



Megaco/H.248 Protocol Implementation

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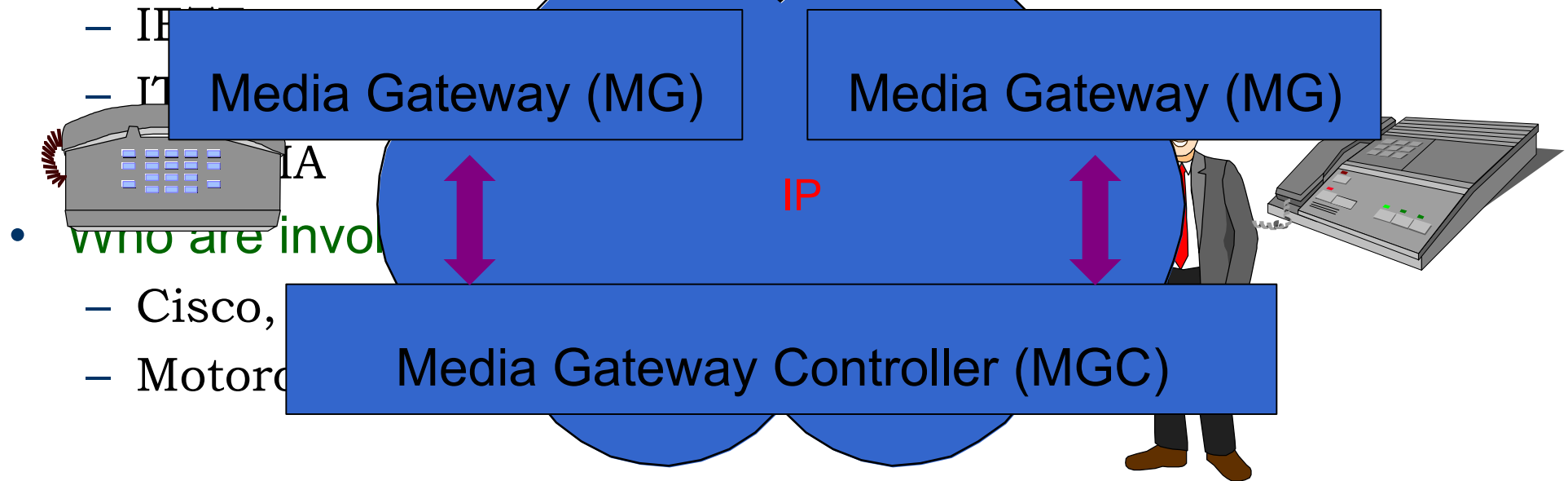
Agenda

- Introduction
- Project Plan & Requirements
- Call flows
- Implementation in OPNET: Network Model & Node Model
- Implementation in OPNET: Custom Real Time Protocol (RTP)
- Implementation in OPNET: Media Gateway Control (MGC)
- Implementation in OPNET: Media Gateway (MG)
- Project Status & Expected Results
- References
- **Q & A**



Introduction

- Problem in **Reality**
- Solution: Media Gateway Control Protocol
- A brand **NEW** area



- IP
- IT
- IA
- who are invol
- Cisco,
- Motorola

Master/slave Architecture

Project Plan & Requirements

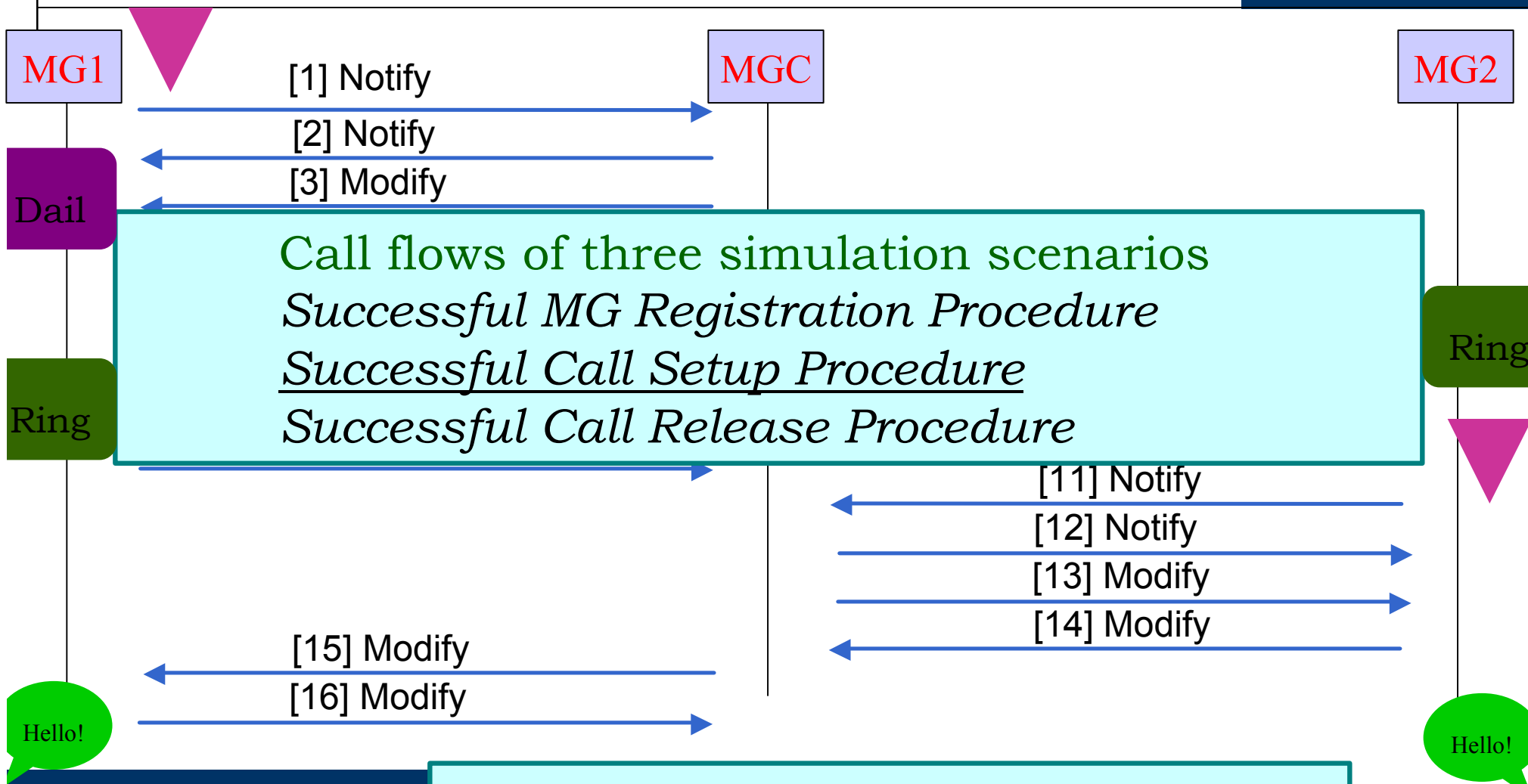
(<http://www.sfu.ca/~vswu/courses/CMPT885/project.htm>)



- Project Plan (Project is *Repeatable & Controlled*)
 - Version 1.1 (5 of 8 commands in 3 simulation scenarios)
 - Three main components: MG (IP Phone), MGC, Custom RTP
- Project Requirements
 - System Requirements
 - System Functional Specification (SFS), Version 1.4
 - SFS of Custom RTP, Version 1.0
 - System Interface Control Document (SICD), Version 1.1
 - Software Requirements
 - Software Functional Specification (SWFS) of MG, Version 1.0
 - SWFS of MGC, Version 1.0
 - SWFS of Custom RTP, Version 1.0



Call flows



Call flows of three simulation scenarios
Successful MG Registration Procedure
Successful Call Setup Procedure
Successful Call Release Procedure

Successful Call Setup Procedure



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Implementation in OPNET: Network Model

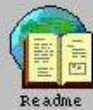
Megaco/H.248 Protocol Network

Control Info Flow: MGC ----> MG
Call Flow: MG <----> MG



Megaco/H.248 Protocol

Media Gateway Controller (MGC)



Media Gateway Controller(MGC)

Media Gateways (MG)

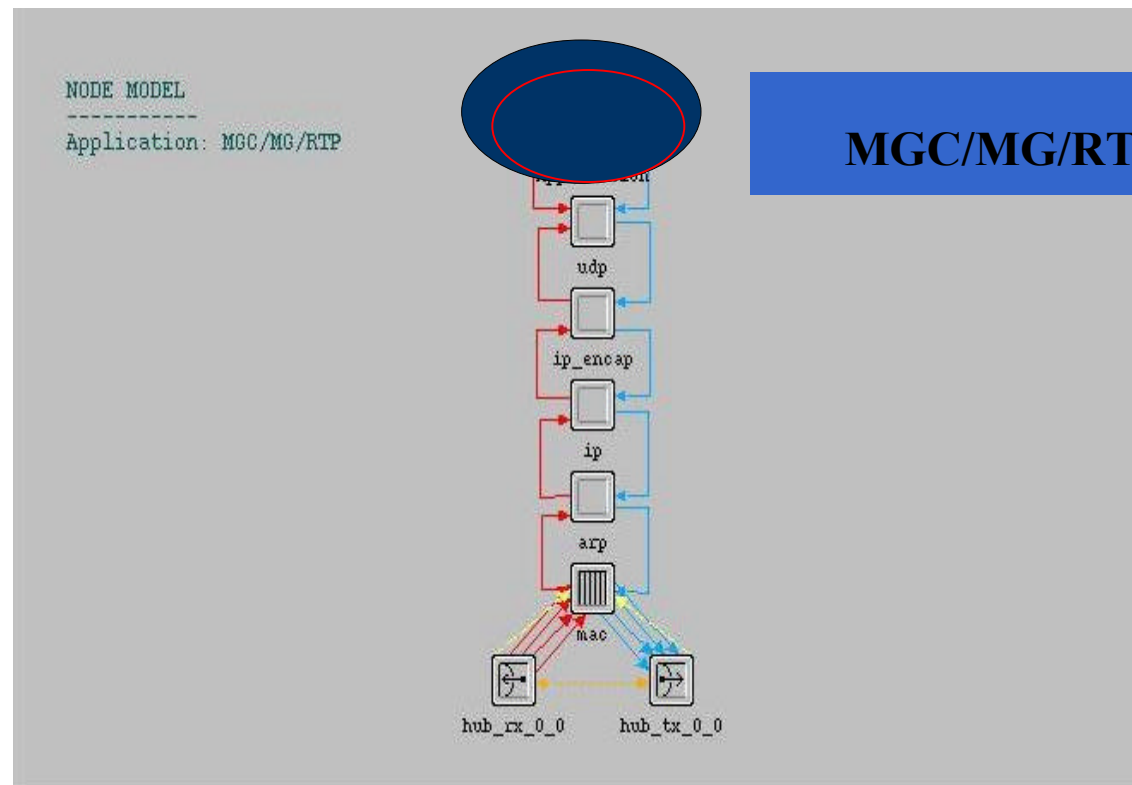


Hub



Network Model: Simulation of Megaco/H.248 Protocol

Implementation in OPNET: Node Model



Implementation in OPNET: Custom Real Time Protocol (RTP)

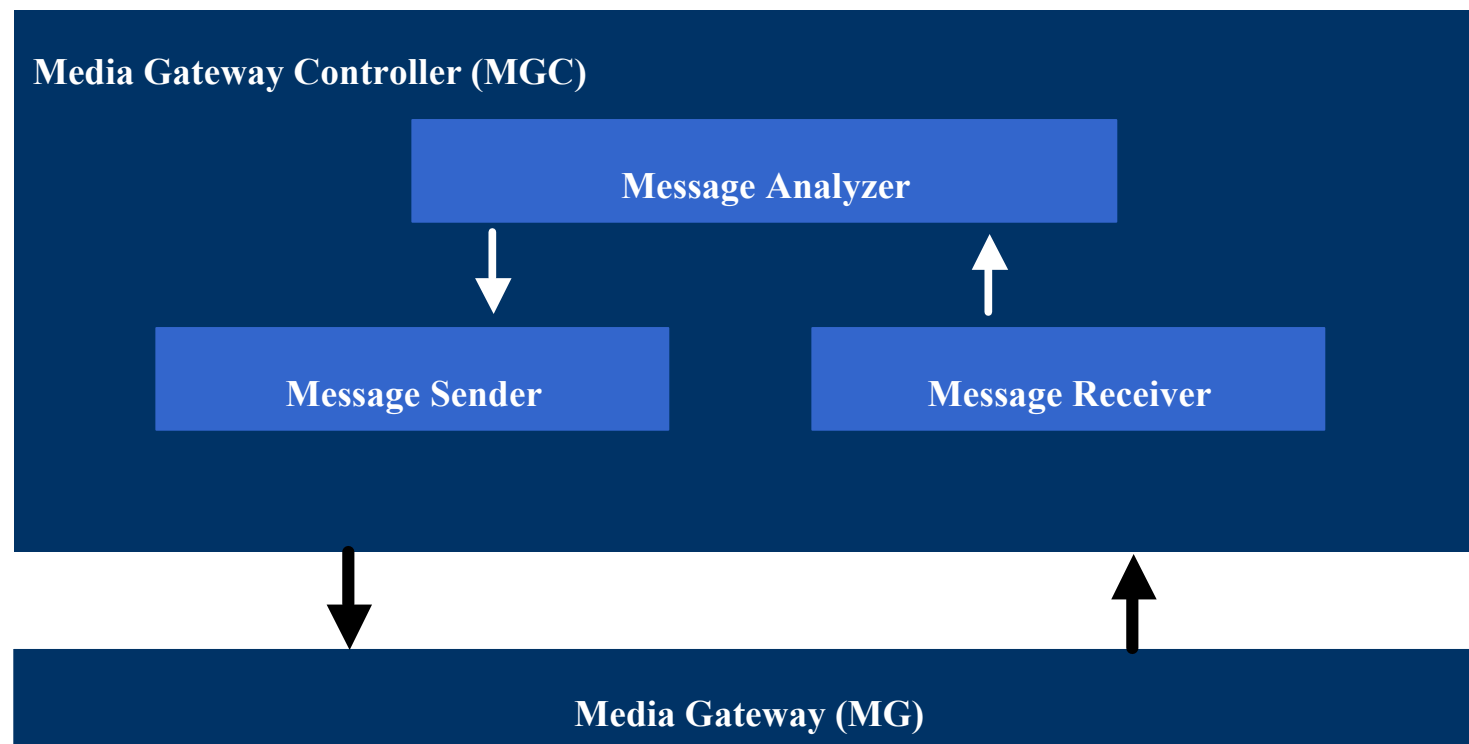


- What is RTP ?
 - RTP provides transmission functions for applications transmitting real time data e.g. Audio, video.
- RTP has two kinds of packet formats
 - RTP Packet
 - RTCP Packet
- RTP in our project:
 - transmits voice traffic between two MGs
 - collects statistics



Media Gateway Controller (MGC)

- The architecture of MGC:



Implementation in OPNET: Media Gateway Controller (MGC)



- Software Design Specification (SWDS) of MGC, Version 1.0
- FSM of MGC

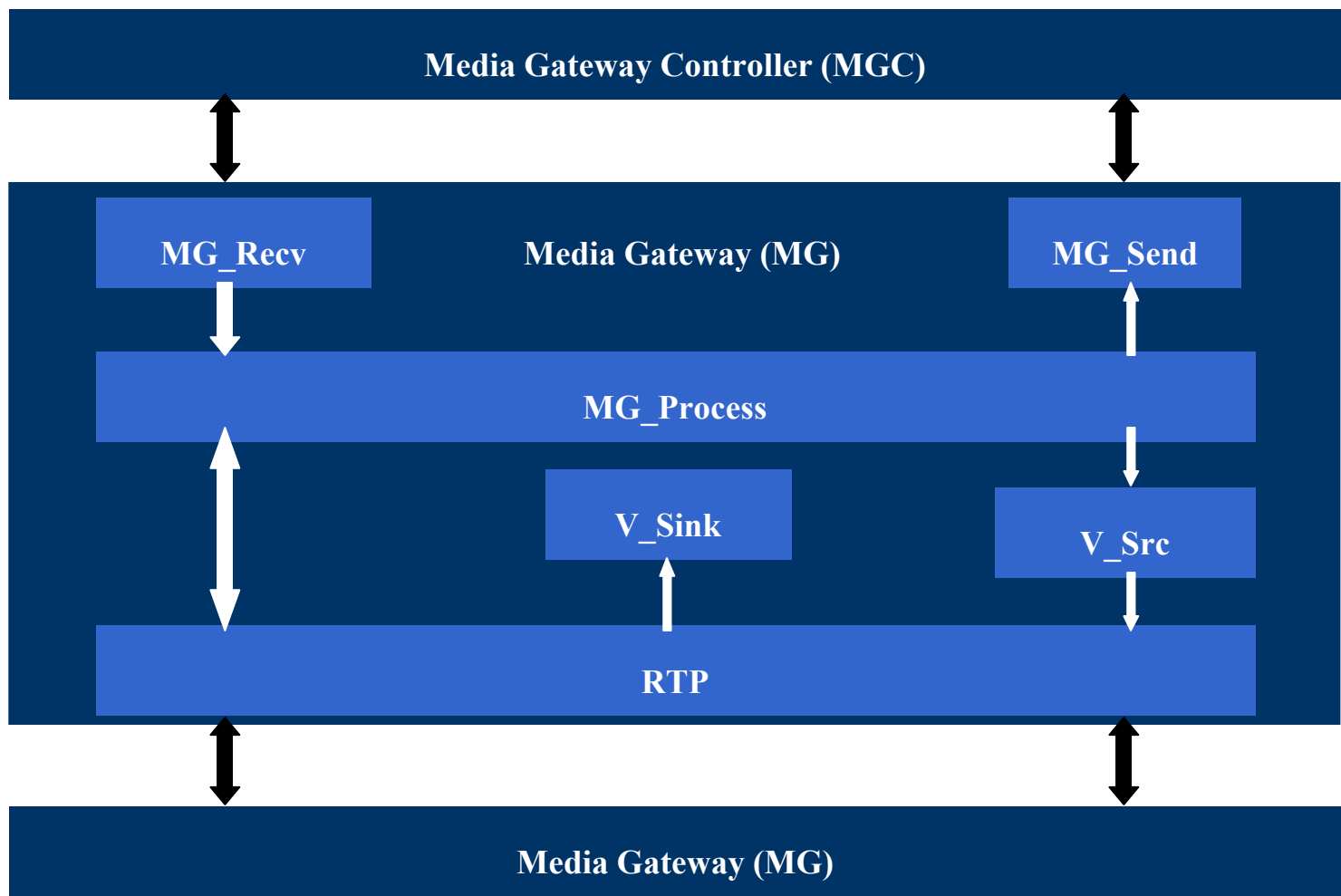


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- ➔ Implementation in OPNET: Media Gateway (MG)
 - Project Status, Expected Results & Future Work
 - References
 - **Q & A**



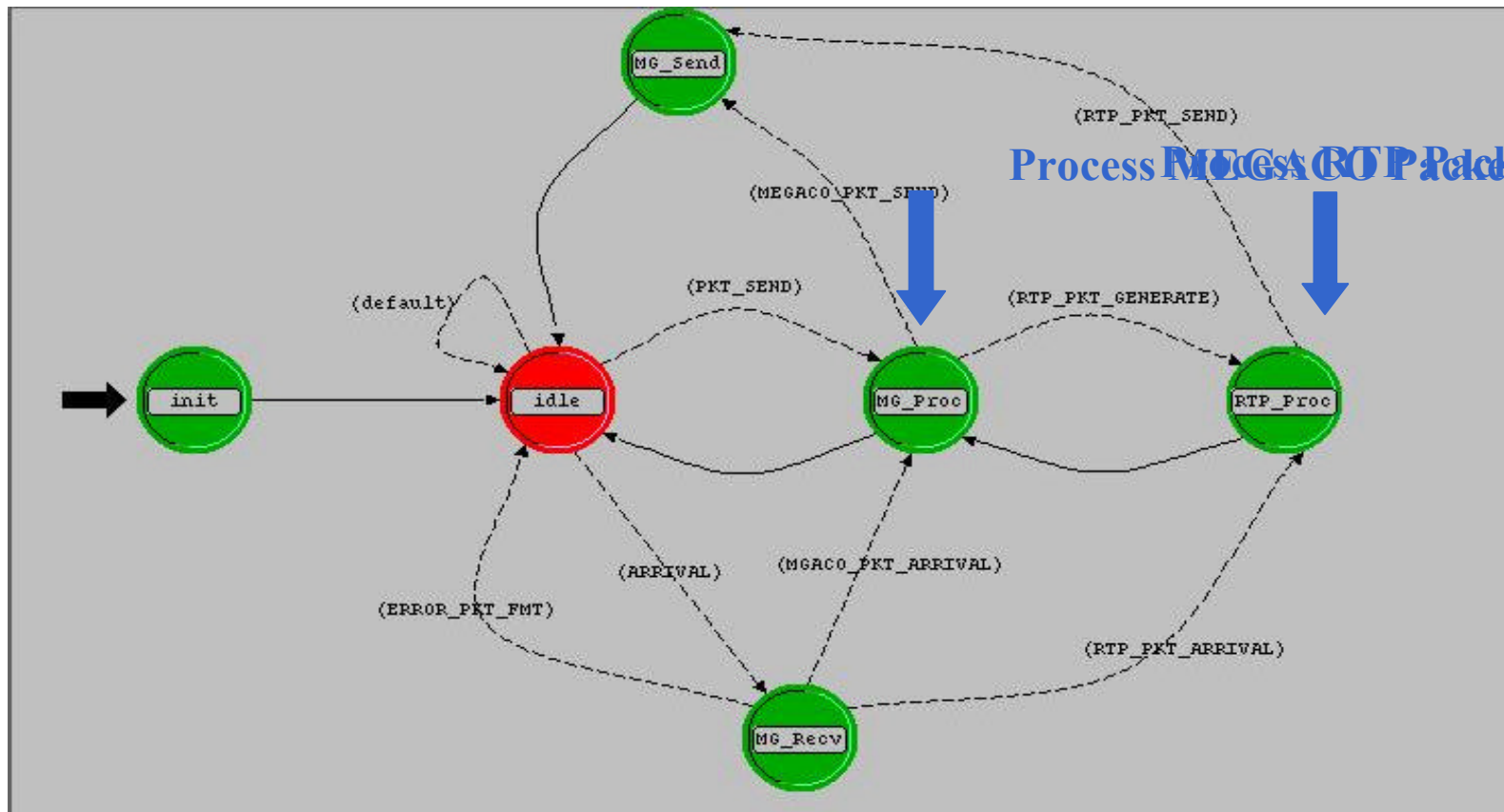
Media Gateway (MG)





Implementation in OPNET: Media Gateway

- SWDS of MG, Version 1.0



MG Process Model



Project Status

- Completed Tasks
 - MGC Process Model
 - MG Process Model
 - Custom RTP
 - Node Model
 - Network Model
- Remaining Tasks
 - Debugging
 - Collecting Statistics
 - Writing Final Report
- For details, visit
<http://www.sfu.ca/~vswu/courses/CMPT885/project.htm>



Expected Results & Future Work

- Expected Results
 - Packets Received
 - Packets Sent
 - Packets Loss
 - Average Delay
- Future Work
 - Implementation of other three Megaco/H.248 commands
 - Implementation of full featured RTP
 - Multiple call scenarios



References

1. Schulzrinne, H., Casner, S., Frederick, R. and V. Jacobson, "RTP: A Transport Protocol for Real-Time Applications", RFC 1889, January 1996. <http://www.ietf.org/rfc/rfc1889.txt>
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4. Greene, N., Ramalho, M. and B. Rosen, "Media Gateway control protocol architecture and requirements", RFC 2805, April 1999. <http://www.ietf.org/rfc/rfc2805.txt>
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6. Blatherwick, P., Bell, R. and P. Holland, "Megaco IP Phone Media Gateway Application Profile", RFC 3054, January 2001. <http://www.ietf.org/rfc/rfc3054.txt>
7. ITU-T SG16, H.248 Annex G: User Interface Elements and Actions Packages, Brown, M. & P. Blatherwick, November 2000. ftp://standards.nortelnetworks.com/megaco/docs/Approved/H248_G_PDF.zip

Thank You!



QUESTION ?