

Unit 5: System Mechanisms

5.2. Win32 IPC - Mailslots

Win32 IPC - Mailslots

- Broadcast mechanism:
 - One-directional
 - Multiple writers/multiple readers (frequently: one-to-many comm.)
 - Message delivery is unreliable
 - Can be located over a network domain
 - Message lengths are limited
- Operations on the mailslot:
 - Each reader (server) creates mailslot with `CreateMailslot()`
 - Write-only client opens mailslot with `CreateFile()` and uses `WriteFile()` – open will fail if there are no waiting readers
 - Client's message can be read by all servers (readers)
- Client lookup: `*\mailslot\mailslotname`
 - Client will connect to every server in network domain

Locate a server via mailslot

Mailslot Servers

App client 0

```
hMS = CreateMailslot(  
    "\\.\mailslot\status");  
ReadFile(hMS, &ServStat);  
/* connect to server */
```

App client n

```
hMS = CreateMailslot(  
    "\\.\mailslot\status");  
ReadFile(hMS, &ServStat);  
/* connect to server */
```

Message is
sent periodically

Mailslot Client

App Server

```
While (...) {  
    Sleep(...);  
    hMS = CreateFile(  
        "\\.\mailslot\status");  
    ...  
    WriteFile(hMS, &StatInfo  
    }  
}
```

Creating a mailslot

```
HANDLE CreateMailslot(LPCTSTR lpszName,  
    DWORD cbMaxMsg,  
    DWORD dwReadTimeout,  
    LPSECURITY_ATTRIBUTES lpsa);
```

- `lpszName` points to a name of the form
 - `\\.mailslot\[path]name`
 - Name must be unique; mailslot is created locally
- `cbMaxMsg` is msg size in byte
- `dwReadTimeout`
 - Read operation will wait for so many msec
 - 0 – immediate return
 - `MAILSLOT_WAIT_FOREVER` – infinite wait

Opening a mailslot

- CreateFile with the following names:
 - `\\.mailslot\[path]name` - retrieve handle for local mailslot
 - `\\host\mailslot\[path]name` - retrieve handle for mailslot on specified host
 - `\\domain\mailslot\[path]name` - returns handle representing all mailslots on machines in the domain
 - `*\mailslot\[path]name` - returns handle representing mailslots on machines in the system's primary domain: max mesg. len: 400 bytes
 - Client must specify FILE_SHARE_READ flag
- GetMailslotInfo() and SetMailslotInfo() are similar to their named pipe counterparts