Systems & Network Training

# Network programming using sockets

A 2 day Hands on training course

Save on expenses. This course is also available on your premises.

## Description

A hands on course for programmers using Sockets. It is important to recognise that the course assumes that delegates are already familiar with TCP/IP and Python. Practical exercises follow all the major theory sessions.

## Key outcomes

By the end of the course delegates will be able to:

- ✔ Read Python programs which use Sockets.
- ✔ Write Python programs which use Sockets.
- ✔ Debug Python programs which use Sockets.

## Training approach

This structured course uses Instructor Led Training to provide the best possible learning experience. Small class sizes ensure students benefit from our engaging and interactive style of teaching with delegates encouraged to ask questions throughout the course. Quizzes follow each major section allowing checking of learning. Hands on sessions are used throughout to allow delegates to consolidate their new skills.

## Details

**Who will benefit?**
Programmers working with network applications.

**Prerequisites**
TCP/IP foundation for engineers.
Effective programming with Python.

**Duration:** 2 days

**Customer rating: New course**

| Generic training | Small class sizes | Hands On training | Our courseware | Customise your course |
|---|---|---|---|---|
| Generic training compliments product specific courses covering the complete picture of all relevant devices including the protocols "on the wire". | We limit our maximum class size to 8 delegates; often we have less than this. This ensures optimal interactivity between delegates and instructor. | The majority of our courses use hands on sessions to reinforce the theory. | We write our own courses; courseware does not just consist of slides and our slides are diagrams not bullet point text. | Please contact us if you would like a course to be customised to meet your specific requirements. Have the course your way. |
| "*Friendly environment with expert teaching that teaches the why before the how.*" G.C. Fasthosts | *"Excellent course. The small class size was a great benefit..."* M.B. IBM | *"Not many courses have practice added to it. Normally just the theoretical stuff is covered."* J.W. Vodafone | *"Comprehensive materials that made the course easy to follow and will be used as a reference point."* V.B. Rockwell Collins | *"I was very impressed by the combination of practical and theory. Very informative. Friendly approachable environment, lots of hands on."* S.R. Qinetiq |

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## Course content

**What is a socket?**
Review of IP, ICMP, UDP vs TCP, IP addresses, protocol numbers, ports. API's, UNIX I/O, sockets. SOCK_STREAM, SOCK_DGRAM. Hands on: Compile and run code.

**The systems calls**
Clients and servers, structs, socket(), bind(), connect(), listen(), accept(), send(), recv(), sendto (), recvfrom(), close(), shutdown(), getpeername(), gethostname(). Hands on: Walk through of example client and server code.

**First code**
TCP connections, passive opens, active opens. Hands on: Write a simple "hello world" server and client.

**Application protocols**
User character stream, ASCII turn taking, binary protocols. Hands on: Raw SMTP, Writing a mail client.

**Clients**
Concurrency, polling, threads, event driven programming. Hands on: Conferencing application.

**Servers**
Concurrency, stateful, stateless. Forks and execs. inetd. Hands on: Running servers with and without inetd, chroot jails, conferencing server modifications.

**Advanced techniques**
Blocking, select(), partial send(s). Raw sockets, example sockets using Java, Perl and PHP. Hands on: A broadcast application.

## What our customers say

*"Absolutely brilliant, very knowledgeable and helpful trainer would recommend to teach anyone. Kept me interested 100% of the time which is very impressive as this does not happen often, if at all!"*

O. B. Network Rail

*"The best technical course I've been on!."*

L. W. Fujitsu Telecoms Europe

*"Very well thought out and structured course. Would recommend 100%. Lots of equipment, good quality."*

A.R. Unipart

*"Course content is interesting. Relevant to current systems and presented well."*

S.S-T. Arqiva