

ICMPv6 Echo Request/Reply for Enabled In-situ OAM Capabilities

draft-xiao-6man-icmpv6-ioam-conf-state-00

Xiao Min

ZTE

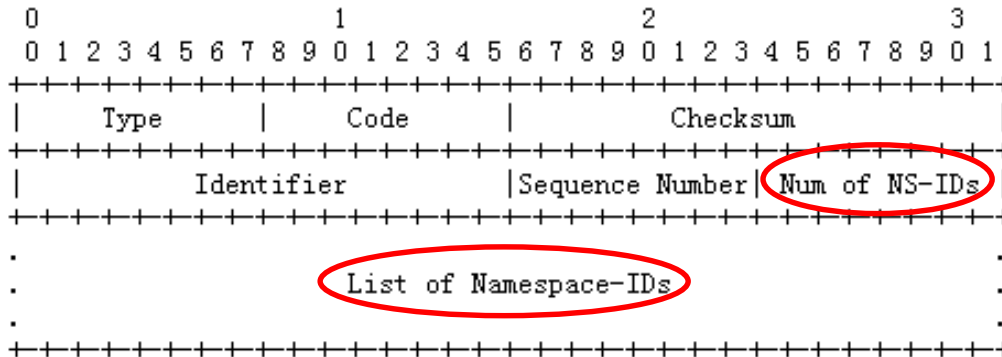
Greg Mirsky

Ericsson

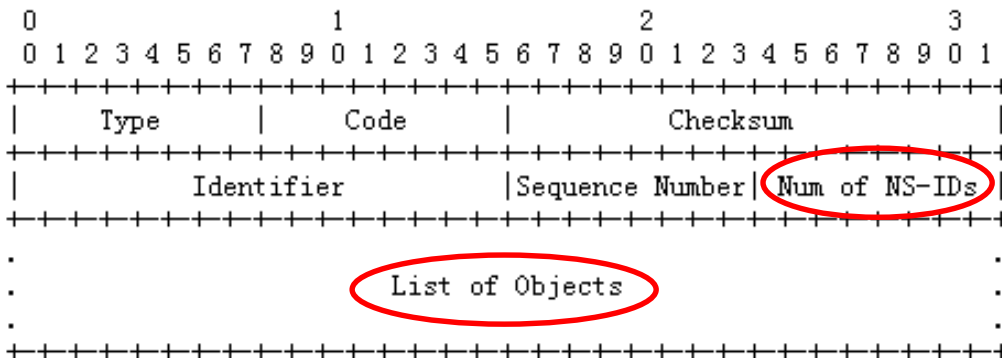
Background of this draft

- draft-ietf-ippm-ioam-conf-state defines a general method of IOAM Capabilities Discovery, including IOAM Capabilities formats
 - Echo Request/Reply is used for IOAM Capabilities Discovery, through which the IOAM encapsulating node can discover the IOAM Capabilities of each IOAM transit and decapsulating node along the transport path of data packet
 - This draft defines ICMPv6 extensions to achieve IOAM Capabilities Discovery in IPv6 networks

ICMPv6 IOAM Echo Request/Reply



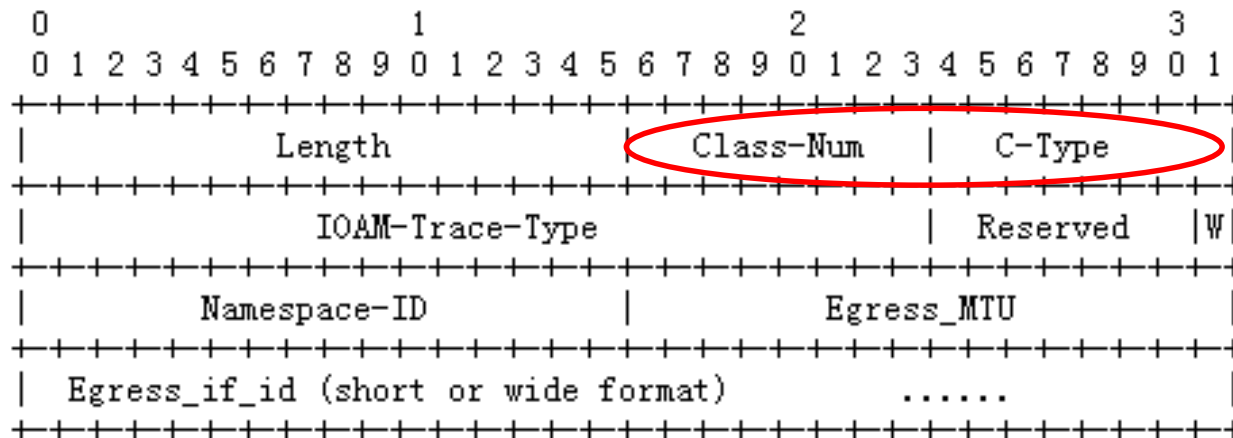
IOAM Echo Request Message



IOAM Echo Reply Message

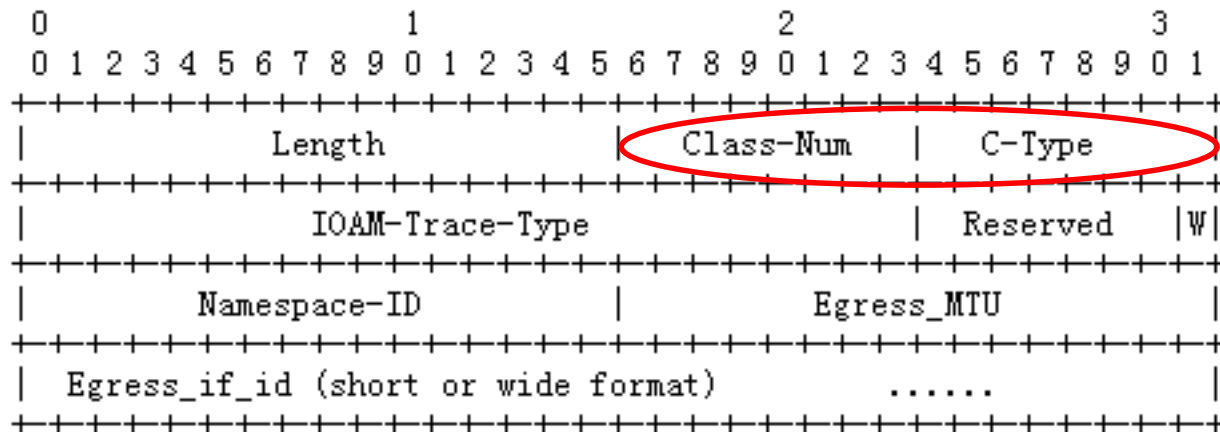
- Taking example by RFC 8335, this draft requests two new ICMPv6 type numbers from IANA

ICMPv6 IOAM Pre-allocated Tracing Capabilities Object



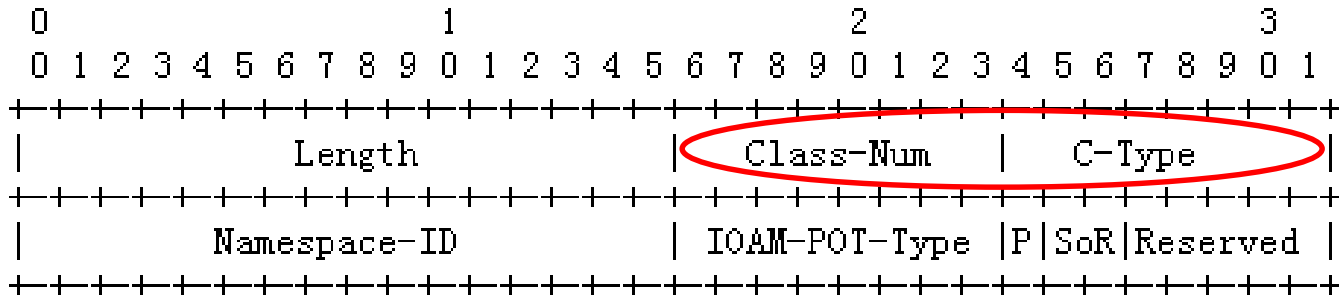
- Combination of Class-Num and C-Type indicates type of the Object
 - A new Class-Num indicates IOAM Tracing Capabilities Object
 - C-Type 1 indicates Pre-allocated Tracing

ICMPv6 IOAM Incremental Tracing Capabilities Object



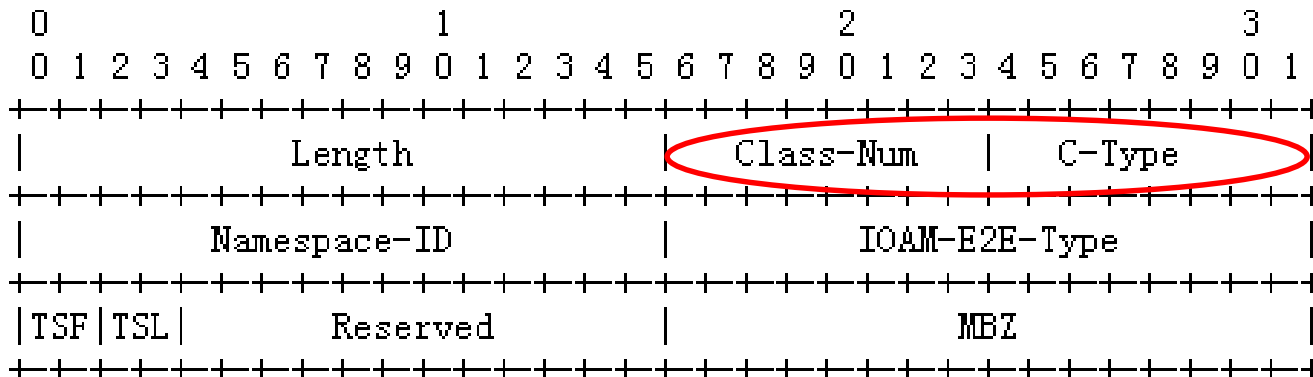
- Combination of Class-Num and C-Type indicates type of the Object
 - A new Class-Num indicates IOAM Tracing Capabilities Object
 - C-Type 2 indicates Incremental Tracing

IOAM Proof-of-Transit Capabilities Object



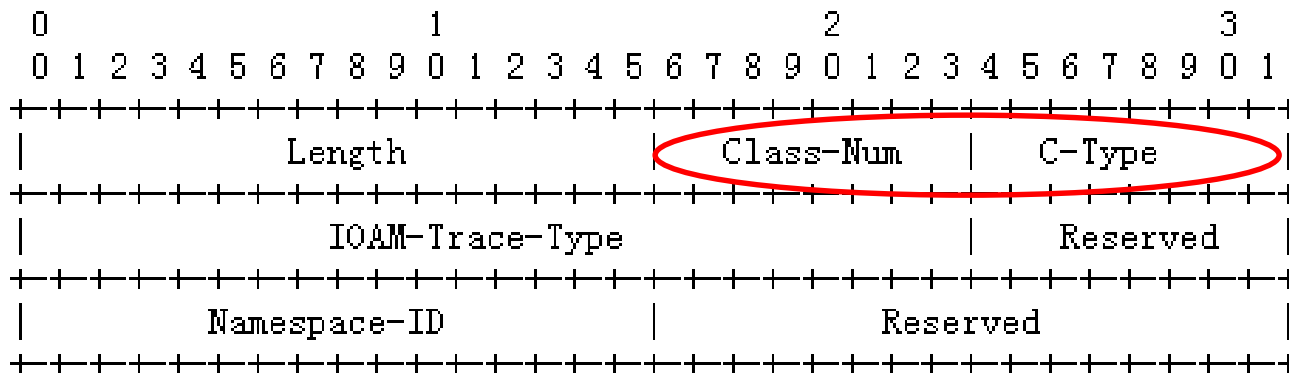
- Combination of Class-Num and C-Type indicates type of the Object
 - A new Class-Num indicates IOAM PoT Capabilities Object
 - C-Type is set to Zero at transmission and ignored at reception

IOAM Edge-to-Edge Capabilities Object



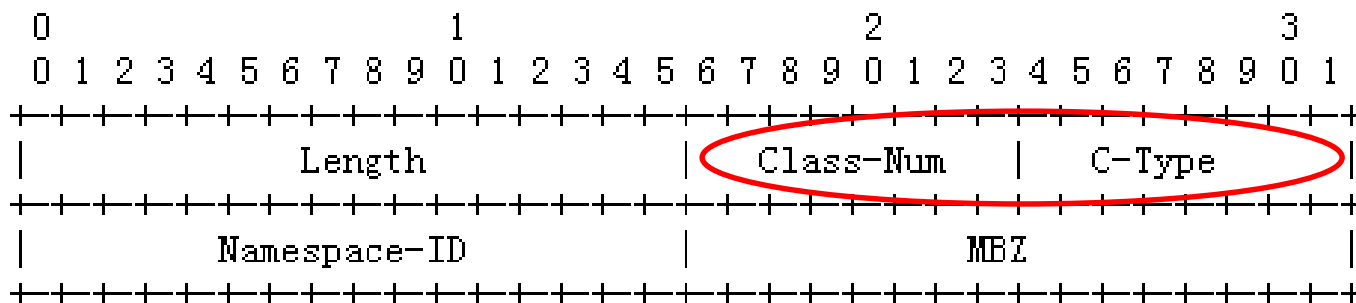
- Combination of Class-Num and C-Type indicates type of the Object
 - A new Class-Num indicates IOAM E2E Capabilities Object
 - C-Type is set to Zero at transmission and ignored at reception

IOAM DEX Capabilities Object



- Combination of Class-Num and C-Type indicates type of the Object
 - A new Class-Num indicates IOAM DEX Capabilities Object
 - C-Type is set to Zero at transmission and ignored at reception

IOAM End-of-Domain Object



- Combination of Class-Num and C-Type indicates type of the Object
 - A new Class-Num indicates IOAM End-of-Domain Capabilities Object
 - C-Type is set to Zero at transmission and ignored at reception

Security Issues Mitigation Methods

- Use IP Authentication Header or IP Encapsulating Security Payload Header to provide integrity protection for IOAM Capabilities information
- Use IP Encapsulating Security Payload Header to provide privacy protection for IOAM Capabilities information
- Network operators establish policies that restrict access to ICMPv6 IOAM Echo functionality
 - Enable/disable ICMPv6 IOAM Echo functionality
 - Define enabled Namespace-IDs
 - For each enabled Namespace-ID, define the prefixes from which ICMPv6 IOAM Echo Request message are permitted
- Rate-limit incoming ICMPv6 IOAM Echo Request messages

Next steps

- Ask for more reviews and comments
- Revise this draft to improve it
- Ask for WG adoption

Thank you!