



**Developing the Cisco Certified Design Expert Practical (CCDEp) Examination: A Case Study in Developing an IT Performance Test**

Theresa Manjar, Cisco Systems; Brian Adams, Alpine Testing Solutions; Russell Smith, Alpine Testing Solutions





### Agenda

- CCDE Program
- Challenges
- Exam Structure & Blueprint
- Item Types & Development
- Item Analysis & Key Verification
- Standard Setting





### Cisco Certified Design Expert

- Expert-level network designers who receive or discover
  - business needs,
  - functional requirements,
  - technical requirements,
  - budget constraints,
  - operational constraints,
- and produce the design of a converged solution.



### CCDE Practical Exam Development Challenges

- Certification Domain
  - Expert level content
  - Industry-wide role definition
  - Industry-wide terminology
  - Perception of "performance test"
- Delivery and Development Tools
  - Exam delivery solutions
  - Scoring and key verification capabilities
  - Item types
  - Item development tools

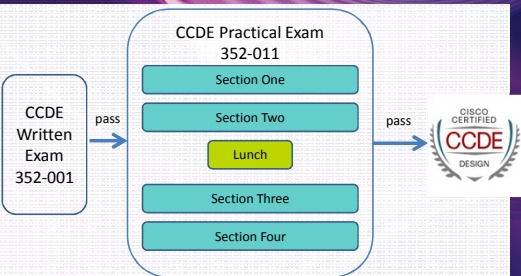



### CCDE Practical Exam Development Challenges

- Subject Matter Experts
  - Variety of experience authoring exam content
  - Some not CCDE certified but wanted to obtain certification
  - Volunteer effort
- Candidate Population
  - Expert level
  - Fairly homogenous

### Certification Process

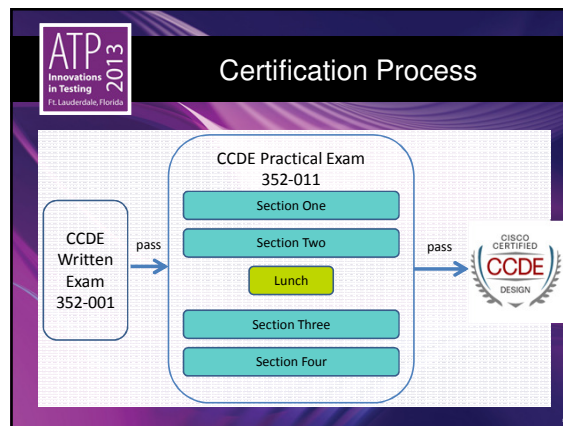


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## Multi-dimensional Blueprint

**CCDE Practical Blueprint**

Job Tasks & Duties	Design Considerations	Weights & Item Counts									
		Availability	Performance	Reliability	Security	Task Weight	Exam Item	Work Model A	Work Model B	Work Model C	Work Model D
<b>1.00 Analyze design requirements</b>	Analyze	x	x	x	x	5.00%	20	5	5	5	5
1.1 Analyze business requirements, conflicts, and constraints											
1.1.1 CPEX and CAPEX											
1.1.2 Project goals											
1.1.3 Lifecycle / Return on Investment											
1.1.4 Business environment											
1.1.5 Compliance and policy											
<b>1.2 Analyze technical requirements, conflicts, and constraints</b>	Analyze	x	x	x	x	5.00%	20	3	4	6	7
1.2.1 Application requirements											
1.2.2 Compliance and policy											



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- ## CCDE Practical Exam Delivery and Format
- Delivery:**
    - Proctored
    - Windows-based testing
    - Limited locations per delivery
  - Exam Format:**
    - 8 hour performance-based exam (plus 1 hour mandatory lunch break)
    - 24 inch monitors
    - 4 scenario-based sections; 20-35 items per scenario
    - Various item types
    - Scored & non-scored items
    - NO "skip question", NO "go back"

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## CCDE Practical Exam Demo

**Scoring Logic:**

- 1pt if (i) "Bandwidth" to "Both CiscoLand and CopperTwist", and (ii) "Application Characteristics" to "ONLY CopperTwist" (required for a functional solution)
- +1pt if "Security" to "Both CiscoLand and CopperTwist" (required for functional solution that also meets security requirements)

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## CCDE Practical Exam Demo

**Scoring Logic:**

- AB = 1pt
- Alternative logic:
  - A = 1pt, B = 1pt
  - AB = 2pt, AC = 1pt
  - Branching
    - E.g., Decision -> Rationale

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## CCDE Practical Exam Demo

Item	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8
1.1.1								
1.1.2								
1.1.3								
1.1.4								
1.1.5								
1.2.1								
1.2.2								

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## CCDE Practical Exam Demo

**Scoring Logic:**

- Based upon relationships rather than dropping items in defined zones

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## CCDE Practical Exam Demo

Option	Score	Time
00-zero	448	12
01-one	526	1
02-two	372	1
03-three	332	3

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## Sample Option Analysis for Key Verification

option	p-value	correlation	avg. time	34 to 63	64 to 68	69 to 77	78 to 83	84 to 100
00-zero	0.552	-0.413	448	12	6	6	4	4
01-one	0.086	0.140	526		1	1	2	1
02-two	0.172	0.173	372	1		3	5	1
03-three	0.190	0.258	332		3	2	2	4

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... this keeps going.

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### Sample Option Analysis for Key Verification

The screenshot displays the ATP 2013 software interface. The main window shows a spreadsheet with columns for 'option', 'p-value', 'correlation', 'avg. time', and various score ranges (34 to 63, 64 to 68, 69 to 77, 78 to 83, 84 to 100). A flowchart on the right side of the spreadsheet illustrates the relationship between different options and their outcomes.

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### Sample Option Analysis for Branched Item

Sample Branch	option	p-value	correlation	avg. time	34 to 63	64 to 68	69 to 77	78 to 83	84 to 100
1	A/AB	0.069	-0.307	208	1	3			
1	A/BC	0.052	-0.122	154	2			1	
1	A/DA	0.017	0.082	314					1
3	A/DB	0.603	0.299	174	6	4	10	6	9
1	A/DC	0.069	-0.082	114	1	1	1	1	
0	B	0.034	-0.105	178		2			
0	C	0.121	0.149	164	1			1	4
0	D	0.034	-0.333	79	2				

Sample Branch	option	p-value	correlation	avg. time	34 to 63	64 to 68	69 to 77	78 to 83	84 to 100
00-zero		0.190	-0.080	151	3	2	1	4	1
01-one		0.207	-0.284	172	4	4	1	3	
03-three		0.603	0.299	174	6	4	10	6	9

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### Standard Setting: Split Panel

- Split panel standard setting
  - Different content, different SMEs
  - Independent standard settings
- Extended Angoff & Hofstee
- Allows for:
  - Verification of results
  - Scoring of SMEs who want to be certified

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### Standard Setting: Split Panel

TCCs by Independent Recommended Cut Scores

The graph plots Form Score on the y-axis against Rasch Measure on the x-axis. Two curves represent Group 1 TCC (red) and Group 2 TCC (blue). Vertical dashed lines indicate the recommended cut scores for each group: Group 1 recommended cut (red dotted line) and Group 2 recommended cut (blue dotted line).

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### Standard Setting: Split Panel

The image shows two Hofstee plots side-by-side. The left plot is for Group 1 and the right plot is for Group 2. Both plots show a downward-sloping curve representing the relationship between Rasch Measure (x-axis) and Form Score (y-axis). Horizontal lines indicate the recommended cut scores for each group.

Thank You!