CREST EXAMINATIONS

CONTENTS

1. INTRODUCTION

CREST provides a recognised career path right from entry into the industry through to experienced senior tester level. We work with the largest number of technical information security providers who support and guide the development of our examination and career paths.

The key benefits of becoming CREST certified are:

- A structured and recognised career path;
- Certifications that are recognised by the buying community;
- CREST is the gold standard, industry leading certification;
- CREST Registered Penetration Tester confers CHECK Team Member status (subject to NCSC (formerly CESG) approval;
- CREST Certified Infrastructure or Web Applications Tester also confers CHECK Team Leader status (subject to NCSC approval);
- The CREST Technical Security Architecture exam is the stepping stone to achieving CESG Certified Professional (CCP) status [see page 20];
- Joining a recognised community of testers, with opportunities for career development through networking and information sharing;
- Employment opportunities with leading security consultancies and information security companies;
- A training, examination and career path to suit professional development and promotion aspirations.

The CREST Practitioner level examinations are the entry level exams and are aimed at individuals with around 2,500 hours relevant and frequent experience.

The CREST Registered level examinations are the next step and by passing these, individuals demonstrate their commitment as an information security tester. Typically, candidates wishing to sit a Registered Tester examination should have at least 6,000 hours (three years or more) relevant and frequent experience.

The CREST Certified level examinations are designed to set the benchmark for senior testers. These are the certifications to which all testers aspire. By gaining the CREST Certified qualification, individuals are recognised as being at the top of their game as information security specialists. Typically, candidates wishing to sit a Certified level examination should have at least 10,000 hours (five years or more) relevant and frequent experience.

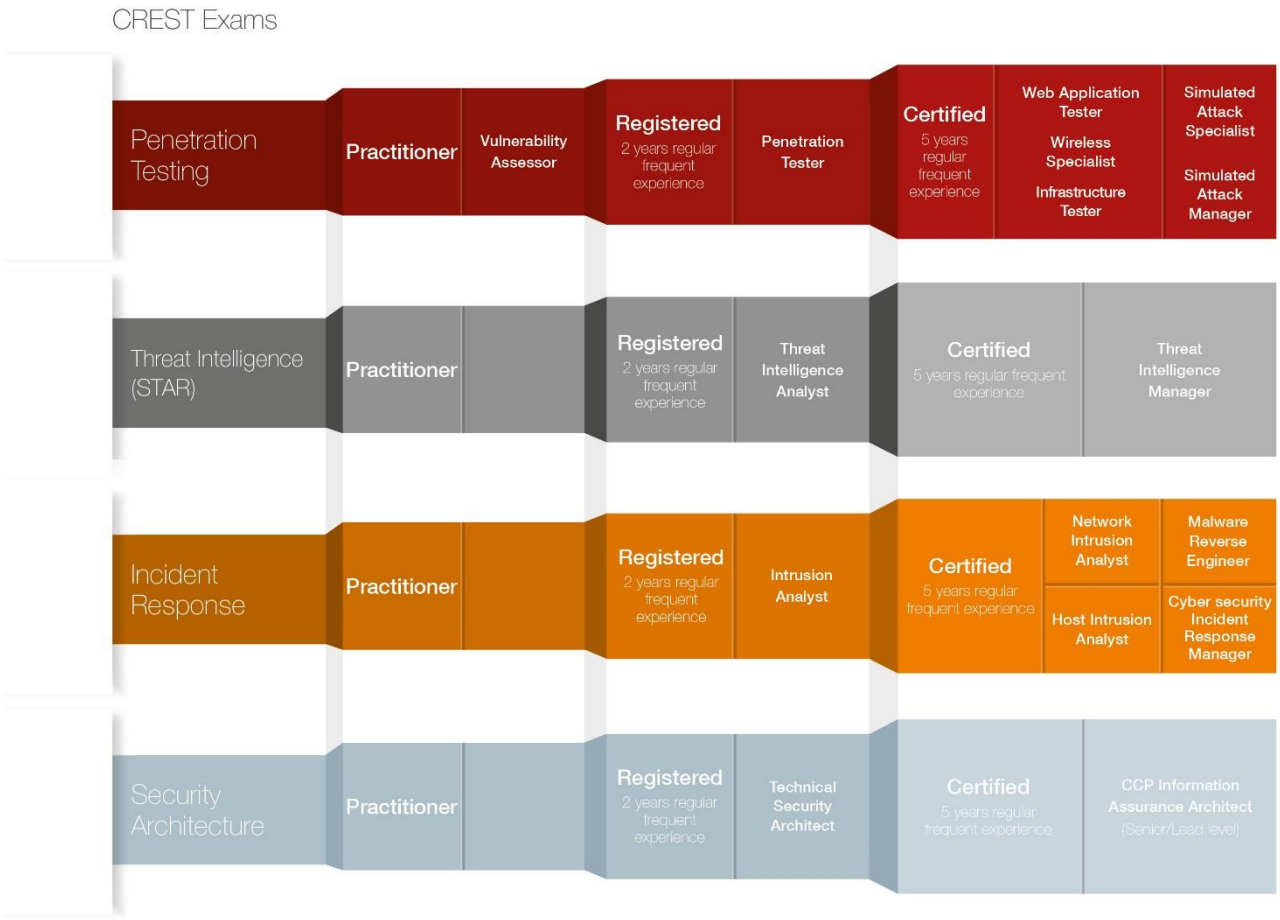
The various CREST examinations currently available are outlined on the following pages and the flowchart at 1.1 demonstrates the career progression that can be achieved. Further examinations are in the development stages.

The Syllabuses for all CREST examinations are available from the CREST website.

The written components of all CREST Certified level exams are closed book.

All CREST examinations are valid for three (3) years.

1.1 Examination Flowchart



Please note that the following examinations are currently in development:

- Threat Intelligence (STAR) - Practitioner level
- Security Architecture – Practitioner level
- Security Architecture – Certified level

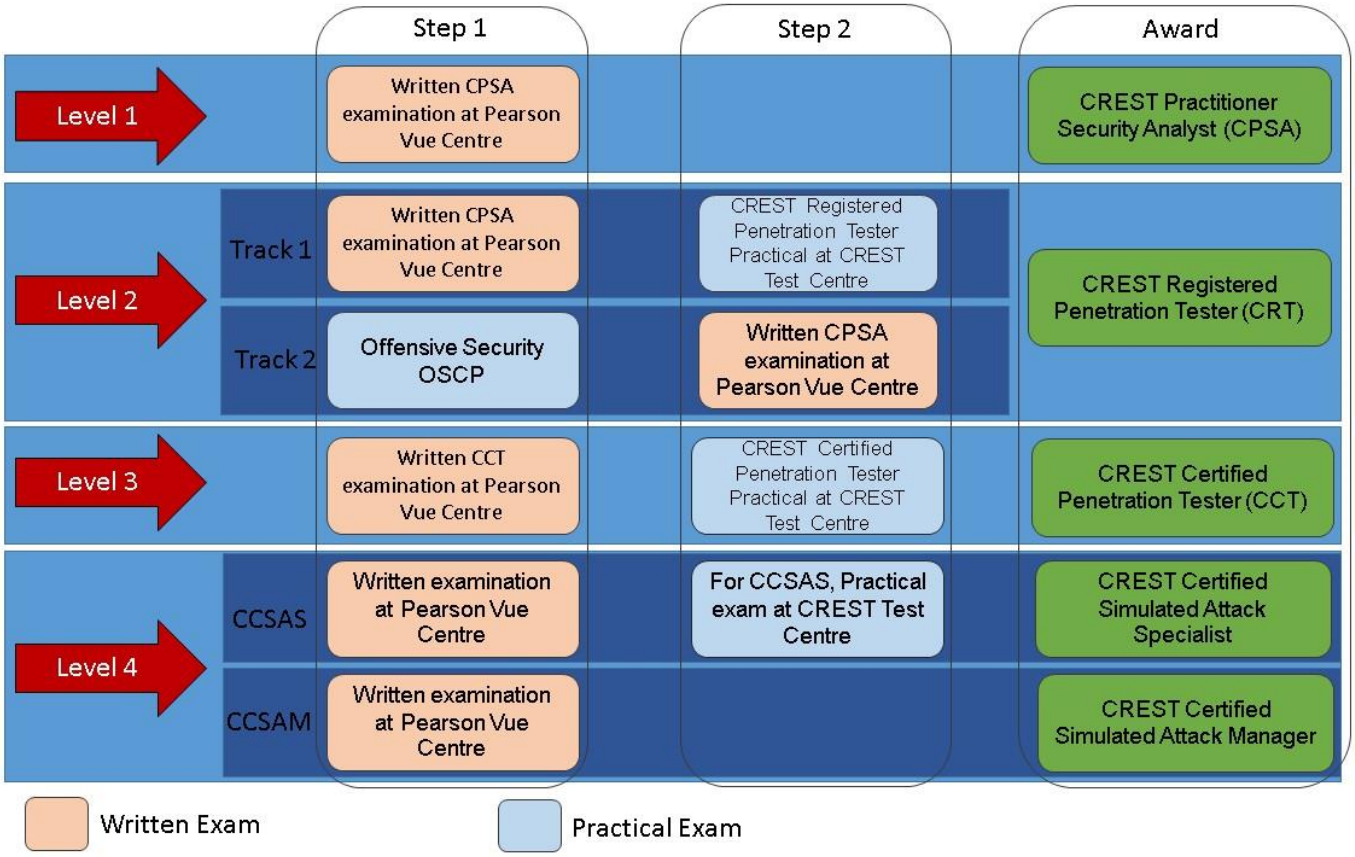
1.2 Career Progression

CREST's portfolio of examinations provide a recognised career path from entry into the industry through to experienced consultant level. Our examinations are supported and guided by the largest number of technical information security providers.

The key benefits of becoming CREST certified are:

- A structured and recognised career path
- Certifications recognised by the buying community
- Certifications that are *the* gold standard leading the industry
- Registered level penetration testing qualification confers CHECK Team Member status (subject to NCSC approval)
- Certified level penetration testing qualifications also confer CHECK Team Leader status (subject to NCSC approval)
- Becoming a member of a recognised community of technical information security specialists
- Heightened employment opportunities

The example below represents the progression for a penetration tester and the means to achieve it:



By taking the CREST route to qualifications, candidates can build on creditable foundations to work towards obtaining the ultimate in industry recognised qualifications.

1.3 Format of CREST Examinations

1.3.1 CREST Practitioner Security Analyst (CP SA) and CREST Practitioner Intrusion Analyst (CP IA) examinations

The CP SA and CP IA are written (theory) online examinations, delivered in Pearson Vue test centres. They are used to assess the theory elements of the CR T and CR IA respectively.

The CP SA examination is a pre-requisite for candidates wishing to take the CR T examination. The CP IA examination is a pre-requisite for candidates wishing to take the CRIA examination.

The CP SA and CP IA examinations are booked directly with Pearson Vue and the fee is paid directly to Pearson Vue at the time of booking

1.3.2 CREST Registered Penetration Tester (CRT) and CREST Registered Intrusion Analyst (CR IA) examinations

The CRT and CR IA are multiple-choice practical only examinations that have the pre-requisite of a CP SA pass for CRT and a CP IA pass for CR IA.

All candidates wishing to qualify as a CRT must hold a valid CP SA pass. All candidates wishing to qualify as a
CR IA must hold a valid CP IA pass.

The CRT and CR IA examinations are booked using the CREST examination booking form and the fee is paid to CREST.

1.3.3 CREST Certified Infrastructure Tester (CCT Inf), Web Applications Tester (CCT App) & Simulated Attack Specialist (CC SAS) examinations

The written and practical components of the CREST Certified level Infrastructure, Web Applications and Simulated Attack Specialist examinations are separate. The written component is delivered via Pearson Vue test centre; the practical examinations remain half day examinations delivered in a regional test centre (eg. Slough).

All candidates must have a pass in the written examination in order to book the practical in that examination to enable the award of the qualification.

The written examination elements are booked directly with Pearson Vue and the fee for the written element is paid directly to Pearson Vue at the time of booking; the fee for the practical elements of these examinations is paid to CREST on invoice and booked using the CREST examination booking form.

1.3.4 CREST Certified Simulated Attack Manager (CC SAM), Certified Threat Intelligence Manager (CC TIM) and Certified Incident Manager (CC IM) examinations

The CC SAM, CC TIM and CC IM examinations are delivered in Pearson Vue centres. They are each divided into two Parts (ie. SAM1, TIM1 and IM1 and SAM2, TIM2 and IM2). For each of these examinations, Part One must be taken before Part Two and in each case, overall results will be released once both examination Parts have been taken.

The CC SAM, CC TIM and CC IM examinations are booked directly with Pearson Vue and the fee is paid directly to Pearson Vue at the time of booking.

1.3.5 All Other examinations

The written components of all CREST examinations will eventually be delivered at a Pearson Vue centre of choice. The practical elements of any CREST examinations will continue to be delivered at an Examination Centre.

The CREST Examination Centres are located in a number of regions globally. In the UK, the centre is in Slough, Berkshire; in the USA, the centre is in New York City. There is also a centre in Singapore and other centres will be listed on the CREST website in the near future.

2. PENETRATION TESTING EXAMINATIONS

2.1 Practitioner Security Analyst (CP SA)

The CREST Practitioner Security Analyst (CP SA) examination is an entry level qualification that tests a candidate's knowledge in assessing operating systems and common network services at a basic level below that of the main CR T and CCT qualifications. The CP SA examination also includes an intermediate level of web application security testing and methods to identify common web application security vulnerabilities.

The examination covers a common set of core skills and knowledge that assess the candidate's technical knowledge. The candidate must demonstrate that they would be able to perform basic infrastructure and web application vulnerability scan and interpret the results to locate security vulnerabilities.

Success will confer the CREST Practitioner status to the individual. This qualification is a pre-requisite for the CREST Registered Penetration Tester examination and comprises a multiple-choice written only examination.

2.2 Registered Penetration Tester (CR T)

The CREST Registered Tester examination is recognised by the NCSC as providing the minimum standard for CHECK Team Member status and is designed to assess a candidate's ability to carry out basic vulnerability assessment and penetration testing tasks.

The CREST Registered Tester exam is a multiple-choice practical assessment where the candidate will be expected to find known vulnerabilities across common network, application and database technologies aimed at assessing the candidate's technical knowledge of penetration testing methodology and skills against reference networks, hosts and applications.

A pass at CP SA level is a pre-requisite for the Registered Tester examination and success at both CP SA and CR T will confer the CREST Registered status to the individual. An individual passing the written but failing the practical element of the CR T exam will be awarded a Practitioner certificate.

Individuals undertaking this examination can request that their information be provided to the NCSC to be considered for CHECK Team Member Status.

2.2.1 OSCP/OSCE/CRT Equivalency

CREST and Offensive Security have entered a partnership to allow Offensive Security OSCP and OSCE certified individuals to be granted CREST Registered Penetration Tester equivalency, subject to various conditions and exclusions. If successfully granted, equivalency is valid for six months during which time candidates must sit the CREST Practitioner Security Analyst (CP SA) examination which will grant them the CREST Registered Penetration Tester qualification for a maximum of four

years from the date on which the OSCP certification was officially awarded or three years after the equivalence was issued, whichever occurs first. Further information on the CP SA examination can be found at paragraph 2.1 above.

Full information on eligibility, exclusions, process and fees is available on the CREST website at http://www.crest-approved.org/examinations/oscp-and-crt-equivalency/index.html.

2.3 Certified Web Application Tester (CCT App)

The CREST Certified Web Application Tester examination is an assessment of the candidate's ability to find vulnerabilities in bespoke web applications. The examination uses specially designed applications running on a variety of web application platforms and now covers a wider scope than purely traditional web applications to include more recent advances in the field of web application technology and security. The candidate will be expected to demonstrate that they are able to find a range of security flaws and vulnerabilities, including proving the ability to exploit and leverage the flaws to ascertain the impact of the issues found.

In addition to traditional web application security, the following topics which are included in the practical examination and can also be included in the written components:

- Flash Application Testing
- .Net Thick Clients
- Java Applets
- Identification of functionality within client-side code that is accessible only to privileged users
- Vulnerabilities in increasingly prevalent application frameworks – eg. Rails
- Identification of more recent SSL vulnerabilities – eg. BEAST
- HTTP Header Fields relating to security features – eg. HSTS
- Decompilation of client-side code – eg. Flash, Java, .Net
- Web Server security misconfigurations – eg. WebDAV

The candidate will be expected to possess not only the technical ability to find security weaknesses and vulnerabilities, but also the skills to ensure findings are presented in a clear, concise and understandable manner. The examination consists of three tasks:

– A multiple choice technical examination
– A hands-on practical examination

To pass the exam, the candidate must pass all sections.

Individuals undertaking this examination can request that their information be provided to the NCSC to be considered for CHECK Team Leader (Web Applications) Status.

The written and practical elements of the Certified Web Application Tester examination are delivered separately and further information can be found at clause 1.3.3.

2.4 Certified Infrastructure Tester (CCT Inf)

The CREST Certified Infrastructure Tester examination was the first assessment to be granted equivalence with the NCSC CHECK Assault Course, in June 2008. The examination is a rigorous assessment of the candidate's ability to assess a network for flaws and vulnerabilities at the network and operating system layer. The exam includes:

- Public domain information sources
- Networking
- Windows operating systems
- Unix operating systems
- Desktops
- Databases
- Voice networking
- Wireless networking.

The candidate will be expected to possess not only the technical ability to find security weaknesses and vulnerabilities, but also the skills to ensure findings are presented in a clear, concise and understandable manner. The examination consists of three tasks:

– A multiple choice technical examination
– A hands-on practical examination

To pass the exam, the candidate must pass all sections.

Individuals undertaking this examination can request that their information be provided to the NCSC to be considered for CHECK Team Leader (Infrastructure) Status.

The written and practical elements of the Certified Infrastructure Tester examination are delivered separately and further information can be found at clause 1.3.3.

2.5 Certified Wireless Specialist (CC WS)

The CREST Certified Wireless Specialist (CC WS) tests a candidate's knowledge and expertise in a common set of core skills and knowledge for penetration testers performing traditional wireless security reviews but also includes elements such as RFID, Bluetooth and ZigBee amongst other wireless technologies. Success will confer the qualification (CC WS) to an existing CREST Certified Consultant who has previously passed one of the CREST CCT level examinations.

The Examination consists of:

– A Multiple Choice Exam
– A Practical Exam

Candidates are required to meet or exceed a two-thirds pass mark in both sections independently in order to pass the exam overall.

3. SIMULATED TARGET ATTACK AND RESPONSE (STAR) EXAMINATIONS

3.1 Certified Simulated Attack Manager (CC SAM)

The CC SAM examination tests candidates' knowledge and expertise in leading a team that specialises in Simulated Attacks. The candidate is expected to have a good breadth of knowledge in all areas of Simulated Attack and proven experience in managing incidents, penetration tests and simulated attack exercises. The exam will assess the candidate's ability to conduct Simulated Attacks in a realistic, legal and safe manner, ensuring appropriate evidence is collated to provide the customer with actionable intelligence of organisational risks and failings while minimising the risks to the customer's staff, data and systems.

The CC SAM examination is delivered in a Pearson Vue centre. It is divided into two parts (SAM1 and SAM2). Part One must be taken before Part Two and overall results will be released once both examination Parts have been taken.

- SAM 1 will comprise multiple-choice questions and one compulsory long form question
- SAM 2 will comprise two long form questions and a scenario-based question.

Candidates are required to meet or exceed a two-thirds pass mark in both sections independently in order to pass the exam overall. A candidate's overall result will be released once both parts of the examination have been taken (ie. there will be no result given after taking part 1).

Further booking information can be found at Clause 1.3.4.

3.2 Simulated Attack Specialist (Red Teaming) (CC SAS)

The CC SAS examination tests candidates' knowledge and expertise delivering technical components of a Simulated Attack, specifically exploitation of client vulnerabilities through Trojanised files, phishing campaigns, implant development, evasion skills and lateral movement within a compromised network. This exam is considered a specialism to the existing CREST CCT Infrastructure certification, which is a mandatory prerequisite for all candidates wishing to complete this examination. While it is acknowledged that there is significant overlap with the existing INF exam syllabus, this examination is set at a significantly higher level of detail in a number of areas.

The examination consists of two components:

- multiple choice plus a written section, comprising a selection of long form questions that require detailed answers
- hands-on practical

Candidates are required to meet or exceed a two-thirds pass mark in both sections independently in order to pass the exam overall.

The written and practical elements of the Certified Infrastructure Tester examination are delivered separately and further information can be found at Clause 1.3.3.

3.3 CREST THREAT INTELLIGENCE CERTIFICATIONS

The CREST threat intelligence certifications test candidates' knowledge and expertise as part of a team that specialises in producing threat intelligence. Candidates are expected to have a good breadth of knowledge in all areas of threat intelligence and proven experience in operational security, data collection/analysis and intelligence production.

The exams assess the candidate's ability to conduct engagements that produce threat intelligence in a realistic, legal and safe manner, ensuring that the customer is provided with actionable intelligence which can be used to increase security and reduce corporate risk.

The certifications cover the core principles of how to obtain data and turn it into intelligence in a safe, controlled manner. This is a broad discipline and it is recognised that individuals will have different expertise, therefore the examinations cover a mixture of traditional intelligence analysis and technical content relating to current cyber threats.

Awareness of threat intelligence is increasing among the buying community, especially with the introduction of the CREST STAR and Bank of England CBEST schemes. The ability to supply high quality threat intelligence whilst conforming to stringent ethical and legal standards requires careful management during an engagement.

3.3.1 Registered Threat Intelligence Analyst (CR TIA)

The CR TIA examination is aimed at individuals who are part of a team delivering threat intelligence services. A minimum of two years' experience collecting, analysing and documenting threat intelligence is expected.

The CR TIA qualification provides assurance that an individual has reached the appropriate standard as a threat intelligence team member to deliver safe, legal and ethical services.

The examination consists of a multiple choice paper. Candidates are required to meet or exceed a two-thirds pass mark in the multiple choice paper to obtain this registered status.

3.3.2 Certified Threat Intelligence Manager (CC TIM)

The CC TIM examination is aimed at individuals who manage engagements to collect, analyse and disseminate threat intelligence to clients and who have experience managing a team producing threat intelligence.

The CCTIM qualification provides assurance that an individual has reached the appropriate standard to manage a team delivering these services.

The examination consists of two components:

- multiple choice plus one compulsory long form question
- a selection of long form questions that require detailed written answers and a written scenario based question

The CC TIM examination is delivered in a Pearson Vue centre. It is divided into two parts (TIM1 and TIM2). Part One must be taken before Part Two:

- TIM 1 will comprise multiple-choice questions and one compulsory long form question
- TIM 2 will comprise two long form questions and a scenario-based question.

Candidates are required to meet or exceed a two-thirds pass mark in both sections independently in order to pass the exam overall. A candidate's overall result will be released once both parts of the examination have been taken (ie. there will be no result given after taking part 1).

Further booking information can be found at Clause 1.3.4.

4. INCIDENT RESPONSE EXAMINATIONS

4.1 Practitioner Intrusion Analyst (CP IA)

The CREST Practitioner Intrusion Analyst (CP IA) examination is an entry level qualification that tests a candidate's knowledge all three subject areas of network intrusion, host intrusion and malware reverse engineering at a basic level below that of the main CR IA and Certified qualifications.

Success will confer the CREST Practitioner status to the individual. This qualification is a pre-requisite for the CREST Registered Intrusion Analyst examination and comprises a multiple-choice written only examination.

4.2 Registered Intrusion Analyst (CR IA)

The technical syllabus for Intrusion Analysis identifies at a high level the technical skills and knowledge that CREST expects candidates to possess for the Certification examinations in this area.

The CREST Registered Intrusion Analyst examination is a multiple-choice practical assessment where the candidate will be expected to perform basic network intrusion analysis, host intrusion analysis, and malware reverse engineering.

A pass at CPIA level is a pre-requisite for the Registered Intrusion Analyst examination and success at both CPIA and CRIA will confer the CREST Registered status to the individual. An individual passing the written but failing the practical element of the CRIA exam will be awarded a Practitioner certificate.

4.3 Certified Network Intrusion Analyst (CC NIA)

The CREST Certified Network Intrusion Analyst (CC NIA) examination tests candidates' knowledge of analysing network traffic and log files for evidence of potential compromise and analysing the potential underlying causes and infection vectors.

The examination is a rigorous assessment of the candidate's ability to assess a given network for indications of malicious activity including remote control and data ex-filtration.

The exam includes:

- Data Sources
- Statistical Analysis
- Beaconing Systems
- Encrypted Communications
- Network Traffic Analysis
- Networking Protocols
- Covert Channel Identification
- Log Analysis

The candidate will be expected to possess not only the technical ability to find security weaknesses and vulnerabilities, but also the skills to ensure findings are presented in a clear, concise and understandable manner. The examination consists of three tasks:

- A multiple choice technical examination
- A long form essay style written paper, testing both technical ability and presentation ability
- A hands-on practical examination

To pass the exam, the candidate must pass all three sections.

4.4 Certified Host Intrusion Analyst (CC HIA)

The CREST Certified Host Intrusion Analyst (CC HIA) examination tests candidates' knowledge of analysing Windows hosts for evidence of potential compromise and analysing potential infection vectors.

The examination is a rigorous assessment of the candidate's ability to assess a Windows host for indications of malware and related forensic artefacts.

The exam includes:

- Windows File Structures
- Application File Structures
- Windows Registry Essentials
- Identifying Suspect Files
- Memory Analysis
- Infection Vectors
- Malware Behaviours and Anti-Forensics

The candidate will be expected to possess not only the technical ability to find security weaknesses and vulnerabilities, but also the skills to ensure findings are presented in a clear, concise and understandable manner. The examination consists of three tasks:

- A multiple choice technical examination
- A long form essay style written paper, testing both technical ability and presentation ability
- A hands-on practical examination

To pass the exam, the candidate must pass all three sections.

4.5 Certified Malware Reverse Engineer (CC MRE)

The technical syllabus for the CREST Certified Malware Reverse Engineer (CC MRE) identifies at a high level the technical skills and knowledge that CREST expects candidates to possess for the Certification examinations in the area of Intrusion Analysis. This is a specialist exam for this subject area which also includes a core skills exam covering network and host intrusion.

The examination tests candidate's ability to reverse engineer malware, particularly remote access Trojans.

The candidate will be expected to possess not only the technical ability to find security weaknesses and vulnerabilities, but also the skills to ensure findings are presented in a clear, concise and understandable manner. The examination consists of three tasks:

- A multiple choice technical examination
- A long form essay style written paper, testing both technical ability and presentation ability
- A hands-on practical examination

To pass the exam, the candidate must pass all three sections.

4.6 Certified Incident Manager (CC IM)

Since August 2015, the UK Government requires that companies providing Cyber Incident Response services within the terms of the NCSC/CPNI CIR scheme, have at least one qualified CREST Certified Incident Manager on their team. The CIR scheme is certified by the NCSC and CPNI to deliver a focused service dealing with sophisticated, targeted attacks on networks of national significance.

The CREST Certified Incident Manager (CC IM) examination tests a candidates' knowledge across a range of areas wider than traditional intrusion analysis including conventional incident response technical tasks and also a wide range of general technology areas to ensure they are competent to assess and handle a range of potential incident scenarios. The detail in these areas is high level but broad with "an awareness of" being a good description of the level of detail required. The core response manager skills that will be assessed are outlined below and the level of detail required in these areas is greater as this is assumed to be the core domain of knowledge for an incident manager. Particular emphasis is placed on the following skill sets:

- Client management
- Containment techniques
- Project management and time management
- Evidence handling
- Communications
- Recovery and remediation
- On-going technical prevention
- Judgement making and critical reasoning
- Written skills
- Third Parties
- Reporting Agencies
- Threat intelligence, Contextualisation Attribution and Motivation.
- Industry Best Practice
- Risk Analysis
- Attack & compromise lifecycle
- Legal and Jurisdictional Issues
- Ethics
- Technical vulnerability root cause identification
- Physical threats
- Insider attacks

The technical syllabus for the CC IM examination tests the knowledge, skill and competence of individuals operating in this area. The examination is delivered in a Pearson Vue centre. It is divided into two parts (IM1 and IM2). Part One must be taken before Part Two and overall results will be released once both examination Parts have been taken.

- IM 1 will comprise multiple-choice questions and one compulsory long form question
- IM 2 will comprise two long form questions and a scenario-based question.

Candidates are required to meet or exceed a two-thirds pass mark in both sections independently in order to pass the exam overall. A candidate's overall result will be released once both parts of the examination have been taken (ie. there will be no result given after taking part 1).

Further booking information can be found at Clause 1.3.4.

5. TECHNICAL SECURITY ARCHITECTURE EXAMINATION

5.1 Registered Technical Security Architect (CR TSA)

The CREST Registered Technical Security Architecture Examination (CR TSA) tests candidates' knowledge and expertise in a common set of core skills and knowledge for systems architects. Success will confer CREST Registered status to the individual.

The examination is aimed at individuals seeking to align themselves with the role of a Senior Security Architect. Successful candidates will have a strong technical ability aligned with suitable experience to recommend high level solutions as necessary. The exam assumes that without adequate technical understanding it is not possible to perform a satisfactory and meaningful risk assessment of the implications of a particular architecture.

Candidates should be able to:

- Design and implement secure IS architectures
- Understand the responsibilities of a Security Architect
- Identify information risks that arise from potential solution architectures
- Design alternate solutions to mitigate identified information risks
- Ensure that alternate solutions or countermeasures mitigate identified information risks
- Apply 'standard' security techniques and architectures to mitigate security risks
- Develop new architectures that mitigate the risks posed by new technologies and business practices
- Provide consultancy and advice to customers on intrusion analysis and architectural problems
- Supervise Security Architects reporting to them and understand the difficulties that they may face

The examination is assessed in both Written Multiple Choice and Written Long Form. A generic guide to the examination can be downloaded from the CREST website Professional Examinations page.

5.1.1 CESG Certified Professional Scheme (CCP Scheme)

As part of the Government's investment in cyber security, the IISP consortium was appointed by the NCSC to provide certification for UK Government Information Assurance (IA) professionals. The consortium has been awarded a licence to issue the CESG Certified Professional (CCP) Mark based on the IISP Skills Framework, as part of a certification scheme driven by the NCSC (formerly CESG), the IA arm of GCHQ.

The consortium comprises CREST, the Institute of Information Security Professionals (IISP) and Royal Holloway's Information Security Group (RHUL), with CREST providing examinations for the more technical roles, the IISP certifying competency and RHUL supporting with their experience in setting rigorous and consistent assessment processes.

The certification process is designed to increase levels of professionalism in Information Assurance and uses the established IISP Skills Framework to define the competencies, knowledge and skills required for specialist IA roles. Developed through public and private sector collaboration by world-renowned academics and security experts, the Framework has been adopted by GCHQ as the basis for its CESG Certified Professional specification.

For the IA Architect role at Senior/Lead level, candidates will need to have passed the CREST Registered Technical Security Architecture (CR TSA) examination from CREST. After successfully passing the CREST examination candidates will be called for interview by the IISP.

Applicants can gain certification in one or more of the following roles:

- Accreditor
- IA Auditor
- Communications Security Officer / Crypto Custodian
- Information Security Officer
- Security & Information Risk Advisor
- IA Architect

This builds on the IISP's existing competency-based membership programmes, so not only will an individual be certified, but their areas of specialism will be recognised, offering the individual and their customers greater confidence that an individual has the right skills and experience for a role.

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6. CREST ACCREDITED TRAINING COURSES

CREST has assessed and accredited a number of training courses as aligning with all or elements of CREST examination syllabuses. These courses are summarised below and full details are available on the CREST website at http://www.crest-approved.org/uk/partners/crest-accredited-training-courses/index.html

6.1 4Armed: App Sec Hacker

[CREST Certified Web Applications Tester]

The App Sec Hacker course provides a mixture of application theory and practical knowledge with an emphasis on learning by example and then trying it out for yourself. The extensive labs cover most of what you would expect from a course designed around the CREST syllabus and provides a good learning ground for application level vulnerabilities.

The trainers are ex-developers and provide a great deal of experience and real-world labs and the course is updated based on industry findings and developments.

Being an application focused course, the relevant infrastructure components of the Web Applications syllabus are not covered, however the course is not intended for this purpose.

The course is set over two days, however it could easily be longer based on the labs alone and would be suitable for candidates in their mid to late revision cycle or those up for a challenge.

6.2 7Safe: Certified Application Security Tester

[CREST Certified Web Applications Tester]

The CAST course is billed as an advanced application security course and as such a number of pre-requisites are recommended before attendance. The advanced nature of the course means a number of topics are not included, however these topics are generally in line with the intended audience.

The course is heavily weighted towards practical components of the CREST Web Applications syllabus and theory is learned through a combination of presentation slides and practical labs. Being an application focused course the relevant infrastructure components of the Web Applications syllabus are not covered, however the course is not intended for this purpose.

It is difficult for a course of this length to cover all components of the CREST Web Applications syllabus and this is the case with CAST. However the labs are excellent, particularly the several practical exercises on SQL Injection and Cross Site Scripting.

This course provides useful practical experience and would benefit a suitable experienced consultant or developer as part of a structured learning programme towards the CREST Web Applications certification.

6.3 7Safe: Certified Security Testing Associate

[CREST Registered Penetration Tester (Infrastructure elements)]

This course is aimed at candidates focusing on the CREST CRT certification. It concentrates on infrastructure components of the syllabus with application security covered in a separate course (CSTP).

The course covers a wide range of topics, many of which are echoed on the CRT syllabus however it cannot considered exhaustive with a number of key components not covered; in particular content related to Appendix F Unix Security, should be reviewed.

Although a very hands on course it would benefit from discussing or at least documenting Appendix A of the CREST syllabus. The course is aimed at CRT level testers and as such an understanding of law and compliance and the importance of reporting should be covered. To that effect, syllabus content in Appendix A should be reviewed.

Overall this has been classed as borderline recommendation of this course. Some basic content is not covered however it does provide an entry level into CRT revision and the practicals would be of great benefit.

It is important to stress to candidates seeking CRT related courses that this course only covers the infrastructure components of the exam.

6.4 7Safe: Certified Security Testing Professional

[CREST Registered Penetration Tester / CREST Certified Web Applications Tester]

The CSTP course is heavily aligned with the OWASP Top 10 of 2013 with each section of the course explaining the individual OWASP issue and backing up the theory with the practical exercises. Obviously a great deal of the issues in the OWASP list align with the application components in the CREST CRT syllabus, however it is not exhaustive.

From a practical standpoint the course excels and the practical exercises would be of great benefit to CRT level candidates. Practicals include comprehensive SQL and Cross Site Scripting labs, exercises on Session Management and Authentication as well as other OWASP categories.

From a practical standpoint this course is recommended for candidates at the CRT level and provides a good level of coverage for a candidates aiming to improve their web application skills.

It is important to note that 7Safe provides two courses aimed at the CRT level; one application and one infrastructure. No infrastructure is included in this course.

6.5 7Safe: Malware Investigations

[CREST Registered Intrusion Analyst]

The CMI course aims to align to the CREST Registered Intrusion Analysis qualification and does cover a number of topics that would be useful in preparation for this exam.

It is by no way exhaustive, as it is difficult for any course of this length to be, however through a combination of both theory and practical exercises common techniques for malware analysis are discussed.

7Safe: Malware Investigations (cont'd)
The course would benefit candidates embarking on their journey towards CRIA, however it would not be suited to those seeking a more advanced level of instruction, particularly in areas such as network intrusion analysis.

It is important to note that the course has not been specifically designed to cover all topics of the CREST syllabus and as such a number of pre-requisites should be satisfied by candidates undertaking this training, as time restrictions prohibit the coverage of a number of core areas such as Section B and Section C of the CRIA syllabus.

6.6 7Safe: Advanced Forensic Investigation
[CREST Certified Host Intrusion Analyst]

The CFIS course covers a number of areas useful for candidates preparing for their CC HIA exam. Candidates should be aware that the course is not exhaustive and expects a good level of forensics/intrusion knowledge before attending.

The course has not been designed specifically to align to the CREST syllabus and would be best suited to candidates embarking on their journey towards CC HIA.

6.7 7Safe: Certified Wireless Security Analyst
[CREST Registered Penetration Tester (wireless elements) / CREST Certified Wireless Specialist]

The CREST Certified Wireless Specialist examination is heavily focussed on 802.11; in fact no other wireless technologies are covered. The course covers this topic well and provides a good introduction to candidates on the tools used to assess the security of 802.11 networks. More advanced topic on cracking wireless encryption mechanisms are included and practical exercises provide the requisite experience in these areas. Additionally enterprise security content, complete with an example lab, is included.

The CREST Wireless Specialist syllabus covers a wide range of wireless technologies and as such any recommendation for this course should be viewed in the guise of 802.11 networks only (Appendix F).

6.8 InfoSec Skills: Intrusion Analysis and Digital Forensics Essentials
[CREST Registered Intrusion Analyst]

The course quality is good and is structured in a manner which closely follows the CREST syllabus. It covers each section in detail and discusses every topic in reasonable depth, highlighting to candidates whether the topic will be assessed in Multiple Choice or in Practical.

The online supporting material is also good, with quizzes and feedback provided on all answers (right or wrong). Previous CR IA candidates believe that the practical topics too are relevant and appropriate.

In conclusion, candidates who complete this course will gain a good grounding in all of the CREST CR IA syllabus requirements.

6.9 InfoSec Skills: Practitioners Certificate in Information Assurance Architecture
[CREST Registered Technical Security Architect]

This course is recommended as useful preparation for the CR TSA qualification.

6.10 International CyberSecurity Institute: Certified Penetration Tester
[CREST Registered Penetration Tester]

The ICSI CPT course aligns quite closely to the CRT syllabus with a number of the key topics covered. The course has a good variety of classroom based learning, demonstrations and practical exercises to work through, although as with most courses, three days cannot provide exhaustive coverage of all penetration testing topics.

The course concentrates on infrastructure and in some aspects exceeds the knowledge required for CRT. Web application components of the syllabus, although mentioned, are not covered in any great depth, however this is not the focus of the course.

Overall this course is recommended for candidates at the earlier stages of their pen testing career, on the way to their CRT qualification and as part of a structured revision programme.

6.11 IRM: Cyber Scheme Team Member
[CREST Registered Penetration Tester]

The course provides a good grounding in the knowledge and skills required of a CREST CRT consultant. It is not by any means exhaustive, however no course of this length can be. It covers a wide range of topics, a large many of which are pre-requisite knowledge for anyone in the process of studying for the CRT qualification.

The practical aspects of the course would be of great benefit to CRT ready consultants and allow practical knowledge to be thoroughly tested or experience on unfamiliar topics to be gained.
The course does not concentrate solely on the technical but also provides a good introduction to the soft skills and assessment management skills required of a competent CRT consultant.

Overall this course would benefit a candidate as part of a structured revision programme and will assist in highlighting areas of deficiencies and focus further revision.

6.12 MDSec: Web Application Hackers Handbook
[CREST Certified Infrastructure Tester / CREST Certified Web Applications Tester]

This course has frequently been recommended by candidates who have taken both the CREST CCT Infrastructure and CCT Web Applications exams.

7. FURTHER INFORMATION

Further information can be found on the CREST website: http://www.crest-approved.org or by emailing CREST Administration.