



Configuration Mechanism of Networked Camera System on Mesh Network

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Agenda



- Motivation
- Objective
- Overview of Mesh Network
- Network Configuration
 - ◆ User Terminals Configuration
 - ◆ Networked Camera System Configuration
- Consideration

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Motivation



- Security camera system
 - ◆ Public space : Parking space, Shopping mall etc...
 - ◆ Private space : Entrance, Child's room
- ◆ Advent of networked camera system
- ◆ Dissemination of broadband network
- Camera systems are connected to the Internet.
- However, these devices are standalone.

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Objective



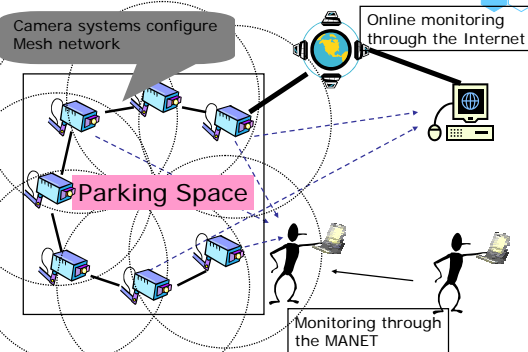
- Networked camera systems configured Mesh network
 - ◆ Easy installation of security camera system
 - ◆ Providing local network community
- Investigation of network configuration of security camera system
- Collaboration with SHARP, Image Processing Lab. (NAIST)
 - inet-lab : designing of network architecture
 - image processing lab : analysis of camera images

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System Overview

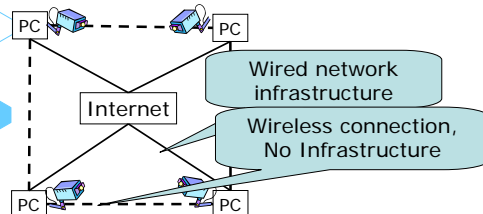


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Overview of Mesh Network



- Mesh Network
- Combining the wireless LAN system expand the area of wireless network.
 - Wireless LANs + Wireless LANs = Wireless WAN

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Network Configuration

- Network environment
 - ◆ Networked camera system
 - 2 wireless network devices
 - For user terminals network configuration
 - For networked camera network configuration
 - ◆ User terminal
 - 1 wireless network device
 - User terminal – user terminal
 - user terminal – networked camera system – user terminal

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Architecture of Networked Camera System

The diagram illustrates the architecture of a networked camera system. It features three 'Networked Camera System' blocks, each containing a camera and a network interface. These systems are interconnected. A 'PC for Database' is connected to the networked camera systems and is also connected to the 'Internet'.

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User Terminals Configuration

- User terminal – User terminal communication
 - ◆ Dynamic configuration
 - ◆ Usage of MANET routing protocol
 - Reactive MANET Protocol
 - ◆ One device of networked camera system join the network of this type.

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Networked Camera System Configuration

- Networked camera system – Networked camera system communication
 - ◆ Static configuration
 - ◆ No effect of power consumption
 - ◆ Usage of MANET routing protocol
 - Expansion of proactive MANET Protocol
 - ◆ The other device of network camera system configure this network

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Consideration

- Communication between user terminals under another networked camera system.
- However, existing MANET routing protocol can not communicate across other groups of MANET.

➔ Modification of existing MANET protocol.

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Communication over another MANET group

The diagram shows two 'Networked Camera System' blocks, each containing a camera and a network interface. A source node (S) in the first system is connected to a destination node (D) in the second system. A text box states: 'All node determine whether the destination node is same group or other group.'

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Modification of proactive MANET protocol



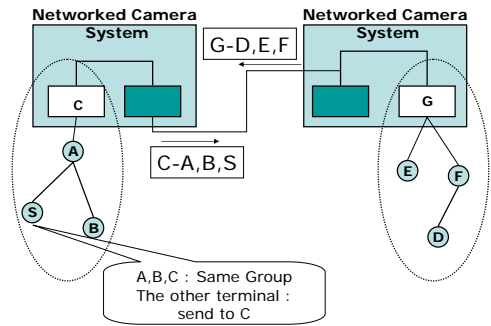
- To communicate with user terminals of other MANET group
 - ◆ User terminals manage route information of the other terminals that is in the same group.
 - ◆ Networked camera systems exchange the information of user terminals.
 - ◆ User terminals register the route to the other user terminals with their routing tables.

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Communicate with other MANET group [1/2]

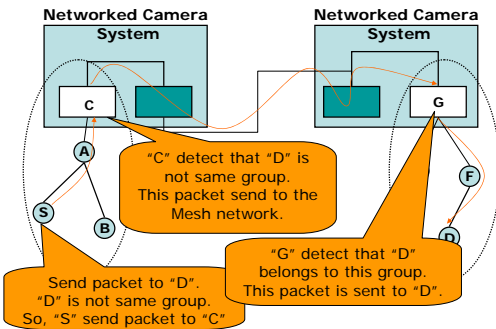


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Communicate with other MANET group [2/2]



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Related Work



- IEEE 802.11s
 - ◆ For mesh network of static wireless access point
 - IEEE – under MAC Layer
 - ◆ This technology and IEEE MANET WG will be cooperated in the area of mesh network.
 - ◆ This trend standardize administrative architecture of mesh network through the all layer.

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Summary



- Networked camera system on the mesh network
 - ◆ User terminal – User terminal
 - ◆ Networked camera system – Networked camera system
 - ◆ User terminal – Networked camera system – User terminal
 - ◆ Modification of MANET routing protocol.

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