The Hollowman

- An Innovative ATM Control Architecture -

Sean Rooney, May 14, 1997

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Standard ATM Signalling

General Approach

- Out-of-band control software runs on switch;
- Switches identify/execute/forward control messages;
- Applications initiate control using the egress switch;
- Simple, but ....

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Open ATM Signalling

General Approach

- 'Open up the box';
- Control architecture distinct from Physical network;
- Distributed Processing Env. as glue;
- Hopefully results in increased flexibility.

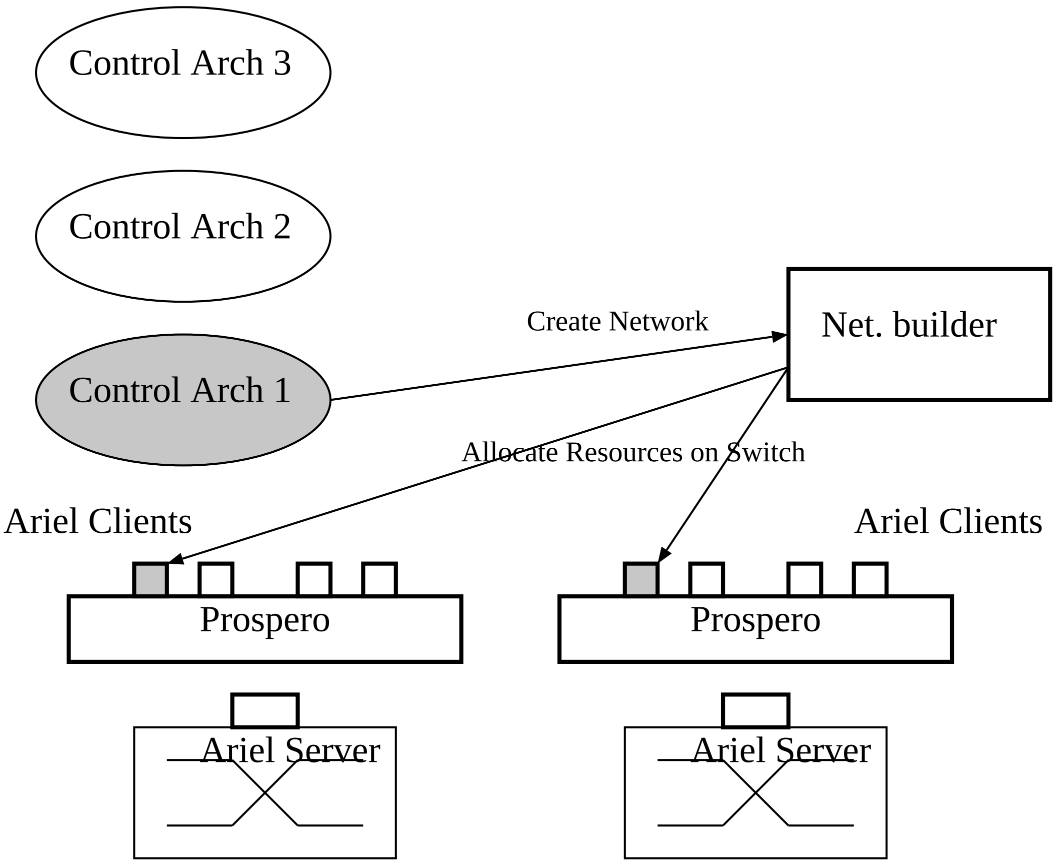
Open ATM Signalling

Cambridge Approach

- Open Signalling is attractive;
- Standards based signalling will remain;
- The two must coexist.
- No *one* right Control Architecture.

Open ATM Signalling

The Tempest



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Hollowman Implementation

What is the Hollowman ?

- An exemplar of an Open ATM Control Architecture;
- A platform for carrying out experiments;
- A set of components for building other Control. Archs.

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Hollowman Implementation

Structure (I)

- Trader;
- Soft Switch;
- Connection Manager;
- Host Manager;
- APIs.

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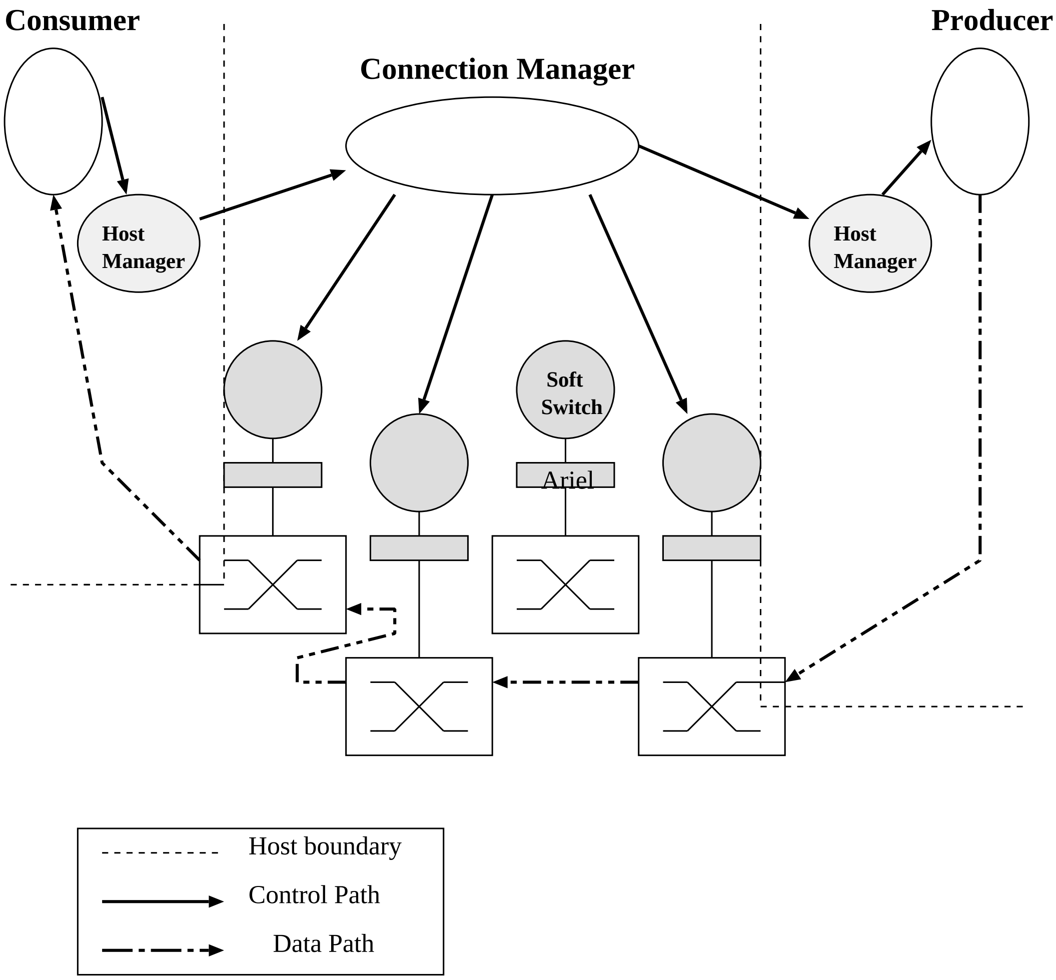
Hollowman Implementation

Structure (II)



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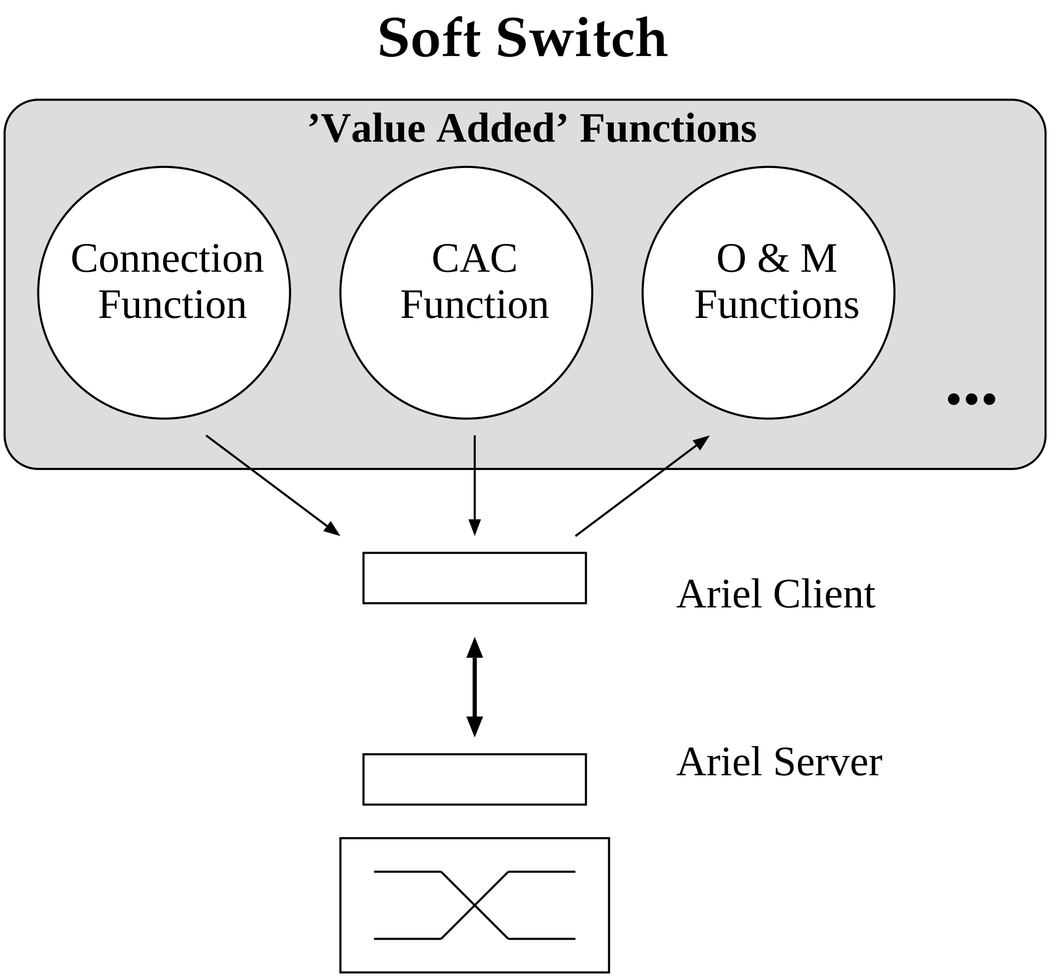
Hollowman Implementation



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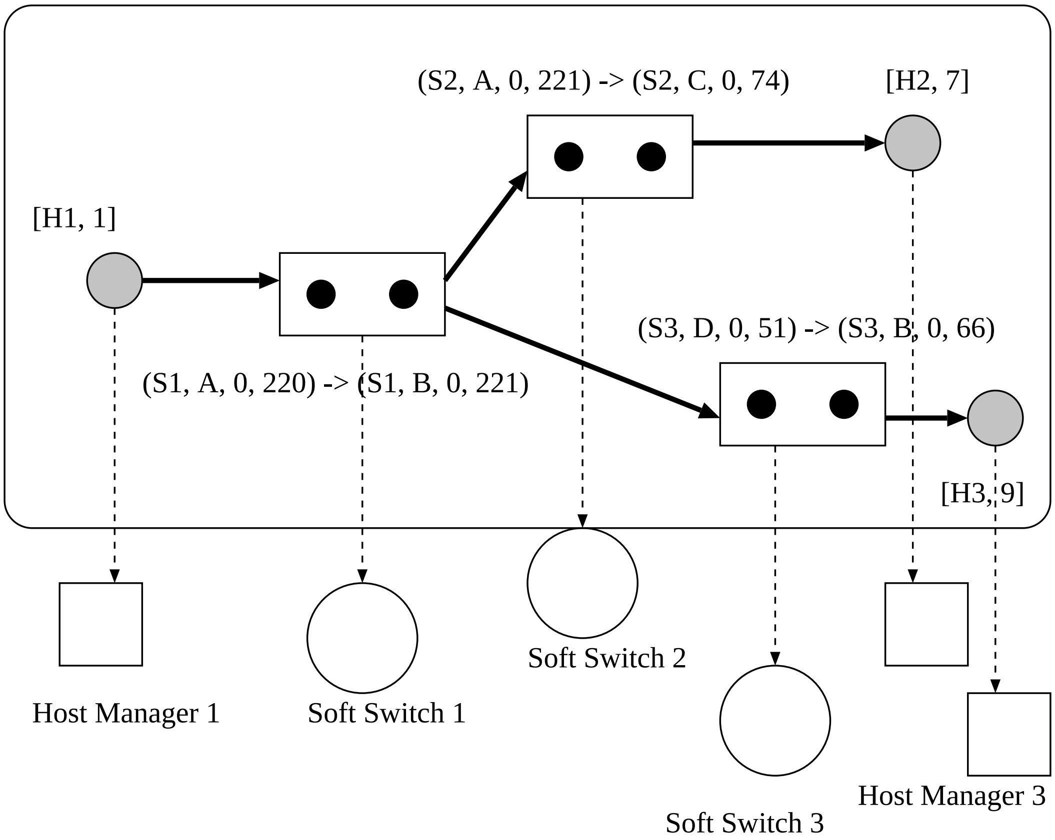
Hollowman Implementation

Connection Manager



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Hollowman Implementation

Host Manager

Time=T

Sink SAP Table

SAP	VCI	Application
0	Free	-
1	220	4567
2	Free	-

Offer Table

Offer	App. Id.	Call Back
X	9807	C1
Y	7654	C2

Time=T+1

Obtain SAP For Sink Offer = X

Sink SAP Table

SAP	VCI	Application
0	Reserve	9807
1	220	4567
2	Free	-

Offer Table

Offer	App. Id.	Call Back
X	9807	C1
Y	7654	C2

Time=T+2

Notify for SAP = 0, state = Active, VCI = 221

Sink SAP Table

SAP	VCI	Application
0	221	9807
1	220	4567
2	Free	-

Offer Table

Offer	App. Id.	Call Back
X	9807	C1
Y	7654	C2

Do Callback C1 listening on VCI = 221

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Hollowman Implementation

APIs

- BSD-socket like API;
- Traded Service API;
- Closure (Code Loading) API.

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Hollowman Implementation

Some Experiments

- Caching connections;
- Lazy evaluation of connections;
- Persistent connections;
- Performance.

Conclusion

- Hollowman is a simple Open ATM Control. Arch;
- Allows us to try out ideas;
- Just one of many Control Archs we run in the Tempest.