

# UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Air Force										Date: February 2019		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0306250F I Cyber Operations Technology Development							
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	-	278.521	246.502	198.864	0.000	198.864	245.293	239.351	243.183	233.050	Continuing	Continuing
646008: US Cyber Command Technology Development	-	278.521	246.502	198.864	0.000	198.864	245.293	239.351	243.183	233.050	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

## Note

In FY2020, elements of PE 0306250F, Cyber Operations Technology Development, Project Joint Common Services efforts were transferred to PE 0208097F, Joint Cyber Command and Control, in order to increase clarity and delineation from other activities.

## A. Mission Description and Budget Item Justification

US Cyber Command's (USCYBERCOM) mission is to deter or defeat strategic threats to US interests and infrastructure, provide mission assurance for the operations and defense of the Department of Defense information environment, and support the achievement of Joint Force Commander objectives.

USCYBERCOM in conjunction with the Services and National Agencies will develop and expand infrastructure architectures and capabilities/tools to support Cyber Mission Forces (CMF). Focus is on four broad program areas: Common Services, Access Platforms, Tools, and Analytics.

The specific details and aspects of these cyber activities are classified and will be provided on a need-to-know basis. Please contact USCYBERCOM, 443-634-7769.

As directed in the FY 2018 NDAA, Sec 825, amendment to PL 114-92 FY 2016 NDAA, Sec 828 Penalty for Cost Overruns, the FY 2018 Air Force penalty total is \$14.373M. The calculated percentage reduction to each research, development, test and evaluation and procurement account will be allocated proportionally from all programs, projects, or activities under such account.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

**UNCLASSIFIED**

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Air Force				Date: February 2019		
Appropriation/Budget Activity		R-1 Program Element (Number/Name)				
3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		PE 0306250F I Cyber Operations Technology Development				
B. Program Change Summary (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	
Previous President's Budget	322.187	253.825	248.661	0.000	248.661	
Current President's Budget	278.521	246.502	198.864	0.000	198.864	
Total Adjustments	-43.666	-7.323	-49.797	0.000	-49.797	
• Congressional General Reductions	-31.800	-7.323				
• Congressional Directed Reductions	0.000	0.000				
• Congressional Rescissions	0.000	0.000				
• Congressional Adds	0.000	0.000				
• Congressional Directed Transfers	0.000	0.000				
• Reprogrammings	0.000	0.000				
• SBIR/STTR Transfer	-9.991	0.000				
• Other Adjustments	-1.875	0.000	-49.797	0.000	-49.797	
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2018	FY 2019	FY 2020
Title: Joint Common Services				73.800	52.962	36.389
Description: Funding supports capabilities used in CMF to conduct cyber operations.						
The origin, details, and specific aspects of these efforts are classified and will be provided on a need-to-know basis. Please contact USCYBERCOM, 443-634-7769						
FY 2019 Plans:						
Continue to evolve the Joint Cyber Warfighter Architecture (JCWA) to enable split-based offensive and defensive operations.						
Deploy CENTROPY for an initial set of use cases. CENTROPY is a Cyber C2 system that provides oversight and management of operational readiness.						
Continue to support delivery of the Unified Cyber Analysis Portal (UCAP) to a full operational capability (FOC) that provides a comprehensive solution for malware triage.						
Continue employment of USCYBERCOM cross domain solutions that enable automated data flow from access platform to data repository.						
Continue development of the Unclassified Amazon Web Services (AWS) GovCloud and Big Data Platform (BDP) that enables the Service CMF teams to identify anomalous behavior on the Department of Defense Information Network (DODIN) network.						

# UNCLASSIFIED

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2020 Air Force		<b>Date:</b> February 2019		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>		<b>R-1 Program Element (Number/Name)</b> PE 0306250F <i>I Cyber Operations Technology Development</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
Continue development of technologies, policies, and processes needed to enable Intelligence and "indicator" sharing across the DODIN tiers and domains.  <b>FY 2020 Plans:</b> Will continue the development of the JCWA as the common joint capability to enable split-based, offensive and defensive operations.  Will continue to develop and expand the malware analysis capabilities of the UCAP.  Will continue development of USCYBERCOM cross-domain solutions that enable automated data flow from access platform to data repository and enable enrichment of data and reporting across security domains.  Will continue development of the Amazon Web Services (AWS) GovCloud and Big Data Platform (BDP) across multiple security domains to enable the Service CMF teams to identify anomalous behavior on the DODIN network.  Will continue development of technologies, policies, and processes needed to enable Intelligence and "indicator" sharing across the DODIN tiers and domains.  Some aspects of the efforts are classified and will be provided on a need-to-know basis. For further information, please contact USCYBERCOM, 443-634-7769.  <b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Funding decrease due to the reduction of the Missile Defeat and Defense Enhancement effort and realignment of JCC2 funding to AFLCMC as executive agent for the Cyber Command and Control Material System Enhancement.				
<b>Title:</b> Joint Access Platforms  <b>Description:</b> Funding supports capabilities used in Cyber Mission Force (CMF) operations to access targets and retrieve data.  The origin, details, and specific aspects of these efforts are classified and will be provided on a need-to-know basis. Please contact USCYBERCOM,443-634-7769.  <b>FY 2019 Plans:</b> Continue development and deployment of the on-net operations infrastructure used to conduct Title 10 cyberspace operations.		52.568	84.249	68.679

# UNCLASSIFIED

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2020 Air Force		<b>Date:</b> February 2019		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>		<b>R-1 Program Element (Number/Name)</b> PE 0306250F <i>I Cyber Operations Technology Development</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
Support continued development of capabilities to enable systems to provide client/server architecture to deliver multiple mission-based cyber effects.				
Continue development of operational system that delivers distributed denial of service (DDoS) capabilities on the DODIN.				
<b>FY 2020 Plans:</b> Will continue development and deployment of on-net operations infrastructure.				
Will continue to develop improvements for client/server platforms that delivers multiple mission-based cyber effects.				
Will continue development of operational system that delivers DDoS capabilities on the DODIN.				
Some aspects of the efforts are classified and will be provided on a need-to-know basis. For further information, please contact USCYBERCOM, 667-812-0814.				
<b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Funding decrease due to the reduction of the Missile Defeat and Defense Enhancement effort.				
<b>Title:</b> Joint Tools		142.653	98.520	86.388
<b>Description:</b> Funding supports capabilities used by the CMF to enable and conduct cyber operations against aligned targets.				
The origin, details, and specific aspects of these efforts are classified and will be provided on a need-to-know basis. Please contact USCYBERCOM, 443-634-7769.				
<b>FY 2019 Plans:</b> Continue development of exploits and the exploitation framework for USCYBERCOM.				
Continue the tool repository and signature management on each spiral of delivered tools that enables tool measurement and repository as well as a means to manipulate tool code to minimize risk of discovery.				
Continue to develop and deliver additional foundational tools suites and continue to populate existing tool suites with the full complement of required capabilities. The foundational tool suites will provide operational agility for CMF cyberspace operations.				
Continue spiral development process of cyberspace operations basic tools that provide operational agility during CMF effects operations.				

**UNCLASSIFIED**

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2020 Air Force		<b>Date:</b> February 2019		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>		<b>R-1 Program Element (Number/Name)</b> PE 0306250F <i>I Cyber Operations Technology Development</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
Continue to support development and employment of the results from the signature diversity study.  Continue to support a classified research and development effort in support of combatant command requirements. All aspects of this effort are classified and will be provided on a need to know basis. This is a congressional special interest item.  <b>FY 2020 Plans:</b> Will continue development of exploits and the exploitation frameworks.  Will complete implementation of signature diversity capability which will have the effect of force multiplication. This capability will enable manipulation of tools code such that a single tool can look like multiple tools and provides a means to minimize risk of discovery.  Will continue to develop and deliver additional foundational tools suites to incrementally achieve a full complement of required capabilities. The foundational tool suites will provide operational agility for CMF cyberspace operations.  Will continue to grow the tool repository and measure signatures on each spiral of delivered tools to verify uniqueness of tools considered to be diverse.  Will continue to develop and deliver specialized tools and exploits to CMF. Tools are designed to enable specific outcomes against adversary targets and technologies.  Will continue to support a classified research and development effort in support of combatant command requirements. All aspects of this effort are classified and will be provided on a need to know basis. This is a congressional special interest item.  Some aspects of the efforts are classified and will be provided on a need to know basis. For further information, please contact USCYBERCOM, 443-634-7769.  <b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Funding decrease due to the reduction of the Missile Defeat and Defense Enhancement effort.				
<b>Title:</b> Joint Analytics  <b>Description:</b> Funding in Analytics supports capabilities used in CMF operations to correlate data collected from multiple sources to garner unique insight to enable decision making.		9.500	10.771	7.408

# UNCLASSIFIED

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2020 Air Force		<b>Date:</b> February 2019		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>		<b>R-1 Program Element (Number/Name)</b> PE 0306250F <i>I Cyber Operations Technology Development</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
<p>The origin, details and specific aspects of these efforts are classified and will be provided on a need-to-know basis. Please contact USCYBERCOM, 443-634-7769.</p> <p><b>FY 2019 Plans:</b> Support creation and development of Advanced Data Analytics that provide big data analysis tools and techniques, assist with developing target folders (to include target analysis, target system analysis, and network analysis), provide technical expertise on data query strategies, provide technical continuity for development efforts.</p> <p><b>FY 2020 Plans:</b> Will continue development and sustainment of Advanced Frameworks and accompanying Data Analytics for cyber operations.</p> <p>Many aspects of the effort are classified and will be provided on a need-to-know basis. For further information, please contact USCYBERCOM at 443-634-7769.</p> <p><b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Funding decrease due to the reduction of the Missile Defeat and Defense Enhancement effort.</p>				
<b>Accomplishments/Planned Programs Subtotals</b>		278.521	246.502	198.864
<b>D. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				
<b>E. Acquisition Strategy</b>				
Facilitate the delivery of technology capabilities to the Cyber Mission Forces, by applying innovative solutions for existing and emerging technologies. Contracts are awarded under full and open competition whenever possible. Variations of both Fixed Price (FP) and Cost Plus (CP) contracting vehicles and the use of Other Transactional Authority (OTA) will be implemented leveraging USCYBERCOM Acquisition authorities. USCYBERCOM will also rely on various Service Component, Combatant Command and National Security Agency contracting offices for procurement of cyber capabilities and contractor support.				
<b>F. Performance Metrics</b>				
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.				

## UNCLASSIFIED

<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2020 Air Force</b>												<b>Date: February 2019</b>			
<b>Appropriation/Budget Activity</b> 3600 / 4						<b>R-1 Program Element (Number/Name)</b> PE 0306250F / <i>Cyber Operations Technology Development</i>						<b>Project (Number/Name)</b> 646008 / <i>US Cyber Command Technology Development</i>			
<b>Product Development (\$ in Millions)</b>				<b>FY 2018</b>		<b>FY 2019</b>		<b>FY 2020 Base</b>		<b>FY 2020 OCO</b>		<b>FY 2020 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Joint Common Services	Various	Multiple Agencies : Various	-	73.113	Feb 2018	52.125	Apr 2019	35.607	Jan 2020	-		35.607	Continuing	Continuing	-
Joint Access Platforms	Various	Multiple Agencies : Various	-	51.970	Feb 2018	83.415	Apr 2019	67.897	Jan 2020	-		67.897	Continuing	Continuing	-
Joint Tools	Various	Multiple Agencies : Various	-	142.029	Feb 2018	97.686	Apr 2019	85.606	Jan 2020	-		85.606	Continuing	Continuing	-
Joint Analytics	Various	Multiple Agencies : Various	-	8.870	Feb 2018	9.940	Apr 2019	6.629	Jan 2020	-		6.629	Continuing	Continuing	-
<b>Subtotal</b>			-	275.982		243.166		195.739		-		195.739	Continuing	Continuing	N/A
<b>Management Services (\$ in Millions)</b>				<b>FY 2018</b>		<b>FY 2019</b>		<b>FY 2020 Base</b>		<b>FY 2020 OCO</b>		<b>FY 2020 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
PMA	Various	Various : Various	-	2.539	Feb 2018	3.336	Apr 2019	3.125	Jan 2020	-		3.125	Continuing	Continuing	-
<b>Subtotal</b>			-	2.539		3.336		3.125		-		3.125	Continuing	Continuing	N/A
			<b>Prior Years</b>	<b>FY 2018</b>	<b>FY 2019</b>		<b>FY 2020 Base</b>		<b>FY 2020 OCO</b>		<b>FY 2020 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>	
<b>Project Cost Totals</b>			-	278.521		246.502		198.864		-		198.864	Continuing	Continuing	N/A
<b>Remarks</b>															

## UNCLASSIFIED

Exhibit R-4, RDT&amp;E Schedule Profile: PB 2020 Air Force

Date: February 2019

## Appropriation/Budget Activity

3600 / 4

## R-1 Program Element (Number/Name)

PE 0306250F / Cyber Operations  
Technology Development

## Project (Number/Name)

646008 / US Cyber Command Technology  
Development

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>Cyber Operations Technology Development</b>																												
1. UP AoA (Joint Common Services, formerly Defend the Nation)																												
2. UP RR (Joint Common Services, formerly Defend the Nation)																												
3. Cyber C2 FOC (Joint Common Services)																												
4. Cyber C2 Spiral Development (Joint Common Services)																												
5. Cyber SA Prototype (Joint Common Services, formerly Defend the Nation)																												
6. Data analytics platform next GEN (Joint Common Services)																												
7. Cyber UCAP FOC (Joint Common Services, formerly Defend the Nation)																												
8. Cyber UCAP Spiral Development - 1 (Joint Common Services)																												
9. CYBERCOM access platform IOC (Joint Access Platforms, formerly Combatant Command Support and Operate and Defend the DODIN)																												
10. CYBERCOM access platform build out capacity (Joint Access Platforms, formerly Combatant Command Support and Operate and Defend the DODIN)																												
11. Cyber data flow cross domain solution (Joint Access Platforms, formerly Combatant Command Support and Operate and Defend the DODIN)																												



**UNCLASSIFIED**

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Air Force																Date: February 2019																					
Appropriation/Budget Activity 3600 / 4										R-1 Program Element (Number/Name) PE 0306250F / Cyber Operations Technology Development								Project (Number/Name) 646008 / US Cyber Command Technology Development																			
										FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
										1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
12. Mission-based platform FOC (Joint Access Platforms, formerly Combatant Command Support and Operate and Defend the DODIN)										<div></div>																											
13. Data analytics platform IOC (Access Platforms, formerly Combatant Command Support and Operate and Defend the DODIN)										<div></div>																											
14. DDoS for DODIN sustain (Joint Access Platforms, formerly Combatant Command Support and Operate and Defend the DODIN)										<div></div>																											
15. DDoS for DODIN spiral development (Joint Access Platforms)										<div></div>																											
16. Exploitation framework spiral development (annual) - (Joint Tools, formerly Combatant Command Support and Operate and Defend the DODIN)										<div></div>																											
17. Foundational tool suites (spirals annual) - (Joint Tools, formerly Combatant Command Support and Operate and Defend the DODIN)										<div></div>																											
18. Tool signature management study (Joint Tools, formerly Combatant Command and Support and Operate and Defend the DODIN)										<div></div>																											
19. Analytics development (Joint Analytic, formerly Combatant Command Support and Operate and Defend the DODIN)										<div></div>																											

**UNCLASSIFIED**

<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2020 Air Force			<b>Date:</b> February 2019
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0306250F / <i>Cyber Operations Technology Development</i>	<b>Project (Number/Name)</b> 646008 / <i>US Cyber Command Technology Development</i>	

**Schedule Details**

<b>Events by Sub Project</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
<b><i>Cyber Operations Technology Development</i></b>				
1. UP AoA (Joint Common Services, formerly Defend the Nation)	1	2018	4	2018
2. UP RR (Joint Common Services, formerly Defend the Nation)	1	2018	4	2018
3. Cyber C2 FOC (Joint Common Services)	1	2018	4	2019
4. Cyber C2 Spiral Development (Joint Common Services)	1	2020	4	2023
5. Cyber SA Prototype (Joint Common Services, formerly Defend the Nation)	1	2018	4	2018
6. Data analytics platform next GEN (Joint Common Services)	2	2018	2	2020
7. Cyber UCAP FOC (Joint Common Services, formerly Defend the Nation)	1	2018	2	2018
8. Cyber UCAP Spiral Development - 1 (Joint Common Services)	3	2019	1	2021
9. CYBERCOM access platform IOC (Joint Access Platforms, formerly Combatant Command Support and Operate and Defend the DODIN)	1	2018	4	2019
10. CYBERCOM access platform build out capacity (Joint Access Platforms, formerly Combatant Command Support and Operate and Defend the DODIN)	1	2018	4	2023
11. Cyber data flow cross domain solution (Joint Access Platforms, formerly Combatant Command Support and Operate and Defend the DODIN)	1	2018	4	2019
12. Mission-based platform FOC (Joint Access Platforms, formerly Combatant Command Support and Operate and Defend the DODIN)	1	2018	3	2022
13. Data analytics platform IOC (Access Platforms, formerly Combatant Command Support and Operate and Defend the DODIN)	1	2018	4	2018
14. DDoS for DODIN sustain (Joint Access Platforms, formerly Combatant Command Support and Operate and Defend the DODIN)	1	2018	4	2019
15. DDoS for DODIN spiral development (Joint Access Platforms)	1	2018	3	2023
16. Exploitation framework spiral development (annual) - (Joint Tools, formerly Combatant Command Support and Operate and Defend the DODIN)	1	2018	4	2023

**UNCLASSIFIED**

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Air Force			Date: February 2019		
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0306250F / Cyber Operations Technology Development		Project (Number/Name) 646008 / US Cyber Command Technology Development	
		Start		End	
Events by Sub Project		Quarter	Year	Quarter	Year
17. Foundational tool suites (spirals annual) - (Joint Tools, formerly Combatant Command Support and Operate and Defend the DODIN)		1	2018	4	2023
18. Tool signature management study (Joint Tools, formerly Combatant Command and Support and Operate and Defend the DODIN)		1	2018	4	2018
19. Analytics development (Joint Analytic, formerly Combatant Command Support and Operate and Defend the DODIN)		1	2018	4	2023