvga-wg
- Contacts:
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  - Thijs Metsch: thijs.metsch@dlr.de

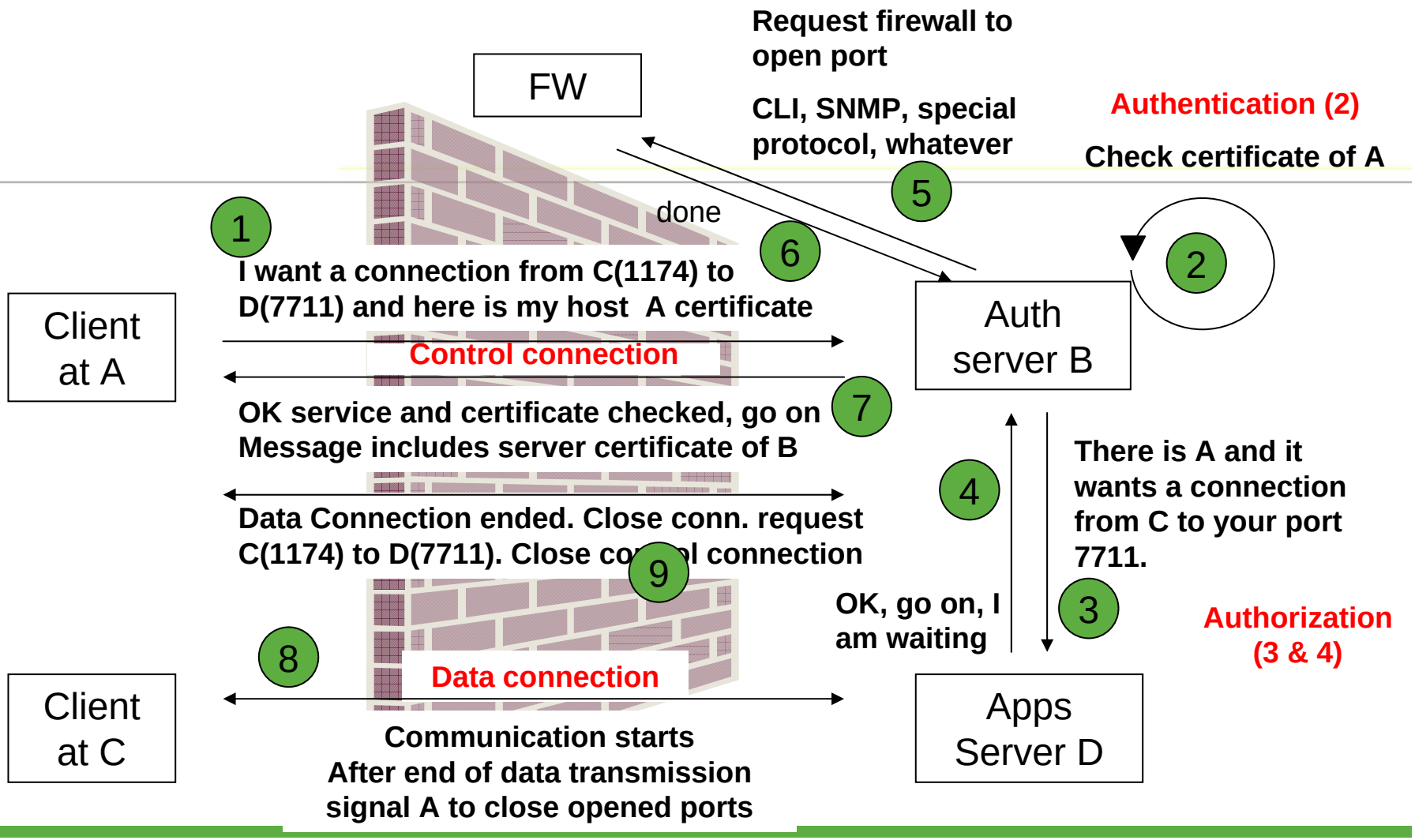
Proposed Solution

- Make middleware and network resources known to each other
  - Grid middlewares should know about communication path.
  - network resources should be opened dynamically.
- End-to-end applicability
- Local authorization/authentication
- Independence of the FW vendor/implementation
  - Capabilities may be different

First thoughts for a dynamic firewall configuration

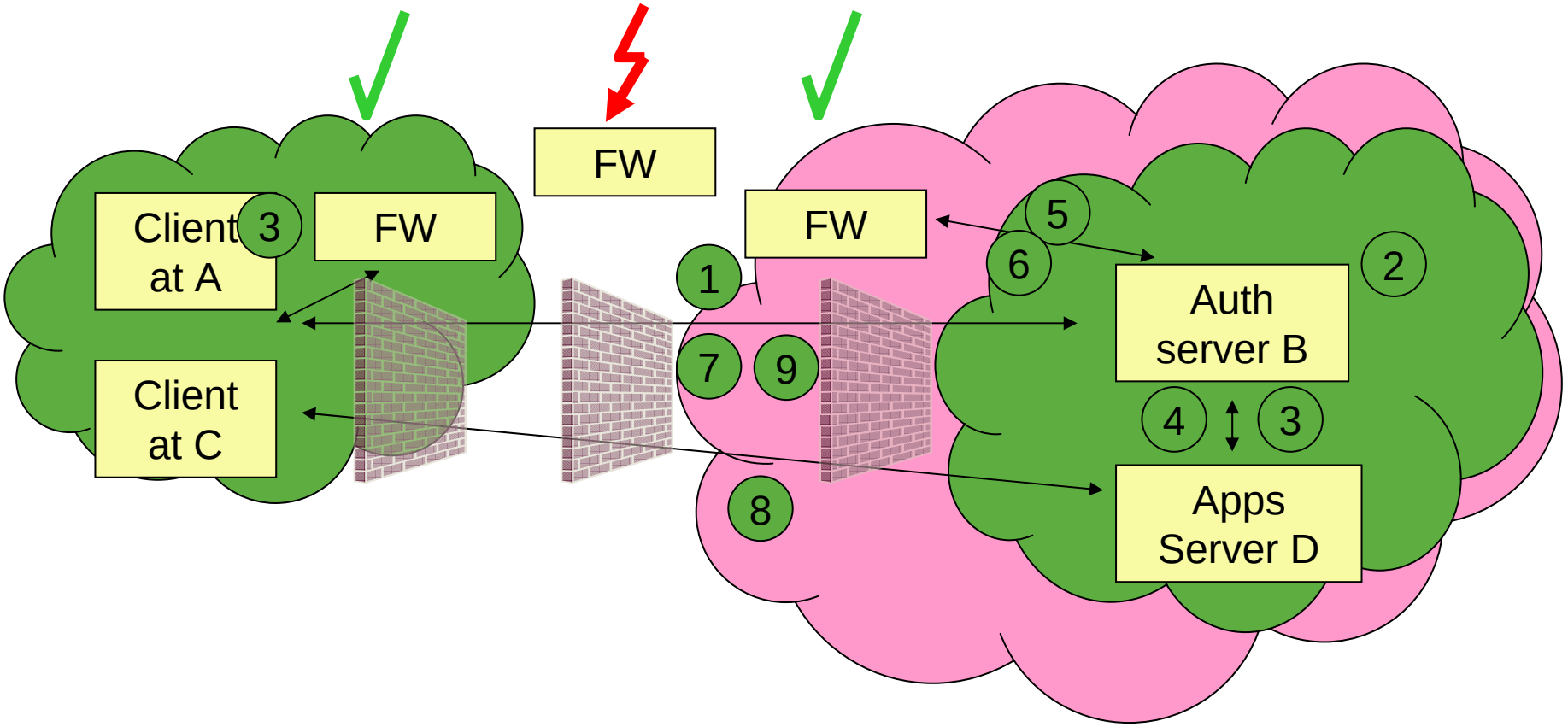
WebServices based FW opening

principle design



WebServices based FW opening

Multiple local, remote and external FWs



Open questions (1)

Which parts should be standardized?

- Control connection
- Authentication
- Authorization
- Data connection

Open questions (2)

What kind of connections should be allowed? Let be:

- A (Control-Connection-Client)
- B (Control-Connection-Server)
- C (Authentication-Server)
- D (Authorization-Server)
- E (Data-Client)
- F (Data-Server)

A=E &/v A≠E

B=C=D=F v B≠C≠D≠F v „any combination“

Open questions (3a)

Number of connections allowed?

a) Port A to Port B

b) Port [A1…An] to Port [B1…Bm]

c) Port * to Port *

d) „any combination“

If multiple streams allowed, define a standard format for specifications.

Example: Interpretation of [A1…An],[B1…Bn]?

a) [A1-B1],[A2-B2],…[An-Bn]

b) [A1-B1],[A1-B2],…[A1-Bn], [A2-B1],[A2-B2],…,[A2-Bn],…,[An-Bn]

Open questions (3b)

How does the exchange of used (to be used) ports take place?

a) Client says which one to use
b) Server responds which one to use
c) Client fixes client port and waits for server port
d) Any other recommendations?

Open questions (4)

It has to be checked, if

- FTP
- SIP
- H.323
- …..

control structures/protocols can be used.

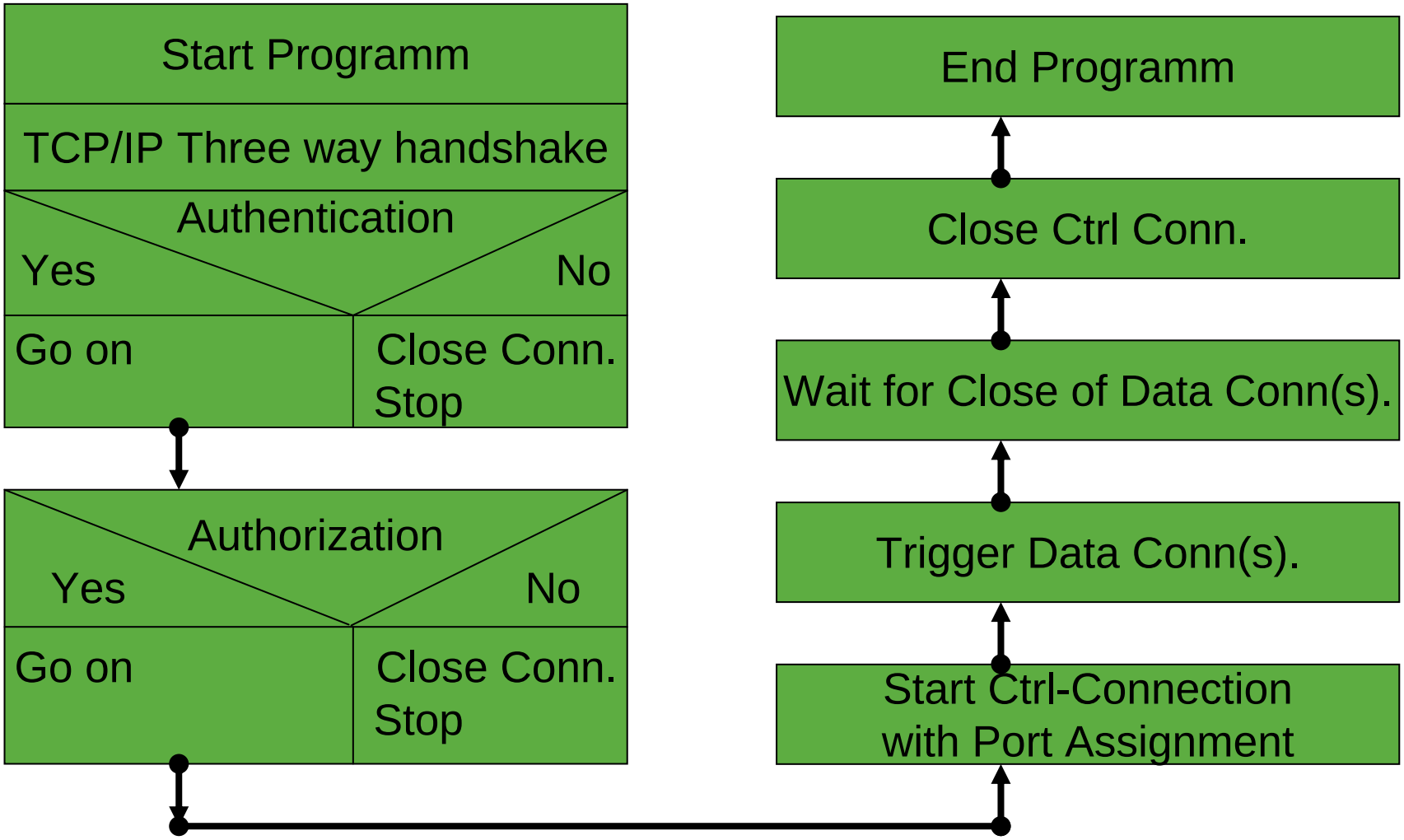
Using as opener as a whole or using parts of those protocols

Simple state machine

- Three way handshake
- Authentication
- Authorization
- Control connection established
- Agreement on dynamic port(s) to be opened including starting of session with data server (getting ports to be used)
- Data exchange (done between client and data server)
- Closing session with data server
- Closing control connection with client
- Finish connection

Of course there are additional states needed. The listing above is a first draft only.

Program flow chart



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Questions and discussion