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**Department of Defense  
Fiscal Year (FY) 2021 Budget Estimates**

February 2020



**Washington Headquarters Services**

*Defense-Wide Justification Book Volume 5 of 5*

***Research, Development, Test & Evaluation, Defense-Wide***

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Washington Headquarters Services • Budget Estimates FY 2021 • RDT&E Program

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Defense-Wide  
 FY 2021 President's Budget  
 Exhibit R-1 FY 2021 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

17 Jan 2020

	FY 2019 (Base + OCO)	FY 2020 Base Enacted	FY 2020 Emergency	FY 2020 OCO Enacted	FY 2020 Total Enacted (Base+Emerg+ OCO)
<u>Summary Recap of Budget Activities</u>					
Advanced Technology Development	29,198				
Management Support	1,000	1,000			1,000
Total Research, Development, Test & Evaluation	30,198	1,000			1,000
<u>Summary Recap of FYDP Programs</u>					
Research and Development	30,198	1,000			1,000
Total Research, Development, Test & Evaluation	30,198	1,000			1,000

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Defense-Wide  
 FY 2021 President's Budget  
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 (Dollars in Thousands)

17 Jan 2020

	FY 2021 Base	FY 2021 OCO for Base Requirements	FY 2021 OCO for Direct War and Enduring Costs	FY 2021 Total OCO	FY 2021 Total (Base + OCO)
Summary Recap of Budget Activities					
Advanced Technology Development					
Management Support	999				999
Total Research, Development, Test & Evaluation	999				999
Summary Recap of FYDP Programs					
Research and Development	999				999
Total Research, Development, Test & Evaluation	999				999



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Defense-Wide  
FY 2021 President's Budget  
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(Dollars in Thousands)

17 Jan 2020

Appropriation	FY 2019 (Base + OCO)	FY 2020 Base Enacted	FY 2020 Emergency	FY 2020 OCO Enacted	FY 2020 Total Enacted (Base+Emerg+ OCO)
Washington Headquarters Services	30,198	1,000			1,000
Total Research, Development, Test & Evaluation	30,198	1,000			1,000

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Defense-Wide  
 FY 2021 President's Budget  
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 Total Obligational Authority  
 (Dollars in Thousands)

17 Jan 2020

Appropriation	FY 2021 Base	FY 2021 OCO for Base Requirements	FY 2021 OCO for Direct War and Enduring Costs	FY 2021 Total OCO	FY 2021 Total (Base + OCO)
Washington Headquarters Services	999				999
Total Research, Development, Test & Evaluation	999				999

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Defense-Wide  
FY 2021 President's Budget  
Exhibit R-1 FY 2021 President's Budget  
Total Obligational Authority  
(Dollars in Thousands)

17 Jan 2020

Appropriation: 0400D Research, Development, Test &amp; Eval, DW

Line No	Program Element Number	Item	Act	FY 2019 (Base + OCO)	FY 2020 Base Enacted	FY 2020 Emergency	FY 2020 OCO Enacted	FY 2020 Total Enacted S (Base+Emerg+ e OCO) c
41	0603342D8W	Defense Innovation Unit Experimental (DIUx)	03	29,198				U
		Advanced Technology Development		29,198				
177	0606589D8W	Defense Digital Service (DDS) Development Support	06	1,000	1,000			1,000 U
		Management Support		1,000	1,000			1,000
Total Research, Development, Test & Eval, DW				30,198	1,000			1,000

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Defense-Wide  
 FY 2021 President's Budget  
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17 Jan 2020

Appropriation: 0400D Research, Development, Test &amp; Eval, DW

Line No	Program Element Number	Item	Act	FY 2021 Base	FY 2021 OCO for Base Requirements	FY 2021 OCO for Direct War and Enduring Costs	FY 2021 Total OCO	FY 2021 Total (Base + OCO)	Se
41	0603342D8W	Defense Innovation Unit Experimental (DIUx)	03						U
		Advanced Technology Development							
177	0606589D8W	Defense Digital Service (DDS) Development Support	06	999				999	U
		Management Support		999				999	
Total Research, Development, Test & Eval, DW				999				999	

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Line	Program Element	Item	Act	FY 2019 (Base + OCO)	FY 2020 Base Enacted	FY 2020 Emergency	FY 2020 OCO Enacted	FY 2020 Total Enacted S (Base+Emerg+ e OCO) c
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41	0603342D8W	Defense Innovation Unit Experimental (DIUx)	03	29,198				U
		Advanced Technology Development		29,198				
177	0606589D8W	Defense Digital Service (DDS) Development Support	06	1,000	1,000			1,000 U
		Management Support		1,000	1,000			1,000
		Total Washington Headquarters Services		30,198	1,000			1,000

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Line No	Program Element Number	Item	Act	FY 2021 Base	FY 2021 OCO for Base Requirements	FY 2021 OCO for Direct War and Enduring Costs	FY 2021 Total OCO	FY 2021 Total (Base + OCO)	Se
41	0603342D8W	Defense Innovation Unit Experimental (DIUx)	03						U
		Advanced Technology Development							
177	0606589D8W	Defense Digital Service (DDS) Development Support	06	999				999	U
		Management Support		999				999	
Total Washington Headquarters Services				999				999	

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Research, Development, Test & Eval, DW	999				999
Total Research, Development, Test & Evaluation	999				999



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Management Support	999				999
Total Research, Development, Test & Evaluation	999				999
Summary Recap of FYDP Programs					
Research and Development	999				999
Total Research, Development, Test & Evaluation	999				999

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***Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide***

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<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
41	03	0603342D8W	Defense Innovation Unit (DIU).....	Volume 5 - 1

***Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide***

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<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
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Defense Innovation Unit (DIU)	0603342D8W	41	03.....	Volume 5 - 1

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2021 Washington Headquarters Services	<b>Date:</b> February 2020
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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>					<b>R-1 Program Element (Number/Name)</b> PE 0603342D8W / <i>Defense Innovation Unit (DIU)</i>							
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	23.498	29.198	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
434: <i>Defense Innovation Unit (DIU)</i>	23.498	29.198	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**Note**

Effective FY 2020, the DIU transferred from WHS Program Element (PE) 0603342D8W to OSD Program Element 0603342D8Z with a functional realignment across the Future Year Defense Program (FYDP) to the Office of the Under Secretary of Defense (Research & Engineering) (OUSD(R&E)).

**A. Mission Description and Budget Item Justification**

The DIU mission is to accelerate innovation and help the U.S. military make faster and more efficient use of emerging commercial technologies. The Department of Defense (DoD) relies on innovation to maintain our nation's ability to deter and prevail in conflict. The DIU increases the Department's access to leading-edge technologies and talent that reside in the commercial sector. Working across the country, and in collaboration with the military departments and international partners, the DIU is developing new ways of doing business, growing our defense industrial base to include "non-traditional" companies that had previously not collaborated with the military, working with traditional vendors in novel ways to increase efficiency, and challenging innovators to share their knowledge and expertise in support of our nation's defense.

<b><u>B. Program Change Summary (\$ in Millions)</u></b>	<b><u>FY 2019</u></b>	<b><u>FY 2020</u></b>	<b><u>FY 2021 Base</u></b>	<b><u>FY 2021 OCO</u></b>	<b><u>FY 2021 Total</u></b>
Previous President's Budget	29.198	0.000	0.000	-	0.000
Current President's Budget	29.198	0.000	0.000	-	0.000
Total Adjustments	0.000	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			

**Change Summary Explanation**

Effective FY 2020, the DIU transferred from WHS PE 0603342D8W to OSD PE 0603342D8Z with a functional realignment across the FYDP to OUSD(R&E).

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Washington Headquarters Services										Date: February 2020		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603342D8W / Defense Innovation Unit (DIU)				Project (Number/Name) 434 / Defense Innovation Unit (DIU)			
COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
434: Defense Innovation Unit (DIU)	23.498	29.198	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Note

As of the FY 2020 President's Budget submission, the DIU has been transferred to the OUSD(R&E) for oversight, policy and control.

A. Mission Description and Budget Item Justification

The DIU mission is to accelerate innovation and help the U.S. military make faster and more efficient use of emerging commercial technologies. The Department of Defense (DoD) relies on innovation to maintain our nation's ability to deter and prevail in conflict. The DIU increases the Department's access to leading-edge technologies and talent that reside in the commercial sector. Working across the country, and in collaboration with the military departments and international partners, DIU is developing new ways of doing business, growing our defense industrial base to include "non-traditional" companies that had previously not collaborated with the military, working with traditional vendors in novel ways to increase efficiency, and challenging innovators to share their knowledge and expertise in support of our nation's defense.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2019	FY 2020	FY 2021
Title: Defense Innovation Unit (DIU)	29.198	0.000	0.000
Description: The FY 2019 request funded the development of leading-edge technologies emerging from high-tech companies that are not traditional defense contractors. An objective of this program is to obtain innovative technological advancements developed in the commercial sector and integrate into the DoD technological ecosystem.			
In FY 2019, the DIU scaled commercial solutions essential to military-technical advantage across the joint force. Through predictive maintenance, DIU improved mission readiness by partnering with the Air Force to prototype predictive maintenance technology for the E-3 Sentry and C-5 Galaxy aircraft. The prototype reduced unscheduled maintenance by 20-40% and increased readiness by 3-6%. This prototype is being scaled across the Air Force's 5,400 military aircraft and to the Army's Apache and Blackhawk helicopters.			
The DIU also executed agile software development through Kessel Run, and saved taxpayer dollars by taking the Tanker Planning Tool from a white board to a digital application within four months at an initial cost of \$1.5 million. The tool has saved more than \$300 million and has scaled to a 300 person Air Force software development organization. Finally, DIU increased the National Security Innovation Base (NSIB) by receiving solution briefs from more than 1,200 companies based in 43 states and the District of Columbia. DIU is working with 122 non-traditional defense contractors, 66 of which are first-time DoD vendors.			
FY 2020 Plans:			



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Washington Headquarters Services							<b>Date:</b> February 2020				
<b>Appropriation/Budget Activity</b> 0400 / 3				<b>R-1 Program Element (Number/Name)</b> PE 0603342D8W / <i>Defense Innovation Unit (DIU)</i>			<b>Project (Number/Name)</b> 434 / <i>Defense Innovation Unit (DIU)</i>				
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>							<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>		
Effective FY 2020, the DIU transferred from WHS PE 0603342D8W to OSD PE 0603342D8Z with a functional realignment across the FYDP to OUSD(R&E).											
<b>FY 2021 Plans:</b> Effective FY 2020, the DIU transferred from WHS PE 0603342D8W to OSD PE 0603342D8Z with a functional realignment across the FYDP to OUSD(R&E). While the DIU is newly aligned to OUSD(R&E), it will continue its current mission and overall focus.											
<b>Accomplishments/Planned Programs Subtotals</b>							29.198	0.000	0.000		
<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• O&M: <i>PE 0901583D8W</i>	9.026	0.000	0.000	-	0.000	0.000	0.000	0.000	-	Continuing	Continuing
<b>Remarks</b> DIU O&M mission support funding.											
<b>D. Acquisition Strategy</b> N/A											

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2021 Washington Headquarters Services	<b>Date:</b> February 2020
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<b>Appropriation/Budget Activity</b>	<b>R-1 Program Element (Number/Name)</b>											
0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 6: RDT&amp;E Management Support</i>	PE 0606589D8W I <i>Defense Digital Service (DDS)</i>											
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	0.000	1.000	1.000	0.999	-	0.999	0.999	0.999	1.019	1.039	Continuing	Continuing
281: <i>Defense Digital Service (DDS)</i>	0.000	1.000	1.000	0.999	-	0.999	0.999	0.999	1.019	1.039	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

Launched in November 2015, and formally chartered under DoD Directive 5105.87 in January 2017 within the Office of the Secretary of Defense (OSD) of the Department of Defense (DoD), and a renewed charter in 2019, DDS is charged with bringing the best available technology in an efficient way into the DoD. The DDS serves as an organization composed of commercially experienced software developers, software designers, product managers, and problem solvers within DoD and utilizes best-in-class private sector practices, talent, and technology to transform the way digital services are delivered within the Department.

The DDS uses design and technology to improve government services, strengthen national defense, and care for military members and their families. For FY 2021 DDS will expand on previous technology efforts, leverage public and private sector initiatives, and pursue innovative solutions to transform technology and improve and expand modern digital services and capabilities across the Department.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
Previous President's Budget	1.000	1.000	1.000	-	1.000
Current President's Budget	1.000	1.000	0.999	-	0.999
Total Adjustments	0.000	0.000	-0.001	-	-0.001
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Inflation Rates for Non-Pay and Non-Fuel Purchases	-	-	-0.001	-	-0.001

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Washington Headquarters Services										Date: February 2020		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0606589D8W / Defense Digital Service (DDS)				Project (Number/Name) 281 / Defense Digital Service (DDS)			
COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
281: Defense Digital Service (DDS)	0.000	1.000	1.000	0.999	-	0.999	0.999	0.999	1.019	1.039	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
The FY 2021 request will continue to enable DDS to build software prototypes and implement proof-of-concept tests for key Department projects that support missions and long term goals of the Department to modernize its offensive and defensive technological capabilities. This funding will allow DDS to determine which private sector software development best practices and/or technology work best for the Department.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2019	FY 2020	FY 2021	
Title: Defense Digital Service (DDS)									1.000	1.000	0.999	
Description: Over the past four years, DDS has provided services and tools that have improved and saved the lives of Service members and their families, and provided technological superiority in areas critical to national defense. Key initiatives include: reforming digital services that provide military families critical health benefits; launching the Federal Government's first bug bounty program 'Hack the Pentagon'; building the next-generation Global Positioning System; developing drone detection technologies; hunting adversaries on DoD networks; overhauling the logistics system that helps military families move; and redesigning training for cyber soldiers.												
FY 2020 Plans: The DoD's need for technical innovation to maintain our nation's ability to deter, and prevail in physical and technological conflict is on-going. DDS projects are positioned to complement and support the Department's innovation and modernization priorities and will continue to support data science, cyber security, and stronger technology platforms across the DoD. Criteria for project selection include the potential for impact, sustainability, and long-term ownership within the Department. Some current efforts include expanding the DDS "Jyn" program that pairs cyber soldiers and other military tech talent with DoD experts on special projects; launching a pilot to help modernize and automate portions of the security clearance process; building out a new satellite office in Augusta, Georgia; and continuing to advise on the JEDI cloud procurement.												
DDS will continue to support the Secretary of Defense in his focus on IT modernization, supporting military personnel, and overall vision for the DoD.												
FY 2021 Plans: DDS research and development is one of the Secretary of Defense's top priorities with the intent of advancing and modernizing technology, especially software systems, critical to the successful implementation of a variety of Department and war fighter												

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Washington Headquarters Services							<b>Date:</b> February 2020				
<b>Appropriation/Budget Activity</b> 0400 / 6				<b>R-1 Program Element (Number/Name)</b> PE 0606589D8W / <i>Defense Digital Service (DDS)</i>			<b>Project (Number/Name)</b> 281 / <i>Defense Digital Service (DDS)</i>				
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>							<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>		
<p>missions. DDS requirements are driven by challenging technical problems identified by the Secretary of Defense where technology is failing the Department's mission and could impede the lethality and effectiveness of the war fighter. These technical problems vary in scope and complexity, but at a minimum, when resolved, have a positive impact on the war fighter's mission and capabilities. DDS involvement may be in the development of new code, product management, advising on code development processes and releases, and hacking or re-writing existing policies or processes that are antiquated or otherwise unnecessary. DDS engages on highly troubled projects to quickly implement fixes that ultimately reduce schedule slip, increase security, lower costs, improve user experiences, and accelerate performance.</p> <p>The most pressing project in which DDS is engaged involves the vetting and security clearance process for personnel. DDS has partnered with the Office of the Under Secretary of Defense for Intelligence and the Defense Counterintelligence and Security Agency to build a prototype to improve the personnel vetting and security clearance process. With the transfer of the background investigation mission from the U.S. Office of Personnel Management to the DoD, DDS is exploring ways to deliver more accurate vetting results while eliminating the existing backlog of cases. The DDS-led System for Automated Background Evaluation and Review (SABER) prototype effort will focus on delivery of an automated investigation result, beginning with the user applying for a clearance, processing the data through government and commercial databases, recording an adjudication decision, and enrolling in continuous evaluation.</p> <p><b><i>FY 2020 to FY 2021 Increase/Decrease Statement:</i></b> There are no significant changes between FY 2020 and FY 2021.</p>											
<b>Accomplishments/Planned Programs Subtotals</b>							1.000	1.000	0.999		
<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• O&M: BA4, PE 0901589D8W	4.113	4.549	4.344	-	4.344	4.338	4.333	4.423	4.512	Continuing	Continuing
<b>Remarks</b>											
<b>D. Acquisition Strategy</b>											
N/A											

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