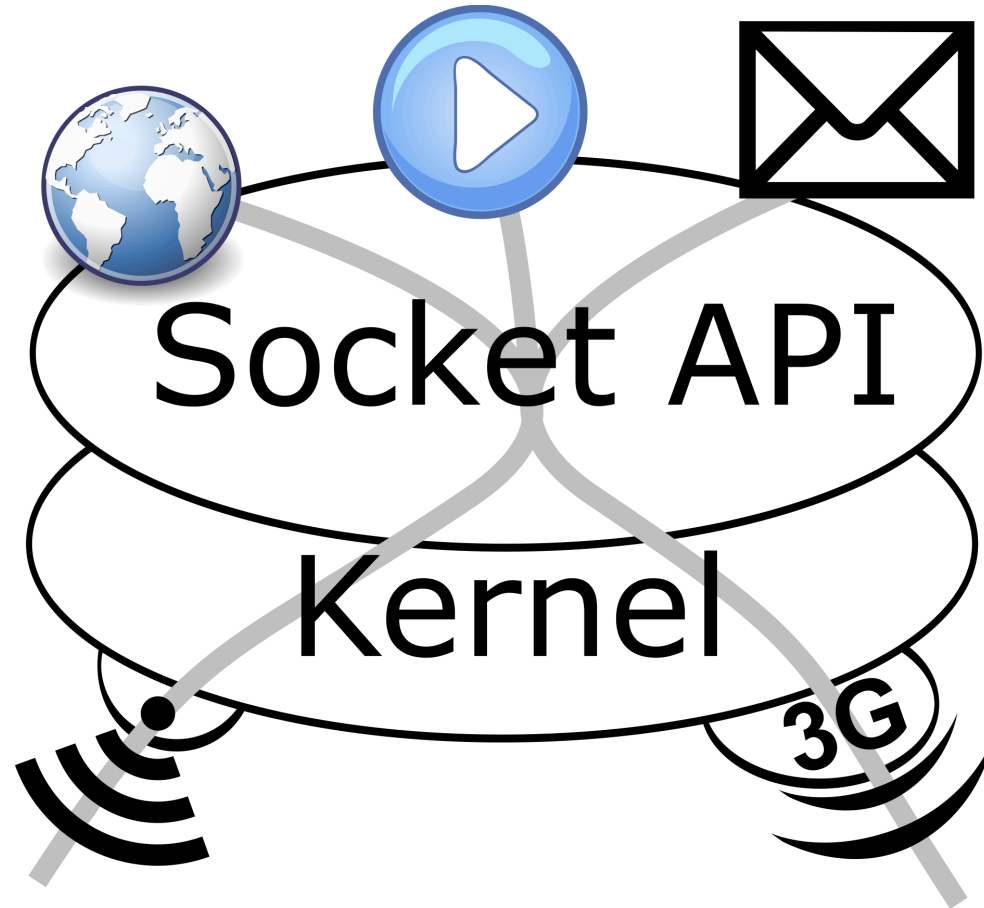


# Socket Intents

## Leveraging Application Awareness for Multi-Access Connectivity

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**Applications know more than they can express using today's Socket API**

# Socket Intents

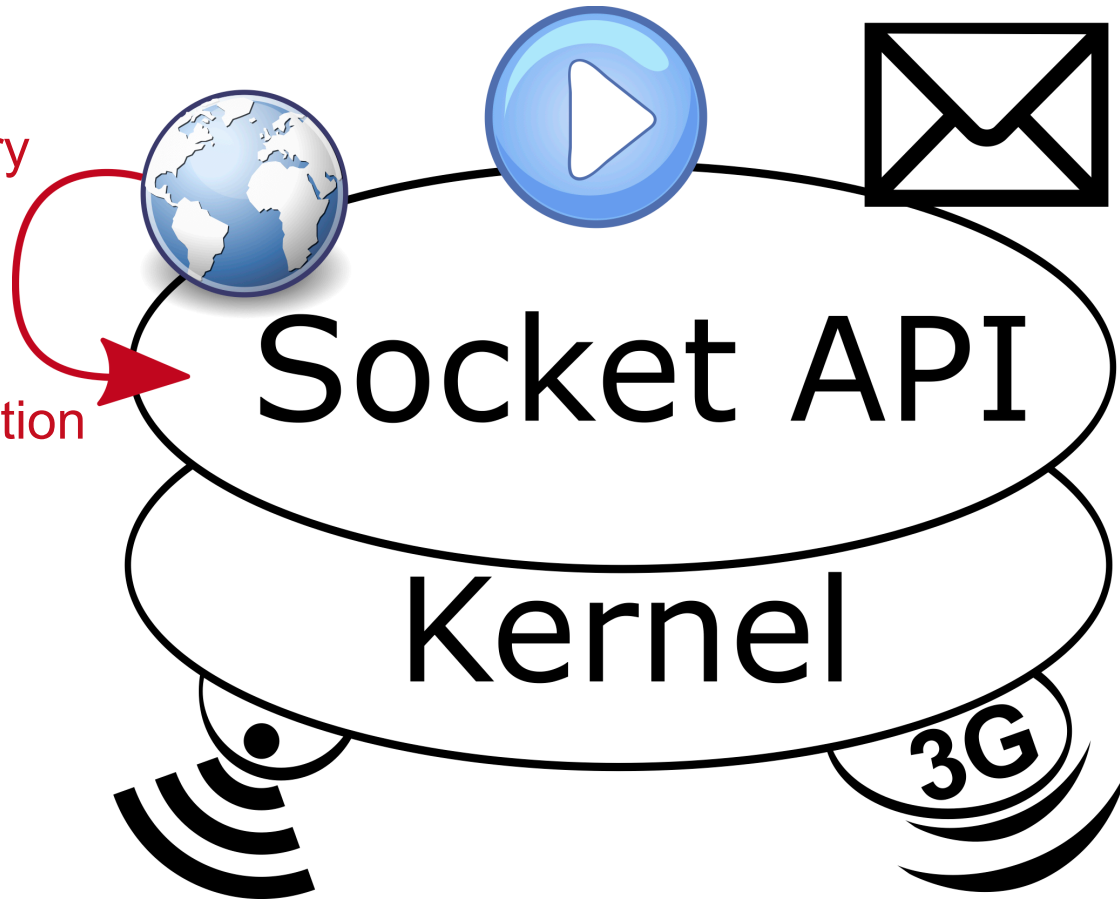
Flow Category

File Size

Timeliness

Bitrate / Duration

Resilience



# Socket Intents

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<b>Intent</b>	<b>Type</b>	<b>Value</b>
Category	Enum	Query, bulk transfer, control traffic, stream
File size	Int	Number of bytes transferred by the application
Duration	Int	Time between first and last packet in seconds
Bitrate	Int	Size divided by duration in bytes per second
Burstiness	Enum	Random bursts, regular bursts, no bursts or bulk (congestion window limited)
Timeliness	Enum	Stream (low delay, low jitter), interactive (low delay), transfer (completes eventually) or background traffic (only loose time constraint)
Resilience	Enum	Sensitive to connection loss, undesirable (loss can be handled) or resilient (loss is tolerable)

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# Modified BSD / Legacy Socket API calls

- Socket Intents are realized as socket options
- Original prototype: modified most socket calls  
socket(), getaddrinfo(), get/setsockopt(), connect()
- Current prototype: only modified addrinfo struct

```
struct muacc_addrinfo {
    /* also in original addrinfo struct */
    int ai_flags;
    int ai_family;
    int ai_socktype;
    int ai_protocol;
    int ai_addrlen;
    struct sockaddr *ai_addr;
    char *ai_canonname;
    struct muacc_addrinfo *ai_next;
};
/* new in muac_addrinfo struct */
struct socketopt *ai_sockopts;
struct sockaddr *ai_bindaddr;
int ai_bindaddrlen;
```

# New Socket API calls for Connation Reuse

- `socketconnect`
  - connect to a given host and service based on Socket Intents Policy's decision
- `socketchoose`
  - connect to a given and service or reuse an existing socket based on Socket Intents Policy's decision
- `socketrelease`
  - mark a socket as “unused” for reuse or close

# socketconnect Signature

```
/** Function that returns a connected socket to the given host and service
 * Supply a "-1" socket and URL, type, proto, family to get a new, freshly connected socket
 * Alternatively, supply an existing socket as representant of a socket set to choose from
 * If your supplied socket is not part of a socket set, a new socket will be created and returned!
 *
 * This is the asynchronous version of muacc_sc_socketconnect.
 *
 * @return 0 if successful (socket is from an existing socket set), 1 if successful (socket is new), -1 if fail
 */
int socketconnect (
    int *s,                /**< [in,out] Pointer to representant of a socket set. "-1" to create a new socket,
                           "0" will try to find a suitable socket set for the request */
    const char *host,     /**< [in] Host name to connect to */
    size_t hostlen,
    const char *serv,     /**< [in] Service or port (in ASCII) to connect to */
    size_t servlen,
    struct socketopt *sockopts, /**< [in,out] List of socket options to be set. May be NULL if socket exists */
    int domain,          /**< [in] Address family for socket() call (e.g. AF_INET, AF_INET6) */
    int type,            /**< [in] Type for socket() call (e.g. SOCK_STREAM or SOCK_DGRAM) */
    int proto            /**< [in] Protocol for socket() call */
);
```

GitHub repository page for **fg-inet / socket-intents**. The page shows repository statistics: 4 commits, 1 branch, 0 releases, and 2 contributors. The current branch is **release-0.3**.

**Description:** Short description of this repository

**Website:** Website for this repository (optional)

**Code:** Fixed definitions in CMake file to fix compilation issues on MacOS X

philsbln authored on Mar 11 latest commit 79322fac3c

File	Commit Message	Time
clib	Initial commit - import from our private repository	3 months ago
cmake	Initial commit - import from our private repository	3 months ago
lib	Initial commit - import from our private repository	3 months ago
libintents	Initial commit - import from our private repository	3 months ago
mam	Initial commit - import from our private repository	3 months ago
muacsocks	Initial commit - import from our private repository	3 months ago
release	Initial commit - import from our private repository	2 months ago

**HTTPS clone URL:** `https://github.com/fg-inet`

You can clone with **HTTPS**, **SSH**, or **Subversion**.

## Socket Intents Prototype

available on <https://github.com/fg-inet/socket-intents>